



## HP Photosmart Digital Cameras Real Life Technologies

### HP Video Prints



### What are Video Prints?

In your HP Photosmart R817 or R818 camera you can capture full VGA (640x480) quality video at 30 frames per second (fps). That is not unique – other cameras can do VGA video though not with the 6 Mega bits per second quality of the R817/R818. What is special about the R817 and R818 is that you can easily select a piece of that video – a frame – and create a still image, a photograph, of that frame. You can do this on the camera, no computer is required. You can select any frame in the video for a print – moving forward and backward through the video and choosing the frame(s) you like. The new still image is stored on the camera just like any other picture you take. Because the source of the photo is VGA video – the quality of the still image will not be as high as the quality of a full resolution still image, but HP uses special image processing techniques developed at HP Labs to improve the quality, enlarge the image and remove MPEG artifacts in the video frame. Plus, the high quality MPEG compression used by the camera exceeds that used in most cameras. The resulting photograph is about a megapixel in size and is best printed at 3x5 or 4x6 inch photos. The sequence below illustrates what you can do with video print. See the next page for more examples!



In this illustration – a frame is chosen from the sequence of the video above – and extracted, processed and stored on the camera as the still image shown to the right.



## Show me!

Below are a series of images extracted, on camera, from video captured by an HP Photosmart R817 Digital Camera.



## How does video printing work?

To understand the details of video print – it is important to understand the video mode of the HP Photosmart R817 and R818 cameras. This camera is able to capture video in 3 quality levels:

- VGA 30 fps, best quality (VGA\*\*\*). This setting captures video at an industry leading 6 Mega bits/second. This is the best setting if you want to use video print. In this mode – you can capture video to your Secure Digital (SD) card – but be aware that a very old or slow SD card may limit how long your video is. In addition, HP stores both I and P frames in the video stream. Few other cameras capture P frames – so you get better video from your HP Photosmart R817 or R818 digital camera.
- VGA 24 fps, good quality (VGA\*\*, 3 Mega bits/second). In this mode, the camera captures VGA resolution but at a lower bit-rate. The quality will be somewhat lower – but you can capture more video for a given amount of memory and since the data rate is lower, a slower SD will work well.
- QVGA 30 fps, lowest quality (QVGA\*, 1.5 Mega bits/second). In this mode, the camera captures ¼ VGA resolution – 320x240 pixels at 30 fps. This is best for long video clips and email – but the quality of the video is not as good. Video print is not recommended.

To use video print, make sure your camera is in VGA\*\*\* mode, then capture your video. After you have captured your video, switch to playback mode and watch the video on your camera. When you see a part of the video you may want to create a still image from, press “OK” to pause the video. You can then press ◀ or ▶ to move back and forth in the video to find precisely the frame you want. Then press ▲ to extract the frame and, in less than 5 seconds, create the still image. Note, the still image is more than just an extracted VGA frame – it is a processed image. However, the quality of the still image will depend on the quality of the frame selected. You may find you get a better still image from the frame immediately before or after the one you like. For best results – create several still images – it is fast, easy and you can choose the one you like best.

## How do I get the best video print?

Because the still image is created from a video stream, the quality will not be as good as a full 5MP still image. But, using video print you can capture an image you would probably never have captured precisely with the camera in normal still image mode – and you have the video as well! There are some tips you can use to help get the best video print.

- Shoot the video in bright lighting. The camera will capture a cleaner, less noisy, image if there is plenty of light.
- Avoid moving the camera quickly. Not only will this make your video better and easier to watch, it will limit motion blur in the video frames and thus in the still images.
- If the objects or people in the video are moving generally towards or away from the camera, there will be less motion blur. If you have a video of something moving quickly



from side to side in the video – then the motion blur in each video frame is more and the prints will show that. For instance, if you are capturing a video of a foot race, the parts of the race video where the runners are approaching you will be better for video print than parts where they are running right past you side to side.

