



P2000AE

Security Management System

DVR Integration Option

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DVR Integration Option

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This equipment must not be modified for any reason and it must be installed as stated in the Manufacturer's instruction.

If this shipment (or any part thereof) is supplied as second-hand equipment, equipment for sale outside the European Economic Area or as spare parts for either a single unit or system, it is not covered by the Directives.

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INTRODUCTION

ABOUT THIS MANUAL

This manual is a supplement to the P2000AE documentation and details the information concerning the Digital Video Recording (DVR) option.

NOTE

Throughout this manual the terms P2000AE and P2000 are used interchangeably.

Manual Summary

The manual is divided into the following chapters:

- **Chapter 1: Introduction**, defines conventions used throughout the manual, lists the DVR hardware requirements and supported protocols, as well as describes the DVR components
- **Chapter 2: Configuration**, describes the steps required to define DVR components
- **Chapter 3: Operation**, provides information on using the DVR option, including detailed information about the AV Player.
- **Chapter 4: Troubleshooting**, offers tips useful in troubleshooting the DVR system.
- **Chapter A: Namespace Definitions**, contains information about the DVR namespace tags and flags.
- **Chapter B: Recording Quality**, contains a table to help you determine recording quality settings.

Note on Other Manufacturer's Documentation

*Johnson Controls does not duplicate documentation of other equipment manufacturers. When necessary, as in this installation procedure, Johnson Controls provides documentation that supplements that of other manufacturers. When unpacking your equipment, **keep all original manufacturer documentation for future reference.***

Manual Conventions

The following items are used throughout this manual to indicate special circumstances, exceptions, important points regarding the equipment or personal safety, or to emphasize a particular point.

NOTE

Notes indicate important points or exceptions to the information provided in the main text.



Cautions remind you that certain actions, if not performed exactly as stated, can cause damage to equipment, security problems, or cause the system to operate incorrectly due to errors in system setup or programming.



Warnings indicate that the possibility of personal injury exists if an action or actions are not performed exactly as stated.

Technical Support

Technical assistance is provided to Johnson Controls authorized dealer representatives from 5 a.m. PT (Pacific Time) to 5 p.m. PT Monday through Friday. System users can get answers to operator questions by calling the local Johnson Controls Inc. sales/service office.

The authorized dealer representatives can also provide you with information on the maintenance contracts and the on-site field service.

DVR OVERVIEW

P2000 provides seamless integration with approved Digital Video Recording (DVR) system. The integration allows authorized users to manage camera functions, including frame rate and resolution, from a single P2000 workstation, as well as to tie an event generated on P2000 to live audio-visual (AV) recording. Depending on the DVR equipment used, it also enables the user to search, retrieve, and download real time or archived AV recording from any transaction or surveillance camera, from any place, at any time.

Audio-visual files can be recalled by a variety of query options, including date and time, alarm events, camera ID, or DVR ID. Live video and audio playback options are available from the Alarm Monitor, Real Time List, and Real Time Map.

IMPORTANT INSTALLATION NOTES

- The screen captures shown in this manual may differ slightly, depending on the software version you are using.
- For most DVRs, multicast traffic must be configured and enabled to allow communication with the P2000 server/workstations. Refer to the user documentation provided with your DVR for more information.
- Do not install third party vendor's workstation or server software on the P2000 server. In addition, it is highly recommended that you do not install the third party DVR client software and the P2000 workstation software on the same machine.

HARDWARE REQUIREMENTS

To operate the DVR option in P2000, both the P2000 server and P2000 workstation require video cards compliant with Microsoft® DirectX 9.0. Below are some of the certified chip sets and boards:

- Intel® 82845 G/GL/GV
- Nvidia® (all chip sets)
- ATI Radeon®

If a graphic card is not compliant with DirectX 9.0, then CCTV Service and AV Player will not function properly.

Detailed hardware requirements must be consulted with the DVR vendor.

SUPPORTED PROTOCOLS

The DVR integration with P2000 versions 4.1 and higher support the following protocols:

- Nice® protocol version 10.5
- Verint® Loronix protocol, version 4.3 and version 4.4
- Verint SmartSight, version 3.0 (build 28) and version 3.5 (build 3)
- DVN 5000, version 2.7 and 2.8, with the Software Development Kit (SDK) installed on the P2000 server and on the P2000 workstations using AV Player.
- DVN 3000, version 3.05.08
- Pelco® X-Portal (only the Endura and the DX8100 DVRs are supported)
- Bosch® VIDOS® Automation Interface

Only one version of each protocol can be used within a P2000 system.

For detailed information on configuration and use of DVN protocols, refer the series of DVN manuals. For information on features supported for each protocol and version, refer to the Tables 1-1 to 1-3.

NOTE

Feature availability in P2000 depends on the set of features provided by the DVR manufacturer's integration software.

Table 1-1: P2000 Events AV Action

P2000 Events AV Action	Protocol						
	Loronix	Nice	Smart Sight	DVN 5000	DVN 3000	Pelco X-Portal	Bosch VIDOS
Camera Complete Alarm	No	Yes	No	No	No	No	No
Camera Complete Alarm Associated Input	No	Yes	No	No	No	No	No
Camera Complete Alarm Associated Terminal	No	Yes	No	No	No	No	No
Camera Preset	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Camera Recording Quality	Yes	Yes	Yes	No	No	No	No
Camera Send Alarm	Yes	Yes	Yes	Yes	Yes	No	No
Camera Send Alarm Associated Input	Yes	Yes	Yes	Yes	Yes	No	No
Camera Send Alarm Associated Terminal	Yes	Yes	Yes	Yes	Yes	No	No
Camera Start Recording	Yes	Yes	Yes	Yes	Yes	No	Yes*
Camera Start Recording and Archiving	Yes	No	No	No	No	No	No
Camera Start Recording Associated Input	Yes	Yes	Yes	Yes	Yes	No	Yes*
Camera Start Recording Associated Terminal	Yes	Yes	Yes	Yes	Yes	No	Yes*
Camera Stop Recording	Yes	Yes	Yes	Yes	Yes	No	Yes*
Camera Stop Recording Associated Input	Yes	Yes	Yes	Yes	Yes	No	Yes*
Camera Stop Recording Associated Terminal	Yes	Yes	Yes	Yes	Yes	No	Yes*

Table 1-1: P2000 Events AV Action

P2000 Events AV Action	Protocol						
	Loronix	Nice	Smart Sight	DVN 5000	DVN 3000	Pelco X-Portal	Bosch VIDOS
Launch AV Player	Yes	Yes	Yes	Yes*	Yes*	Yes*	No
Monitor Camera	No	Yes	Yes	No	Yes	No	Yes

* See "Configuration Notes" on page 2-1.

Table 1-2: AV Alarm Subscription

AV Alarms	Protocol						
	Loronix	Nice	Smart Sight	DVN 5000	DVN 3000	Pelco X-Portal	Bosch VIDOS
Motion alarm	No	Yes	Yes	Yes	Yes	See note	Yes
Behavior alarm	No	Yes	N/A	Yes	N/A	N/A	No
Dry contact alarm	No	Yes	Yes	Yes	Yes	Yes	Yes
DVR system alarms	No	No	Yes	Yes	Yes	No	No
Video loss alarm	No	Yes	Yes	Yes	Yes	Yes	Yes

Table 1-3: AV Player Action

Action	Protocol						
	Loronix	Nice	Smart Sight	DVN 5000	DVN 3000	Pelco X-Portal	Bosch VIDOS
Call up live video	Yes	Yes	Yes	Yes	Yes	Yes	No
Retrieval of video	Yes	Yes	Yes	Yes	Yes	Yes	No
PTZ control	Yes	Yes	Yes	Yes	Yes	Yes	No
Capture video	Yes	Yes	No	Yes	No	Yes	No
Capture image	Yes	Yes	Yes	Yes	Yes	Yes	No
Note: Motion alarm subscription is available for the Endura DVR, but not for the DX8100 DVR.							

DVR OPTION COMPONENTS

Components that operate within the DVR option include CCTV Server, AV Server, AV Switches, Monitors, Cameras, and Dry Contacts.

<i>CCTV Server</i>	A P2000 component that provides communication with the DVR hardware. CCTV Server is responsible for sending commands from P2000 to the DVR system using the P2000 event action functions.
<i>AV Server</i>	A P2000 component that provides communication with the DVR hardware. AV Server is responsible for receiving alarms from the DVR system, as well as automatically forwarding P2000 alarms to the DVR system (provided the Input to Camera and/or Terminal to Camera mapping are configured.)
<i>AV Switch</i>	Defines general system information about the Digital Video Recorder hardware, and about the Monitors and Cameras that are connected to it. You must define at least one AV Switch for each configured CCTV Server.
<i>Monitors</i>	Defined for a particular AV Switch.
<i>Cameras</i>	Defined for a particular AV Switch. You may also configure the Presets that will be available for a particular Camera.
<i>Dry Contacts</i>	Dry Contacts are two-state (open/closed) input points defined for a particular AV Switch.

NOTE

Matrix operations, such as Presets and Monitors, require special hardware (a compatible video matrix switch), that must be connected to the DVR. When a matrix switch is controlled by the P2000's CCTV option (and not the DVR option), then the DVR option will not provide matrix operations.

DEFINING SYSTEM HARDWARE FOR THE DVR OPTION

Once you have configured the CCTV Server and the AV Switch, and the Cameras and Monitors, and Dry Contacts are connected to the configured addresses, you do not need to specifically configure any other equipment. The AV Switch configuration will contain the necessary global configuration information for all the DVR hardware components connected to it.

However, you may want to specifically define the operation of a piece of equipment. For example, you may have one Camera that is fixed, so you do not want to enable the “move” functions for the operator when running AV Player. In this case you would specifically set up

and configure a named Camera. Any functions expressly defined for the named Camera will override the global Camera information in the AV Switch configuration.

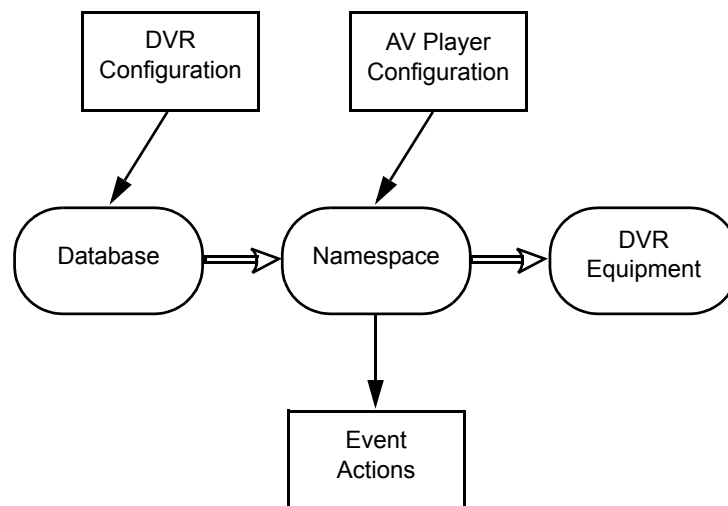
Similarly, the Camera configuration will define global information about the Presets for the Camera, including the number of the Presets that are to be generated in the namespace. For example, if the Camera definition generates 20 Presets, then the 20 Presets will exist in the namespace tagged with the namespace name. However, if you want to give a specific name to the Presets, you would need to specifically set up and define each Preset in the CCTV/AV Configuration window.

Namespace and Database

When you define the CCTV Server, AV Switch, and other items in the CCTV/AV Configuration window (except for Dry Contacts), the software creates a database table for each item, and will also create a valid entry for the AV Switch in the AV Server namespace. If the system then uses the default settings for the DVR protocol, as many entries are added to the namespace as there are default items, but no database tables will be created for these items until one of the items has been specifically created, configured, and saved. For example, if you specifically create a Preset, a record will be created and it will contain information about the named Preset. When you create the Preset, you will allocate the Preset a number that the software will use to create the namespace name (OPC name) for the Preset. The namespace entry will be updated from any information in the database when the CCTV Server is next started.

Relationship Between the Namespace and Database

The following illustration summarizes how the various system activities relate to the namespace and database.



DVR Naming Conventions

Where there is a large number of components a DVR system, it is helpful to name them with a consistent naming convention. For example, a Camera may be assigned a name that also includes the AV Switch name (OfficeCam1), or it may be named with the location of the Camera (Floor 4), or the area of its view (West Car Park). These names are added to the DVR database. Using meaningful names will help the system operators.

The AV Server namespace names are assigned automatically, using the number assigned to the item when it is manually or automatically configured.

Naming Items for the AV Server Namespace

Each of the items that you define specifically in the CCTV/AV Configuration window (except for Dry Contacts) is automatically allocated an identifying name that is recognized by the CCTV Server. The name comprises the number of the item and a fixed description. In the case of Cameras and Monitors, the number is the physical address that the equipment is wired to at the AV Switch; in the case of other AV Switch elements, the address is a logical address that can be recognized by the CCTV Server. The fixed description is assigned automatically by the DVR software when the item number is added to the CCTV/AV Configuration window.

NOTE

The AV Server namespace for the CCTV Server is initialized from the P2000 database each time the CCTV Server is started. If the CCTV Server cannot find the P2000 database, then the namespace is initialized from a local copy. However, the local copy will have been made when the P2000 database was last read, so it may not be up-to-date.

The item name is automatically tagged with an inherent name. For example, a Preset is recognized by its AV Switch, Camera, and Preset name; Presets created for different Cameras can have the same number but will have a different namespace name.

When you create records in the CCTV/AV Configuration window, you need to enter a number for the address of the item that you are adding. Each number is prefixed by one or two letters. The following table shows the prefix letters and the range of numbers permitted for each item.

Namespace Item	Parent Item	Prefix	Range
Switch	Server	AV	1 to 9999
Monitor	Switch	M	1 to 9999
Camera	Switch	C	1 to 9999
Camera Presets	SwitchCamera	Pr	1 to 9999

The number of items is determined by the DVR hardware and the protocol used. In addition, if the system is configured with the CCTV option and a CCTV Switch, the number of Cameras and Monitors is determined by the capacity of the CCTV Switch.

The prefix letters for the item are automatically inserted by the CCTV/AV Configuration window.

The number is selected by the user. The following rules must be followed:

- AV Switches must be numbered consecutively starting from AV0001.
- For Cameras and Monitors the number must match the hardware address at the AV Switch. There is no automatic checking whether the number is correct. Where a large number of Monitors and Cameras is installed it is recommended that the installing engineer develops a plan for the addressing process, so that the correct numbers can be entered into the CCTV/AV Configuration window.

Additional recommendations are as follows:

- Connect Cameras and Monitors to the low-numbered addresses at the AV Switch in order to keep the number of AV Server namespace entries as small as possible.
- For easier operations, define the most frequently used equipment with numbers that will appear in the AV Player window, that is: AV0001 to AV0006 for AV Switches, M0001 to M0020 for Monitors, and C0001 to C0040 for Cameras.

NOTE

The CCTV Server system uses intrinsic addressing, so it is recommended that you do not change the address of the items once they have been configured. If you do, you may find that actions that use intrinsic addressing (for example, OPCWrite event actions) refer to a different item.

Defining the Number of Namespace Items

When you create and configure items for the CCTV Server, you need to give each item in the namespace a number. The range of numbers permitted is dependent on the number of items configured for the namespace.

A feature of the software allows the namespace items to be configured automatically. You can decide whether the total number of items in the namespace is based on the default number of names defined by DVR protocol, or whether it is based on a specific user-defined number.

Automatic configuration of the namespace items is useful for the initial software setup. It allows you to have a working system after just configuring a CCTV Server and an AV Switch with the DVR protocol defaults, and connecting the Cameras and Monitors to a valid address at the AV Switch.

CONFIGURATION

DVR CONFIGURATION OVERVIEW

To operate your Johnson Controls® DVR system, the DVR option must be set up and configured to communicate with the system hardware. Configuration is typically performed by a system engineer or a system administrator. Although it is simple to use the DVR option on a daily basis, the system engineer will need some specific knowledge of the DVR equipment in order to configure the hardware. The hardware is set up from the CCTV/AV Configuration window.

The system hardware consists of the Digital Video Recorder (also called an “AV Switch”), Dry Contacts, and Cameras. If integrated with the CCTV option, the system may also include CCTV Switch and Monitors.

Communication with the system hardware is provided by the CCTV Server and AV Server.

The CCTV Server is OPC-compliant (OPC stands for “OLE for Process Control”). For further information relating to the OPC Interface Standard, see the OPC Foundation Interface Specification.

The protocol used by the DVR system must be defined in the CCTV/AV Configuration window. The configuration of the Cameras, Monitors, and Dry Contacts may be performed automatically or customized to your particular requirements.

Configuration should progress in a logical sequence. First, configure the AV Switch, followed by the Cameras, Monitors, and Dry Contacts that are associated with it. After the system is configured, you may return to a component and make changes if necessary.

For troubleshooting information refer to *Chapter 4: Troubleshooting*.

Configuration Notes

All Protocols

- It is recommended that you develop a naming convention to apply to AV Switches, Cameras, Monitors, and Dry Contacts before programming the software.

- The first 12 characters of named AV Switches, Monitors, and Cameras will appear in the AV Player window (the full name for the item is displayed when the cursor hovers over the button or the button is selected). It is therefore useful to use names that have the first 12 characters unique and meaningful.
- Changes to the configuration settings will not take effect until the CCTV Server has been restarted using the P2000 Service Control. This means that if it is currently running, you will need to stop it and then restart it.
- Provided the CCTV Server and AV Switch are configured, you can use the equipment using the default settings.
- The installation and operation of the DVR equipment must be done in accordance with the manufacturer's instructions.
- The DVR Equipment must be time synchronized with the P2000 server.

DVN Protocol

- Each DVN supports up to 16 simultaneous connections. These connections are used, for example, by the user interface, the P2000 AV Service, and the P2000 CCTV Service. In addition to that, each time the AV Player is launched in P2000, a DVN connection is consumed until that AV Player window is closed.
- To limit the number of connections used it is recommended that rather than use the P2000 AV Player, you configure the DVN software to display popup videos. A DVN application called SiteManager can respond to incoming DVN alarms by popping up a video window for the associated camera. SiteManager uses only a single DVN connection to handle all video from a given DVN, no matter how many windows are displayed. For the instructions on how to configure the SiteManager application refer to the DVN user documentation provided with your DVN system.
- The Software Development Kit (SDK) for the DVN protocol must be installed on the P2000 server and on the P2000 workstations using AV Player.

Nice Protocol

NiceVision 10.5 Integration Process with P2000

For installation and configuration process follow this outline:

1. Install the P2000 server software with the Nice protocol.
For instructions on P2000 software installation refer to the *P2000 Server/Workstation Software Installation Manual*.
2. Install the following Nice software:
 - Nice DVR
 - AMS Server

- Database
- ICM Server

For instructions, refer to the manufacturer's documentation.

3. Configure the Nice DVR and Cameras using the NiceVision SiteBuilder application. For instructions refer to the manufacturer's documentation.
4. Configure the AV Switch using the P2000 application (see this chapter).

Pelco DX8100

- Pelco DX8100 allows only one login per user account. Therefore, for each P2000 workstation that will run AV Player, you need to create a separate user account on the DX8100. The account must use the *workstation's* computer name for login and the same password as defined for the AV switch on page 2-14.
- On each P2000 workstation you can run only one copy of AV Player at a time when using DX8100. If you are using other DVR protocols as well, you can run additional copies of AV player along with the one copy allowed for DX8100.
- The P2000 Server cannot run any instances of the AV Player with the DX8100.

Additional Notes

- For Nice protocol the authentication user name is Administrator, and the case-sensitive authentication password is NICE.
- The Software Development Kit (SDK) for the Nice 10.5 protocol must be installed on the P2000 server and on the P2000 workstations using AV Player.

