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Guide for Configuring Recording and VMD for V920D Series Cameras

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Guide for Configuring Recording and Video Motion Detection on Roughneck V920D Series Cameras

This guide provides a step-by-step procedure for recording the Roughneck® V920D cameras (24/7) with ViconNet (versions 6.0 - 6.6 and drivers 934-A or version 6.6SP2). It assumes an understanding of ViconNet and the cameras. Refer to the ViconNet® and camera manuals for detailed information.

Since initial setup and configuration of V920D cameras are not done through VNSetup software but through a Web Browser interface, the configuration of recording is done in the camera configuration. The cameras can be set up to record 24/7.

The 24/7 recording procedure is also the first step of the configuration of a Video Motion Detection alarm event. Support for a VMD alarm is generated by the camera and is also defined and setup in the camera configuration. The VMD feature activates an alarm due to activity beyond specified sensitivities in preconfigured regions of interest (ROIs) in the camera view area. The VMD message is sent from the camera and received in ViconNet as an external alarm; it can then be used to trigger a macro created in ViconNet that reacts to the alarm.

Each camera that has VMD configured must be connected to be viewed or recorded at least once before the alarm mechanism will work. Typically, a camera is recording 24/7, and when a VMD triggers an alarm, the parameters for recording change. It is also possible to trigger a VMD alarm to record only upon motion. In this case, a macro must be configured to create this “handshake” and to ensure that the alarm will be re-activated and triggered even if the NVR reboots, shuts down or fails.

Camera Configuration

Stream Configuration

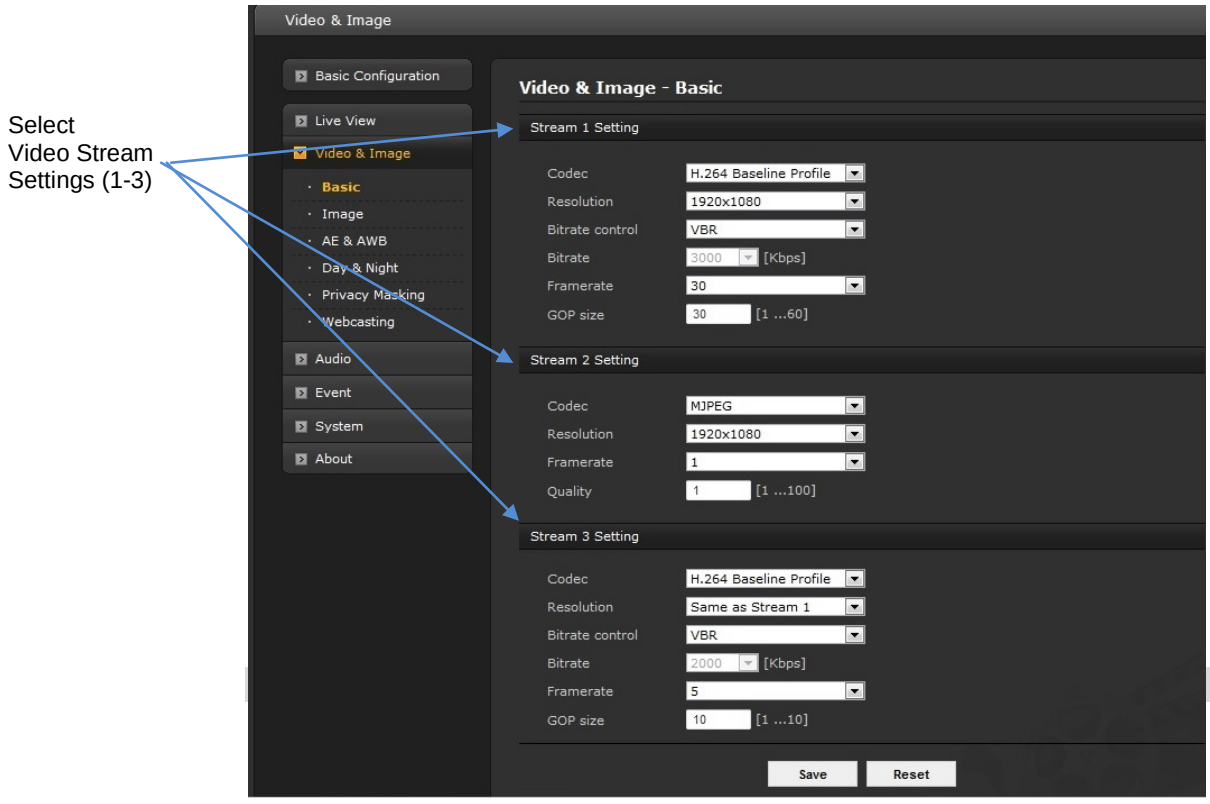
The ViconNet system and the camera should be setup and connected before beginning this procedure. Review the requirements for the particular installation to determine whether a 24/7 recording macro or the “handshake” macro method is best for this installation. The “handshake” macro is only used if a continuous stream of video is ***not*** required; it is used solely to maintain contact with the system, to be recognized by the system as needed.

Note:

The “handshake” method saves on storage space but does not provide the prealarm option. The 24/7 method should be used if constant recording, prealarm or control of fps is required.

The video streams must be configured before any recording (and motion detection) can be set up. The V920D cameras provide for using multiple-stream configuration, which may be required for certain installations.

Select *Video & Image* tab from the selection of the Setup menus.



Notes

Although 3 streams are available on these cameras, typically streams 1 and 3 are used at H.264 compression; MPEG-4 compression is also offered in streams 1 and 3 and only M-JPEG is available in stream 2.

