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Guide for Configuring Recording and VMD for Roughneck V920D Series and V-CELL-HD, Cruiser SN663V, and SN680D-WNIR Cameras

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Guide for Configuring Recording and Video Motion Detection on Roughneck V920D Series, V-CELL-HD, Cruiser SN663V and SN680D-WNIR Cameras

This guide provides a step-by-step procedure for recording the Roughneck® V920D series, V-CELL-HD, Cruiser™ SN663V, and SN680D-WNIR cameras with ViconNet (version 7). It assumes an understanding of ViconNet and the cameras. Refer to the ViconNet® and camera manuals for detailed information.

Setup and configuration of cameras are done using the Smart Manager discovery tool and the camera Web Browser interface; the initial configuration for recording is done in the camera and continues in ViconNet.

VMD alarm is generated by the camera 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.

In ViconNet Recording Manager, each camera can be individually setup to a specific recording scheme. Typically, a camera is recording 24/7 at the desired resolution and fps. Another option is to record at a certain (usually lower) resolution, and when VMD triggers an alarm from the camera, the parameters for recording change (boost, usually to a higher quality). A third option is to trigger the system to record *only* upon VMD. All these are setup in Recording Management in ViconNet.

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 24/7 recording is required (with or without boost upon motion) or whether just recording upon motion will suffice.

Note:

The 24/7 method should be used if constant recording or prealarm is required.

The video streams must be configured before any recording (and motion detection) can be set up. These 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.

Select
Video Stream
Settings (1-3)

Notes

Although 3 streams are available on these cameras, typically streams 1 and 3 are used at H.264 compression or MPEG-4 compression; 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.

Even if only 24/7 recording is being set up, it is recommended to keep streams 2 and 3 with the default parameter, so it can be used by the display.

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 specific camera for details on camera setup.

Check *Enable video motion detection*.

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

New Motion	
New Mask	
Select	▶
Delete	
Freeze	

- 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.

Check to Enable
Motion Detection

Video Motion Detection Setting

☑ Enable video motion detection

ID	Name	Type	Threshold	Sensitivity	Dwell	Delete
1	Door	Include	2	55	3	X
2	New	Include	2	55	3	X

- ID `2`
- Name `New`
- Type `Include ▾`
- Threshold `2` [1... 100]
- Sensitivity `55` [1... 100]
- Dwell time `3` [1... 180] sec

Save   Reset

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

The next step is setting up Recording Management that defines what happens when motion occurs. Remember that recording is not available on a Workstation, only on an NVR or DVR.

Using Recording Management in ViconNet

After the streams are configured through the Web Browser, recording options are setup from ViconNet's Recording Management screen.

Note

This step is also required when setting up VMD alarms that will change the recording parameters upon motion.

The cameras are delivered, by default, set to use two streams for both display and recording purposes. If recording is just required 24/7 or to start only when motion is detected, it utilizes one stream with the desired parameters. Depending on the required recording scheme, it may utilize more than one video stream. Some examples follow after setup.

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

Recording Management Setup

The ViconNet system enables you to configure recording management, which allows the system to record the selected connected cameras and/or microphones continuously (24/7), to record 24/7 and then boost upon motion, or to record only upon motion.

Configuring recording management consists of selecting the cameras and/or microphones that will be recorded and selecting the recording settings.

To configure recording management:

1. From the ViconNet *Main* window, click [Setup]. The *Setup Site* Selection window is displayed, showing a list of all currently connected transmitters and Workstations.

2. Select the site name for which you want to configure automatic recording and click [Select]. The *System Settings* window is displayed.

3. Click [Recording Management]. The *Recording Management* settings window is displayed.
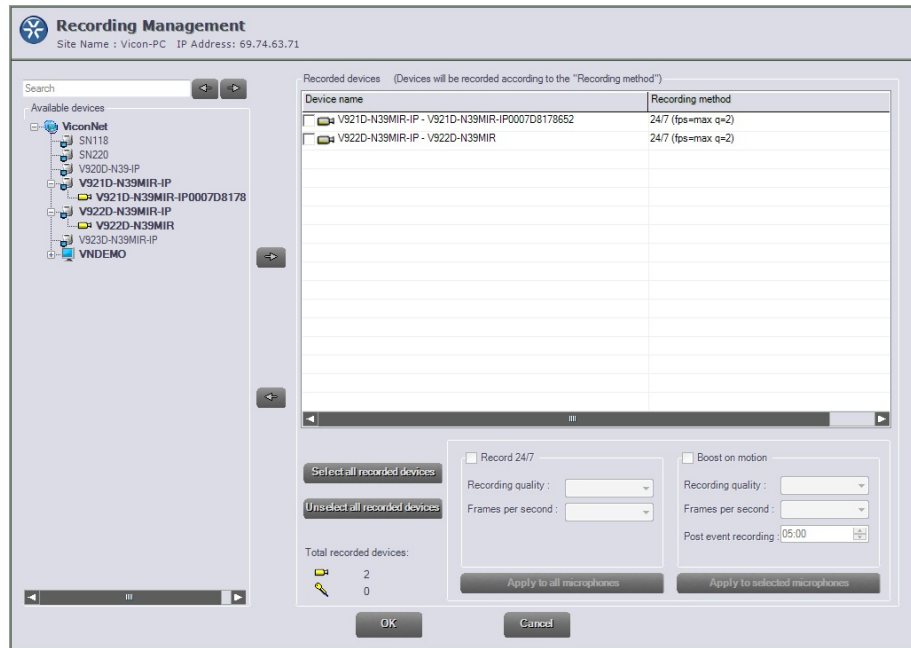
4. The Available devices list displays all camera/microphones on the system. Select the required devices to be configured for recording. Either drag the device into the Recording devices list or highlight it and click the (add icon). From here each device can be configured. To remove a device from the list, highlight it and click the ⟸ (remove icon).