Bosch VIDOS Automation Interface Protocol

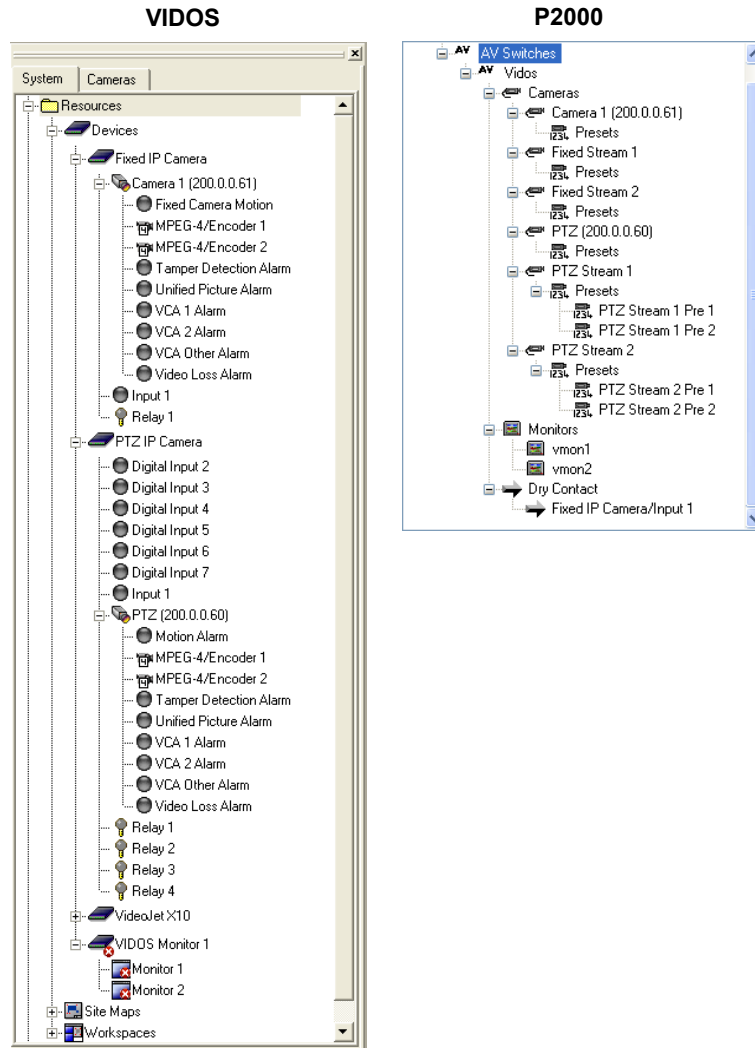
NOTE

Live video display within P2000 is not supported.

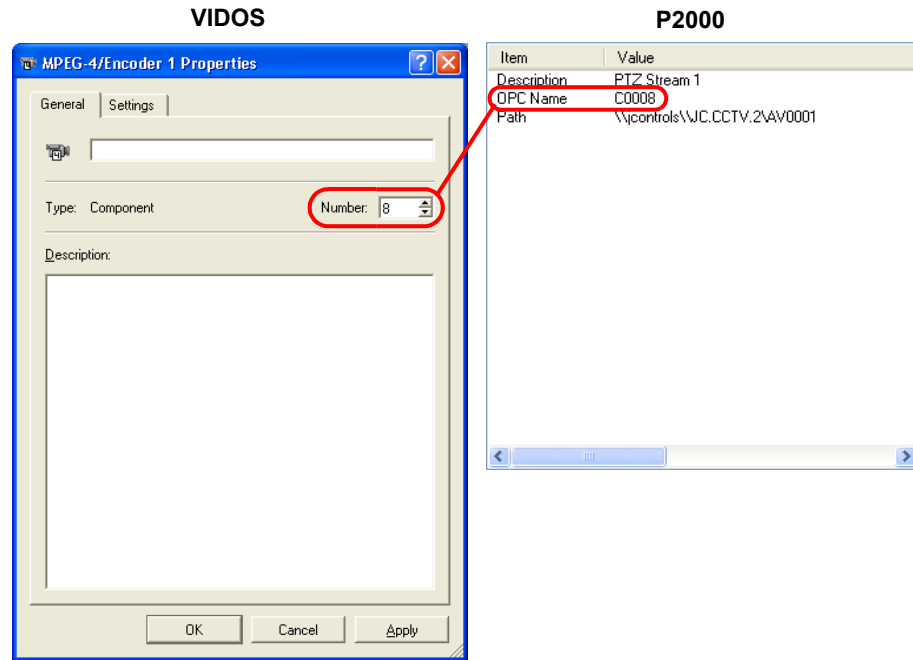
- In order to be controlled by the P2000, camera streams and monitors in VIDOS must be assigned a unique **global number**. The P2000's allowed camera numbers are 1-9999.
- To receive motion alarms from cameras, the name of each camera configured in P2000 must exactly match the camera name (not to be confused with the device name). Additionally, the motion alarm name used in the VIDOS configuration must contain the words "video loss" (they are *not* case sensitive).
- To control presets and start/stop recording, add an entry in P2000 for each camera video stream, and confirm that the P2000 **camera number** matches the VIDOS **global number**.

- Start/Stop recording is only functional when using a VIDOS Network Video Recorder (NVR).
- In order to receive Dry Contact alarms in P2000, the contact name must be a concatenation of the camera device name and input name, such as “Fixed IP Camera/Input 1,” and the names must exactly match the names used in VIDOS. Additionally, the name used in the VIDOS configuration must contain the word “input” (it is *not* case sensitive).
- Do *not* use the keywords “video loss” and “input” to name items in VIDOS, unless you are naming a motion alarm or a physical input.
- If you are using a VIDOS server, it must be running at all times for P2000 to receive alarms and send commands. If you are *not* using a VIDOS server, the VIDOS application must always be running and an operator must always be logged in.
- The VIDOS Automation Interface must be properly licensed for use with P2000, and a proper user account must be created, which is typically named “script”.
- P2000 communicates with the VIDOS Automation Interface via TCP port 1758.
- On most systems, three P2000 camera entries are required for each physical camera connected to VIDOS, one for the camera itself (not the device) and two for the video streams.

- The following screen captures show the VIDOS configuration screen and the corresponding P2000 configuration screen.



- The following screen captures show how the P2000 **camera number** must match the VIDOS **global number**.



NOTE

For more detailed information on the VIDOS Automation Interface, refer to the manufacturer's reference manual.

Using the CCTV/AV Configuration Window

The CCTV/AV Configuration window provides quick access to the component configurations. All “root” items in the CCTV/AV Configuration “tree” are displayed on the left side of the window. A “+” sign next to an item indicates that “branches” exist beneath them. When you select a branch in the tree, the detailed settings and values relating to that selection are listed on the right side of the windowpane.

You can add as many items to the CCTV/AV Configuration window as you need. After items have been added, you can edit them as desired.

The CCTV/AV Configuration window is accessed from the P2000 Main menu.

► To access the CCTV/AV Configuration window:

1. From the P2000 Main menu, select **Options>CCTV/AV>Configuration**.
2. If prompted, enter the password (Johnson Controls uses `master` as the default setting). The CCTV/AV Configuration window opens.

► **To add an item to the CCTV/AV Configuration window:**

1. From the configuration tree, click the root icon for the item you wish to add.
2. To access configuration windows, either click the **Add** button at the bottom of the window or right-click to access a shortcut button and select **Add**. The appropriate window appears.



3. Add the information according to the field definitions and click **OK** to return to the CCTV/AV Configuration window. When windows offer several configuration tabs, such as in the Edit AV Switch window, configure each tab in turn, as applicable. You may not be able to access some tabs until a minimum of information has been entered into the active tab.
4. When all settings have been entered, click **OK** to save your settings and return to the CCTV/AV Configuration window. Verify that the settings for the new item are listed in the right side of the window.
5. Continue to add items in this manner until all items and their related controls have been configured.

► **To edit CCTV/AV configuration items:**

1. From the configuration tree, right-click the item to be configured and select **Edit** (you can also select the item and click **Edit** from the shortcut button). The Edit window appears.
2. Complete your changes and click **OK** to save the settings.
3. Verify that the changes appear in the right side of the CCTV/AV Configuration window.

NOTE

Any changes will take effect only after the CCTV Server has been stopped and restarted using Service Control. For instructions see "Starting and Stopping Service Control" in the P2000 Software User Manual.

CONFIGURING DVR COMPONENTS

Configuration should progress in a logical sequence. First, configure the AV Switch, followed by the Cameras, Monitors, and Dry Contacts that are associated with it. After the system is configured, you may return to a component and make changes if necessary.

It is recommended that you use a naming convention to apply to DVR Components.

► **To access the CCTV/AV Configuration window:**

1. From the P2000 Main menu, select **Options>CCTV/AV>Configuration**.
2. If prompted, enter the password (Johnson Controls uses `master` as the default setting) and click **OK**.
3. In the CCTV/AV Configuration window, proceed with the actions you want to perform.

NOTE

For any DVR configuration changes to take effect, the CCTV Server must be stopped and restarted using P2000 Service Control. This should be done at the completion of your configuration session.

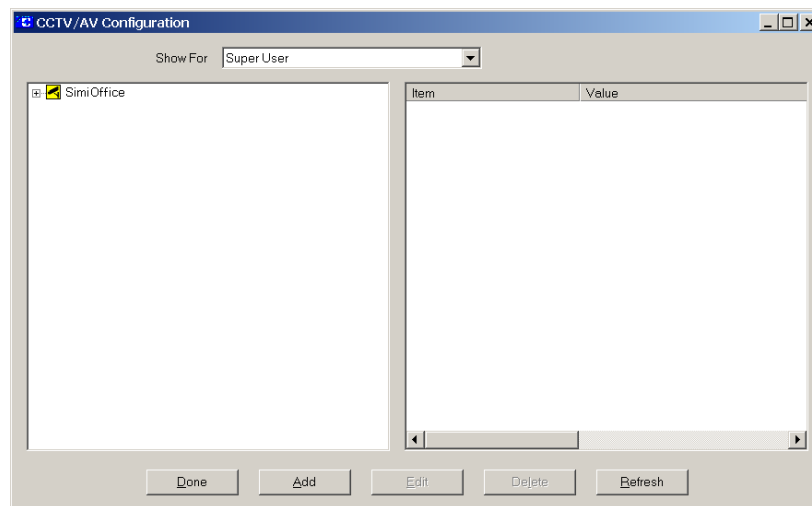
A fully configured system will display the configured items in the left windowpane, and information about the item in focus in the right windowpane.

CCTV Server

The CCTV Server, which is automatically installed in your system with the DVR option, must be configured to establish communication and control.

► **To add and configure a CCTV Server for DVR:**

1. Open the CCTV/AV Configuration window.
2. In the CCTV/AV Configuration window, right-click the icon for the CCTV Server and click **Add**.



3. In the Edit Server window, fill in the information for each field according to the “Edit Server Field Definitions” below.

The screenshot shows the 'Edit Server' window with the following fields:

- Partition:** A dropdown menu currently showing 'Super User'.
- Public:** An unchecked checkbox.
- Description:** An empty text input field.
- PC Name:** An empty text input field followed by a browse button (...).
- Prog ID:** A dropdown menu currently showing 'JC.CCTV'.
- Buttons:** 'OK' and 'Cancel' buttons at the bottom right.

4. Click **OK** to save the new information.

Edit Server Field Definitions

Partition – If partitioning is available, select the partition that will have access to this CCTV Server information.

Public – If partitioning is available, select this check box to allow all partitions to see this CCTV Server.

Description – This is a user-defined description of up to 30 characters to describe the CCTV Server.

PC Name – Enter the name of the PC on which the CCTV Server resides. This will usually be the name of the P2000 server on which you are operating. You can also search for the name using the browse button.

Prog ID – An installed CCTV Server is associated with a Program ID. Select the Program ID for the CCTV Server. The default Program ID for the CCTV Server is JC.CCTV. Sub versions may be released from time to time (numbered consecutively starting with JC.CCTV1), but using JC.CCTV ensures that you use the latest version.

AV Switches

An AV Switch receives video inputs from Cameras and outputs the data to video outputs. Each Switch operates using the manufacturer’s protocol; the functionality of the AV Switch is largely determined by the protocol provided and the capacity of the equipment connected to the AV Switch. For a list of currently supported protocols, refer to “Supported Protocols” on page 1-3.

Creating and Configuring AV Switches

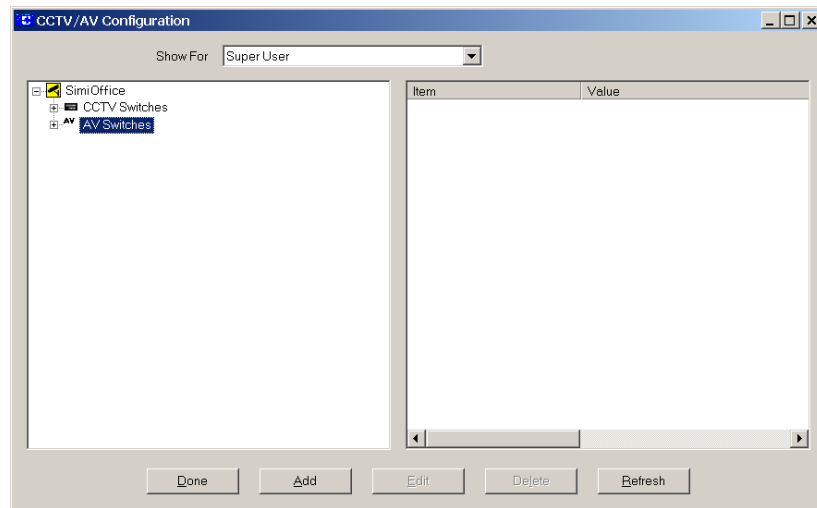
A DVR (Digital Video Recorder), also called an AV Switch, is connected to a PC with a CCTV Server running on it. The AV Switch will have a variety of equipment connected to it, including Monitors, Cameras, and Dry Contacts. Equipment connected to an AV Switch is presumed to be compatible with that specific

AV Switch. A CCTV Server system may include a number of separately connected AV Switches, and each may use a different protocol. However, only one version of each protocol can be used within a P2000 system.

To establish communication and control, each AV Switch installed in your system must be set up and configured in the CCTV/AV Configuration window. At the highest level, this window displays the CCTV Server. To display icons for the AV Switches, expand the CCTV Server's entry.

► **To add an AV Switch and configure alarm options:**

1. Open the CCTV/AV Configuration window.
2. Select the root **AV Switches** icon and click **Add**.



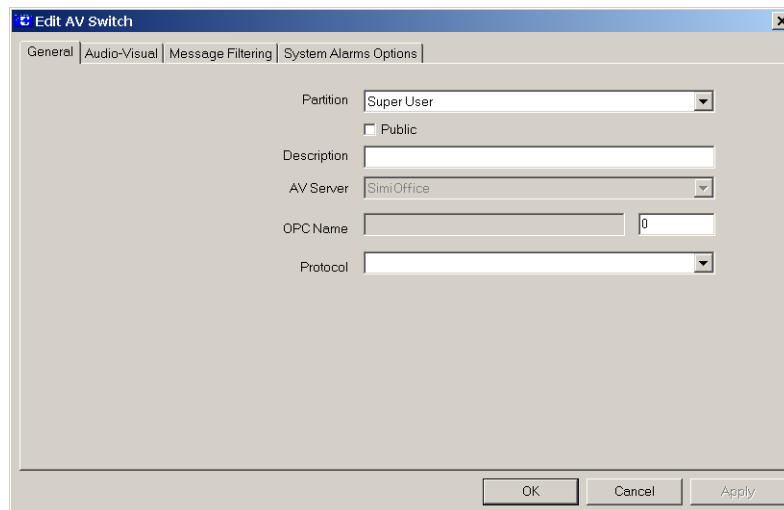
3. The Edit AV Switch window opens with the **General** tab active.

Fill in the information under the following tabs:

- **General**
- **Audio-Visual**
- **Message Filtering**

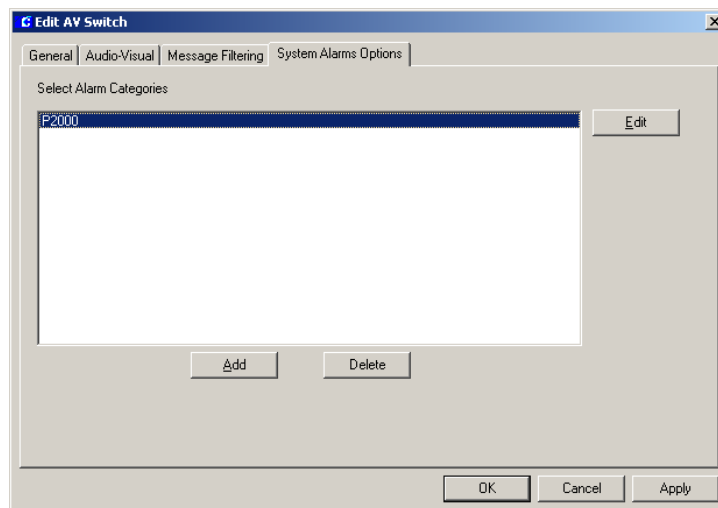
For reference use the section “Edit AV Switch Field Definitions” on page 2-13.

In each tab, click **Apply** to save your changes.

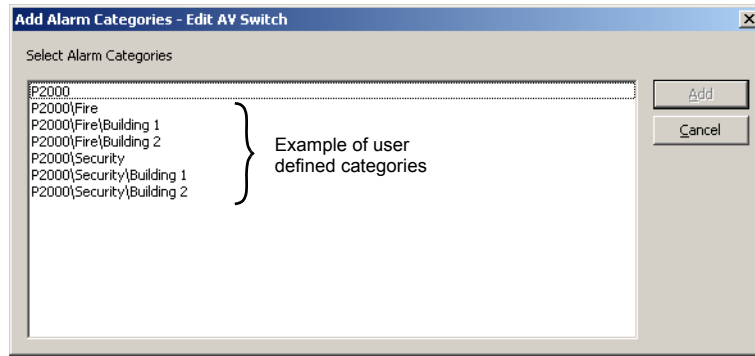


4. Click the **System Alarm Options** tab. It displays all alarm categories assigned to this AV switch.

All alarms originating at the AV switch (AV alarms) must belong to at least one Alarm Category. The default category for a new AV switch is “P2000.”



5. Click the **Add** button to assign system alarms to one or more Alarm Categories. (Click **Delete** if you want to delete a highlighted category from the list of Alarm Categories assigned to this alarm.)
6. The Add Alarm Categories window opens. It lists the default “P2000” category and all user-defined categories. (If you are using the Enterprise option, the Alarm Categories defined for all P2000 sites within an Enterprise system will be listed.) Select one or more categories and click **Add**.



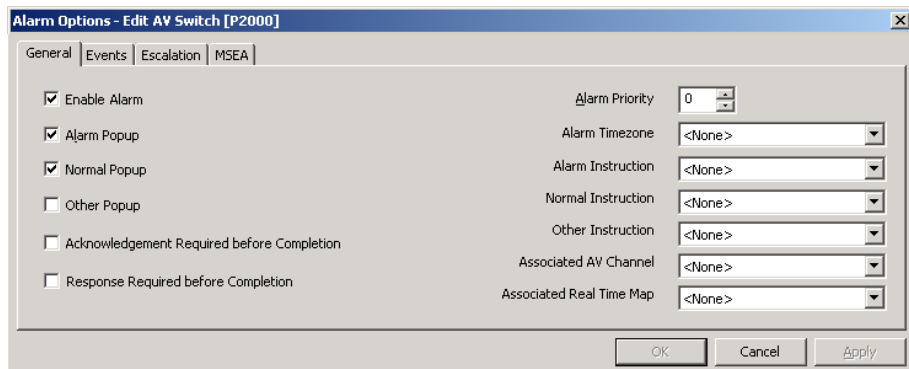
7. To edit alarm options for an Alarm Category, highlight it the Edit AV Switch window and click **Edit**. You can select and edit more than one category at a time.
8. The Alarm Options window opens with the **General** tab active. Edit the options under the following tabs:
 - **General**
 - **Events**
 - **Escalation**

NOTE

The **MSEA** tab is not currently used for defining the DVR alarm options.

For reference use the section “Alarm Options Field Definitions” on page 2-29.

Click **OK** to save your changes and return to the Alarm Categories window.



9. Repeat steps 6 - 8 to configure all Alarm Categories assigned to this AV switch.
10. Click **OK** to save your changes and close the Edit AV Switch window.
11. Click **Done** to close the CCTV/AV Configuration window.

NOTE

For any DVR configuration changes to take effect, the CCTV Server must be stopped and restarted using P2000 Service Control. This should be done at the completion of your configuration session.

When a new AV Switch is created, a corresponding icon is displayed under the root **AV Switches** icon in the CCTV/AV Configuration window. The icons for all AV Switch components are listed under it.

Edit AV Switch Field Definitions

The Edit AV Switch window opens at with the **General** tab active. You must enter information in all Edit AV Switch tabs to complete your configuration of the AV Switch.