This guide focuses on using streams 1 and 3; it does not address using M-JPEG stream 2. When configuring Stream 3 resolution, the dropdown provides Same as Stream 1 or Same as Stream 2; Vicon recommends selecting Same as Stream 2 when configuring Stream 3. Set Stream 2 to the resolution required for Stream 3. The Frame Rate (fps) can then be set. Note that both stream 1 and 3 can be set for 30 fps; however, if the settings exceed the fps limits, ViconNet will adjust the fps to as close as possible, dividing the fps evenly between the two streams.

If only 24/7 recording is being set up, it is only necessary to set up one stream with the desired parameters.

Creating Macros in ViconNet

After the streams are configured through the Web Browser, a macro is created from ViconNet's Macro Editor screen that defines which stream is recorded for 24/7 recording.

Note

This step is also required when setting up a VMD alarm that will trigger a change to the recording parameters upon motion.

Creating a Recording Macro

To create a macro:

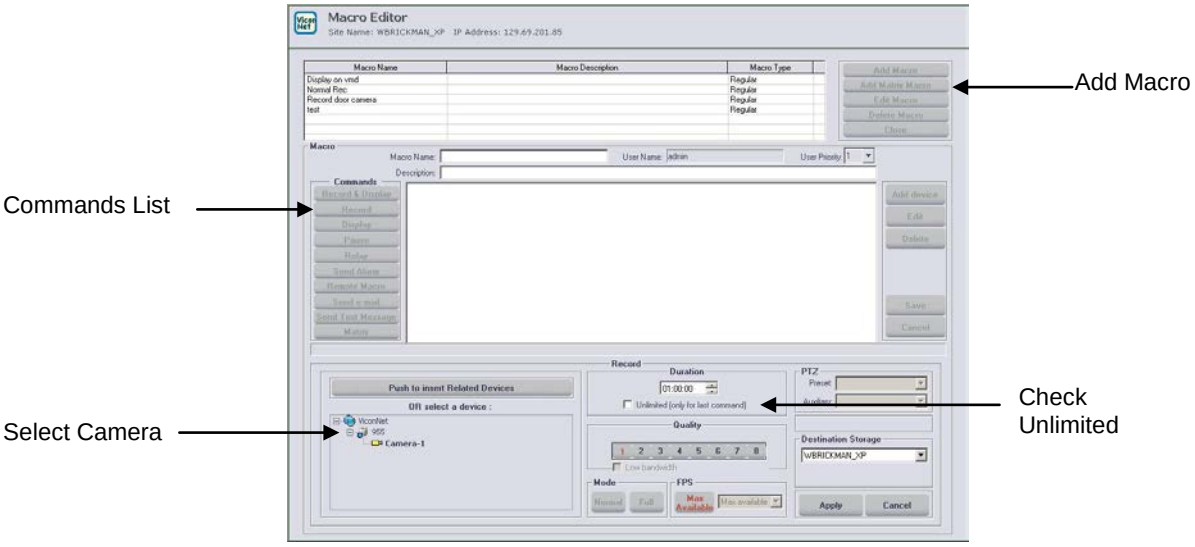
- From the ViconNet *Main* window, click 

. The *Setup Site Selection* window displays.
- Select the site (NVR/Workstation) for which the macro is being defined and click 

. The *System Settings* window displays.
- Click 

. The *Macro Editor* window displays. Click 

The middle section of the screen displays.



- Fill in a logical name for the macro and a description if desired.
- Select the first command from the Commands list; in this case, select Record. The bottom portion of the screen displays.
- Select the camera(s) that is (are) being configured from the device list (on the left).

Note:

The ViconNet macro setup distinguishes between the streams from the camera by resolution (Q number). The stream parameters are "translated" by the macro and fps is determined by the stream selected and according to the fps setting in the camera for that stream.

- Fill in the appropriate fields for the command. For a 24/7 recording macro, be sure to check the Unlimited box.

  The V920D cameras do not allow fps selection; the fps is determined by the stream selected, according to the setup done previously on the camera web page. When defining the macro, the user will define the stream requested by the Q number (Q1 for highest available stream, Q8 for lowest). The Q number represents the combination of resolution and fps. The higher resolution and/or fps stream will be Q1, the lower resolution/fps is Q8; if the resolution of the two streams is the same, the higher fps will be Q1. Remember this must correspond with the camera stream setting. Refer to the Appendix for more details on these settings.

- A macro can have multiple commands; repeat command selection if required for the macro. The macro executes in the command order.

Note:

To add another camera to the same command later, click Add device and select the additional device from the list. Configure the settings as previously described. To add a new command to the existing macro, select the command type and configure the command settings as previously described.

