

# Video capture instructions for HD 3DHoloprint

## PART A: 60x80cm or 30x40cm (portrait orientation)

Update 02 February 2011

Preliminary notes:

- 1) HD 3DHoloprints have 4:3 aspect ratio when the HD video cam has a 16/9 image.
- 2) For technical reasons you will need to record horizontally a wider image than the one that will be printed: you must add +10% on right and +10% on left sides.
- 3) The center of the rotation of the camera will become the vertical center axis of the final 3DHoloprint. Anything of the scene in front of this center will appear "floating" in front of the 3DHoloprint
- 4) The distance of the camera to the center of the rotation should be measured precisely and given to us with the video as the main parameter.

Currently available full HD video formats:

MXP: 1920x1080, 24Mbit/s

FXP: 1920x1080, 17Mbit/s

The format 1920x1080 (16:9) is the best available for producing a HD 3DHoloprint.

It will be cropped to 900x1200 (which is 900x1200x (3:4) +10% on right and +10% on left sides) to match 3DHoloprint format. FXP is the recommended format, to limit the video file size.

### Video format for a 3DHoloprint

Video Capture

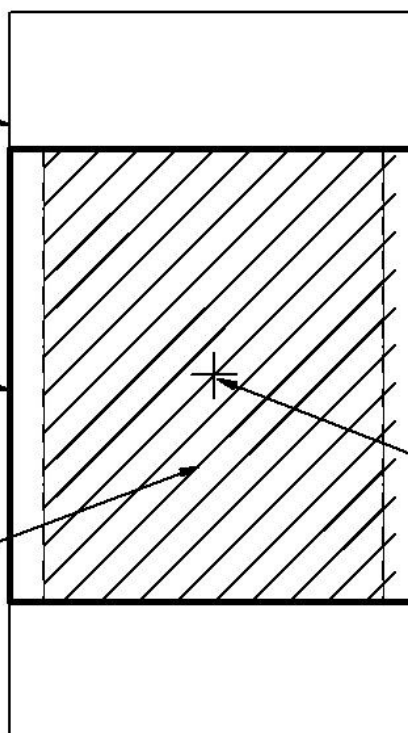
72x128 cm  
(1080x1920 pixels)

Cardboard  
72x80 cm  
(1080x1200 pixels)

Final Hologram

60x80 cm  
(900x1200 pixels)

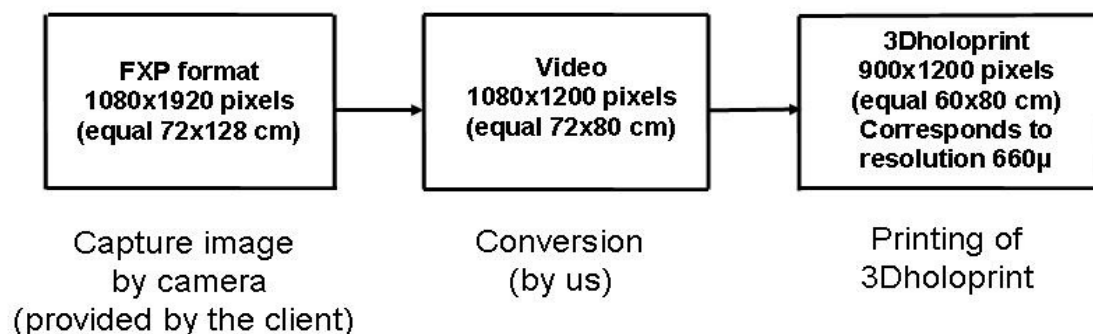
Centre of the  
cardboard and  
the video screen