If you enable a function that is not available for the particular protocol, then the operator's action will have no effect. The system does not check whether the functions selected at the AV Switch are compatible with the functionality of the equipment.

General Tab

Partition – If partitioning is available, select the partition that will have access to this AV Switch information.

Public – If partitioning is available, select this check box to allow all partitions to see this AV Switch.

Description – This is the user-defined name of the AV Switch. The name will be displayed in the AV Player window.

AV Server – This is the name of the CCTV Server that resides on the PC that the AV Switch is physically connected to. This name is automatically entered by the software.

NOTE

When used for the DVR operation, the CCTV Server is also referred to as the AV Server.

OPC Name – In the text box to the right, enter the number of the AV Switch. The number is automatically appended to the prefix letter and added to the **OPC Name** field. For further information about namespace names and item numbers, see “Naming Items for the AV Server Namespace” on page 1-8.

Protocol – Select the DVR protocol to be used with this make and model of the AV Switch.

Audio-Visual Tab

There are two versions of the AV tab, depending on the protocol used by the AV Switch.

Audio-Visual Tab for the Nice, Loronix, and DVN Protocols

The screenshot shows the 'Edit AV Switch' dialog box with the 'Audio-Visual' tab selected. The 'General' tab is also visible. The 'Audio-Visual' tab contains the following fields:

- Streaming Server IP Address: 127 . 0 . 0 . 0
- Data Server IP Address: 127 . 0 . 0 . 0
- Storage Server IP Address: 127 . 0 . 0 . 0
- Authentication section:
 - Username: admin
 - Password: [masked]
 - Confirm password: [masked]
- Matrix Switch section:
 - Server Name: NONE
 - IP Address: 127 . 0 . 0 . 0
 - Port: COM1

Buttons: OK, Cancel, Apply

Streaming Server IP Address – IP address of the Streaming Server (usually the IP address of the AV Switch). The Streaming Server allows transmission and viewing of audio and video.

Data Server IP Address – IP address of the Data Server (usually the IP address of the AV Switch). The Data Server is a database server that maintains all necessary information for operating DVR functions including administration, video clip logging, etc. In addition, it handles all video retrieval requests.

Storage Server IP Address – IP address of Storage Server (usually the IP address of the AV Switch). This is an archive server that typically has a number of tape libraries.

Username – Login user name needed to access remote DVR systems.

Password – Login password needed to access remote DVR systems.

NOTE

For Nice protocol the authentication user name is Administrator, and the case-sensitive authentication password is NICE.

Confirm Password – Re-enter login password needed to access remote DVR systems.

Server Name – Name of the server computer that is responsible for manipulating a video matrix switch. This is the network ID computer name of the AV Switch that communicates with the CCTV Switch.

IP Address – IP address of the video matrix switch server. This is the IP address of the AV Switch that communicates with the CCTV Switch.

Port – The COM port of the AV Switch that is physically connected to the CCTV Switch. Note that the software will check with the CCTV Server to establish whether there is a conflict in port usage, but will not check with any other equipment that may be running.

Audio-Visual Tab for the SmartSight Protocol

The screenshot shows the 'Edit AV Switch' window with the 'Audio-Visual' tab selected. The window is divided into sections for 'Sub Net 1', 'Use Subnet 2', and 'Authentication'. Each subnet section contains three IP address input fields for Primary, Secondary, and Tertiary Directory Servers. The 'Authentication' section has fields for Username, Password, and Confirm password. The bottom of the window features 'OK', 'Cancel', and 'Apply' buttons.

Primary Directory Server IP Address – Use this address to configure multiple Directory Servers for failover. By default, this will be the first address used to establish connection.

Secondary Directory Server IP Address – Use this address to configure multiple Directory Servers for failover. By default, this will be the second address used to establish connection.

Tertiary Directory Server IP Address – Use this address to configure multiple Directory Servers for failover. By default, this will be the third address used to establish connection.

Use Subnet 2 – Define the subnet if the P2000 workstations require an IP address different from the one used by the P2000 server to connect to the same SmartSight Directory Server.

Username – Login user name needed to access remote DVR systems.

Password – Login password needed to access remote DVR systems.

Confirm Password – Re-enter login password needed to access remote DVR systems.

Message Filtering Tab

Process AV Messages

Motion Detection – From the drop-down list select the timezone during which the Motion Detection AV messages will be processed.

Dry Contact – From the drop-down list select the timezone during which the Dry Contact AV messages will be processed.

Video Loss – From the drop-down list select the timezone during which the Video Loss AV messages will be processed.

Behavior – From the drop-down list select the timezone during which the Behavior AV messages will be processed.

AV Messages Debounce Time

Motion Detection – If a time between two consecutive motion detection alarms coming from the same source (camera) is less than the defined value, the second alarm will not be added to P2000 alarm queue.

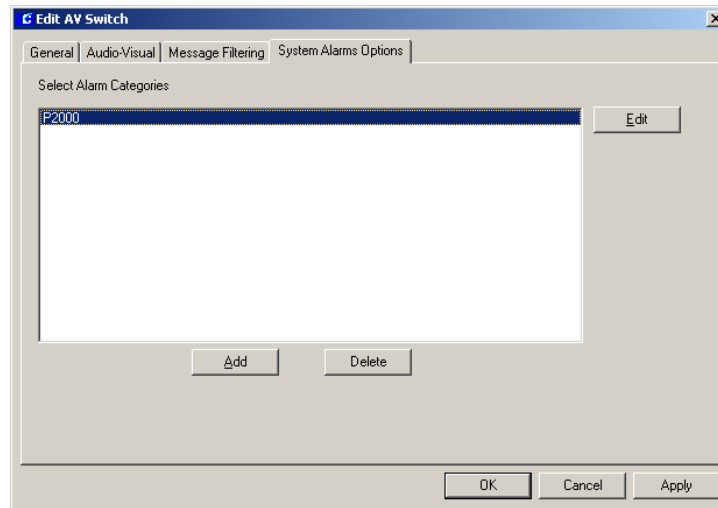
Behavior – If a time between two consecutive behavior alarms coming from the same source (camera) is less than the defined value, the second alarm will not be added to P2000 alarm queue.

Generate AV Alarm

Message Filter Group – From the drop-down list select the Message Filter Group that defines which messages will be transmitted to a mapped camera as P2000 alarms. Select **<None>** if you wish to transmit all messages.

Timezone – From the drop-down list select the time zone during which messages that pass the Message Filter Group criteria will be transmitted to a mapped camera as P2000 alarms. Select **<Always Enabled>** if you wish to send messages at all times.

System Alarm Options Tab



Select Alarm Categories

Edit – Click this button to open the Alarm Options window and edit the alarm options for a highlighted Alarm Category. See “Alarm Options Field Definitions” on page 2-29 for more information.

Add – Click this button to open the Add Alarm Categories window and assign this alarm to an additional Alarm Category.

Delete – Click this button to delete a highlighted Alarm Category from the list of categories assigned to this alarm.

Cameras

Cameras are physically connected to the AV Switch and are recognized by their physical address.

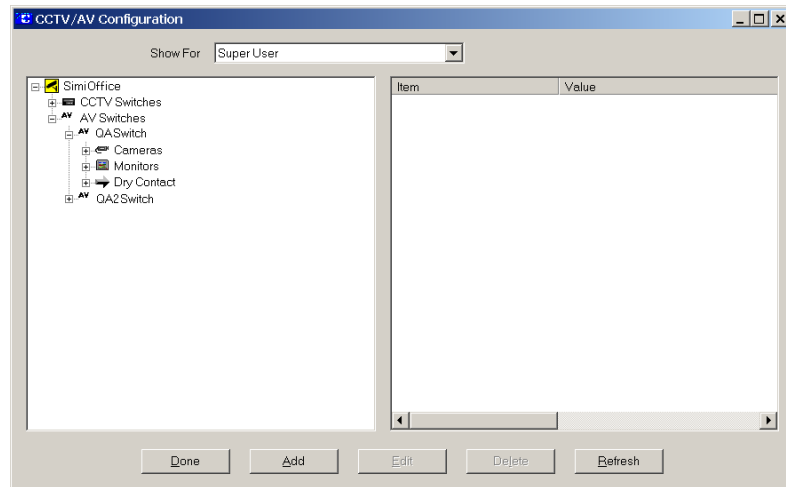
Creating and Configuring Cameras

The Cameras need to be defined manually. It is recommended that you name them in a consistent manner for easier use. Refer to “DVR Naming Conventions” on page 1-8 for more information.

► To add a named Camera and configure alarm options:

1. In the CCTV/AV Configuration window, expand the **AV Switches** entry. Click the + by the icon for the AV Switch to which the Camera is connected.

This will display all the items associated with that particular Switch.

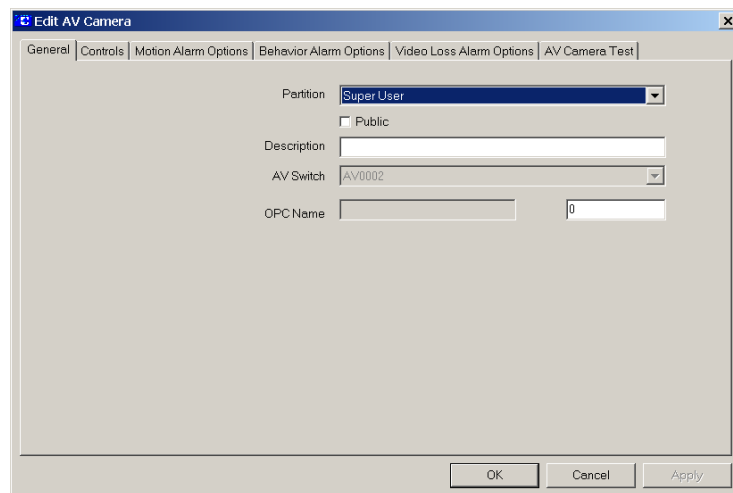


2. Right-click the **Cameras** icon and click **Add**.
3. The Edit AV Camera window opens with the **General** tab active.
Edit the options under the following tabs:

- **General**
- **Controls**

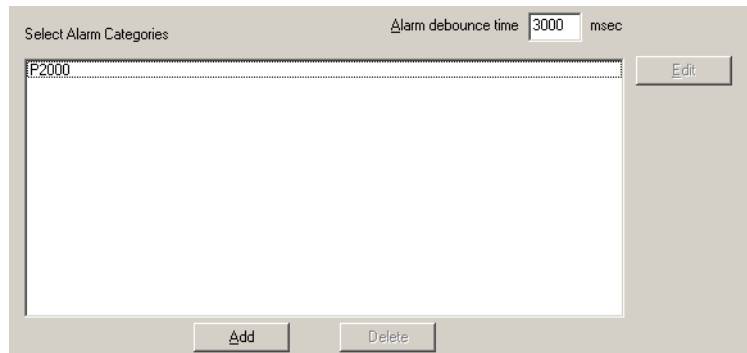
For reference see “Edit AV Camera Field Definitions” on page 2-20.

In each tab, click **Apply** to save your changes.

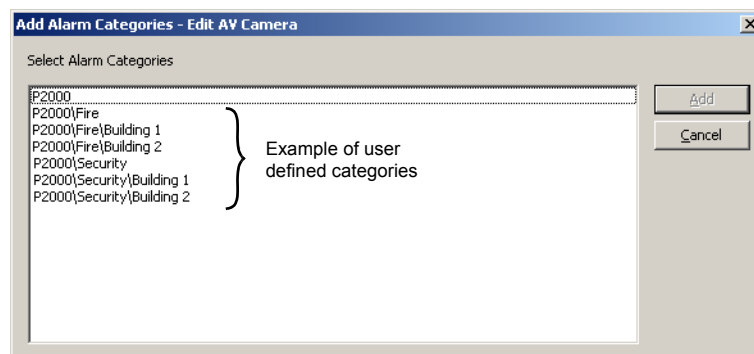


4. Configure each alarm type (motion, behavior, or video loss). Start with clicking the appropriate alarm tab in the Edit AV Camera window:
 - **Motion Alarm Options**
 - **Behavior Alarm Options**
 - **Video Loss Alarm Options**

5. The **Select Alarm Categories** list displayed under the selected alarm tab contains all Alarm Categories to which this type of alarm has been assigned. The “P2000” Alarm Category is listed by default.



6. To add more categories, click the **Add** button.
7. The Add Alarm Categories window opens. It lists the default “P2000” category and all user-defined categories. (If you are using the Enterprise option, the Alarm Categories defined for all P2000 sites within an Enterprise system will be listed.) Select one or more categories and click **Add**.



8. To delete a category from the list of Alarm Categories assigned to this alarm, highlight it in the list and click **Delete**.
9. To edit alarm options, in the Edit AV Camera window highlight a category and click **Edit**. You can select and edit more than one category at a time.
10. The Alarm Options window opens with the **General** tab active.
Edit the options under the following tabs:

- **General**
- **Events**
- **Escalation**

NOTE

The **MSEA** tab is not currently used for defining the DVR alarm options.

For reference use the section “Alarm Options Field Definitions” on page 2-29.

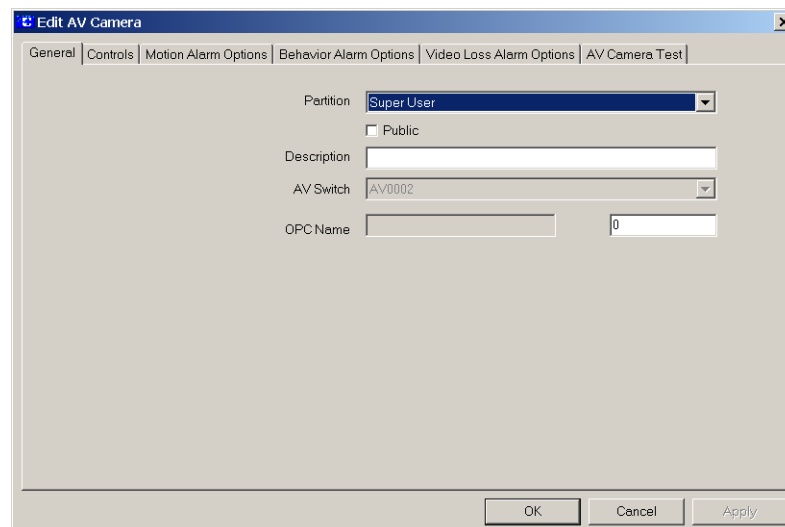
Click **OK** to save your changes and return to the Alarm Categories window.

11. Repeat steps 9-10 to configure all Alarm Categories assigned to this alarm type. Click **Apply** to save your changes.
12. Repeat steps 4-11 until you have configured all three alarm types (motion, behavior, and video loss alarms).
13. To verify the camera’s functionality, click the **AV Camera Test** tab.
14. Click **OK** to close the Edit AV Camera window.

Edit AV Camera Field Definitions

The Edit AV Camera window opens at the **General** tab. You must enter information in all Edit AV Camera tabs to complete your configuration of the Camera.

General Tab



The screenshot shows the 'Edit AV Camera' dialog box with the 'General' tab selected. The 'Partition' dropdown is set to 'Super User'. The 'Public' checkbox is unchecked. The 'Description' field is empty. The 'AV Switch' dropdown is set to 'AV0002'. The 'OPC Name' field has '0' entered. At the bottom right are 'OK', 'Cancel', and 'Apply' buttons.

Partition – If partitioning is available, select the partition that will have access to this Camera’s information.

Public – If partitioning is available, select this check box to allow all partitions to see this Camera.

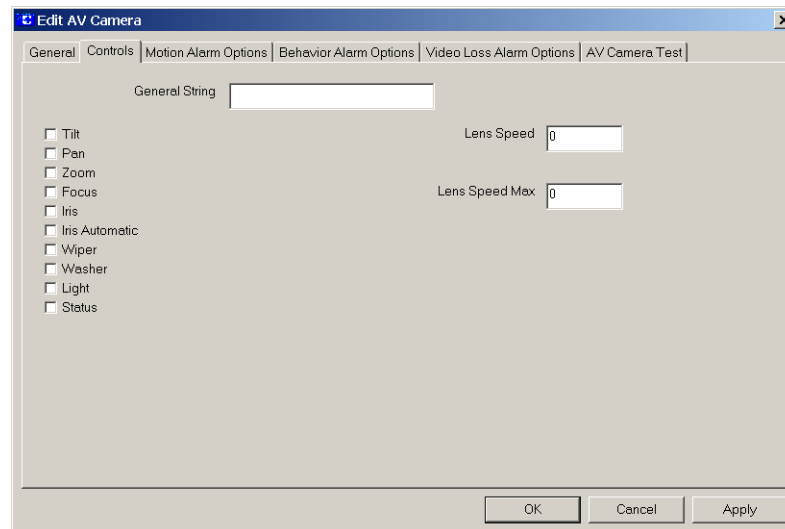
Description – This is the user-defined name of the Camera. The name will be displayed in the AV Player window.

AV Switch – This is the name of the AV Switch that the Camera is physically connected to. The AV Switch name is automatically entered into this field.

OPC Name – In the text box to the right, enter the number of the Camera. The number is automatically appended to the prefix letter and added to the **OPC Name** field. For further information about namespace names and item numbers, see “Naming Items for the AV Server Namespace” on page 1-8.

Controls Tab

If the majority of your Cameras are of one type (for example, fixed), it is recommended that you select the Camera functions that apply to the majority of the equipment. You would then be able to specifically configure those Cameras that have different capabilities.



General String – This string consists of up to 50 characters that may be displayed at the Monitor when the Camera is operating from the AV Player window (provided the protocol allows it). It could be the name of the Camera or a description of the location of the Camera. This is an optional field.

Tilt – If available, select the check box to enable Tilt for this Camera.

Pan – If available, select the check box to enable Pan for this Camera.

Zoom – If available, select the check box to enable Zoom for this Camera.

Focus – If available, select the check box to enable Focus for this Camera.

Iris – If available, select the check box to enable Iris for this Camera.

Iris Automatic – If available, select the check box to enable the Automatic Iris for this Camera.

Wiper – If available, select the check box to enable Wiper for this Camera.

Washer – If available, select the check box to enable Washer for this Camera.

Light – If available, select the check box to enable the Light for this Camera.

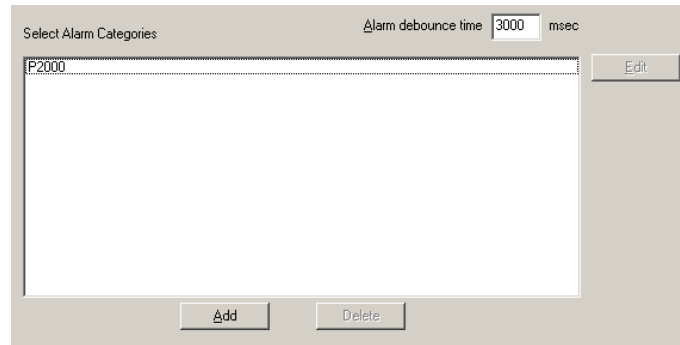
Status – If available, select the check box to enable Status for this Camera.

Lens Speed – This is the speed of the lens. Refer to the manufacturer's instructions.

Lens Speed Max – This is the maximum speed of the lens. Refer to the manufacturer's instructions.

Tabs for Alarm Options

These three tabs (**Motion Alarm Options**, **Behavior Alarm Options**, **Video Loss Alarm Options**) look the same. They list the Alarm Categories to which alarms of a particular type have been assigned, and provide access to the Add Alarm Categories and Alarm Options windows.



Alarm debounce time - Enter a minimum delay time in milliseconds. When two consecutive alarms of the same type and coming from the same camera occur within the specified delay time, the second alarm will not be added to the alarm queue. This feature is available for motion and behavior alarms.

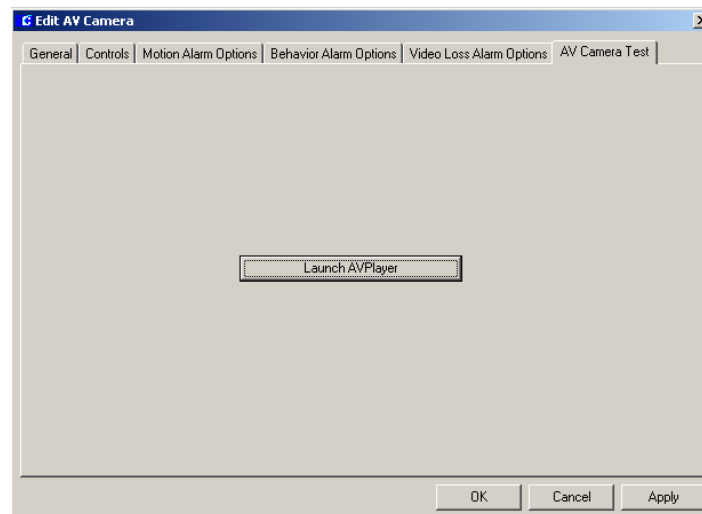
Edit – Click this button to open the Alarm Options window for one or more highlighted Alarm Categories. See “Alarm Options Field Definitions” on page 2-29 for more information.