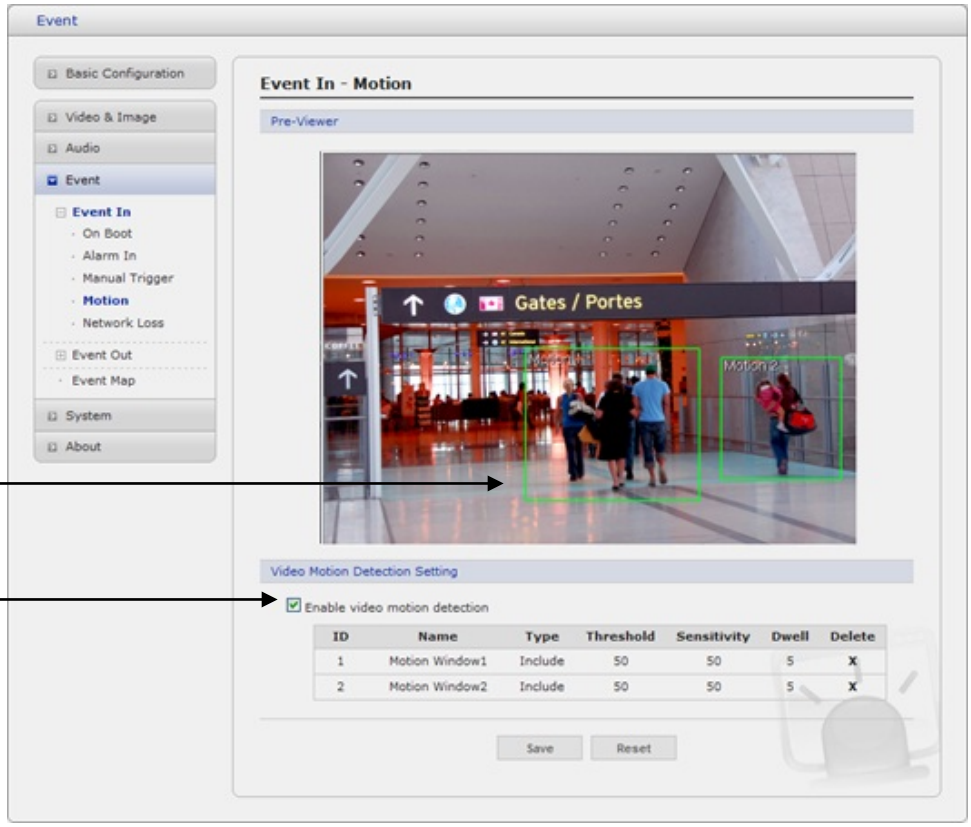
- Click Apply and then Save.

Motion Detection Configuration

If a VMD trigger is required, Video Motion Detection is set up from the Web Browser. Then the macros are configured.

Setting up Video Motion Detection from the Web Browser

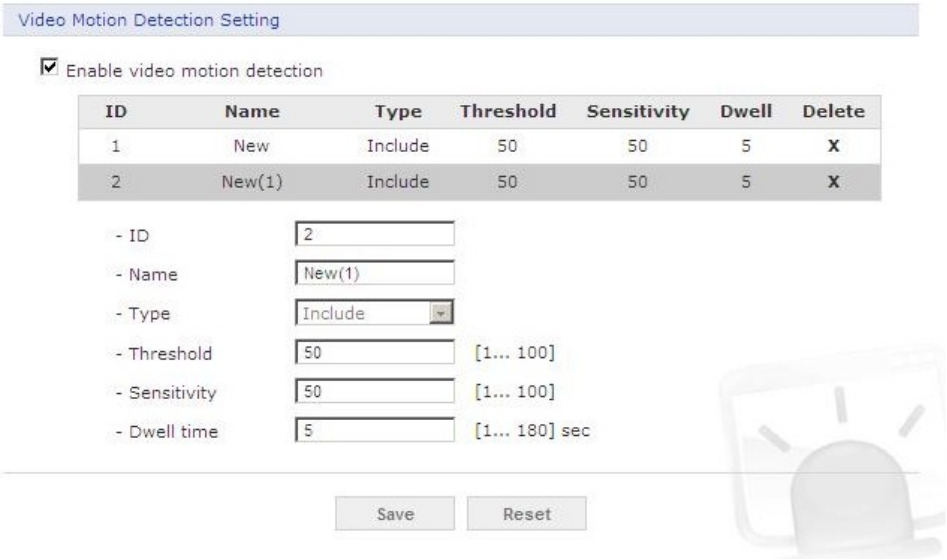
From the *Event* tab list, select *Event In*, *Motion*. The following screen displays. Note that motion detection is set up *only* on the stream that will be associated with the VMD macro. Refer to the User manual for the V920D camera for details on camera setup.



Check *Enable video motion detection*.

- Click the right mouse button to display the mouse menu.

- Select New Motion in the mouse menu.
- Click and drag mouse to designate a motion area window. The window can be sized and positioned anywhere on the video image.
- When a new Motion window is defined, the screen expands to allow the setup of the window's *ID*, *Name*, *Type*, *Threshold*, *Sensitivity* and *Dwell time* to be defined.



When setup of the Motion window is complete, click Save.

The next step is creating the macro(s) that defines what happens when motion occurs. After the macro(s) is defined it is then linked to the external alarm of the NVR/Workstation. Remember that recording is not available on a Workstation, only on an NVR or DVR.

VMD Options

Depending on the required operation, it may be necessary to configure more than one video stream. If recording is required to start only when motion is detected, it is only necessary to set up one stream with the desired parameters. In this case it is not necessary to set up the 24/7 recording macro previously described.

However, if it is necessary to have the system record at a certain resolution and fps all the time (usually lower one), and switch to a different configuration (resolution and/or fps) on motion (usually higher one), at least two streams need to be configured with the different parameters. In this case, it is required to configure both the previously described 24/7 recording option to record the desired stream (Q number) and a macro upon motion.

The motion recording options are:

- Record at a certain resolution and fps and switch to a higher resolution and/or fps on motion event
- Record at a certain resolution at low fps while viewing the same resolution at high fps

The V920D cameras have the ability to define two H.264 streams with the same resolution and different FPS, for example, Stream 1 – 1080p @ 30 fps; Stream 3 – 1080p @ 5 fps. In this way, normal recording can be of Stream 3 and a motion event can trigger a macro to record Stream 1.

Stream 2 will be set to its default M-JPEG.

