

USING THE EXPODISC WITH A DIGITAL CAMERA

All digital camera imagers are optimized for recording the effects of “white light” illumination on a subject. White light can be defined as light with a Kelvin color temperature of between 5000-5500 degrees, containing equal amounts of all visible colors. This light occurs naturally at noon on a cloudless day or is created artificially by on or off-camera electronic flash lighting. To render natural/neutral colors of the subject, with no noticeable color cast in a photograph, the light must be precisely the same color temperature as the neutral rendering point of the digital camera being used.

Unfortunately, the world hardly ever presents us with this ideal light for our specific camera model. To make matters worse, all cameras have different neutral rendering points. Even when using flash, there is enough non-white ambient light in the image to cause a color shift, or perhaps the automated features of a camera are fooled by strong color tones in a subject. In any case, varying levels of different color casts always occur in digital photography and require compensation as part of the process to create a photograph with good color fidelity.

Fortunately, there is a solution.

WELCOME AND THANK YOU FOR CHOOSING EXPODISC – THE ULTIMATE WHITE BALANCE FILTER

With the ExpoDisc you can:

- Set custom white balance (WB) ‘pre-process’ in camera without using a gray or white card.
- Avoid common gray/white card errors caused by surface glare, reflected light, viewing angle, shadows, or lens flare.
- Accurately, quickly and easily document existing light conditions for future reference.
- Sandwich an ExpoDisc with a color filter to create a WB with preferred filtration and eliminate virtually all WB post-processing.
- Set accurate exposure in one step using TTL (through the lens) metering.
- Prevent overexposed highlights.
- Check or calibrate your camera’s internal light meter for accuracy by reading the resultant RGB numbers in an image editing software like Adobe Photoshop or Elements.

We recommend using The ExpoDisc to do a Custom White/Gray balance ‘pre-process’ in camera right before taking any pictures in a given lighting/scene condition. This is the most efficient and accurate way to use this tool. If you are unable to set a custom WB in camera due to time, or other constraints, then manually exposing an incident gray frame with the ExpoDisc in place will enable you to set accurate WB ‘post process’ in Adobe Photoshop, or Adobe Elements.

The ExpoDisc works by combining diffusion and compensating filters, which the camera reads as neutral gray. Simply read and set white balance with the disc in place before shooting, using your digital camera’s menu, and you’ll reduce or eliminate the need for post-capture adjustments. The result will be accurate color in almost all lighting conditions. Gray frames shot with the ExpoDisc are useful ‘post-process’ standards with which to identify accurate WB for all images shot in similar lighting conditions. It is even possible to WB archived photos given the opportunity to create a new gray frame under similar lighting conditions.

We manufacture each ExpoDisc to fall within 1/12th f/stop accuracy for exposure. That’s 400% more stringent than the digital camera standard of 1/3rd f/stop, and even more accurate than handheld incident light meters, which must be within 1/10th f/stop. As such, each ExpoDisc is designed to pass 18% of the light it receives, thereby generating an ideal gray frame (middle of zone 5) that can be used with TTL metering to set perfect exposure.

To install the ExpoDisc:

The White Balance Solution For Digital Cameras and Digital Video.

- Push and twist the ExpoDisc into the threaded recesses in front of your camera lens—three high points hold it in place with a friction fit. The milky white side faces toward the camera, and the prismatic element faces away from it.

To remove the ExpoDisc, simply reverse this action.

USING THE PREFERRED INCIDENT METHOD FOR TTL EXPOSURE METERING AND WB IN NATURAL AMBIENT, OR ARTIFICIAL LIGHT (no flash).

The incident method can be used to set exposure and capture WB at the same time. Use the incident method to capture WB when there is a single dominant light source:

- At night indoors or in a gym (aim at one of the lights closest to subject)
- In daylight indoors (aim at a window)
- In daylight outdoors (aim at the sun)

IMPORTANT: Do not point your camera at the sun without the ExpoDisc correctly installed. Direct sunlight will damage or destroy your camera's image sensor.

