

## Steps to Capture Panorama Photographs

Shooting panoramas takes a little practice. While learning, it's helpful to leave more room at the top and bottom of the frame than normal. This will be very handy should more cropping happen in post processing than expected.

1. Place the camera in the manual shooting mode.
2. Identify the composition then place a tripod under the camera.
3. Level the tripod; the post must be vertical; not tilted. Many tripods have a built in bubble level to aid with this.
4. Attach camera to tripod and ensure the horizon is level by using the built-in camera level or a two axis, hot shoe bubble level. To accommodate the composition, the camera may tip forward or back a bit, especially if the foreground elements are not too close. Close foreground elements in combination with a wide angle lens and forward or back tip create a series of images that may have problems being properly stitched in post processing.
5. Attach any desired filters. Be careful using polarizers while taking panoramas. Very often they create unnatural darkening in the image. It is usually best to remove a polarizing filter while taking panoramas.

6. Adjust the aperture and focus distance for the desired depth-of-field for the entire scene. Do not refocus between shots. After focusing it may be best to move the switch on the lens to the "M" position to avoid refocusing between shots.

7. Pan the scene while watching the light meter in the viewfinder. When the brightest portion of the scene is identified use that portion to meter for the entire panorama; adjust the shutter speed so that the highlights record as desired. Do not change exposure settings between shots.

8. Shoot the panorama from left to right. Start the panorama one frame wider than needed and finish one frame wider than needed. Overlap each frame 25% - 50%; better to overlap too much than not enough. Wider lenses and when foreground elements are close to the camera require more overlap. Long lenses and when the subject is at distance requires less overlap.

Note: When photographing panoramas and the camera is saving jpg images, then one should also select a white balance other than auto; perhaps daylight. If capturing raw files then the camera setting for white balance is not overly important. With raw files one can choose a suitable white balance later, non destructively in post processing.

When stitching the images together in Photoshop® try using the cylindrical mode. It usually aligns most images accurately. Panoramas with a lot of lines (e.g. city scene with brick street) will be the most difficult for the program to stitch. Be cautious of allowing Lightroom to stitch panoramas as one may not be happy with the resulting crop and it is harder to verify the image was properly stitched.

Extra space is left between steps above to allow room for notes.