Notes

Stream 3 can be the same or lower resolution than the Stream 1; the fps of the Stream 3 is independent of the fps set in the Stream 1 (up to the total fps the camera can provide at each combination of resolutions). Bear in mind that using the high resolution on both streams does affect on the system display resources.

Refer to the Appendix for examples of stream configurations.

Examples of VMD Alarms

Example 1

- A camera is only recorded by motion.
  - A Workstation is viewing the camera as needed
  - The camera VMD is set to generate an alarm on motion
  - On the NVR, the VMD alarm trigger runs a macro that will trigger recording on the NVR

Note: There is no pre-alarm at all in this case.

Example 2

- A camera is recorded at a low fps and switches to a higher fps upon motion.
  - Requires two video streams set up in the camera
  - The NVR is set to record the camera at lower frame rate on video stream (lower fps stream)
  - The camera VMD is set to generate an alarm on motion
  - On the NVR, the VMD alarm trigger runs a 2nd macro that will record the higher fps video stream for a predetermined time

Note: There is no higher fps pre-alarm option for this; any recording prior to the VMD alarm is at the low fps.

Note

When VMD is on a camera that is recording, the recording macro is created first. The VMD trigger is a second macro. In the setup of the 24/7 recording macro, for example no. 2, define recording at Q8, the lower fps stream.

For VMD recording, a second macro is configured to tell the NVR what to do in the case of a VMD alarm; in example 2, command the NVR to record the camera at a different resolution and/or fps. Example 1 does not require the first macro; this alarm macro instructs it to record the camera upon a motion alarm.

- Follow the previous steps to create the recording macro.
- To setup example 1: From the Commands list, select Record. Select the recording stream for the Record command (usually Q1).
- To setup example 2: From the Commands list, select Record. Select the higher recording stream (Q1) for the Record command.

  Remember that the Q number is in no way related to the stream number, for example the stream with Q1 is not necessarily Stream 1.

Note:

An option of recording, with a macro for display on motion can also be configured.

- From the device list, select Push to insert Related Devices. This links the camera to the external alarm and uses the camera name as shown in the alarm for the macro to work (eliminating the need to specify which camera is for this macro).

Note

This method has one limitation. A macro that runs as a result of ANY alarm will always trigger the same response (for example display the alarmed camera) and does not allow launching different macros for different alarms. If

there is a requirement to do so, you will need to utilize ViconNet Events Management (see ViconNet manual).

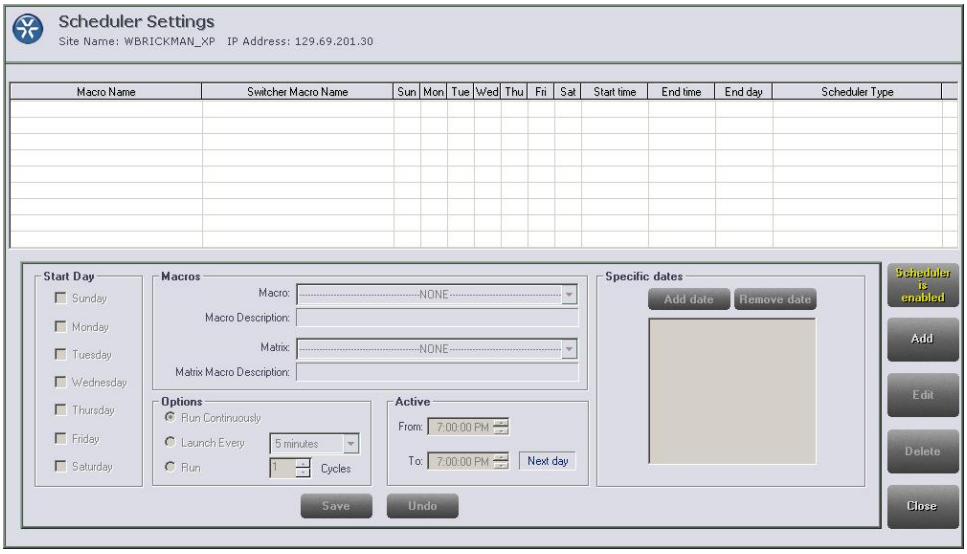
A camera that is recording video only upon motion requires a “handshake” macro to assure the system recognizes the alarm. Running this macro on the camera for 10 seconds every hour will assure that the VMD will be triggered even if the NVR restarted or lost communication to the camera at some point. To create the “handshake” macro:

- Follow the previous steps to create the macro.
- Configure a macro to record the camera every hour for 10 seconds so that the system maintains recognition of the camera.

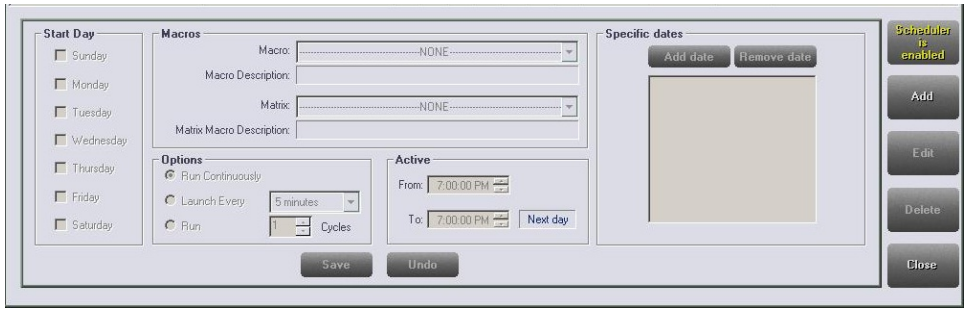
Configuring the Macro Scheduler

Next, a schedule needs to be created to run the 24/7 recording macro and/or the “handshake” macro according to your requirements, including on which days of the week, as well as a start time and end time for each day. Refer to the Creating Schedules section in the Configuring ViconNet chapter in the latest ViconNet manual, XX113.