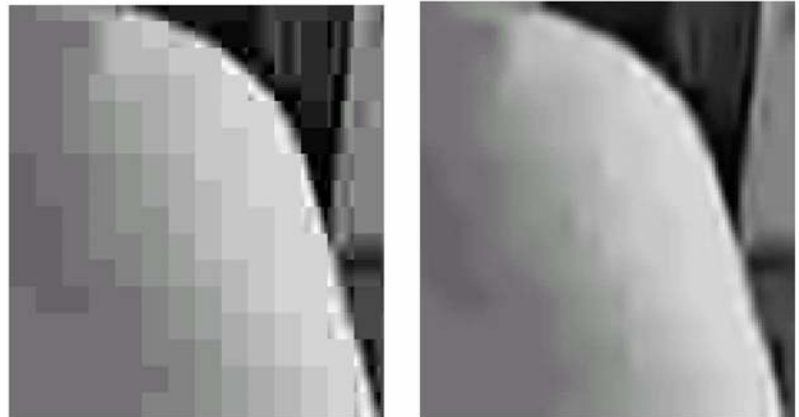
- Experiment. Sometimes moving just a frame or two forward or backward can make a large difference in the quality of the extracted frame.

## What special processing does video print do?

There are other cameras, some of them video cameras, which can take a frame from a video and just create a 640x480 still image from them. These images – while interesting – are often not that good. HP has applied technology developed in HP digital imaging research labs to maximize the quality of the extracted video.

First, a process called artifact reduction is applied to the frame. Artifact reduction helps eliminate the blocky artifacts of MPEG compression that make a single frame less appealing. These blocks are not visible when you view a video moving because your eye and brain ‘average’ the frames together to create a nice motion image. That is why a video looks better when playing than when paused. When you view a single frame, the blocking becomes visible.

The artifact reduction processes developed by HP Labs helps minimize the appearance of the MPEG blocks as illustrated here. Note, these processes adapt to the frame being processed, so how effective they are depends on the content of the frame.



In addition to artifact reduction, HP applies special sharpening routines that sharpen the image without increasing noise

significantly. Finally, the extracted frame is enlarged to about a 1 Mega Pixel image size using advanced interpolation. This improvement allows the image to be printed larger and with better quality than would be possible if just the 640x480 video frame were saved.

## Common Questions.

- Is the extracted print the same as a 1 Mega Pixel still image? No. The 1MP size of the image reflects what is stored in the camera – not what is captured. The captured image is based upon an enhancement of VGA video. In many cases, the extracted print will be as good as a 1MP still image would be – but not always. Remember – however, with video you have, essentially, 30 potential still images per second to choose from! If you are unhappy with the frame you extracted, try the previous or next one.

- How does video print compare to still images captured by digital video cameras? That depends on the digital video camera.
  - First, realize that HP Video print is not the same as a video camera that can capture a still image! To capture a still image from most video cameras, you must press the capture button at the moment you want the still image. It is typically not possible to extract a frame from somewhere in the video, on the video camera, after you have taken the video.
  - Second, video cameras in the price range of the HP Photosmart R817 and R818 typically will capture only 640x480 still images. Video print images on your HP camera will likely be better. Much more expensive video cameras can sometimes capture higher resolution still images and will probably capture a better still image than HP video print can create – but again – this is not an image extracted from the video – but an image you must capture by pressing the button at the right moment.

## Summary

HP video print is a new capability not provided in other digital still cameras. It gives you a new way to use your camera to capture important moments in your life. Therefore, when comparing HP video print to other solutions – be sure to consider if the other solution could have captured the image while capturing the video – or even at all. Yes, you may be able to get a better still image using the normal still image mode of your HP Photosmart camera – but would you have pushed the button at the right moment and, of course, you would not have a video of the scene. While the photo you capture may be of lower quality, the moment and memory you capture may be priceless.

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