

Recommended Digital SLR Camera settings for use with iWitness™ & iWitnessPRO™

1. When using a zoom lens, always shoot with the lens set to its widest field of view (F.O.V.). NEVER zoom the lens during imaging, the focus must remain constant!



2. If the camera has an "AUTO-ROTATE" feature, make sure it is set to OFF.



3. Always operate the lens in Manual Focus (MF) mode and select a representative focus for the project (usually the widest F.O.V), but do not adjust the focus during the photo session.

4. Some more optimal settings:

- Speed = ISO 400 (or as close as possible)
- White Balance = "Auto"
- Image format & quality = JPEG at either the highest or "normal" resolution setting for the camera. The setting should be the same as when the camera was calibrated (i.e., *highest* or *normal* quality).

SPECIAL NOTE: If your lens is "focus-by-wire", you may need to perform the following prior to imaging:

- Set the lens to widest F.O.V.
- Assure the lens is initially set to "Auto Focus"
- Point the lens at an object at a distance of > 30' (10m) from the camera

- Depress the shutter half-way, to “lock” the focus (this will effectively be at “infinity”)
- Change the lens toggle setting to MF to begin and complete imaging as normal

DAYTIME SETTINGS (i.e. for in sunlight)

Turn the dial to PROGRAM MODE (P on the camera dial – see Figure 1), and use the previously explained settings in steps 1-3. The camera will automatically adjust the aperture (f-stop) and shutter speed for optimal photography in the current lighting conditions.



Figure 1

NIGHTTIME SETTINGS (i.e. for in darkness)

Shoot in MANUAL MODE (M on the camera dial – see Figure 2), now explained:

i) Turn the dial to MANUAL MODE as shown in Figure 2:



Figure 2

ii) Always use a tripod if long exposures are necessary.

iii) Avoid use of the camera flash! Use a long exposure, and then “paint by light” with a flashlight or other lighting source if more light is required. If the scene is small (i.e., less than 30’, then hand held with flash is fine. Larger scenes should utilize long image exposure, with the camera tripod mounted – and do not use the camera flash!

iv) Change the aperture (*f*-stop) to *f*4.5. See your camera manual for the procedure required to change the *f*-stop. Often, there is a button to depress on the camera body, while at the same time turning a dial on the back or front of the camera. In Figure 3, you can see the *F*-stop is set to *f*4.5. If your lens does not support *f*4.5, then select a value as close as possible to *f*4.5.



Figure 3

v) Depress the shutter button halfway down on your camera to display the Exposure Value (EV) meter, as in Figure 3. The EV should be set to zero (0), typically the center tick mark. Some cameras display the EV meter in the View Finder and not on the LCD Display.

vi) For very dark scenes, an exposure of several seconds may be required. You can use the Timer, or a hand held Remote, or optionally, carefully depressing the shutter button to take the exposure.

iWitnessPRO Camera Settings (Indoor and Outdoor Imaging)

- iWitnessPRO images must be taken with either the onboard camera flash or an external flash.
- Use of a digital SLR camera with at least 6 megapixel resolution, is highly recommended.

It is important that both coded targets and feature point targets are slightly *underexposed* in the imagery. The best way to accomplish this is to shoot in APERTURE PRIORITY (for Indoors) and MANUAL MODE (for Outdoors). Refer to your camera manual for information on changing the imaging mode.

Typical settings for indoor photography:

Aperture Priority: $f8$, ISO 400, AUTO white balance, use the camera flash.

Typical settings for outdoor photography:

Manual Mode: $f18$, shutter speed $1/125^{\text{th}}$ second, AUTO white balance, use the camera flash.

Note: perform a test image at ISO 400. If, at ISO 400, the image appears to be too bright, adjust the ISO to a smaller number, i.e. ISO 100. The imagery should then be slightly darker than normal, thus providing good contrast for the iWitnessPRO coded targets. NOTE: These settings are appropriate for most daytime imaging. *Test your camera and experiment for the best exposure. You are trying to underexpose the images slightly, so that the coded targets are well defined against the surrounding black surface of the target placard.*