- From the ViconNet Main window, click Setup. The *Setup Site Selection* window displays.
- Select the site name (NVR/Workstation) for which the alarm is to be defined and click Select. The *System Settings* window displays.
- Click Schedule for Macros. The *Scheduler Settings* window is displayed, showing any currently defined schedules in the system.



- Click Add. The *Scheduler Settings* window is enabled.



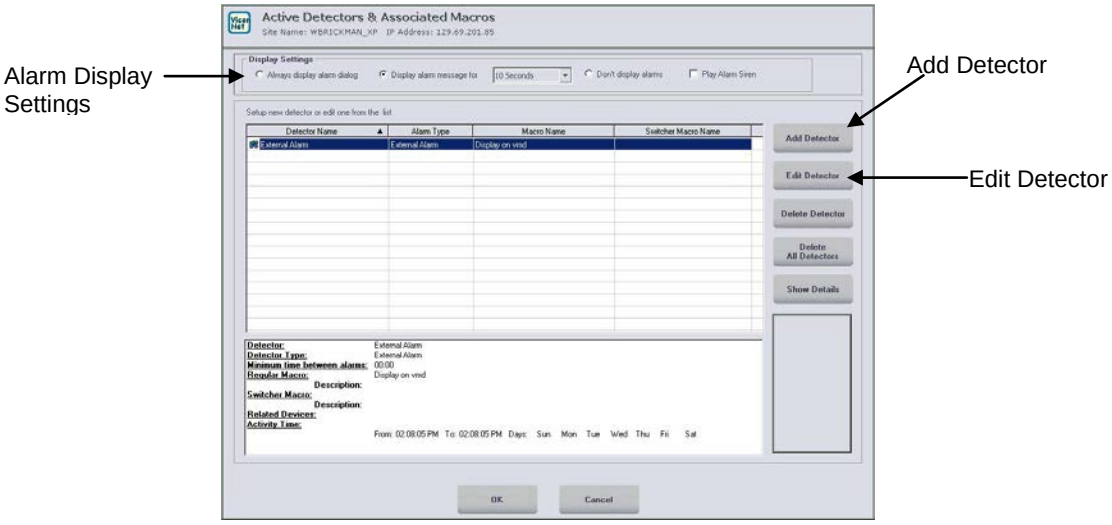
- From the **Macro** dropdown list, select the macro for which you want to create a schedule. The defined macro description is displayed automatically in the **Macro Description** field.
- Select the days of the week that you want the macro to run from the **Sunday - Saturday** checkboxes. To select a specific date for the macro to run, click Add date in the **Specific dates** area. A calendar is displayed. Select the date(s) required by clicking in the calendar. For the recording and “handshake” macros, every day of the week should be checked.
- In the **Options** area, select a run option for the macro; for the 24/7 recording (examples 1 and 2), select Continuously; for the “handshake” macro (set up for recording on motion only), select Launch Every and select 1 hour.
- Click Save .

Configuring the External Alarm

The final step is to configure the external alarm on the Workstation/NVR to activate the macro upon receiving the VMD alarm. Each NVR/Workstation has 1 default **External Alarm** that can be edited to receive the VMD alarm from the camera and execute the macro.

To define the external alarm:

- From the ViconNet Main window, click Setup. The *Setup Site Selection* window displays.
- Select the site name (NVR/Workstation that has the ability to receive alarms) for which the alarm is to be defined and click Select The *System Settings* window displays.
- Click Alarms. The *Active Detectors & Associated Macros* window displays.

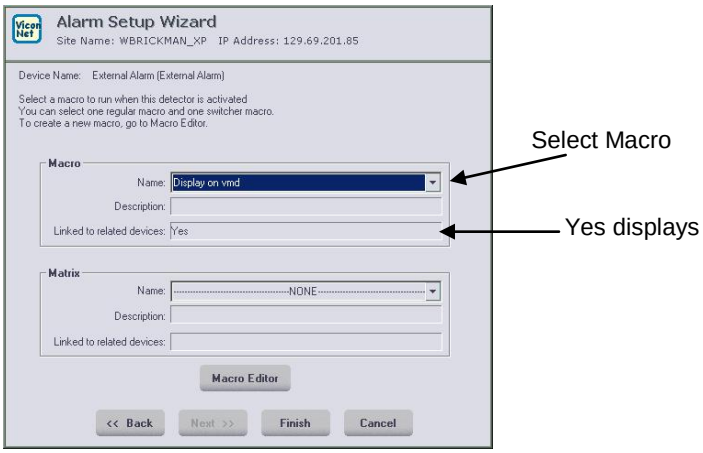


- Select the alarm display settings at the top of the screen.
- From the displayed list, select *External Alarm*. Click Edit Detector The *Alarm Setup Wizard* window displays.

Note: If the External Alarm has been previously deleted from the NVR/Workstation, click Add Detector. From the *Alarm Setup Wizard*, select **External Alarm** and Next >> Proceed with the steps for **Edit Detector** that follow.

- Define the time schedule for the macro in the *Alarm Activity Time* area; the default is 24 hours a day, 7 days a week. Press Next >> .