5. Click the device in the Recording device list to select it. Each device can be configured to record 24/7 (default), to boost on motion or to record only when there is a motion alarm, by deselecting the Record 24/7 checkbox. Each device can be configured individually. To select multiple devices, check the checkboxes for all the cameras included to apply these settings to, and then click the *Apply to the selected cameras* button; click *Apply to all cameras* if they are all to have the same configuration (the camera highlighted blue settings will be applied to those with the checkboxes checked).

Note

When recording on motion or boosting on motion, the motion settings must first be done from the camera browser.

6. When configuring Record 24/7, select the Recording quality number from the list (Q number 1-8, where Q1 is the highest quality). Then select the Frames per second (fps).

7. When configuring Boost on motion, check both the Boost on motion and Record 24/7 boxes. Select the Recording quality number from the list (Q number 1-8, where Q1 is the highest quality). Then select the Frames per second (fps). Select a time for Post event recording (minutes:seconds). Highlight the minutes/seconds and click the up/down arrow to change the value.

Notes on setting up streams

In the setup of the 24/7 recording only, define recording at Q1, the better stream. If boost required, the 24/7 recording will typically be set to Q8, the lower stream and on VMD switch and record the camera at a different resolution and/or fps by defining recording at Q1, the better stream.

For VMD, the boost on motion is configured to tell the NVR what to do in the case of a VMD alarm.

The 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 (Q8, lower stream) and a motion event can cause ViconNet then to record Stream 1 (Q1, higher stream).

Stream 2 will be set to its default M-JPEG and 1 fps.

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.

8. If it is desired to only record when motion occurs, deselect Record 24/7 and the Boost on motion fields screen will change to Record on motion only. Select the Recording quality number from the list (typically Q1). Then select the Frames per second (fps). Select a time for Post event recording (minutes:seconds). Highlight the minutes/seconds and click the up/down arrow to change the value.

9. When configuration is complete, select OK. The configuration screen will close. A message will display that this screen will time out if left idle for too long. Be sure to save settings.

Examples of VMD Alarms

Example 1

- A camera is only recorded when motion is triggered.

  - A Workstation is viewing the camera as needed

  - The camera VMD is set to generate an alarm on motion

  - On the NVR, the Recording Manager will start recording on the NVR at the selected quality

Note: There is no pre-alarm at all in this case. This does not require the 24/7 recording; this alarm instructs it to record the camera only upon a motion alarm

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 Recording Manager 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.

# 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 * *
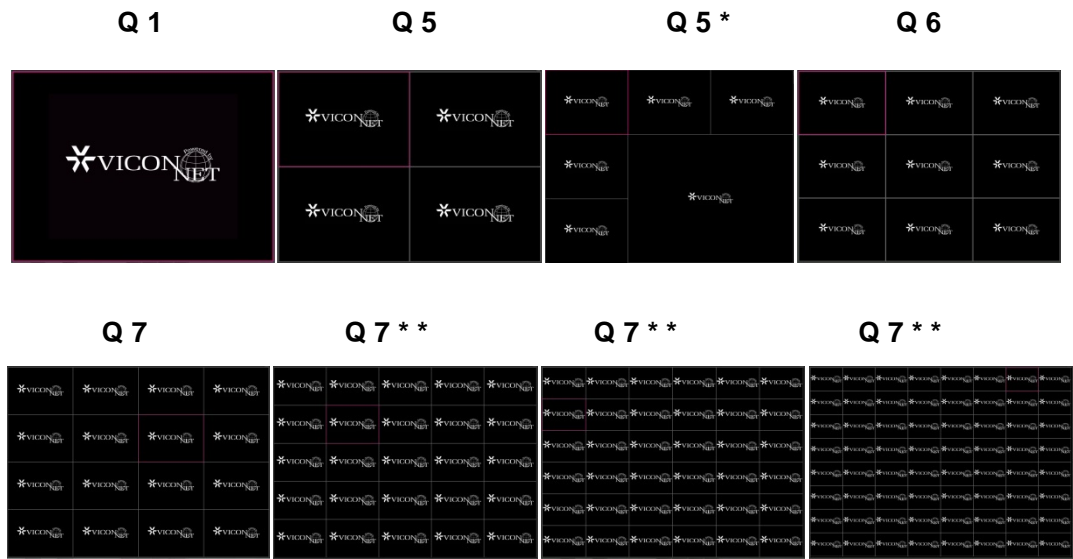
* ViconNet application only; ** VMDC application only

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)	← Configuration 1
	1280 x 1024	Not Supported	
	1280 x 720	Not Supported	
	704 x 576	27 (55)	
	704 x 480	28 (57)	← Configuration 3
	640 x 480	28 (57)	← Configuration 2
	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)	

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