## Scene Capture preparation (for camera on rotation) :

- We recommend to install a video screen, connected to your Video cam, to adjust the zoom and focus of the recorded object, and control image quality after recording (the screen of the cam usually does not display exactly the recorded image, and is too small to control the quality of your recording)
- prepare a piece of white cardboard of 72 cm x 80 cm (or a 36x40cm, for a 30x40cm 3Dholoprint) , with a + cross marked in the center and a printed text so you can focus on it. It will be used to validate orientation, cropping, and distance / zoom
- Install the Canon HF200 at a distance of 120cm
- create a reference axis at the center of rotation of the camera using a small weight on a string (so you will be able to center the object and camera image )
- put 2 vertical bars to visualize 120° (one at -60°, one at+60°), just in front of the camera lense, in the rotation path (inside the camera rotation). they will provide automatic markers for start / stop of 120 degrees
- orient camera vertically (this will maximize the number of pixels used for portraiture)
- position the cardboard directly under the axis of rotation (indicated by the «plumb bob»)
- position the camera at its 0 degree rotation (center position of the 120°) and adjust zoom so that the cardboard target exactly fills the video cam screen horizontally. . if the edges of the cardboard are not exactly parallel to the edges of the viewfinder then orientation of the camera is not parallel to the cardboard target - you will need to adjust to correct
- adjust the focus in manual mode on the plane of the cardboard (put a text chart on the cardboard to help to focus)
- the cardboard target represents the hologram film plane - when replacing the cardboard target with the subject to be captured – place their eyes (if the subject is an human) in that plane – anything in front of the plane will project from the hologram – in general, no more than 25-30% of the subject should project in front of the plane.

## Video values for a 60x80cm record (portrait)



## PART B: 80x60cm or 40x30cm (landscape)

Update 13 October 2010

Preliminary notes:

- 5) HD 3DHoloprints have 4:3 aspect ratio when the HD video cam has a 16/9 image.
- 2) For technical reasons you will need to record horizontally a wider image than the one that will be printed: you must add +10% on right and +10% on left sides.
- 3) The center of the rotation of the camera will become the vertical center axis of the final 3DHoloprint. Anything of the scene in front of this center will appear "floating" in front of the 3DHoloprint
- 4) The distance of the camera to the center of the rotation should be measured precisely and given to us with the video as the main parameter.

Currently available full HD video formats:

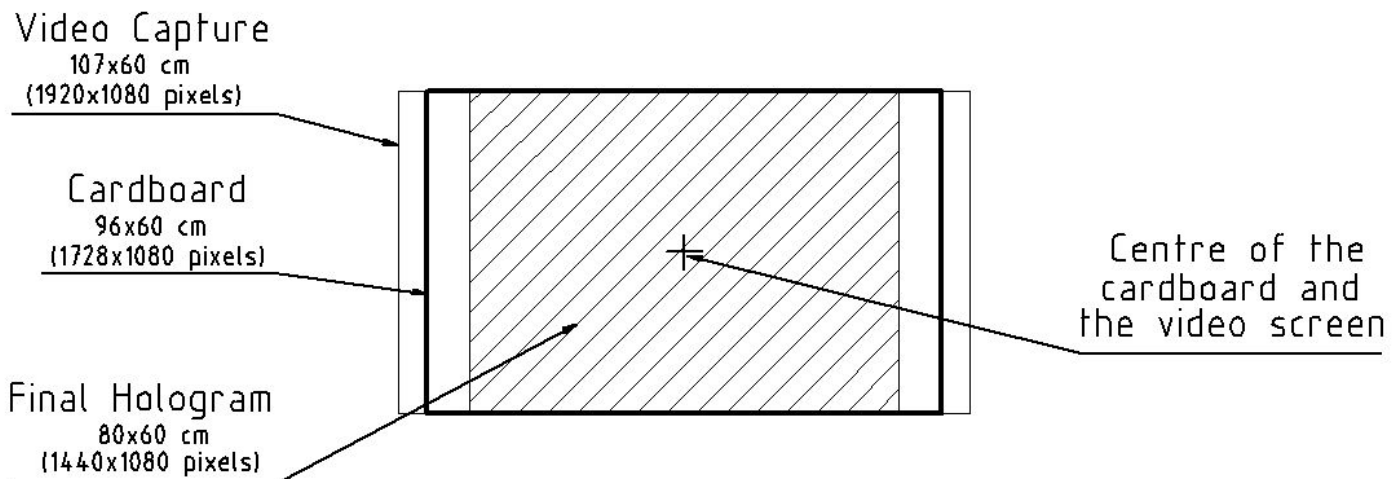
MXP: 1920x1080, 24Mbit/s

FXP: 1920x1080, 17Mbit/s

The format 1920x1080 (16:9) is the best available for producing a HD 3DHoloprint.