Add – Click this button to open the Add Alarm Categories window.

Delete – Click this button to delete a highlighted Alarm Category.

AV Camera Test Tab

This tab provides the **Launch AVPlayer** button. Click this button to display live image and, depending on the hardware you are using, to test supported functions.



Camera Presets

A Preset Camera position is a user-defined position which may include pan, tilt, zoom, and focus adjustments. Numbered Presets will be defined as part of the AV Switch or Camera definition; specifically named Camera Presets can be defined in the CCTV/AV Configuration window. If the Preset is a named item, the name will be displayed in the AV Player window. Named and numbered Camera Presets can be used from the **PTZ** tab of the AV Player window, provided the equipment is available and is able to perform the required functions.

► To add a named Camera Preset:

1. In the CCTV/AV Configuration window, click the **AV Switch** icon that the Camera is associated with. Click the + to open the items for the AV Switch.
2. Click the + to open the items for the **Camera**.
3. Click the **Presets** icon and click **Add**. The Edit AV Preset window opens.

4. If partitioning is available, select the **Partition** that will have access to this Preset information.
5. If partitioning is available, select the **Public** check box to allow all partitions to see this Preset.
6. In the **Description** field, enter the user-defined name of the Preset. The name will be displayed in the AV Player window.
7. The **AV Camera** field displays the name of the Camera that the Preset is physically connected to. The Camera name is automatically entered into this field.
8. In the **OPC Name** field, enter the number of the Preset. The number is automatically appended to the prefix letter and added to the **OPC Name** field. For further information about namespace names and item numbers, see “Naming Items for the AV Server Namespace” on page 1-8.
9. Click **OK** to save the settings.

Monitors

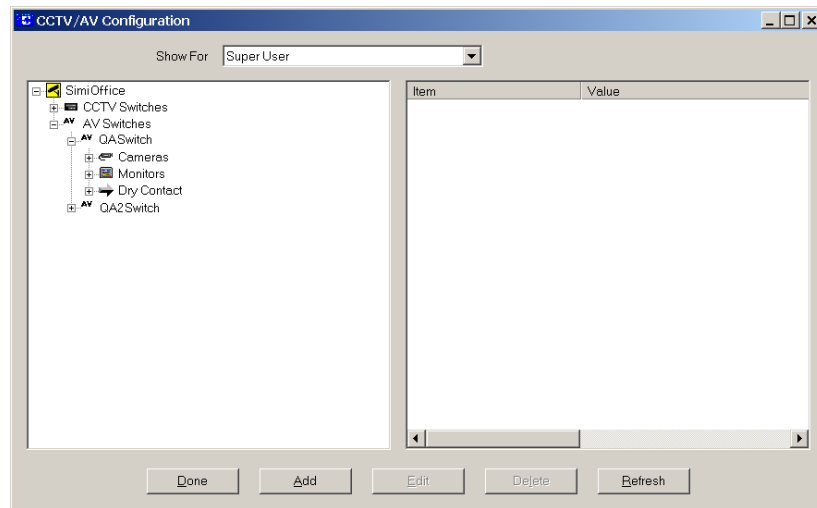
Monitors are physically connected to a CCTV Switch which is controlled by the AV Switch. They are recognized by their physical address.

Creating and Configuring Monitors

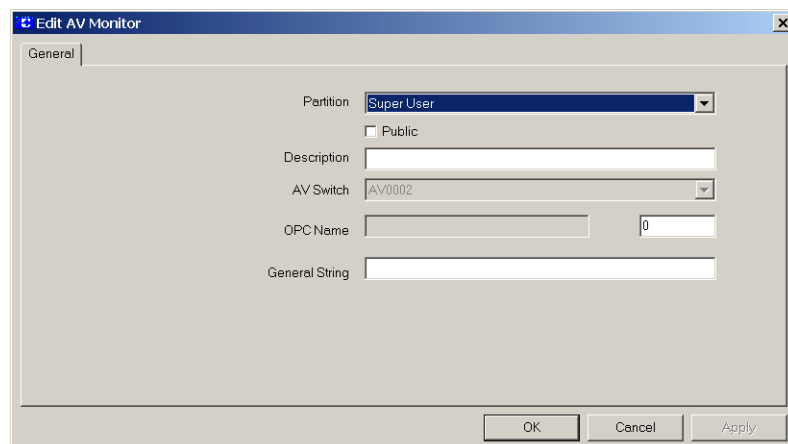
The Monitors connected to the AV Switch can be defined automatically. However, defining individual Monitors simplifies the day to day operation of the system. It is recommended that when the system is proven to perform correctly, the Monitors to be used are named for easier use. Refer to “DVR Naming Conventions” on page 1-8 for more information.

► To add a named Monitor:

1. In the CCTV/AV Configuration window, expand the **AV Switches** entry. Click the + by the icon for the AV Switch to which the Monitor is connected. This will display all the items associated with that particular Switch.



2. Right-click the **Monitors** icon and click **Add**. The Edit AV Monitor window opens.



3. Fill in the information for each field according to the “Edit AV Monitor Field Definitions” below.
4. Click **OK** to close the window.

Edit AV Monitor Field Definitions

Partition – If partitioning is available, select the partition that will have access to this Monitor’s information.

Public – If partitioning is available, select this check box to allow all partitions to see this Monitor.

Description – The name of the monitor as defined by the user. This name will be displayed in the AV Player window.

AV Switch – The name of the AV Switch that the Monitor is physically connected to. The AV Switch name entered into this field automatically.

OPC Name – In the text box to the right, enter the number of the Monitor. The number is automatically appended to the prefix letter and added to the **OPC Name** field. For further information about namespace names and item numbers, see “Naming Items for the AV Server Namespace” on page 1-8.

General String – Specify a user string that will be displayed when AV Player is running.

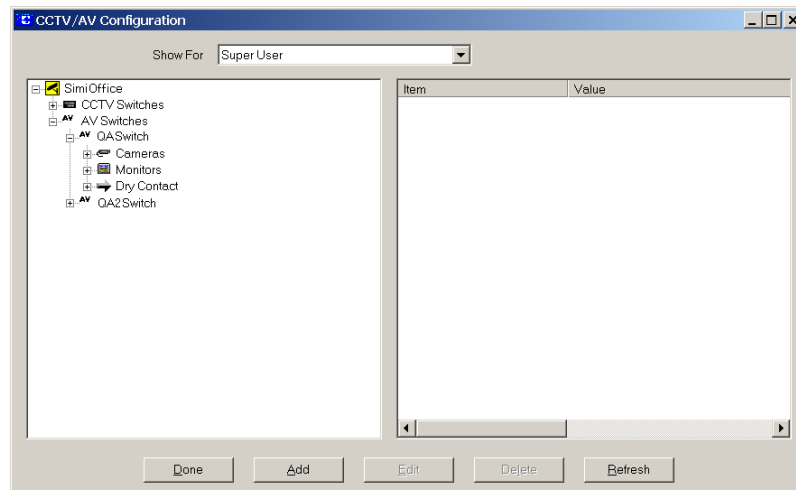
Dry Contact

Dry Contacts are two-state (open/closed) input points physically connected to a CCTV Switch and recognized by their physical address.

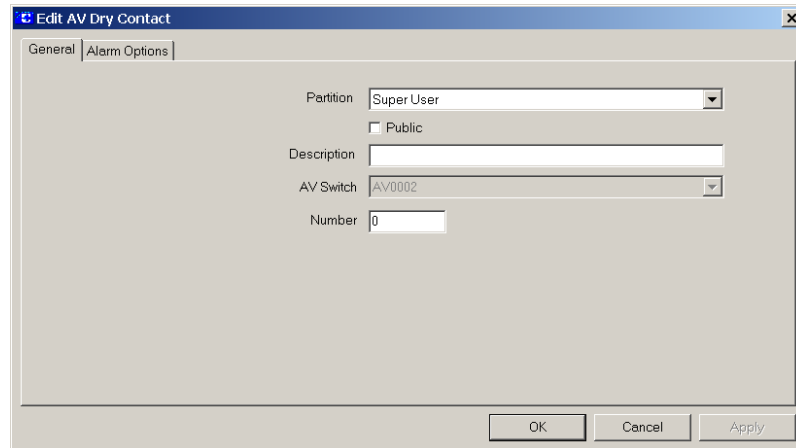
The Dry Contacts need to be defined manually. It is recommended that you name them in a consistent manner for easier use. Refer to “DVR Naming Conventions” on page 1-8 for more information.

► To add a named Dry Contact and configure alarm options:

1. In the CCTV/AV Configuration window, expand the **AV Switches** entry. Click the + by the icon for the AV Switch to which the Dry Contact is connected. This will display all the items associated with that particular Switch.



2. Right-click the **Dry Contact** icon and click **Add**.
3. The Edit AV Dry Contact window opens with the **General** tab active.
Fill in the information under this tab according to the “Edit AV Dry Contact Field Definitions” on page 2-28.
Click **Apply** to save your changes.

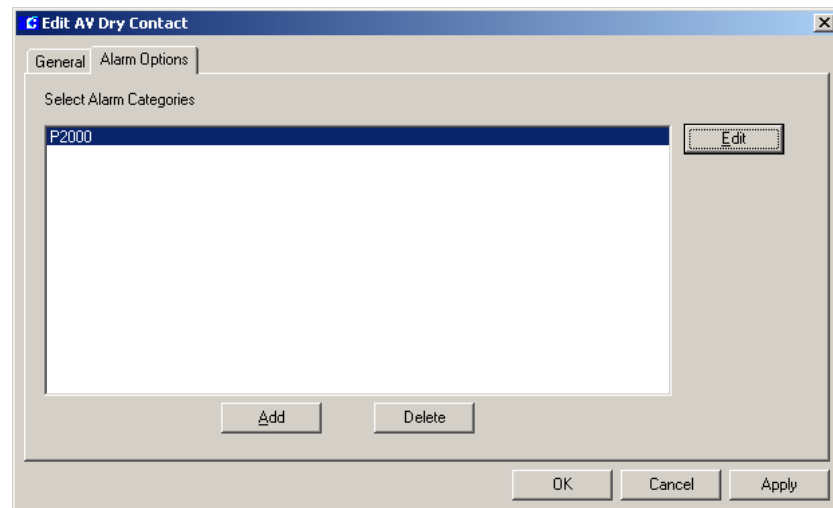


The screenshot shows the 'Edit AV Dry Contact' window with the 'General' tab selected. The window contains the following fields:

- Partition:** A dropdown menu showing 'Super User'.
- Public:** An unchecked checkbox.
- Description:** An empty text input field.
- AV Switch:** A dropdown menu showing 'AV0002'.
- Number:** A text input field containing '0'.

At the bottom right of the window are three buttons: 'OK', 'Cancel', and 'Apply'.

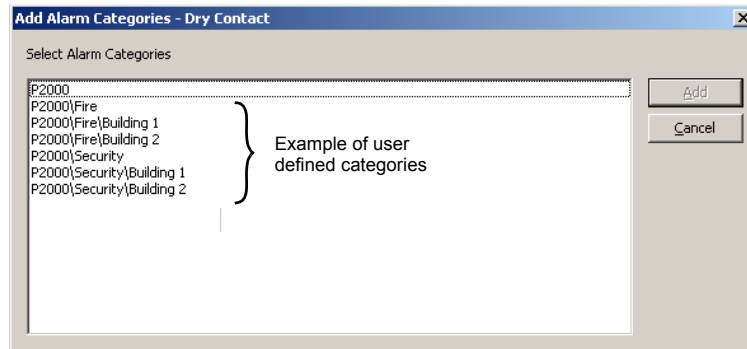
4. Click the **Alarm Options** tab. It displays all alarm categories assigned to this dry contact.
The **Select Alarm Categories** list contains all Alarm Categories to which this type of alarm has been assigned. The “P2000” Alarm Category is listed by default.



The screenshot shows the 'Edit AV Dry Contact' window with the 'Alarm Options' tab selected. The window displays a list of alarm categories under the heading 'Select Alarm Categories'. The list contains one entry, 'P2000', which is highlighted. To the right of the list is an 'Edit' button. Below the list are 'Add' and 'Delete' buttons. At the bottom right of the window are three buttons: 'OK', 'Cancel', and 'Apply'.

5. Click the **Add** button to assign system alarms to one or more Alarm Categories. (Click **Delete** if you want to delete a highlighted category from the list of Alarm Categories assigned to this alarm.)
6. The Add Alarm Categories window opens. It lists the default “P2000” category and all user-defined categories. (If you are using the Enterprise

option, the Alarm Categories defined for all P2000 sites within an Enterprise system will be listed.) Select one or more categories and click **Add**.



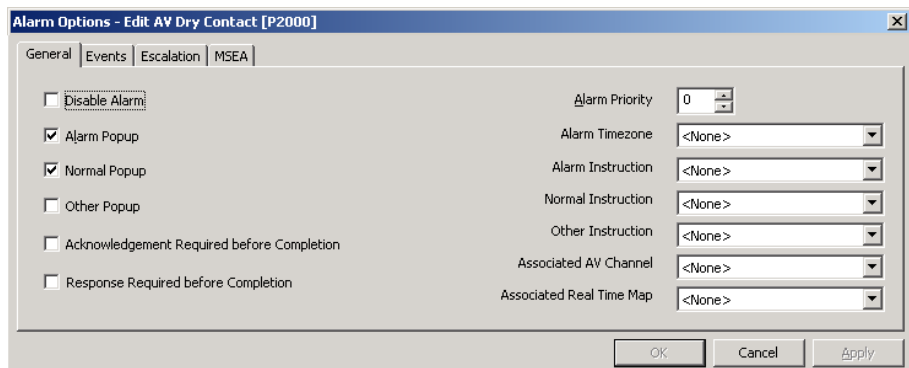
7. To edit alarm options for an Alarm Category, highlight it the Edit AV Dry Contact window and click **Edit**. You can select and edit more than one category at a time.
8. The Alarm Options window opens with the **General** tab active.
9. Edit the options under the following tabs:
 - **General**
 - **Events**
 - **Escalation**

NOTE

The **MSEA** tab is not currently used for defining the DVR alarm options.

For reference use the section “Alarm Options Field Definitions” on page 2-29.

Click **OK** to save your changes and return to the Alarm Categories window.

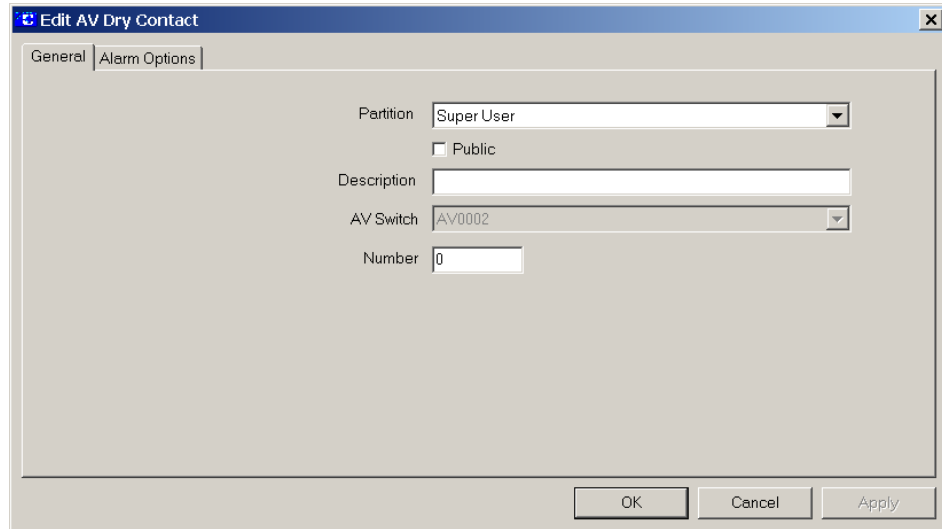


10. Repeat steps 7-9 to configure all Alarm Categories assigned to this dry contact.
11. Click **OK** to save your changes and close the Edit AV Dry Contact window.
12. Click **Done** to close the CCTV/AV Configuration window.

Edit AV Dry Contact Field Definitions

The Edit AV Dry Contact window opens at the **General** tab. You must enter information in both Edit AV Dry Contact tabs to complete your configuration of the Dry Contact.

General Tab

The screenshot shows a window titled "Edit AV Dry Contact" with two tabs: "General" and "Alarm Options". The "General" tab is active. It contains the following fields: "Partition" is a dropdown menu with "Super User" selected; "Public" is an unchecked checkbox; "Description" is an empty text box; "AV Switch" is a dropdown menu with "AV0002" selected; and "Number" is a text box containing the value "0". At the bottom right are three buttons: "OK", "Cancel", and "Apply".

Partition – If partitioning is available, select the partition that will have access to this Dry Contact's information.

Public – If partitioning is available, select this check box to allow all partitions to see this Dry Contact.

Description – This is the user-defined name of the Dry Contact. The name will be displayed in the AV Player window.

AV Switch – This is the name of the AV Switch that the Dry Contact is physically connected to. The AV Switch name is automatically entered into this field.

Number – In the text box to the right, enter the number of the Dry Contact.

Alarm Options for DVR Components

To configure alarm options for an alarm generated by an AV switch, AV camera, or AV Dry Contact, use the Alarm Options window.

Each AV alarm belongs to one or more Alarm Categories. You can configure different alarm options for each Alarm Category to which the alarm belongs. These different configurations can then be used with the Alarm Filter and Escalation features of P2000 to design a system in which dynamic alarm routing allows for effective use of the operator's time.

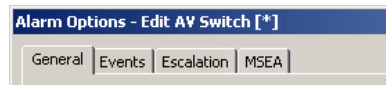
For more information on Alarm Categories, Alarm Filter, and Escalation, refer to the *P2000 Software User Manual*.

Alarm Options Field Definitions

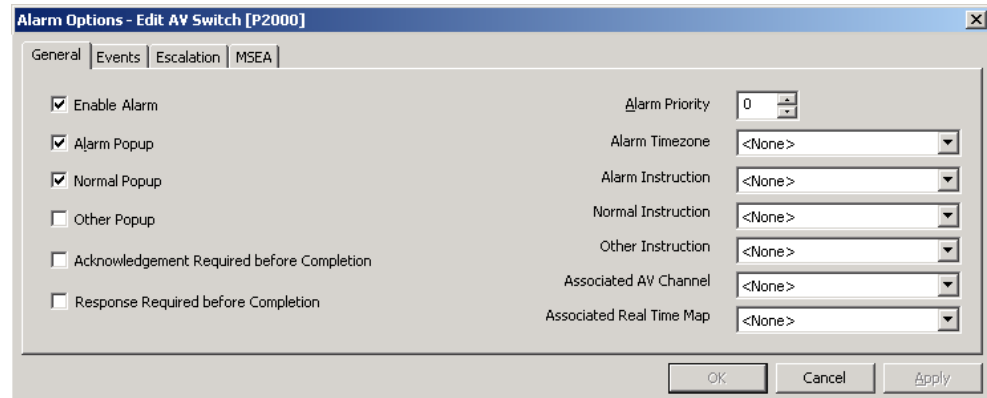
The Alarm Options window will display the following in the title bar: “Alarm Option,” the name of the window from which it was accessed, and the Alarm Category. For example:



If you are editing the alarm options for more than one category at a time, the Alarm Category will be displayed as [*], for example:



General Tab



Enable Alarm – Leave this check selected for the alarm to be added to the alarm queue and displayed in the alarm monitoring window to notify the operator of its activation. Un-selecting this check box will disable this alarm. Enabling/disabling of the alarm is specific to a particular Alarm Category. For example, you can enable the alarm for a user-defined “Fire” category and disable the same alarm for a user-defined “Security” category.

NOTE

Before you assign instruction text to the various popups, you must first create instruction text. For more information, refer to the P2000 Software User Manual.