To simultaneously capture WB and set exposure with the preferred Incident Method:

1. Mount the ExpoDisc on the front of the lens assembly.
2. Use manual settings on your camera. (Auto Focus prevents ExpoDisc exposures.)
3. Stand next to your subject (or in similar lighting), and aim the ExpoDisc away from the subject toward the dominant light source. In a studio (aim the ExpoDisc at the main light source such as an umbrella, or soft box when using reflector fill, or between both lights when using main and fill lights).
4. Set camera to manual mode and adjust for a proper exposure using TTL metering.

FOR WB ONLY: It is not required to set exposure with ExpoDisc to capture WB. Simply set exposure as you normally would (Incident Flash Meter preferred) and proceed to step 5.

5. If you did not set exposure manually with ExpoDisc, then set camera to aperture priority or shutter priority for a proper exposure.
6. We firmly believe in back-up systems. If you manually expose an incident gray frame at this stage to document each lighting condition, then you will always be able to reference that gray frame to accurately set WB 'post process' using Adobe Photoshop or Adobe Elements. Or skip the back-up and proceed to step 7.
7. Use either JPEG or RAW, as follows for each new lighting condition:

FOR JPEG: Do one of the following:

- Push your camera's white balance button.
- Manually expose a gray frame image and select it to set custom WB.

FOR RAW: Use same workflow as FOR JPEG above and select the "as shot" option when post-processing for color balance in RAW conversion software. Applying a custom WB in camera saves the step of batch applying the WB gray frame later in Photoshop. Or, manually expose an ExpoDisc gray frame image to document a particular lighting condition. Apply it later in PhotoShop to get instant custom WB on all images sharing the same lighting conditions.

8. Save/OK the WB just recorded.
9. If desired, restore Auto Focus before taking photos.
10. Remove the ExpoDisc from your lens, and start shooting.

*Repeat this procedure whenever there is a change in the lighting condition

USING THE (SECONDARY) REFLECTIVE METHOD

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Use the reflective method in mixed light conditions or when you cannot get an incident light reading.

Aim the camera towards the subject in a general direction that allows a broad mix of light. Make an exposure through the ExpoDisc to record a gray-frame with the averaged colorcast of all ambient light, mixed into a uniform 'ambient soup.'

To set WB with the reflective method:

1. Mount the ExpoDisc on your lens assembly.
2. Set your camera to Manual Focus, Manual Mode.
3. Aim towards your subject.
4. If required by your camera, increase exposure. (ExpoDisc gray frames are very dark because they pass only 18% of the light -- your camera may require 4x normal exposure to expose a gray frame.)
5. Take a picture through the ExpoDisc to record a gray frame.
6. Select/save this gray frame image to set WB.
7. Remove the ExpoDisc
8. Adjust for "Normal" exposure of your subject.
9. If desired, restore Auto Focus before taking photos.

*Repeat this procedure whenever there is a change in the lighting condition.

CREATING A WARM WB AT CAPTURE

The ExpoDisc gray frame allows the digital camera to create a neutral WB, which may appear more cool than many photographers prefer. If you are shooting with white studio lights or flash, or under overcast or dominant blue-sky conditions, this method lets you create a warm WB at capture.

To create a warm WB at capture:

1. Mount the ExpoDisc on the front of your lens.
2. Attach a cool 82-series filter to the front of the ExpoDisc.
3. Shoot a gray frame exposure through this combination (your camera will overcompensate for the too blue image resulting in a warmed WB).
4. Select that gray frame for a WB effectively warmed by 81 series filtration.

With most camera models, this is the only way you can accomplish color correction inside the camera. Adding filtration lets you download color already balanced to your preferences on the first proof.

USING FLASH

Flash (white light) becomes the dominant light source whenever it is used, so an ExpoDisc gray frame may serve as a versatile WB reference under uniform lighting conditions. This method works on many subjects, inside or out, day or night.