It will be cropped to 1080 x1728 (which is 1080x1440 (3:4) +10% on right and left sides) to match 3DHoloprint format. FXP is the recommended format to limit the video file size.

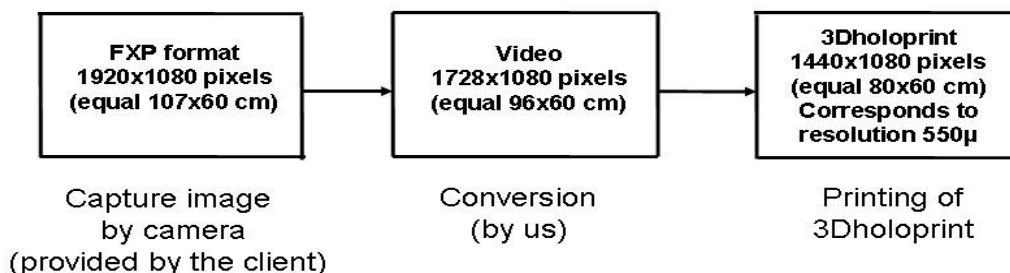
### Video format for a 3DHoloprint



## Scene Capture preparation (for camera on rotation) :

- We recommend to install a video screen, connected to your Video cam, to adjust the zoom and focus of the recorded object, and control image quality after recording (the screen of the cam usually does not display exactly the recorded image, and is too small to control the quality of your recording)
- prepare a piece of white cardboard of 72 cm x 80 cm (or a 36x40cm, for a 30x40cm 3Dholoprint) , with a + cross marked in the center and a printed text so you can focus on it. It will be used to validate orientation, cropping, and distance / zoom
- Install the Canon HF200 at a distance of 120cm
- create a reference axis at the center of rotation of the camera using a small weight on a string (so you will be able to center the object and camera image )
- put 2 vertical bars to visualize 120° (one at -60°, one at+60°), just in front of the camera lense, in the rotation path (inside the camera rotation). they will provide automatic markers for start / stop of 120 degrees
- orient camera vertically (this will maximize the number of pixels used for portraiture)
- position the cardboard directly under the axis of rotation (indicated by the «plumb bob»)
- position the camera at its 0 degree rotation (center position of the 120°) and adjust zoom so that the cardboard target exactly fills the video cam screen horizontally. . if the edges of the cardboard are not exactly parallel to the edges of the viewfinder then orientation of the camera is not parallel to the cardboard target - you will need to adjust to correct
- adjust the focus in manual mode on the plane of the cardboard (put a text chart on the cardboard to help to focus)
- the cardboard target represents the hologram film plane - when replacing the cardboard target with the subject to be captured – place their eyes (if the subject is an human) in that plane – anything in front of the plane will project from the hologram – in general, no more than 25-30% of the subject should project in front of the plane.

## Video values for a 80x60cm record (landscape)



## Video cam preparation

### Videocam parameters for Canon HF200:

- **select Frame Rate PF25 (progressive mode 25p). This is the most critical point.**
- select Quality FXP = 17Mbit/s (1920 x 1080 pixels )
- select Manual Focus
- select Onscreen markers Level “white” (so you visualize the center of your video).

### Videocam parameters for Canon HV20:

- select Frame Rate PF25 (progressive mode 25p; older model may have 24p)
- select Manual Focus
- select Onscreen markers Level “white” (so you visualize the center of your video).