Alarm Popup – When you enable Alarm Popup for an alarm, the Alarm Monitor will pop up at the front of the screen when the sending item is in the alarm state.

Normal Popup – When you enable Alarm Popup for an alarm, the Alarm Monitor will pop up at the front of the screen when the sending item is in the normal state.

Other Popup – When you enable Alarm Popup for an alarm, the Alarm Monitor will pop up at the front of the screen when the sending item is in the state other than “alarm” or “normal.”

Acknowledgement Required before Completion – Select this check box to require acknowledgement of this alarm before its completion.

Response Required before Completion – Select this check box to require response to this alarm before its completion.

Alarm Priority – Enter a value from 0 to 255. Zero equals the highest priority. This is the order in which the alarm message will be placed in the alarm queue. If alarm messages have the same alarm priority, the date and time determine which alarm is positioned higher in the queue.

Alarm Timezone – If you want the item to generate alarms only at certain time of the day, select from the drop-down list the time zone during which the item activation will be reported as an alarm in the Alarm Monitor window. If you select **<none>**, item activation at any time will always result in generating an alarm.

Alarm Instruction – Alarm Instruction selected in the drop-down list will be displayed in the Alarm Response window when the sending item is in the alarm state.

Normal Instruction – Alarm Instruction selected in the drop-down list will be displayed in the Alarm Response window when the sending item is in the normal state.

Other Instruction – Alarm Instruction selected in the drop-down list will be displayed in the Alarm Response window when the sending item is in the state other than “alarm” or “normal.”

Associated AV Channel – Select the camera to be associated with this alarm. If applicable, this selection will override the selection made in the Input to camera mapping window.

Associated Real Time Map – Select the Real Time Map to be associated with this alarm. If applicable, this selection will override the default behavior of the Real Time Map containing the item for the alarm. That is, when you click the **Map** button in the Alarm Monitor, the associated Real Time Map will be displayed, even if it is different from the Real Time Map containing the alarm item.

Events Tab

Alarm Options - Edit AV Switch [P2000]

General Events Escalation MSEA

Event 1 <None>

Event 2 <None>

Event 3 <None>

Event 4 <None>

OK Cancel Apply

Event 1-4 – You can define up to four events that can be triggered from the Alarm Monitor window whenever the alarm occurs and is entered into the alarm queue. To define an event, enter a descriptive name and select a previously configured Event from the associated drop-down list.

Escalation Tab

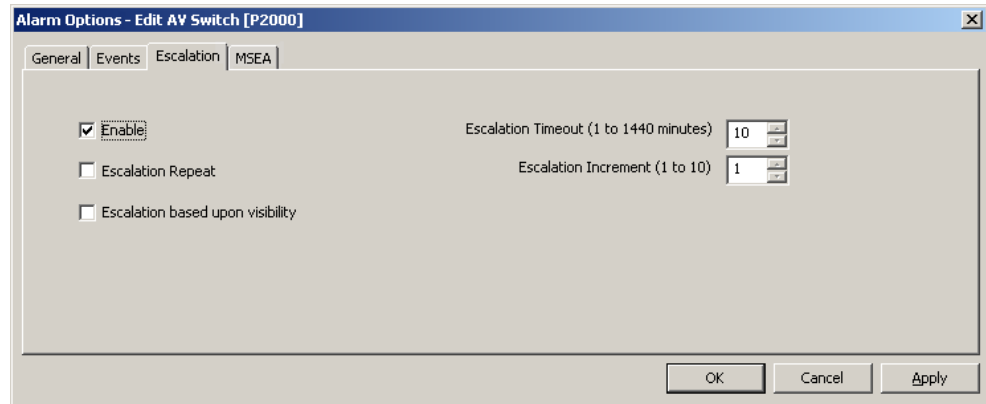
The alarm escalation function constantly monitors all generated alarms that have their escalation options enabled. Escalation level value range is from 0 to 10, where 0 indicates a non-escalated alarm.

The alarm escalation feature provides for two different conditions when an alarm may be escalated:

- If an alarm is generated for a specific alarm category and there are currently no operators logged into the P2000 that have privileges to receive alarms for that category.
- If an alarm is generated and remains pending for the configured escalation timeout period.

If either of these conditions occurs, that alarm will be regenerated with an elevated escalation level. The escalation level will be incremented by the configured escalation increment value. This process may be repeated multiple times until a high enough escalation level is reached that matches the privileges of a currently logged in operator. If no operators are logged into the P2000, the alarm will be regenerated until the maximum escalation level is reached, and then no further action will be taken.

After an escalated alarm has been completed, the next occurrence of that alarm is created with no escalation level.



Enable – Select this check box to enable alarm escalation.

Escalation Repeat – Select this check box to allow for escalation to occur more than once for the alarm. For example, if the Escalation Timeout is set to 30 minutes, and the Escalation Increment is set to 2, every half an hour the escalation value for alarms remaining in pending state will go up by 2 until it reaches the maximum value. If this check box is not selected, escalation can occur only once for this alarm.

Escalation based upon visibility – When this check box is selected, the alarm will be immediately escalated by a defined increment if, at the time of occurrence, no operator able to receive alarms from this Alarm Category is logged in.

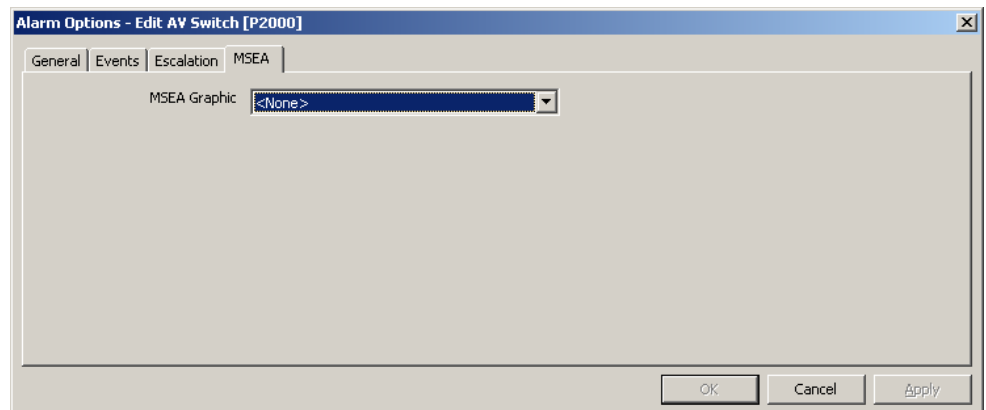
Escalation Timeout (1 to 1440 minutes) – Enter the time period (in minutes) after which an alarm remaining in pending state will be escalated by the Escalation Increment.

Escalation Increment (1 to 10) – Enter the value by which to escalate an alarm each time the escalation takes place.

MSEA Tab

NOTE

*The **MSEA** tab is not currently used for defining the DVR alarm options.*



OPERATION

The DVR operation is controlled through the AV Player user interface. Associated Cameras can be mapped to Input Points and Terminals. The AV Player software is part of the P2000 DVR application and, depending on equipment, provides controls to search and retrieve stored video clips, play live or stored video streams; take and store screenshot images and control AV Switches, CCTV Switches, Cameras, and Presets that are all part of the DVR system.

USING P2000 FUNCTIONS WITH THE DVR OPTION

The DVR option benefits from the following standard P2000 features:

<i>Event Actions</i>	The equipment connected to the system is capable of responding to event actions launched from the P2000 software. For full details, refer to the appropriate sections later in this chapter and also to “Creating Actions” section in the <i>P2000 Software User Manual</i> .
<i>User Roles</i>	User roles must be defined in order to use the AV configuration items.
<i>Audit Trail</i>	Changes to the database are listed in the audit trail. You can use the standard P2000 audit trail report for details.
<i>Partitioning</i>	If you are using Partitioning, all DVR-associated items should be in the same partition. However, there is no check in the software to prevent a user from setting up partitions that are not practicable. For example, if an AV Switch and Camera Preset are assigned to Partition A, and the Camera itself is assigned to Partition B, the operator logged on to Partition A would neither see the Camera nor be able to run the Preset unless they were made public.

DVR OPTION EVENT ACTIONS

A key advantage to DVR Integration is that you can program P2000 to react to events, activated either by the system or card activation, which will start or stop the recording of any detected moving image. The DVR equipment connected to the system can respond to event

actions using the P2000 Event application. You can define event actions that start or stop a selected recording Camera, or define event actions that activate the Camera's Preset, display the image from a particular Camera on a selected Monitor, or adjust the recording quality (resolution/frame rate) of a selected Camera when a specific event occurs. You can also define events that start recording and archiving at the same time.

NOTE

When defining Audio-Visual event actions to adjust the camera recording quality, refer to the manufacturer's documentation for the ideal resolution/frame rate combination quality factor.

Audio-Visual Event Actions are a category in the standard P2000 Event Action window. Event actions that are created for the category Audio-Visual are sent via the CCTV Server, which is an OPC Server. The two ways of creating an Audio-Visual event are described below.

➤ **To create an Audio-Visual event from the Audio-Visual category:**

1. In the Action window select the **Audio-Visual** category.
By doing so, you are building an OPC Server namespace tag from the field selections. However, when you select the equipment, if you are building an Audio-Visual action you will select it by the name that you gave it when the Audio-Visual item was configured and the namespace tag is selected from a drop-down list of action types.
2. Audio-Visual event actions are created in the same way as any other event action. For detailed instructions refer to "Creating Actions" and "OPC Server Event Actions" in the *P2000 Software User Manual*.

➤ **To create an Audio-Visual event from the OPC Server category:**

Use this method if the action that you wish to define is not available from the Audio-Visual category, or you have not fully configured the DVR equipment from the CCTV/AV Configuration window.

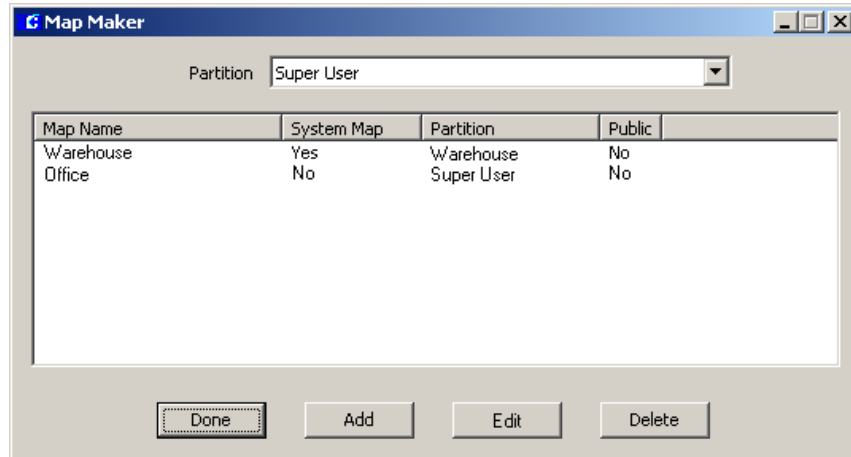
1. In the Action window select the **OPC Server** category.
If you are building an OPC Server tag you will be selecting an intrinsic name (that is, the default namespace name, for example, AV0001). The value for an OPC Server tag will be the value of the action type associated with the namespace. For details of the namespace tags and their values, refer to *Appendix A: Namespace Definitions*.
2. Write an OPCWrite action.
3. Audio-Visual event actions are created in the same way as any other event action. For detailed instructions refer to "Creating Actions" and "OPC Server Event Actions" in the *P2000 Software User Manual*.

DISPLAYING ITEMS IN THE REAL TIME MAP

After the DVR hardware is configured and events are created, set up the P2000 Map Maker application to define the items you intend to use to display live or recorded video from a Real Time Map.

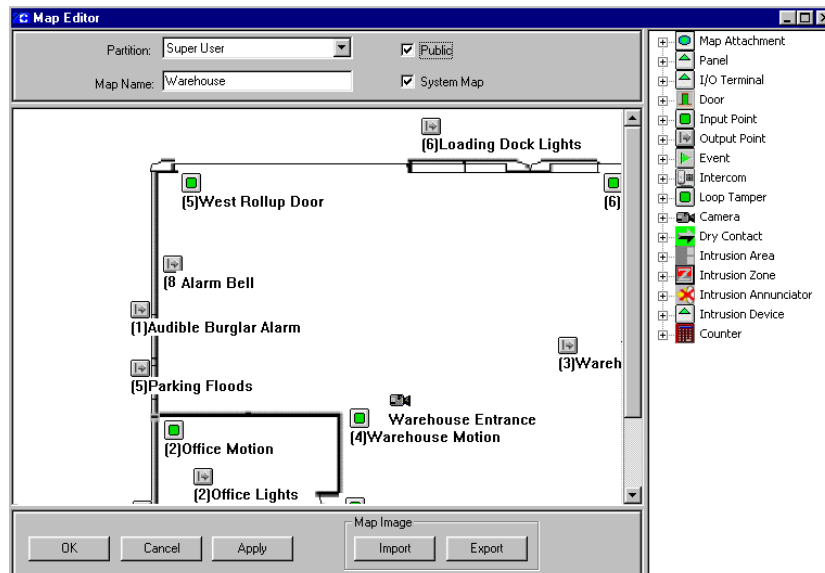
► To place device icons on a Real Time Map:

1. From the P2000 Main menu, select **Config>Map Maker**. The Map Maker window appears.



2. Select the map where you wish to place the icons, and click **Edit**. The Map Editor window appears. Detailed instructions for creating maps are presented in “Creating a Real Time Map” in the *P2000 Software User Manual*.

When you open Map Maker, map icons representing Panels, Terminals, Input Points, Events, Cameras, and other elements are listed on the right windowpane. You can also define new camera icons, which will be available in addition to the default camera icons.



3. To place a camera icon on the map, click the “+” next to this icon. A camera icon will appear under it.



4. You can drag and drop new icon to the desired position on the map. For example, the **Camera** icon could be dragged near the door representing where an Input Point or reader Terminal is actually installed. When you release the mouse button, the Properties window will appear.

- In the Label field, enter a descriptive name that can easily identify the camera icon in the Real Time Map. This name will appear next to the icon on your layout.
- From the Camera drop-down list select the name that represents the location on the map. All available Cameras will be displayed in the drop-down list.
- To assign events to the Camera, enter a descriptive event name and select a previously configured event from the associated drop-down list. You can define up to four events for each Camera.

Click **OK** to close the Properties window. The icon will be inserted in the map.

5. To add Audio-Visual-related events to the map, follow the same procedures using the **Event** icons. Events can be manually activated by an operator from the Real Time Map, rather than by the trigger conditions set up in the Configure Events window. Icons on the Real Time Map, such as Terminals or Input Points, can also be configured to initiate events that will start or stop recording when the Input or Terminal is activated.

6. When all elements have been added, click **OK** to close the Map Editor window.
7. Click **Done** to close the Map Maker window.

NOTE

Map Maker provides a default camera image icon to display the location of the camera, however, you can use your own icons to create custom image sets. For details, refer to “Adding Image Sets” in the P2000 Software User Manual.

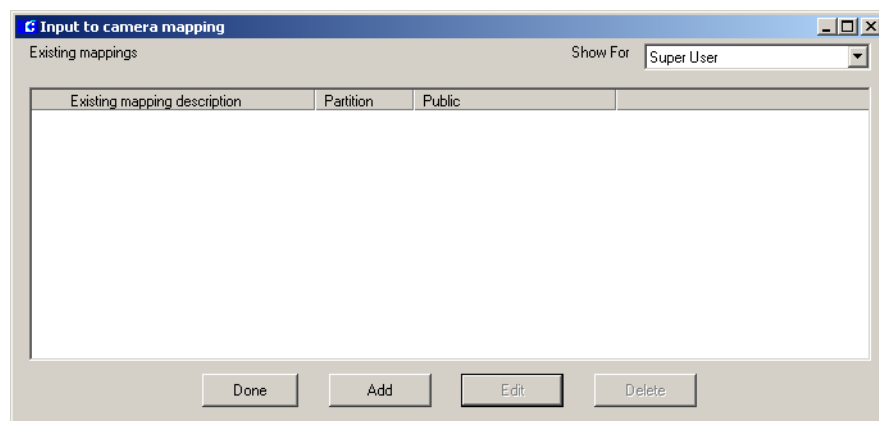
ASSOCIATING CAMERAS TO INPUT POINTS OR TERMINALS

When an alarm or event occurs, for example an invalid card swiped at the reader named “Security Reader,” the operator may want to issue a command to start recording the image from the camera that is monitoring the “Security Reader.” To issue such recording command, the system must have information about the mapping that describes which camera is monitoring which alarm/event source.

Input to Camera is a tool that defines mappings between an Input Point or a Terminal and a Camera (or a Camera’s Preset). All system configuration items such as Terminals, Input Points, AV Switches, Cameras, and Presets must be registered in the P2000 database before using the Input to Camera application.

► To associate cameras to Input Points or Terminals:

1. From the P2000 Main menu, select **Options>CCTV/AV>Input to Camera**. The Input to camera mapping window appears.



2. Click the **Add** button. The Add input/terminal to camera mapping window appears.

Add input/terminal to camera mapping

Available Input Points/Terminals:

Name	Type
East Side Entrance	Input Point

Available Channels:

Name	Description
C0001	Lobby Camera

☐ Public Partition:

Presets for the selected channel

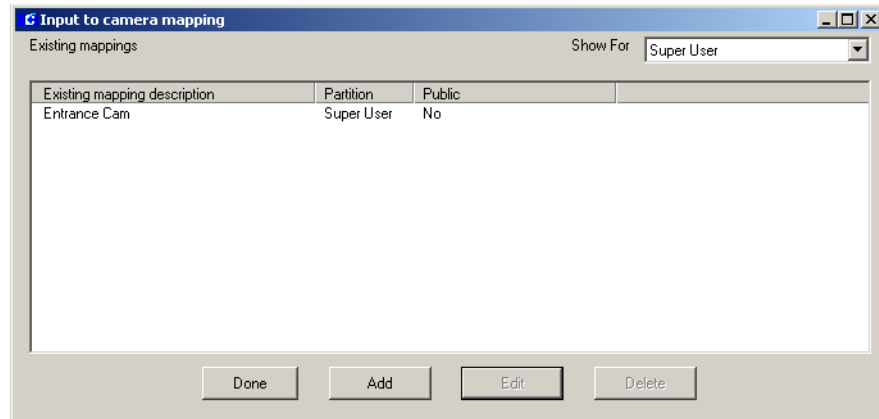
Preset Number	Preset Description
1	Pr0001
2	Pr0002
3	Pr0003

Name: [AV0002.lorionix]

Current Selection:

No existing mapping between the input/terminal and the camera

3. In the **Available Input Points/Terminals** box enter the name of the Input Point or Terminal that will be associated with a Camera, and click the **Search** button. As an alternative, you can also enter a filter string, the list box will display all Input Points and Terminals that meet the search criteria. If you do not enter any names or filter strings, and click the **Search** button, the list will display all Input Points and Terminals defined in the system.
4. Select the Input Point or Terminal in the list.
5. In the **Available Channels** box enter the name or filter string of the Camera that will be associated with the Input Point or Terminal, and click the **Search** button. The list box will display all Cameras that meet the search criteria. If you do not enter any names or filter strings, and click the **Search** button, the list will display all Cameras defined in the system.
6. Select the camera name from the list. The **Presets for the selected channel** box will display all Presets defined on the Camera.
7. Select the Preset that you want to use for the Camera.
8. In the **Name** box, enter a descriptive name for the mapping so that it can be easily recognized by the operator monitoring the system.
9. The **Current Selection** box displays the current selection of Input Point/Terminal, Camera, and Preset. Click **OK** to add this mapping to the **Existing Mapping** list.



10. To edit the content of an existing mapping, select the mapping from the list and click the **Edit** button. Repeat the same steps.
11. If you wish to delete a mapping, select the mapping from the list and click the **Delete** button.
12. Click **Done** to close the Input to camera mapping window.

NOTE

The mapping will fail if changes are made to the Input Point or Terminal name and you do not redefine the mapping using the new values.