To use the 'mirror method':

1. Mount the ExpoDisc onto your lens assembly.
2. Make an exposure through the ExpoDisc while bouncing the flash off a mirror, or any neutral, or bright white surface.
3. Select that exposure to set Custom WB.

FLASH – PROBLEMS WITH MISMATCHED LIGHT SOURCES

In scenes with strong mixed lighting, these are your options:

- WB by aiming at a modified light source such as an umbrella, or soft box.
- Balance the lighting to the dominant ambient light color using gels on flash/fill lights (such as an 85 gel over the flash to match incandescent light or a 30 green to match fluorescent).
- Try 50% white flash from further back to force a mix of light.

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- Select the flash-lit subject (use flash WB up close on the subject only) and let the background go.

An ExpoDisc gray frame accurately documents the averaged colorcast of mixed ambient light, and allows the camera's color filtration software to effectively neutralize any resulting colorcast. But because The ExpoDisc averages all available light that strikes it, a wide separation in the color temperature of strong multiple light sources falling on a scene may produce an undesirable WB result. Good WB is therefore only possible under relatively uniform lighting conditions. For example, no single WB method can correct both tungsten and fluorescent light influences in different parts of the same image. Tungsten on one side, fluorescent on the other, and flash up front will not result in ANY single-step WB correction using any method. The ExpoDisc is a great tool, but it cannot fix the impossible!

Similarly, wide temperature differences of light within the same subject area may result in an undesirable colorcast of either the foreground or background. Under these difficult lighting conditions, it may be necessary to balance the lighting by using gels on flash/fill lights. Failure to balance the lighting under these circumstances may cause colorcast, again because the camera's corrective filtration applied to one area of the image may be undesirable for another.

USING ADOBE PHOTOSHOP OR ADOBE ELEMENTS WITH EXPODISC

Since it is not always possible with certain cameras, or when time doesn't allow to WB 'pre-process' in camera, you can easily WB 'post process' in Photoshop. Simply expose one frame with The ExpoDisc installed in that particular lighting condition to use later as your reference in Photoshop.

To set WB 'post process' using an ExpoDisc gray frame:

1. Refer to procedure for Incident Method above.
2. Manually expose a gray frame image for each different lighting condition.
3. In Photoshop, open side by side the ExpoDisc gray frame and the image you wish to WB.
4. Click on the Eyedropper Tool in the tool bar to the left of the screen.
5. Set the 'sample size' in the upper left corner to '5 x 5 Average'. This will ensure an accurate representation of the light by generating a value derived from 25 pixels, and eliminating the possibility of referencing a single noisy pixel.
6. Make the photograph you want to color correct the current, or active window.
7. Hit 'Control L', or 'Command L' on your keyboard to access the Levels Histogram Display along with 3 Eyedropper buttons.
8. Use the medium gray Eyedropper button and click the middle of the ExpoDisc gray frame image.
9. Close and Save the picture.

You're Done! You just applied the medium gray value of the ExpoDisc gray frame image to your picture, and in so doing set an accurate WB.

You may acquire slightly different color in your picture by clicking on different areas of the ExpoDisc gray frame. The ExpoDisc is uniform in its neutral transmittance of light across the rear milky white surface. The changing color value is from slight imperfections on the surface of the silicon imaging chips resulting in rogue pixel noise.

We recommend using the '5 by 5 Average' Eyedropper Tool setting instead of a single pixel reference point to help protect against spot pixel noise. And since most digital cameras are designed to read and set WB from the center of the chip, clicking on the center with the gray Eyedropper should provide you with the most accurate WB value.

WHERE TO GET MORE INFORMATION

Thank you for choosing ExpoDisc, The Ultimate White Balance Filter. We hope you enjoy better, more consistent results for many years to come. Please visit us at www.expodisc.com for more information on The ExpoDisc, and to read about our other exciting products.

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The ExpoDisc website (<http://www.expodisc.com>) provides a wealth of information beyond these instructions. Please refer to this website for technical support. You'll find more advanced usage information, tips and tricks, troubleshooting, and instructions for film and digital video use.

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