- From this *Alarm Setup Wizard*, select the macro previously created to be activated when the motion alarm occurs. *Linked to related devices* should say **Yes**. If the macro was not created, or needs to be changed, it can be done by clicking Macro Editor Follow the procedure for creating a macro. Click Finish .



- The external alarm setup link is displayed in the list in the *Active Detectors & Associated Macros* window. Click **Show Details** to see complete information on alarm setup.

Appendix A
Camera Settings

A

This appendix provides information about configuring the V920D resolution and fps to attain maximum use of resources:

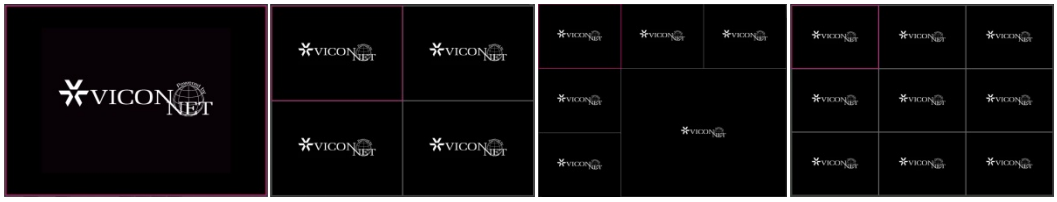
ViconNet Display and Recording

Understanding the way the ViconNet application is set to display and record cameras that have multiple streams will help in the configuration of the video streams to attain optimal use of resources.

In order to create a general scheme for programming and displaying, the current version of ViconNet has simplified the way it calls different streams.

The GUI on both the ViconNet and the VMDC application is designed to automatically request a certain resolution in each different display mode, based on the fact that the lower resolution the stream is, the more streams can be displayed. If a single camera is called up for display, it is safe to assume the user would like to see the best resolution available, but in a split screen mode, a lower resolution stream will look just as good (as it is shown in a smaller tile).

Q 1 **Q 5** **Q 5 *** **Q 6**



Q 7 **Q 7 * *** **Q 7 * *** **Q 7 * ***

* ViconNet application only; ** VMDC application only

Mapping Streams to Cameras

These examples are based on typical dual streaming cameras.

Example 1: Both streams are set to the same resolution

Cases where this would apply are:

- A system that needs to record at a certain resolution and FPS (i.e., D1 @ 5 FPS) and display the same resolution but a different FPS (typically higher, i.e., D1 @ 30 FPS)
- A system that needs to record at a certain resolution and FPS (i.e., D1 @ 5 FPS) and boost to a higher FPS on a trigger such as motion (i.e., D1 @ 30 FPS)

The result in ViconNet for this example is that the stream that is set with the higher fps will be mapped as Q4 and the one with the lower fps as Q7. Remember that this process is automatic; the Q number is provided as a point of reference.

Display Mode	GUI Requests	Camera Provides	Display Result
Single camera view	Q1	Q4	Higher FPS stream
4 way split	Q5	Q4	Higher FPS stream
6 way split *	Q5	Q4	Higher FPS stream
9 way split	Q6	Q4	Higher FPS stream
16 way split	Q7	Q7	Lower FPS stream
25 way split **	Q7	Q7	Lower FPS stream
36 way split **	Q7	Q7	Lower FPS stream
64 way split **	Q7	Q7	Lower FPS stream

* ViconNet application only; ** VMDC application only

Example 2: The two streams are set to different resolution with the same or different fps

Cases where this would apply are:

- A system where the recording is of the higher resolution stream (i.e., 1080P @ 30 FPS) and the second stream (i.e., D1 @ 30 FPS) can be used to lower display load in split screen mode (highly recommended method in cases when multiple cameras need to be displayed in a split screen).
- A system that needs to record at a certain resolution and FPS (i.e., D1 @ 30 FPS) and boost to a higher resolution on a trigger such as motion (i.e., 1080P @ 30 FPS).

The result in ViconNet for this example is that the stream that is set with the higher fps will be mapped as Q1 and the one with the lower fps as Q5. Remember that this process is automatic; the Q number is provided as a point of reference.

Display Mode	GUI Requests	Camera Provides	Display result
Single camera view	Q1	Q1	Higher resolution stream
4 way split	Q5	Q5	Lower resolution stream
6 way split *	Q5	Q5	Lower resolution stream
9 way split	Q6	Q5	Lower resolution stream
16 way split	Q7	Q5	Lower resolution stream
25 way split **	Q7	Q5	Lower resolution stream
36 way split **	Q7	Q5	Lower resolution stream
64 way split **	Q7	Q5	Lower resolution stream

* ViconNet application only; ** VMDC application only

Selecting the Stream to Record

Once mapping is understood, deciding which stream to record with a macro is easier.