EXECUTING AV PLAYER

AV Player can be executed from the following P2000 applications:

- Real Time List
- Real Time Map
- Alarm Monitor
- Options Menu

NOTE

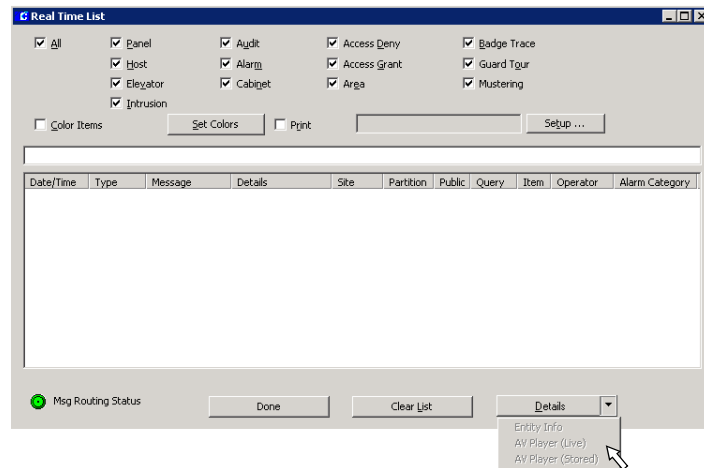
Executing the AV Player is not supported for Bosch VIDOS Automation Interface Protocol.

Executing AV Player from the Real Time List

The AV Player option allows you to review video associated with some system transactions.

► **To execute the AV Player from the Real Time List:**

1. Prior to launching the AV Player you need to:
 - Associate a Terminal or an Input Point with a Camera (see “Associating Cameras to Input Points or Terminals” on page 3-5).
 - Select a message line or alarm from the Real Time List.
2. Click the **Details** button located at the bottom of the window to launch the AV Player in live mode. As an alternative, you can click the associated drop-down list and select **AV Player (Live)** to launch AV Player in live mode or select **AV Player (Stored)** to launch AV Player in video retrieval mode.



Executing AV Player from the Real Time Map

The AV Player option allows you to review video associated with some system transactions from the Real Time Map.

If you have a Camera associated with an Input Point and have this Input Point on the Real Time Map, you will be able to bring up the AV Player to display live or stored video.

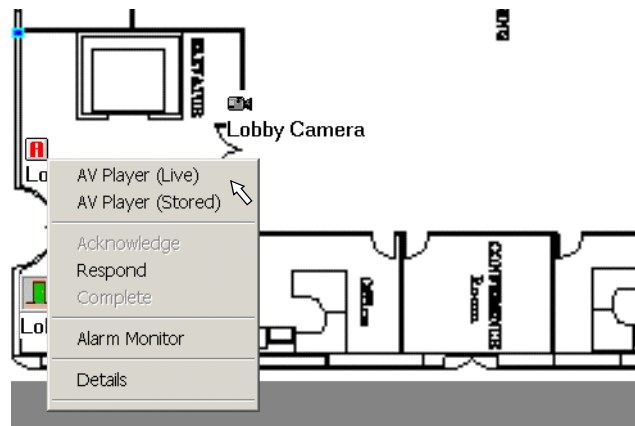
You can also connect a PTZ (Pan, Tilt & Zoom) Camera to a particular Preset or Monitor from the Real Time Map by adding an event to the Real Time Map with an associated AV action and allowing this event to be triggered from the pop-up menu. See “Alarm Options for DVR Components” on page 2-28 for details.

► **To execute the AV Player from the Real Time Map:**

1. Prior to launching the AV Player you need to:
 - Associate an Input Point with a Camera through Input/Terminal to Camera Mapping.
 - Define the items you intend to use to display live or recorded video. Refer to “Displaying Items in the Real Time Map” on page 3-3.
2. Right-click a map icon that is associated with a Camera from the Real Time Map.

3. From the pop-up menu select **AV Player (Live)** or **AV Player (Stored)**.

Stored videos are available if the Input Point is in an alarm state. The default time stamp to obtain data is a 90-second retrieval time and a 3-minute duration.

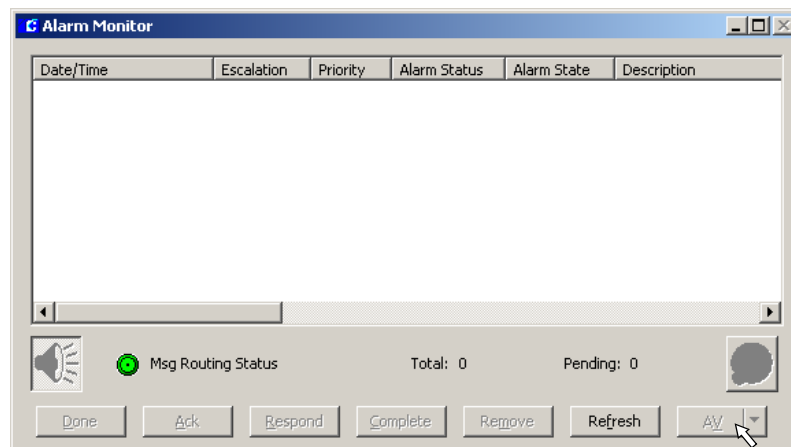


Executing AV Player from the Alarm Monitor

► To execute the AV Player from the Alarm Monitor:

1. Prior to launching the AV Player you need to:
 - Associate the alarm message displayed for an Input Point with a Camera through Input/Terminal to Camera Mapping.
2. In the Alarm Monitor window select the specific alarm. The **AV** button at the bottom of the window becomes active.
3. Click the **AV** button and from the pop-up menu select **AV Player (Live)** or **AV Player (Stored)**.

Stored videos are available if the Input Point is in an alarm state. The default time stamp to obtain data is a 90 sec retrieval time and a 3 min duration.

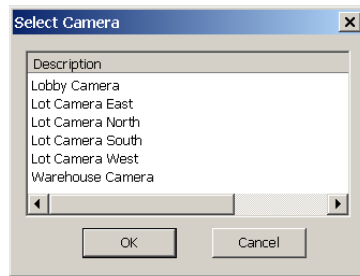


Executing AV Player from the Options Menu

This is the primary means of accessing the AV Player.

► **To open the AV Player:**

1. From the P2000 Main menu select **Options>CCTV/AV>AV Player**.
2. The Select Camera window appears, displaying the configured Cameras.



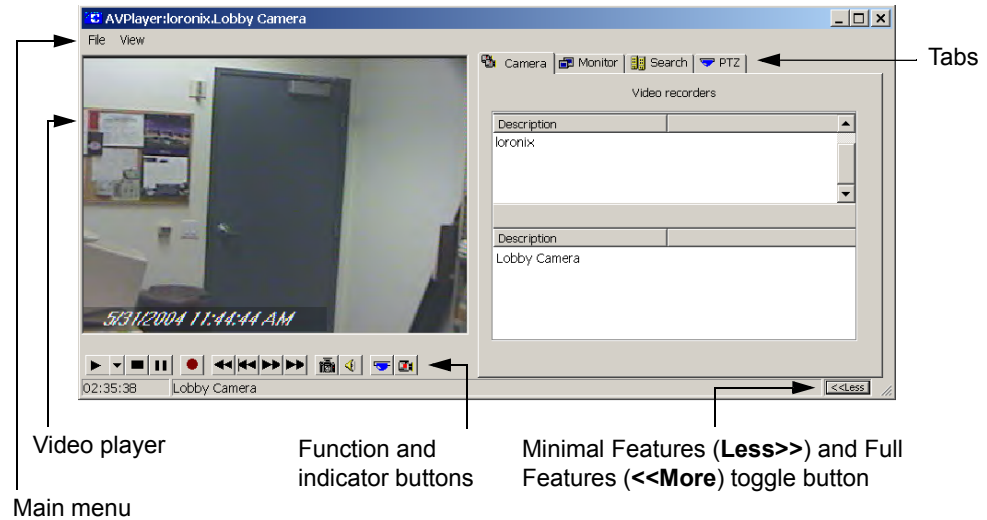
3. Make the selection and click **OK**. The AV Player window will open.

AV PLAYER COMPONENTS AND FUNCTIONS

The AV Player consists of the following user interface components:

- Main menu
- Video player viewing area
- Tabs to access the camera and switch control panel (the **Camera** tab), a monitor selection screen (the **Monitor** tab), a search and retrieval interface (the **Search** tab), and a pan, tilt, and zoom controller with a presets controller (the **PTZ** tab)
- Buttons to control AV Player functions and indicate the camera's recording and PTZ status

The AV Player window title displays a description of the current video stream, consisting of the OPC Server namespace tags of the AV Player and the respective Camera.



Main Menu

The Main menu allows you to save the recording and select display aspect ratio for the video player.

Saving the Recording

The recording can be saved in .bmp or .avi format.

► **To save the recording in .bmp format:**

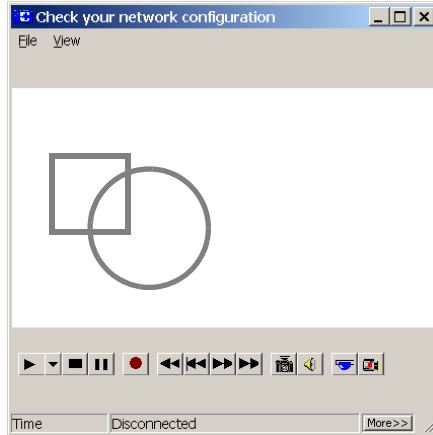
1. Go to **File>Save Picture**.
2. Specify the file name and location and click **Save**.

► **To save the recording in .avi format:**

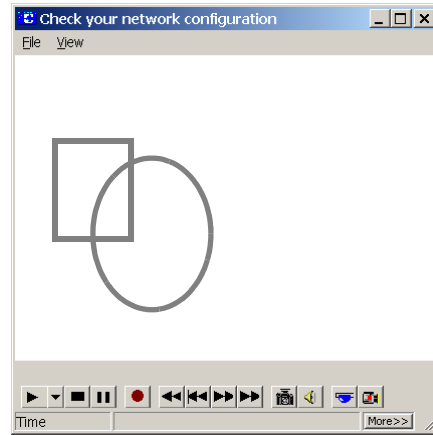
1. Go to **View>Save Video**.
2. Specify the file name and location and click **Save**.

Video Display Aspect Ratio

You can choose the video player to retain or not retain aspect ratio in the recording displayed. Keeping the aspect ratio prevents distortion of the image.



Viewing area with **Keep Aspect Ratio** selected.



Viewing area with **Keep Aspect Ratio** un-selected. Notice the image distortion.

► To adjust the aspect ratio:

1. Go to **View>Keep Aspect Ratio**.
2. To keep the aspect ratio, select this option (a check mark will be displayed). To display recording without keeping the aspect ratio, un-select this option (no check mark will be displayed).

Video Player

The video viewing area is an ActiveX based video player that can render heterogeneous video streams (H.263+ or MPEG-4 etc.) or various video files.

AV Player Functions



Play – Click to play the recording.



Play speed – Click to play the recording with altered speed. From the drop-down list select **1/2** to play the recording at half speed, or **2** to play the recording at double speed (available for some vendors only).



Stop – Click to stop playing the recording.



Pause – Click to pause playing the recording.



Record – Click to make a 60-second recording of the live streaming video in .avi format. This feature is particularly useful for instant incident reporting. The file will be automatically saved in the following folder:

C:\Program Files\Johnson Controls\Cardkey P2000\AVData



Rewind – Click to rewind the recording.



Go to first frame – Click to go to the beginning of the recording.



Go to last frame – Click to go to the end of the recording.



Fast forward – Click to fast forward the recording.



Snap shot – Click to take a screenshot bitmap image of a particular frame of the video image. This feature is particularly useful for instant incident reporting. The file will be automatically saved in the following folder:

C:\Program Files\Johnson Controls\Cardkey P2000\AVData



Audio – This button is activated when an audio channel is configured. Click the button to display the volume control sliding bar. Currently, vendors provide volume control through the system volume.



PTZ – When enabled, this button indicates that the camera you are currently monitoring is a PTZ camera.



Recording – When enabled, this button indicates that the camera you are currently monitoring is recording (available for some vendors only).

Viewing Modes

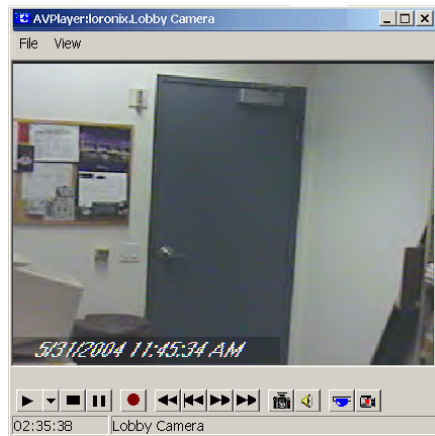
AV Player has two viewing modes: *minimal features* and *full features*. Both display the video viewing area, function and indicator buttons, and the toggle button for switching viewing modes.

► To toggle between the viewing modes:

1. If you are in the minimal full features mode, click the **More>>** button.
2. If you are in the full features mode, click the **<<Less** button.

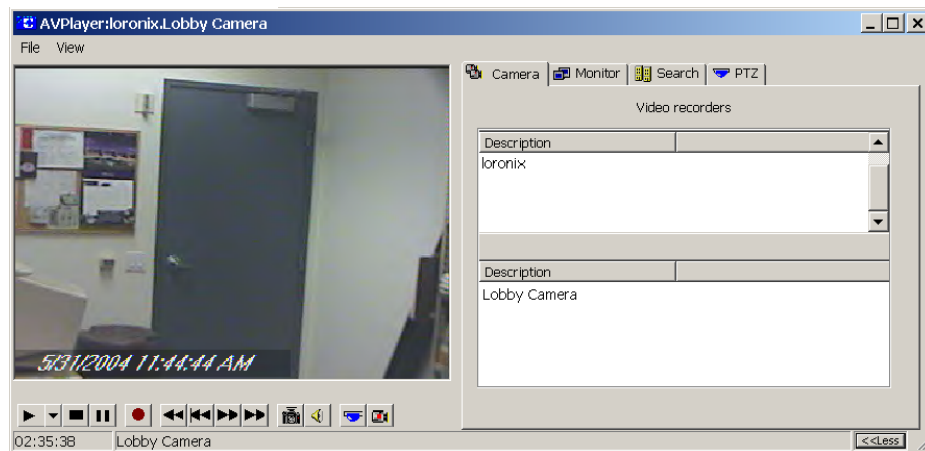
Minimal Features Mode

The minimal features mode is the default setting when the AV Player is launched for the real-time rendering of live video.



Full Features Mode

In addition to the features in minimal features mode, the full features mode provides camera/switch control, video retrieval, monitor selection, and a more ergonomic PTZ control through live mode. Access to the features depends on the user roles configuration.



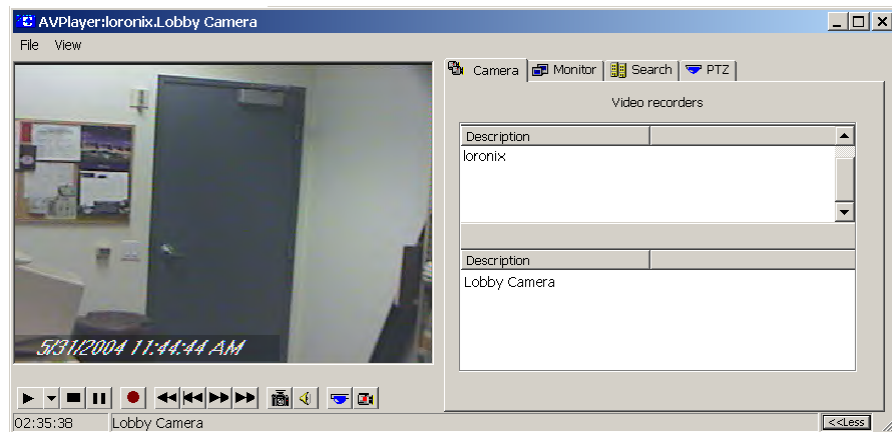
Live Video Monitoring

For live video monitoring, click the **Camera** in full features mode of the AV Player.

► To play a live video stream:

1. Under the **Camera** tab, select the AV Switch.
2. Select a Camera associated with that AV Switch (see “Creating and Configuring Cameras” on page 2-17).

- The video player will show a live stream corresponding to the currently selected Camera.

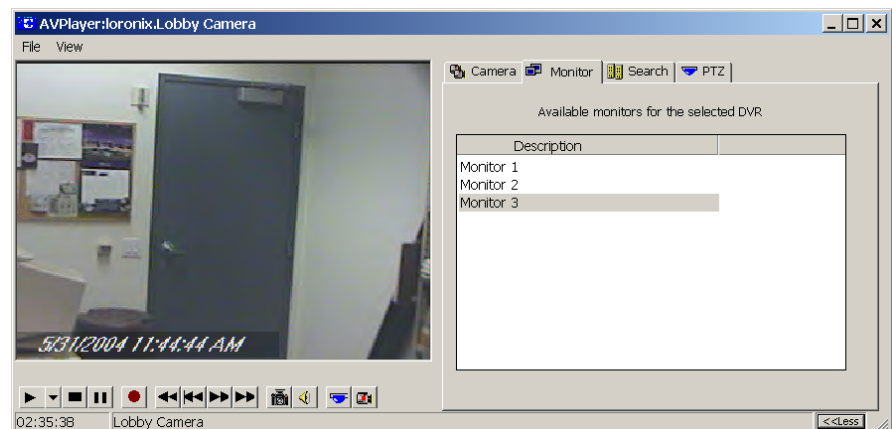


Monitor Selection

For monitor selection, click the **Monitor** in full features mode of the AV Player.

► To select a monitor:

- Under the **Camera** tab, select the AV Switch.
- Under the **Monitors** tab, select the monitor from the list of monitors previously created during the CCTV/AV Configuration (see “Creating and Configuring Cameras” on page 2-17).



Video Search and Retrieval

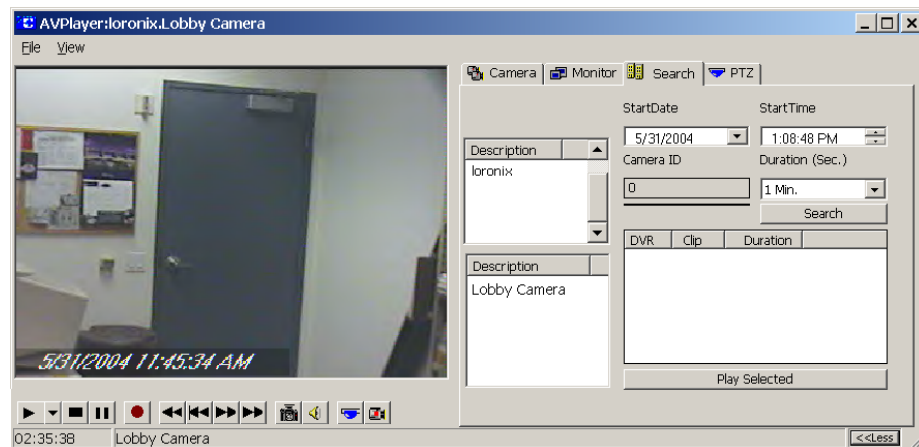
For video search and retrieval, click the **Search** tab in full features mode of the AV Player. Captured video clips can be searched based on AV Switch, Camera ID, and time stamps.

► **To search for and retrieve a video file:**

1. Under the **Search** tab, select the AV Switch that supports the storing and retrieval of video files.
2. Select a Camera associated with that AV Switch.
3. Specify the start and end time (estimated by duration).
4. Based on the given criteria, a set of video clips is retrieved and played through the VCR control. In addition, any video clips manually created using the VCR record button will be displayed in the file selection screen.
5. Highlight the video file and click the **Play Selected** button.

When you request video review from the Alarm Monitor, Real Time Map, or Real Time List, the search criteria will be defined automatically.

The VCR controls (play, stop, pause, rewind, go to first frame, go to last frame, and fast forward) are active only during the playing of a stored video. You can also use the slider windowpane to quickly display any image within the video clip for the time frame specified.