### Videocam parameters for Generic HD:

- **select Frame Rate 30fps (USA) or 25fps (Europe) in progressive mode**
  - if AVHCD camera (real time compression) select a quality of 12Mbit/s or greater
- Note: higher quality than 12Mbit/s may exceed the transfer rate of the digital storage card
- select 1920 x 1080 pixels, or HD if available.
  - select Manual Focus
  - select Onscreen markers Level “white” (so you visualize the center of your video).

### **Scene setup:**

- Lighting should provide even illumination on both sides of the subject for the entire 120 degrees of capture. There should be no glare or shadows, excepting any artistic effects. Natural light can be used in some studios. Our very best result was by working under a glass verandah.
- center the subject below the axis of rotation; position front to back as mentioned above
- perform a test capture and verify that the subject stays « centered » and does not « touch » the edge of the viewfinder of the camera for the entire 120 degrees of rotation; sometimes (like on HF200) the camera view screen can be rotated so the subject sees themselves – in this case you can preview from the subjects position
- For portraiture, to help the subject to keep the right position, a system on the back neck can be installed (like XIX century photographers did before)
- Validate in the test capture that the video also meets these criteria. Check that the color is natural, adjusting white balance as preliminary step may be required. Use for that a white cardboard and make the white balance using the final lightning, on it. This is an example with Canon HF200 of what gave us the very best results (verandah shooting, no direct sun lightning, only natural diffused):  
**Programmed AE: P**
  - mode shade
  - custom effect :color depth max/sharpness max/ contrast max/medium.
  - digital effect OFF
  - High Quality : FXP
  - simultaneous recording OFF
- it may help to give the subject verbal queues when reaching -60 degree and +60 degree marks – so they can prepare themselves or time animation effects (such as opening eyes or a kiss)

## RECORDING

- At least 192 images (frames) need to be captured during the 120 degrees of rotation. Depending on the FPS used – you can calculate the ideal duration of the 120 degrees of rotation (so the speed of your rotating system). For example, at 25 FPS the 120 degrees of rotation should last 8 seconds. For 30 fps it should last approximately 6 seconds. That result times 3 (for 360 degrees total) will provide the duration of one entire rotation.
- Sixty seconds divided by the duration of one complete rotation will yield the RPM required for the rotating device. Contact us for equipment recommendations if that is not clear.
- **The rotation should be counter-clockwise when viewed from above.**
- In practice, any apparatus will take a few rotations to cease vibrating, so expect that the third or subsequent rotation will be used for capture. The remote control for the camera is in preference used to minimize capture time. The subject can use this time to relax and prepare for any posing.

### After Recording:

Verify the quality of the video captured:

- For the 120 degrees of capture, there should be at least 192 frames.
- The exposure and color should be of good quality on the video recording.
- The video should not show motion or vibration effects, but rather smooth camera movement.
- Subject focus should be perfect all time

## POSSIBLE systems for shooting:

### 1: System of rotating Camera

Most practical for human subjects, including standing poses. The camera height should be adjustable or an adjustable platform will have to be used. The camera should be mounted at the minimum zoom position, where focus can be achieved. **The distance of the camera to the center of the cardboard should be measured precisely and given to us with the video as a parameter.** For the Canon HF200 this distance is 120cm.

### 2: System of rotating Object

For smaller objects or those requiring macro zoom, a rotating platform is the best choice. Typically too heavy objects can not be used, as the motor will turn slower or possibly be damaged. All other criteria specified for rotating Camera can be leveraged, with a different zoom setting and a stable tripod for the camera. As before the center of the object should be adjust at the center of the Camera lens (and of the rotating system) . A cardboard target must be used as before to adjust the zoom of the camera, so the image will be adjusted for the future 3DHoloprint. An adjustable speed of the rotating system is necessary, to match the 192 images/120° of rotation. **The distance of the camera to the center of the cardboard should be measured precisely and given to us with the video as a parameter**