Example 1: Both streams are set to the same resolution

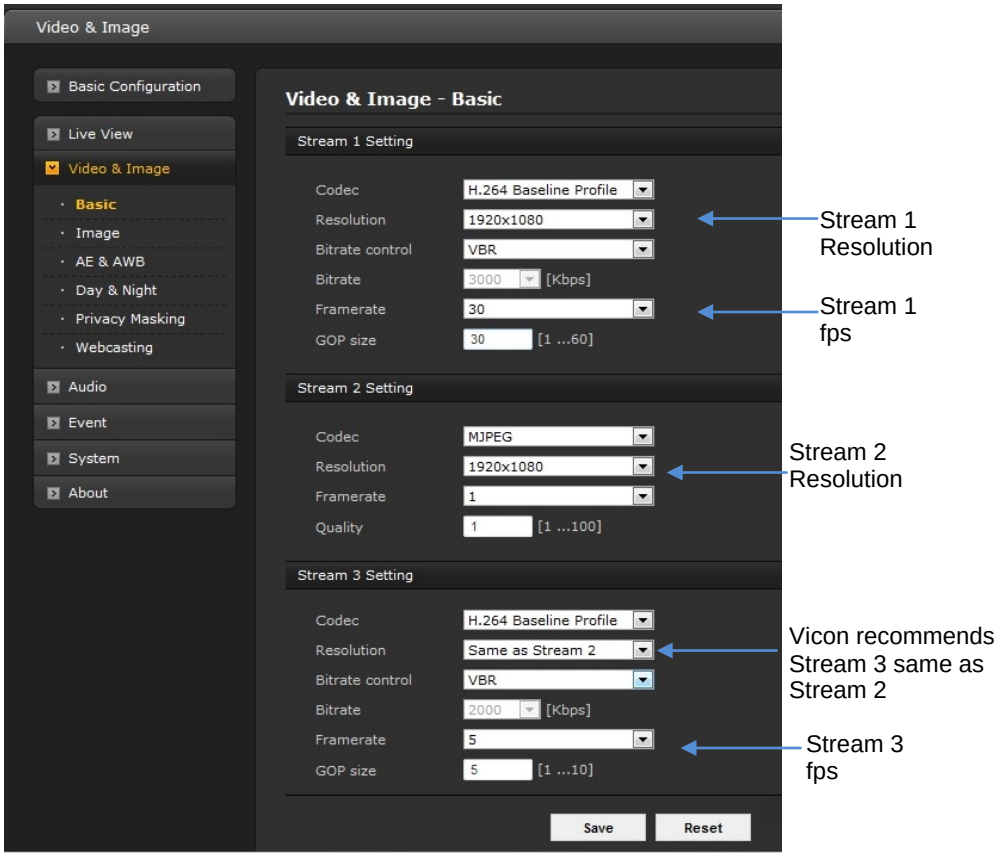
Example 2: The two streams are set to different resolution with the same or different fps

- Setting the recording macro to Q1 (similar to single camera view) will record:
  - ❖ In example 1, the stream with the **higher FPS** of the two
  - ❖ In example 2, the stream with the **higher resolution** of the two
- Setting the recording macro to Q8 (similar to 16 way split) will record:
  - ❖ In example 1, the stream with the **lower FPS** of the two
  - ❖ In example 2, the stream with the **lower resolution** of the two

Camera Configuration Examples

The video streams are setup in the camera's web browser. *Vicon recommends setting Stream 3 the same as Stream 2. Stream 2 is set to M-JPEG and 1 fps and is not used in these examples.*

1. To set up a camera with the both streams at the same resolution but different fps:



Note that Vicon recommends that GOP be the same as frame rate.

In this case, Stream 3 can record 24/7 at the lower fps and switch to Stream 1, at 30 fps, upon motion.

The maximum frame rate in this case is (using Stream 3 same as Stream 2):

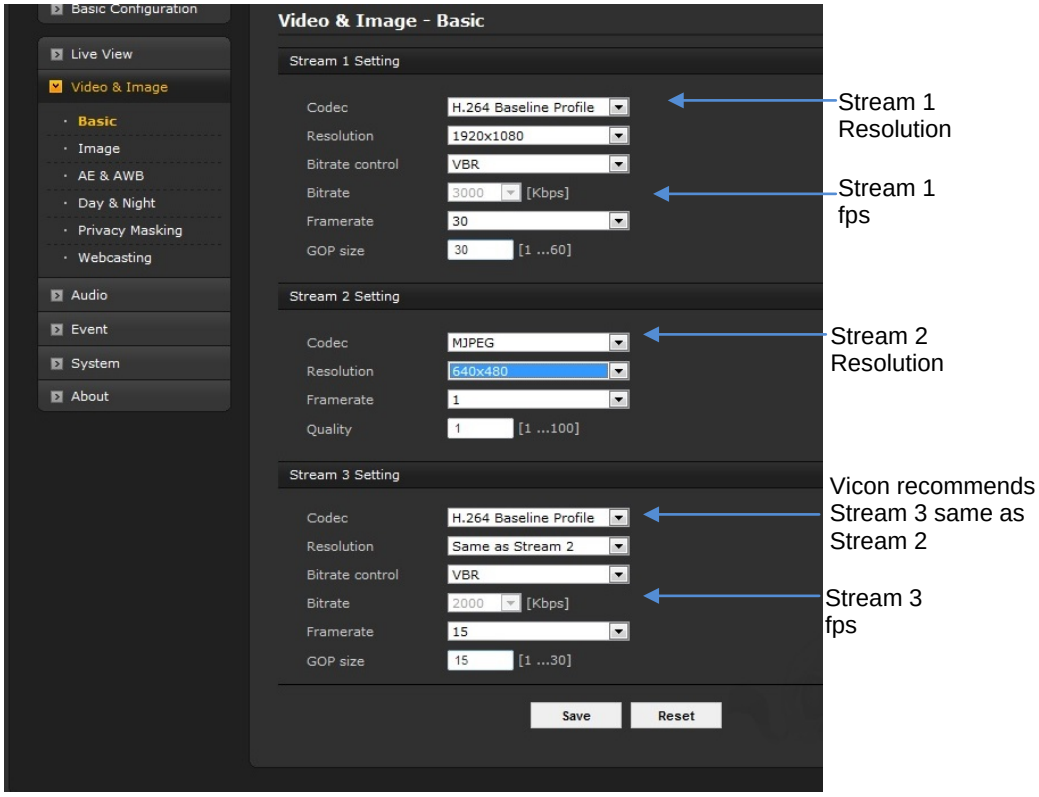
STREAM1	STREAM2 STREAM3	Maximum Frame Rate
1920 x 1080	1920 x 1080	18 fps

Note

If the configuration exceeds the fps limits of the system, the ViconNet application divides the fps evenly between the two streams. If the

configuration requires less than what the system can provide, you will get it exactly; if the configuration is more than the system can provide, it will give as close as possible to the configuration.