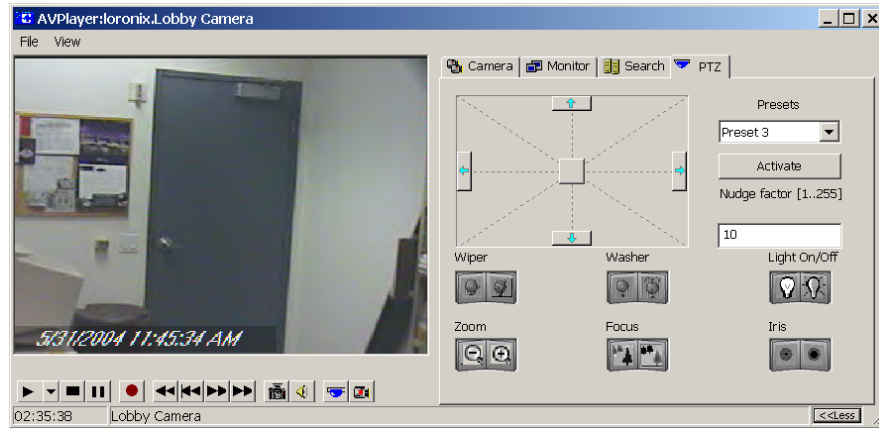


PTZ and Presets Control

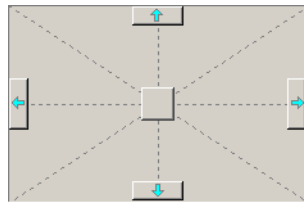
For PTZ and presets control, click the **PTZ** tab in full features mode of the AV Player.

► **To use the PTZ interface:**

1. Under the **Camera** tab, select a supported Camera.
2. Click the **PTZ** tab.



Pan/Tilt – Click and hold down the mouse on the movement control square in the Pan/Tilt area to move the selected Camera. The movement control returns to the center of the Pan/Tilt area when at rest. The position of the Camera is as is and not centered. To Pan the Camera you move the movement control along the horizontal; to tilt the Camera you move the Camera along the vertical. Movements between the horizontal and vertical are proportional. The further from the center, the faster the movement.



The selected Camera can also be moved using the nudge arrows on each side of the Pan/Tilt area. The Camera will be moved at a speed defined by the nudge factor. The nudge factor is a value in the range of 1 to 255, which determines the speed of the Camera movements. The larger the number, the faster the Camera movements.



Wiper – There are two wiper buttons. The left button switches off the Camera wiper; the right button switches on the Camera wiper.



Washer – There are two washer buttons. The left button switches off the Camera washer; the right button switches on the Camera washer.



Light – There are two light buttons. The left button switches off the Camera light; the right button switches on the Camera light or other relay device.



Zoom – There are two Zoom buttons. The left button zooms out from the object; the right button zooms in on the object.



Focus – There are two Focus buttons. The left button focuses on near objects; the right button focuses on far objects.



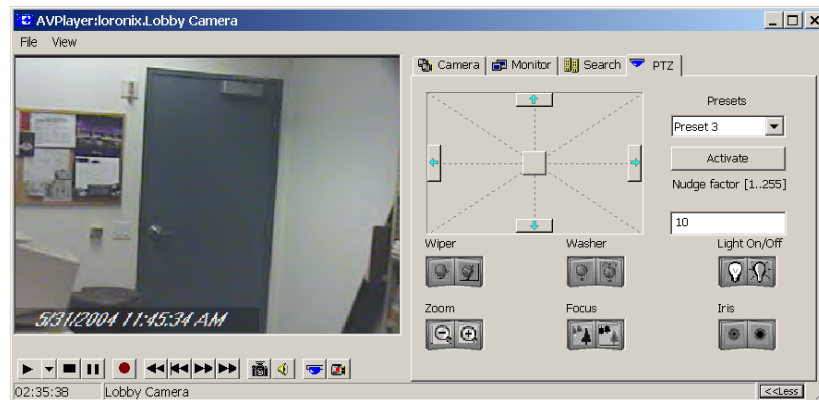
Iris – There are two Iris buttons. The left button closes the iris; the right button opens the iris.

If there are configured Presets (via AV configuration), the **Preset** drop-down list will be filled with Presets that are configured for the currently selected Camera.

► **To activate Preset:**

Preset would operate only if the equipment supports the relevant functions.

1. Under the **Camera** tab, select an AV Switch.
2. Select the PTZ Camera associated with this switch.
3. Click on the **PTZ** tab.
4. Select a Preset from the drop-down list.
5. Click the **Activate** button.



TROUBLESHOOTING

This section explains some common issues encountered during the setup and operation of the P2000 AV Player and the supported DVR equipment. It also contains specific information on features and known limitations of the Nice protocol.

TROUBLESHOOTING P2000 AV PLAYER

AV Player cannot connect to the DVR.

Check you network connections and login credentials.

I have created new objects (Cameras, Presets) in the AV Player, but when I run the AV Player application those objects do not appear.

AV Player creates a database table for each item and will also create a valid namespace entry for each object. Changes to the configuration settings will not take effect until the CCTV Server has been restarted using P2000 Service Control. This means that if it is currently running, you will need to stop it then restart it.

I am using multiple DVRs: some are able to connect to the AV Player, and others are unable to connect.

A DVR is actually a type of modified PC. Therefore, make sure that all of the DVRs belong to the same workgroup and domain.

The AV Player is working, but the live video feed shows the wrong date and time.

Time synchronization is critical in any DVR installation. Make sure that all of the DVRs have the correct time, date, and regional settings. Also, verify that they all belong to the same domain.

I have an acknowledged alarm in the Alarm Monitor. When I select a stored video for this alarm, the AV Player plays a video clip recorded at a later time.

Videos for the acknowledged alarms play at the time of the acknowledgement, not at the time the alarm occurred.

TROUBLESHOOTING LORONIX DVR

This section describes common problems when using the Loronix protocol.

For the AV Player to function properly, the matrix switch must be connected to a vendor's matrix server, and this server needs to be properly configured. See page 4-4 for an illustration of proper Loronix hardware setup.

The AV Player cannot connect to the Loronix DVR. How can I determine if there is a problem with the AV Player or with the Loronix DVR?

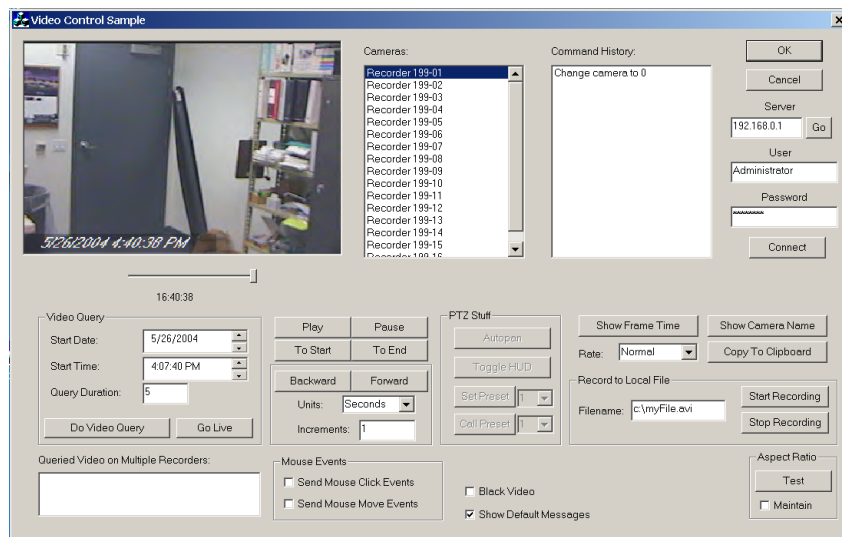
Loronix test tool performs some of the basic video communication functions as AV Player. Go to the following directory to access this tool:

Program Files\Johnson Controls\Tools\Loronix\Loronixtestapp.exe

You can launch the program from the CD, or copy it to the desktop or a local hard drive of a workstation computer. The tool can be used only on a machine where the P2000 software has been installed with the Loronix Codecs, so that the ActiveX controls can be registered.

► To use the Loronix test tool:

1. Double-click on the **Loronixtestapp.exe icon**. The Video Control Sample program starts.
2. In the **Server** field enter the IP address of the Loronix DVR that is running the MSRecorder.
3. In the **User** field enter the CCTVWare administrator user name on the Loronix DVR (default: Administrator). In the **Password** field type in the CCTVWare administrator password (default: cctvware).
4. Click the **Go** button. A connection to DVR will be established and a list of available recorders will appear in the Camera window. If an available recorder does not appear, check your network connections and login credentials.



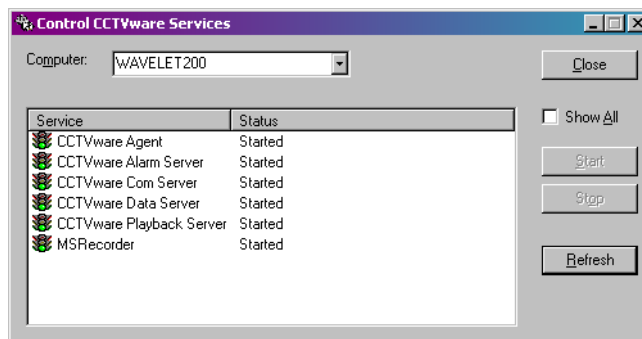
5. Highlight one of the recorders that have a Camera connected to it and click the **Connect** button. The image from the camera should appear in the display. You can also do a query of stored videos, check camera aspect and save .avi files to the local hard drive.

When using the Loronix test tool, when I select recorder number 2, the following message appears in the command history: “Change camera to 1.” However, the image displayed comes from Camera number 2.

Loronix Camera ID number is equivalent to AV Player camera ID number minus 1.

When I click on a Camera in AV Player, the image screen is blank and a message appears stating that the AV Player cannot connect to the server.

Check the CCTVWare service control on the Loronix DVR and make sure MSRecorder is running.



When I click on a Camera, a message appears at the bottom of the AV Player Connecting window stating that there is disconnected network failure.

Make sure that the CCTVware Com Server Service and Data Server service are running on the Loronix DVR.

The Send Alarm function does not work.

The Send Alarm function requires an Alarm to Camera Mapping and alarm processing instructions to be configured. The Alarm Type (Pre_Post_Alarm_X, where X is a number of camera in Loronix system), Alarm ID (199), and Alarm Message must be registered in CCTVWare database for proper alarm processing.

Configuration Requirements

See Figure 4-1 for hardware setup. The following conditions also apply:

- Loronix CCTVWare version 4.3 or higher must be installed on the master machine and on the recorders.
- There should be a single master machine on the network.

- All machines (including master and recorders) must be in the same workgroup and domain to allow identification by name rather than IP address.

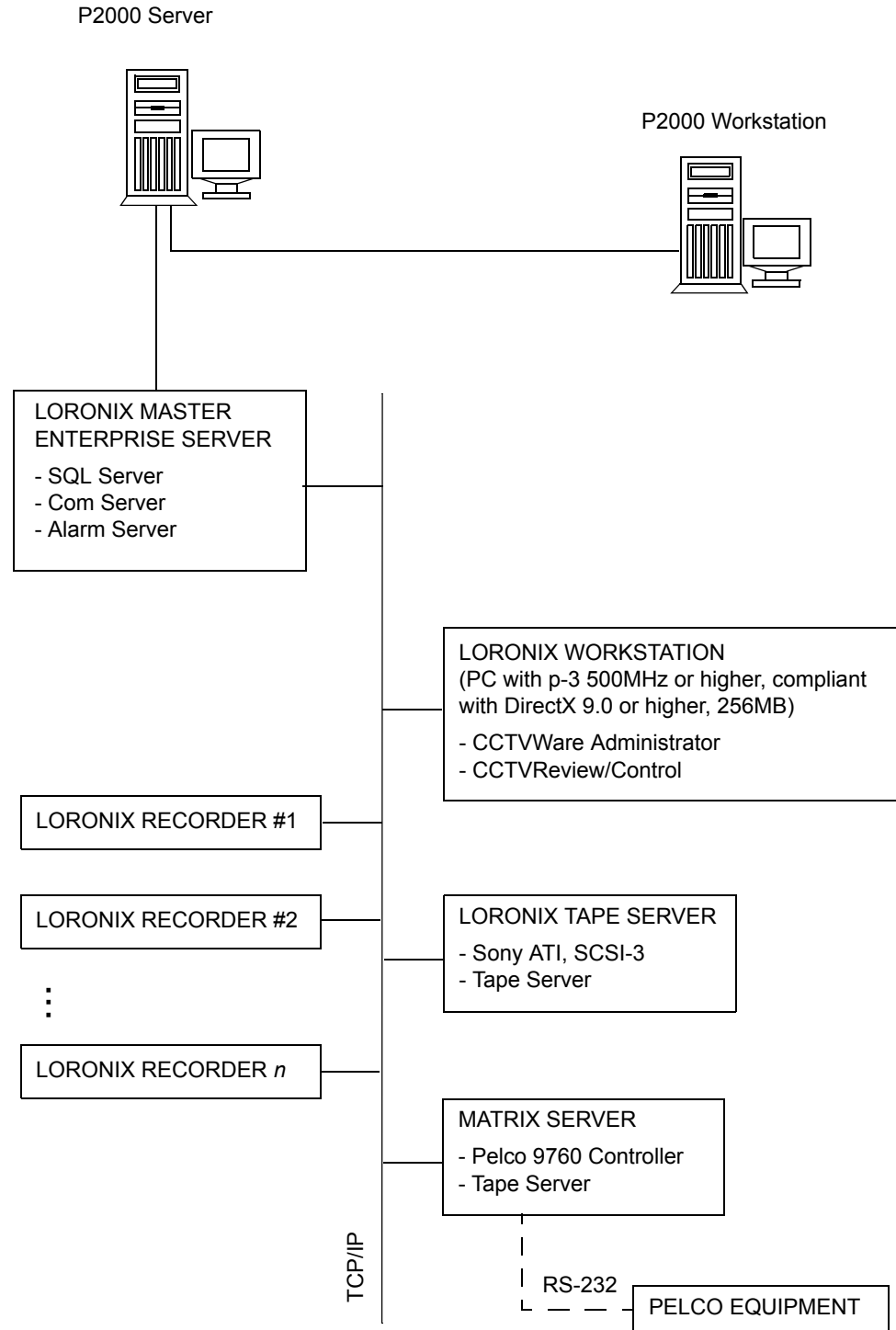


Figure 4-1: Proper Hardware Setup for the Loronix Protocol

TROUBLESHOOTING NICE DVR

This section describes common problems when using the Nice protocol. In addition, see page 4-6 for details on Nice protocol-related limitations and setup requirements.

The AV Player cannot connect to the Nice DVR. How can I determine if there is a problem with the AV Player or with the Nice DVR?

A Nice test tool is supplied on the Nice Application Suite CD. This application performs some of the basic video communication functions as AV Player. The tool can be used only on a machine where the P2000 software has been installed with the Nice Codecs, so that the ActiveX controls can be registered.

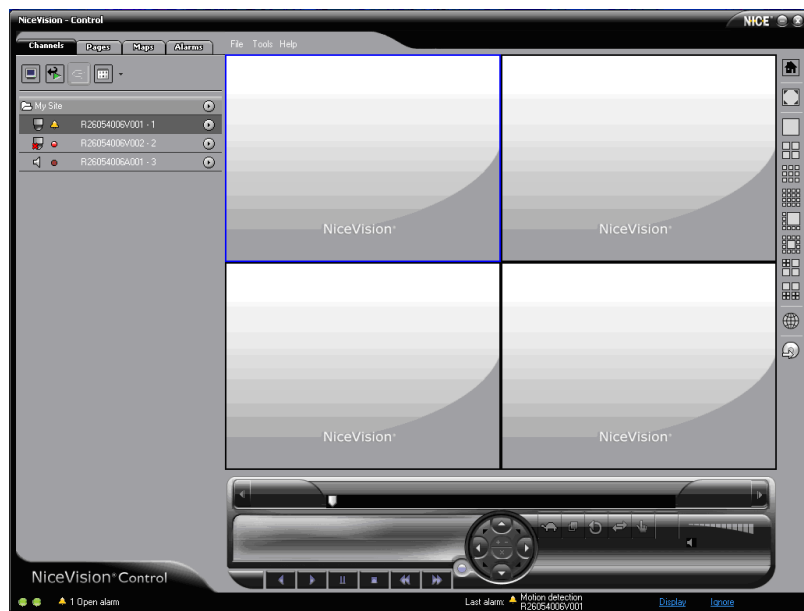
The tool is located in the CD directory:

Tools\Nice\Nicetestapp.exe

To use the tool, you need to check boxes for the NiceVision Player and NiceVision Control during the Nice software installation.

► To use the Nice test tool:

1. Launch the NiceVision Control.
2. Enter the IP address of the Nice DVR. The Cameras connected to it will appear under the site name.



3. In the **Login Name** enter the name (default: Administrator). In the **Password** field type in the password (default: NICE, all capitals).
4. Drag and drop a Camera to any of the viewing windows on the right. The selected Camera's image should appear in the window.

5. If the NiceVision control displays the proper image, it indicates proper functioning of the Nice DVR.

The AV Player will not store or retrieve video clips in .avi format on the local hard drive.

Recording of live video clip to a local disk is not supported by Nice SDK.

When installing the P2000 software on a workstation with the NICE Codecs, I get the following error message: “No IPP matching to examined CPU was found during the waterfall procedure.”

The Nice protocol looks for an Intel PIII or higher CPU with MMX. The error message indicates you are using a workstation with a non-standard CPU. The AV Player may not work properly.

When installing P2000 on a workstation with the Nice Codecs, I get the following error message: “DX9 Compatible Video Card Not Found.”

The Nice DVR requires a DirectX 9.0-compatible Video card to be installed on a workstation.

The Send Alarm function does not work.

The Send Alarm function requires an Alarm to Camera Mapping and alarm processing instructions to be configured. User API and Cameras must be configured in AMS server. Currently, Nice can process 1 alarm per 2 seconds.

Known Limitations

This section lists some known characteristics, limitations and known problems of the Nice protocol.

Supported Commands

The following commands are supported by NICE SDK:

- Start recording
- Stop recording
- Set Quality (1-255)
- Allocate a monitor to a camera
- Set Preset (1-10)
- Send Alarm

Limitations

The following features of AV Player are **not supported** by NICE SDK

- Full VCR operations on stored video playback. Only stop and play are supported until the AV Player finishes downloading a retrieved video to local hardware.
- Recording a live video clip to a local disk (a single snapshot can be taken).

Known Issues

- When a recorder fails to get actual playback time from its index, Nice video retrieval can take 20-30 seconds.
- Changing the video recording quality works correctly on bit rate change, but not on frame rate change. As a workaround, it is recommended that you configure the Nice recorder with preconfigured recording parameters, and then change configuration rather than change recording quality directly.

Time Synchronization

All Nice recorders must synchronize time with the P2000 server. However, they cannot become P2000 clients directly. Instead, you need to configure the Nice AMS server as a client of the P2000 server. Then, you must synchronize Nice recorders with the Nice AMS server. The recommended configuration is illustrated in Figure 4-2.

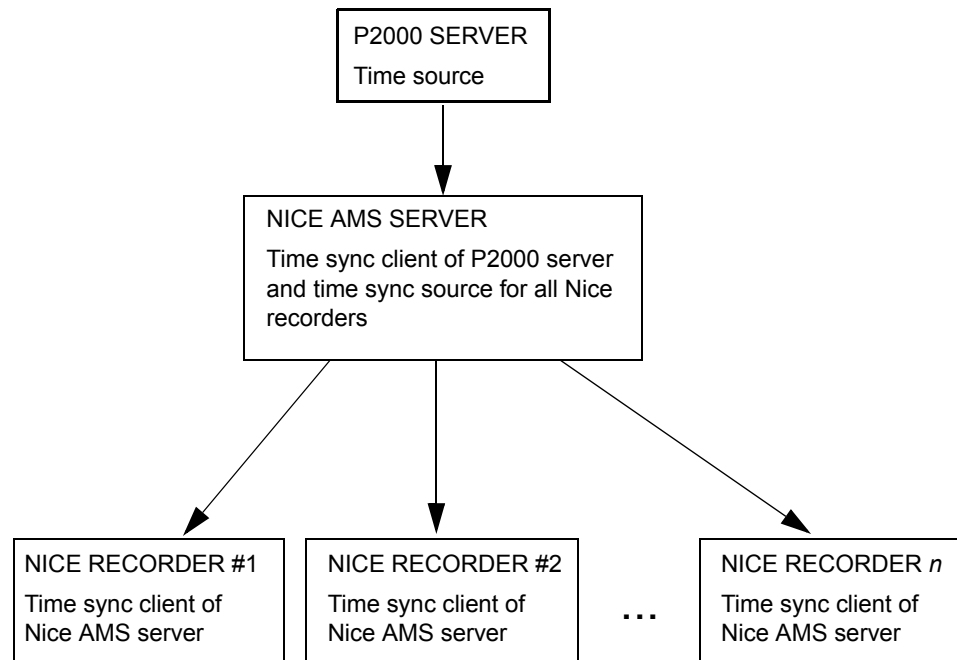


Figure 4-2: Time Source Configuration

NAMESPACE DEFINITIONS

This chapter contains information about the DVR namespace definitions.