2. To set up a camera with the streams at the different resolutions and fps:



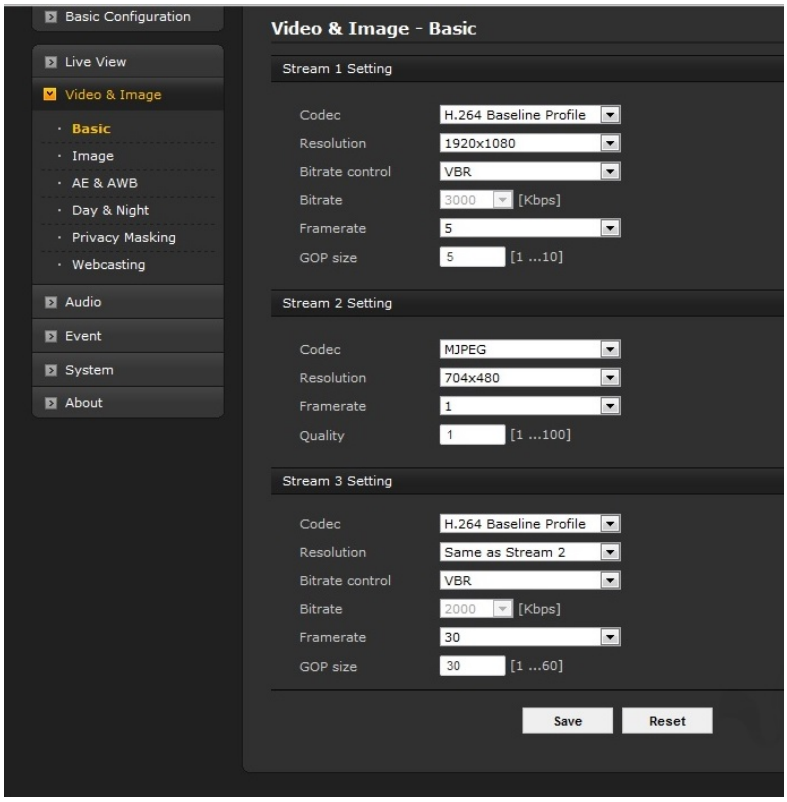
Note that Vicon recommends that GOP be the same as frame rate.

In this case, the lower fps stream can record 24/7 at the lower resolution and fps and switch to the stream with higher resolution and fps upon motion.

The maximum frame rate in this case is (using Stream 3 same as Stream 2):

STREAM1	STREAM2 STREAM3	Maximum Frame Rate
1920 x 1080	640 x 480	28 fps

3. This configuration shows a high resolution and low fps on Stream 1 and a low resolution and high fps on Stream 3. It is shown to illustrate a specific circumstance when the best quality is desired but there is a need to save on storage. In this case it is recommended to use the lower resolution/high fps stream for display and the higher resolution/ low fps stream to record to save on storage.



Note that Vicon recommends that GOP be the same as frame rate.

IMPORTANT

Remembering how ViconNet maps the video streams resolutions, this configuration would ***NOT*** work in the table shown after Example 2, single camera view because there is a conflict between how ViconNet automatically handles the stream resolution and how the streams are configured in the camera web browser. Since the higher resolution stream is set to a lower fps, it would only be able to display a single view for the first stream (set to high resolution) at a low fps.

STREAM1	STREAM2 STREAM3	Maximum Frame Rate
1920 x 1080	704 x 480	28 fps

For a table showing maximum fps with all resolution combinations, refer to the table below. Additionally, refer to the separate V920D Resolution and Frame Rate Performance sheet.

Conditions

STREAM 1	H.264 30 fps 4 Mbps
STREAM 2	JPEG 1 fps 1 (quality)
STREAM 3	H.264 3 0fps 4 Mbps

STREAM 3 resolution same as STREAM 2

STREAM 1	**STREAM 2 STREAM 3**	**Maximum Frame Rate (total)**
1920 x 1080	1920 x 1080	18 (37)
	1280 x 1024	Not Supported
	1280 x 720	Not Supported
	704 x 576	27 (55)
	704 x 480	28 (57)
	640 x 480	28 (57)
	352 x 288 ↓	30 (61)
1280 x 1024	1920 x 1080	Not Supported
	1280 x 1024	27 (55)
	1280 x 720	Not Supported
	704 x 576 ↓	30 (61)
1280 x 720	1920 x 1080	Not Supported
	1280 x 1024	Not Supported
	1280 x 720 ↓	30 (61)
704 x 576	1920 x 1080	26 (53)
	1280 x 1024 ↓	30 (61)
704 x 480	1920 x 1080	27 (55)
	1280 x 1024 ↓	30 (61)
640 x 480	1920 x 1080	27 (55)
	1280 x 1024 ↓	30 (61)
352 x 288	1920 x 1080	29 (59)
	1280 x 1024 ↓	30 (61)
352 x 240	1920 x 1080	29 (59)
	1280 x 1024 ↓	30 (61)
320 x 240	1920 x 1080 ↓	30 (61)

Configuration 1

Configuration 3

Configuration 2

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