FLAGS

The following flags are used in the namespace tag tables.

Flags	Meaning
A	If set to autorepeat AND flags are WZ, Z is ignored
C	Configured Value (persistence required)
D	Decrements/Increments towards 0 until value becomes 0
R	Readable
U	The value is periodically scanned from device and value updated to reflect value in device. If the DVR vendor protocol does not allow the scanning of this information, then the DVR vendor module updates the value after transmitting the command to the AV Switch. If updated by the vendor module the OPC status information for the data item should return UNCERTAIN rather than GOOD.
W	Writable
Z	Server resets this value to 0 as soon as it processes the value written to it by a client.

When a value in the namespace of the DVR Runtime Server changes, the class representing the folder object checks its validity. Assuming that the new value is correct, the class subsequently issues the required command to the appropriate vendor protocol via the vendor neutral interface defined by DVR Vendor X Implementation class. The vendor protocol then performs the required action and informs the initiating class when the action has been completed. The subsequent sections list the valid values, action required and any action to be taken by the class on command completion for each class together with other associated data.

DVR NAMESPACE TAGS

The “%” sign identifies the DVR device object, which is a four digit number from 0001 to 9999.

Tag Name	Type	Flags	Description
D%.Exists	Integer	CR	Only present if a configuration database exists. The parameter is set in the database to establish that the DVR exists.
D%.Description	VarChar	CR	-
<i>Access Rights</i>			
D%.Partition	Integer	CR	Database Partition.
D%.Public	Integer	CR	-
<i>Communications</i>			
D%.DVRSiteName	VarChar	CR	Site name of DVR installation.
D%.DVRID	Integer	CR	DVR ID: last three digits of IP Address as a number automatically assigned by a database.
D%.DVRName	VarChar	CR	DVR Name associated with DVR ID.
D%.Type	Enum	CR	1 = SERIAL 2 = TCP/IP
D%.StreamingServerIP Address	VarChar	CR	IP address of video streaming and playback server on the network. Need for video playback.
D%.StorageServerIP Address	VarChar	CR	IP address of video storage server on the network. Need for access physical storage.
D%.DataServerIP Address	VarChar	CR	IP address of database server on the network. Need for search and retrieval of video clips.
D%.Error	Integer	R	Error indicator, used by the DVR server to indicate communication problems.
D%.DVRType	VarChar	CR	<ul style="list-style-type: none"> ■ JC.Loronix ■ JC.Nice ■ JC.SmartSight ■ JC.DVN5000 ■ JC.DVN3000

Tag Name	Type	Flags	Description
<i>Archive</i>			
D%.ArchiveDeviceExist	Integer	CR	Only present if a configuration database exists. The parameter is set in the database to establish that the jukebox exists.
D%.ArchiveName	VarChar	CR	Human readable name of archive device.
D%.ArchiveSize	Integer	CR	Max. Size of archive device.
D%.NumArchiveDevice	Integer	CR	Number of archive devices.
D%.ArchiveHasMedia	VarChar	CR	-
<i>Cameras</i>			
D%.CameraGroup	Integer	CR	Number of camera groups configured.
D%.CameraGroupMax	Integer	CR	Number of camera groups to be created in the name space for this DVR. 1 to CameraGroupMax = the number of camera group instances/branches need to match this definition, i.e. the names Camera0001 to Camera<CameraMax> must exist. -1 = check with vendor during initialization.
D%.CameraCount	Integer	CR	Number of cameras configured.
D%.CameraMax	Integer	CR	Number of cameras to be created in the name space for this DVR. 1 to CameraMax = the number of camera instances/branches need to match this definition, i.e. the names Camera0001 to Camera<CameraMax> must exist. -1 = check with vendor during initialization.
D%.ActiveCameraExists	Integer	CR	Present only if a configuration database exists. Not supported in current release.
D%.SetActiveCamera	Integer	RW	Present only if a configuration database exists. Not supported in current release.
<i>Channels</i>			
D%.ChannelGroup	Integer	CR	Number of channel groups configured.
D%.ChannelGroupMax	Integer	CR	Number of camera groups to be created in the name space for this DVR. 1 to ChannelGroupMax = the number of camera group instances/branches need to match this definition, i.e. the names Channel0001 to Channel<CameraMax> must exist. -1 = check with vendor during initialization.

Tag Name	Type	Flags	Description
D%.ChannelCount	Integer	CR	Number of channels configured.
D%.ChannelMax	Integer	CR	Number of channels to be created in the name space for this DVR. 1 to ChannelMax = the number of camera instances/branches need to match this definition, i.e. the names Camera0001 to Camera<ChannelMax> must exist. -1 = check with vendor during initialization.
D%.ActiveChannelExists	Integer	CR	Only present if a configuration database exists.
D%.SetActiveChannel	Integer	RW	Only present if a configuration database exists.
<i>Status Info</i>			
D%.CameraInfoUpdate	Integer	WZ	These commands receive an information update for the equipment associated with the AV Switch. Unfortunately the protocol specification is not very specific what information is returned. This is especially the case for: <ul style="list-style-type: none"> ■ Camera number info ■ Time date info ■ Special message info
D%.MonitorInfoUpdate	Integer	WZ	
D%.AlarmInfoUpdate	Integer	WZ	
D%.CameraNumberInfo Update	Integer	WZ	
D%.TimeDateInfoUpdate	Integer	WZ	
D%.SpecialMessageInfo Update	Integer	WZ	
D%.CameraAttribute Update	Integer	WZ	These commands request an attribute update for the equipment associated with the AV Switch. Unfortunately the protocol specification is not very specific what information is returned. This is especially the case for: <ul style="list-style-type: none"> ■ Camera number info ■ Time date info ■ Special message info
D%.MonitorAttribute Update	Integer	WZ	
D%.AlarmAttribute Update	Integer	WZ	
D%.CameraNumber AttributeUpdate	Integer	WZ	
D%.TimeDateAttribute Update	Integer	WZ	
D%.SpecialMessage AttributeUpdate	Integer	WZ	

Tag Name	Type	Flags	Description
<i>Feature Check</i>			
D%.PresetExists	Integer	CR	0 = not supported 1 = supported 2 = check with vendor during initialization Note: "D%.CameraAuxiliaryExists" is not supported in current release.
D%.PresetStopExists	Integer	CR	
D%.PresetRecordExists	Integer	CR	
D%.PresetPlayExists	Integer	CR	
D%.CameraAuxiliaryExists	Integer	N./A	
D%.CameraAuxiliaryPlayExists	Integer	CR	
D%.CameraAuxiliaryStopExists	Integer	CR	
D%.PresetMax	Integer	CR	0 = not supported -1 = check with vendor during initialization
D%.CameraAuxiliaryMax	Integer	CR	

DVR CHANNEL NAMESPACE TAGS

To the DVR, a channel is a camera and a video input stream, which can be recorded, stored, and later recalled for playback. Channel has some characteristics of Camera (i.e. PTZ controls), and other characteristics of a VCR (record, playback, etc.).

The sign # identifies the channel number, which is a four digit number starting from 0001 to 9999.

Tag Name	Type	Flags	Description
Ch#.Exists	Integer	CR	Only present if a configuration database exists. The parameter is set in the database by the configurator to show that this Camera exists.
Ch#.Description	VarChar	CR	This is a variable length string that describes the camera. If the server does not contain a database, or does not persist definitions, this property is not used.
Ch#.PathDS	VarChar	CR	This is a variable length string that describes the access path of camera. This path information will be used in Video Player Client.

Tag Name	Type	Flags	Description
<i>Access Rights</i>			
Ch#.Partition	Integer	CR	Managing partitions. Not supported in current release.
Ch#.Public	Integer	CR	Define public accessibility. Value: 1 for Yes.
Ch#.ClientLockId	32 char	WR	Can be used by a client to lock access to this camera
<i>General Commands/Status</i>			
Ch#.GeneralString	VarChar	CWR	A string of characters that is written to the specific camera to annotation of all that is being recorded or monitored from it.
Ch#.ChannelStatus	Integer	WRU	Bit flagged field to define the equipment status. The status flags are to be defined at a later stage. The status field is only to be used for those status identifications that are NOT part of the original item list.
Ch#.StartRecordExists	Integer	CR	Only present if a recording configuration exists. Default value: 1.
Ch#.StartRecord	Integer	RW	Issue start recording. Only present if a configuration database exists.
Ch#.StopRecordExists	Integer	CR	Only present if a configuration database exists.
Ch#.StopRecord	Integer	RW	Stop recording on the channel. Only present if a configuration database exists.
Ch#.RewindExists	Integer	CR	Only present if a configuration database exists.
Ch#.Rewind	Integer	RW	Rewind playback video. Only present if a configuration database exists.
Ch#.PauseExists	Integer	CR	Only present if a configuration database exists.
Ch#.Pause	Integer	RW	Pause playback video. Only present if a configuration database exists.
Ch#.FastForwardExists	Integer	CR	Only present if a configuration database exists.
Ch#.FastForward	Integer	RW	Only present if a configuration database exists.
Ch#.StartPlaybackExists	Integer	CR	Only present if a configuration database exists.

Tag Name	Type	Flags	Description
Ch#.StartPlayback	Integer	RW	Can perform manual stop on the channel. Only present if a configuration database exists.
Ch#.StopPlaybackExists	Integer	CR	Only present if a configuration database exists.
Ch#.StopPlayback	Integer	RW	Stop playback. Only present if a configuration database exists.
Ch#.ArchiveExportExists	Integer	CR	Only present if a configuration database exists.
Ch#.ArchiveExport	Integer	RW	Only present if a configuration database exists.
Ch#.SetPreAlarmExists	Integer	CR	Only present if a configuration database exists.
Ch#.SetPreAlarm	Integer	RW	Issue PreAlarm configured in DVR. Only present if a configuration database exists.
Ch#.SetPostAlarmExists	Integer	CR	Only present if a configuration database exists.
Ch#.SetPostAlarm	Integer	RW	Issue post alarm configured DVR. Only present if a configuration database exists.
Ch#.SetVideoLossAlarmExists	Integer	CR	Only present if a configuration database exists.
Ch#.SetVideoLossAlarm	Integer	RW	Only present if a configuration database exists.
Ch#.SetMotionDetectExists	Integer	CR	Only present if a configuration database exists.
Ch#.SetMotionDetectAlarm	Integer	RW	Send motion detection alarm. Only present if a configuration database exists.
Ch#.SetFrameRateExists	Integer	CR	Only present if a configuration database exists.
Ch#.SetFrameRate	Integer	RW	Change frame rate. Only present if a configuration database exists.
Ch#.SetResolutionExists	Integer	CR	Only present if a configuration database exists.
Ch#.SetResolution	Integer	RW	Change resolution, DVR must support this function. Only present if a configuration database exists.

Tag Name	Type	Flags	Description
<i>Predefining Camera Positions</i>			
Ch#.PresetExists	Integer	CR	If configuration database exists, this defines if this camera has this ability 0 = not supported 1 = supported 2 = check with AV Switch during initialization
Ch#.PresestCount	Integer	CR	Number of total presets defined.
Ch#.PresetMax	Integer	CR	If the channel supports preset, this value defines the max number of presets. Presets are number from 1 to (PresetMax).
Ch#.PresetStopExists	Integer	CR	0 = not supported 1 = supported 2 = check with AV Switch during initialization
Ch#.PresetStop	Integer	WZ	Clears the preset <integer>
Ch#.PresetRecordExists	Integer	CR	0 = not supported 1 = supported 2 = check with AV Switch during initialization
Ch#.PresetRecord	Integer	WZ	Defines the current camera position as preset <integer>
Ch#.PresetPlayExists	Integer	CR	0 = not supported 1 = supported 2 = check with AV Switch during initialization
Ch#.PresetPlay	Integer	WR	Forces channel to pre-specified position
<i>Camera Movements</i>			
Ch#.TiltExists	Integer	CR	If configuration database exists, this defines if this camera has this ability.
Ch#.Tilt	Signed Integer	AWR	Moves channel vertically with given speed. < 0 down > 0 up
Ch#.PanExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.Pan	Signed Integer	AWR	Moves channel with this speed < 0 left > 0 right
Ch#.StopAllIPT	Integer	WZ	Writing a one to this property stops all Pan and Tilt commands, that have not yet been issued

Tag Name	Type	Flags	Description
<i>Camera Lens Control</i>			
Ch#.ZoomExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.Zoom	Integer	AWR	Writing a positive number zooms wide, A negative number zooms narrow. A 0 stops zoom
Ch#.FocusExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.Focus	Integer	AWR	Writing a positive number focus near, a negative number focus far, a zero stops focus.
Ch#.IrisExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.IrisAutomatic	Integer	CWR	Write one to this property to set the iris to automatic
Ch#.Iris	Integer	AWR	Writing a positive number drives Iris open, a negative drives closed, a zero stops the iris
Ch#.StopAllZFI	Integer	WZ	Write one to this property stops all Zoom, Iris and Focus commands
Ch#.LensSpeedMax	Integer	CR	The maximum speed of the lens. If 1, then the camera does not support variable speeds
Ch#.LensSpeed	Integer	CWR	Set the lens speed (0 to LensSpeedMax)
<i>Other Camera Commands</i>			
Ch#.Arm	Integer	WZ	Arms the camera
Ch#.Disarm	Integer	WZ	Disarms the camera
Ch#.IsArmed	Integer	RWU	-
Ch#.StatusExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.WiperExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.Wiper	Integer	WR	Turns wipers on or off
Ch#.WasherExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.Washer	Integer	WR	Activate washers
Ch#.LightExists	Integer	CR	If configuration database exists, this defines if this camera has this ability
Ch#.Light	Integer	WR	Turns lights on or off

Tag Name	Type	Flags	Description
<i>Auxiliary</i>			
Ch#.AuxiliaryExists	Integer	CR	0 = not supported 1 = supported 2 = check with AV Switch during initialization
Ch#.AuxiliaryCount	Integer	CR	-
Ch#.AuxiliaryMax	Integer	CR	-1 = check with AV Switch during initialization
Ch#.AuxiliaryPlayExists	Integer	CR	0 = not supported 1 = supported 2 = check with AV Switch during initialization
Ch#.AuxiliaryPlay	Integer	AWZ	Sets the auxiliary <integer> Autorepeat is not yet available for this tag
Ch#.AuxiliaryStopExists	Integer	CR	0 = not supported 1 = supported 2 = check with AV Switch during initialization
Ch#.AuxiliaryStop	Integer	WZ	Clears the auxiliary <integer>

RECORDING QUALITY

Use the table below to determine recording quality settings. The frame rate controls the sampling rate of grabbing frames within a second, while the bit rate controls the quality of individual images within a video frame.

NOTE

Currently, only the Nice protocol supports bit rate. The Loronix protocol has a fixed bit rate (960000). For proper operation, recording quality defined in this table should be registered in Loronix's recording configuration.

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
1	360x243	1	256
2	640x480	1	256
3	720x486	1	256
4	360x243	1	512
5	640x480	1	512
6	720x486	1	512
7	360x243	1	768
8	640x480	1	768
9	720x486	1	768
10	360x243	2	256
11	640x480	2	256
12	720x486	2	256
13	360x243	2	512
14	640x480	2	512
15	720x486	2	512
16	360x243	2	768

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
17	640x480	2	768
18	720x486	2	768
19	360x243	3	256
20	640x480	3	256
21	720x486	3	256
22	360x243	3	512
23	640x480	3	512
24	720x486	3	512
25	360x243	3	768
26	640x480	3	768
27	720x486	3	768
28	360x243	4	256
29	640x480	4	256
30	720x486	4	256
31	360x243	4	512
32	640x480	4	512
33	720x486	4	512
34	360x243	4	768
35	640x480	4	768
36	720x486	4	768
37	360x243	5	256
38	640x480	5	256
39	720x486	5	256
40	360x243	5	512
41	640x480	5	512
42	720x486	5	512
43	360x243	5	768
44	640x480	5	768
45	720x486	5	768

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
46	360x243	6	256
47	640x480	6	256
48	720x486	6	256
49	360x243	6	512
50	640x480	6	512
51	720x486	6	512
52	360x243	6	768
53	640x480	6	768
54	720x486	6	768
55	360x243	7	256
56	640x480	7	256
57	720x486	7	256
58	360x243	7	512
59	640x480	7	512
60	720x486	7	512
61	360x243	7	768
62	640x480	7	768
63	720x486	7	768
64	360x243	8	256
65	640x480	8	256
66	720x486	8	256
67	360x243	8	512
68	640x480	8	512
69	720x486	8	512
70	360x243	8	768
71	640x480	8	768
72	720x486	8	768
73	360x243	9	256
74	640x480	9	256

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
75	720x486	9	256
76	360x243	9	512
77	640x480	9	512
78	720x486	9	512
79	360x243	9	768
80	640x480	9	768
81	720x486	9	768
82	360x243	10	256
83	640x480	10	256
84	720x486	10	256
85	360x243	10	512
86	640x480	10	512
87	720x486	10	512
88	360x243	10	768
89	640x480	10	768
90	720x486	10	768
91	360x243	11	256
92	640x480	11	256
93	720x486	11	256
94	360x243	11	512
95	640x480	11	512
96	720x486	11	512
97	360x243	11	768
98	640x480	11	768
99	720x486	11	768
100	360x243	12	256
101	640x480	12	256
102	720x486	12	256
103	360x243	12	512

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
104	640x480	12	512
105	720x486	12	512
106	360x243	12	768
107	640x480	12	768
108	720x486	12	768
109	360x243	13	256
110	640x480	13	256
111	720x486	13	256
112	360x243	13	512
113	640x480	13	512
114	720x486	13	512
115	360x243	13	768
116	640x480	13	768
117	720x486	13	768
118	360x243	14	256
119	640x480	14	256
120	720x486	14	256
121	360x243	14	512
122	640x480	14	512
123	720x486	14	512
124	360x243	14	768
125	640x480	14	768
126	720x486	14	768
127	360x243	15	256
128	640x480	15	256
129	720x486	15	256
130	360x243	15	512
131	640x480	15	512
132	720x486	15	512

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
133	360x243	15	768
134	640x480	15	768
135	720x486	15	768
136	360x243	16	256
137	640x480	16	256
138	720x486	16	256
139	360x243	16	512
140	640x480	16	512
141	720x486	16	512
142	360x243	16	768
143	640x480	16	768
144	720x486	16	768
145	360x243	17	256
146	640x480	17	256
147	720x486	17	256
148	360x243	17	512
149	640x480	17	512
150	720x486	17	512
151	360x243	17	768
152	640x480	17	768
153	720x486	17	768
154	360x243	18	256
155	640x480	18	256
156	720x486	18	256
157	360x243	18	512
158	640x480	18	512
159	720x486	18	512
160	360x243	18	768
161	640x480	18	768

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
162	720x486	18	768
163	360x243	19	256
164	640x480	19	256
165	720x486	19	256
166	360x243	19	512
167	640x480	19	512
168	720x486	19	512
169	360x243	19	768
170	640x480	19	768
171	720x486	19	768
172	360x243	20	256
173	640x480	20	256
174	720x486	20	256
175	360x243	20	512
176	640x480	20	512
177	720x486	20	512
178	360x243	20	768
179	640x480	20	768
180	720x486	20	768
181	360x243	21	256
182	640x480	21	256
183	720x486	21	256
184	360x243	21	512
185	640x480	21	512
186	720x486	21	512
187	360x243	21	768
188	640x480	21	768
189	720x486	21	768
190	360x243	22	256

Table B-1: Recording Quality

Quality in P2000	Resolution	Frame Rate	Bit Rate (kbit/sec)
191	640x480	22	256
192	720x486	22	256
193	360x243	22	512
194	640x480	22	512
195	720x486	22	512
196	360x243	22	768
197	640x480	22	768
198	720x486	22	768
199	360x243	23	256
200	640x480	23	256
201	720x486	23	256
202	360x243	23	512
203	640x480	23	512
204	720x486	23	512
205	360x243	23	768
206	640x480	23	768
207	720x486	23	768
208	360x243	24	256
209	640x480	24	256
210	720x486	24	256
211	360x243	24	512
212	640x480	24	512
213	720x486	24	512
214	360x243	24	768
215	640x480	24	768
216 to 255	720x486	24	768