



# *Be Prepared!*

How to prepare for  
**Daytime Long Exposure Photography**

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This eBook is for people starting out with daytime long exposure (DLE) photography or those who want to brush up on the basics. It outlines how to prepare for a successful shoot by getting the necessary equipment and changing camera settings that are important and different from regular daytime photography.

## Personal Preparation

DLE is based on completely manual exposure and requires a lot of changing settings as we go. Fiddling around, trying to find ISO, aperture, exposure time and white balance settings in the field is frustrating and wasting time that could be spent taking photos.

The photographer is strongly encouraged to practice the below settings and specifically to change them frequently until they are familiar with manual photography and don't have to think about how to change what. This can be done at home on the living room couch: take photos pointing the camera into bright lights (perhaps a window), then into a darker room. Do this often and change settings using different trade-offs between exposure time, aperture and ISO. Adjust white balance so the image looks like what you see with your eyes.

The goal is to learn using your camera blindly, without having to go through menus or figuring out where which button or dial is to change the settings. This is particularly true for workshops where any time searching for settings will take away time the instructor can spend with you on composition, impact and content or mastering DLE.

## Equipment Needs

### Camera

- A camera with the ability for manual exposure (aperture, ISO, exposure time, white balance). Just about any DSLR, mirrorless, SLR camera will work for this.
- Remove the camera strap or tie it down to prevent movement by wind (which can blur long exposure images).
- Don't forget to charge your battery before the photo shoot.



### Tripod

- Use a [sturdy tripod](#); with individual leg adjustments. Ball-heads are more flexible than 3-way heads, and **much** easier to use.
- Use Velcro strips to hold the timer / intervalometer and camera strap etc. to prevent them from moving in the wind.

### Lenses

- Remove any filters other than ND, they create reflections and flares.
- Bring your lens hoods! They avoid flares from the sun.



- The most common lens range is below 100 mm focal length for full frame (70 mm cropped sensor). Wide angles are often used, but there may be objects of compositions a little further away, needing a longer zoom. However, zooming in amplifies lens motion in wind. A 24-70mm or 24-120 mm lens (full frame, 18-50 or 18-80mm cropped sensor) is most useful to get started. Wide apertures (f/2.8 or less) are not needed, we will mostly shoot with f/11 to 16.

## Neutral Density Filters

- For this kind of photography, you will need neutral density filters, which cut out most of the light and force us to take long exposures.
- A set of 3, 6 and 10 stop filters is recommended, as it covers all scenarios you might encounter such as twilight (3-6 stop filter), cloudy days (10 stops), partly cloudy days (13 stops = 10+3) or bright sunlight (16 stops (10+6)). A recommended set is made by ICE: <https://amzn.to/3Aog3bW>. You can find more suggestions on [Jürgen's Amazon store](#).
- Make sure to buy the filters for your largest lens (typically 82, 77 or 72 mm) and perhaps a [step-up ring](#) to adapt them to smaller lenses. Note that some wide angle lenses cannot easily accommodate ND filters, as they don't have filter threads.

## Intervalometer or Timer

- If your camera provides long exposures up to at least a few minutes, you are all set.
- Many DLE exposures are longer than 30 seconds, but most cameras (and internal intervalometers) are still limited to 30 s exposure time.
- Intervalometers are more powerful than remote on/off controls.
- The layout on the right is recommended. Don't use detachable cables (the device can fall off unseen) or overly complicated layouts. Use off-brands, they are 1/10<sup>th</sup> of the expense compared to camera brand devices. [Here is one for Nikon cameras](#), search the one for your brand/model.



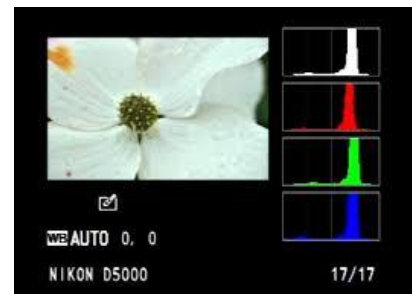
## Other stuff

- A practical bag to carry your equipment. [Backpacks](#) are most useful, as they are out of the way. Don't leave your bag on the ground and walk away. Put them under the tripod, if needed.
- Hiking boots (for uneven grounds), water, snacks, suitable clothing (it's cooler at night and you are standing around without moving),
- A [microfiber cloth](#) to clean your lens and the filters, 1-2 spare (charged!) batteries. Camera batteries drain much faster with long exposures.



## Camera Settings

- Set your camera to shoot RAW image format (or RAW+JPG). It has much more latitude in recovering highlights and shadows and gives you the best image quality
- Turn autofocus off, the camera can't focus through ND filters
- Learn to use LiveView and zooming in with +/- controls for focusing.
- Turn auto-ISO off, we want to control the ISO setting.
- Turn motion compensation (VR/VC/OS/IBIS...) off, it blurs images when on a tripod
- Turn off LENR = Long Exposure Noise Reduction (default: ON), it is a long delay after each photo, which you don't need when shooting at low ISO.
- For shutter speed / exposure time, use your camera times up to 30 seconds, then use the intervalometer and the camera in BULB mode. Stick to full minutes to keep adjustments easy.
- White balance: set it to "K" (Kelvin temperature): 5500 is daylight, which works for most settings, but you can use the cloudy and shade settings as needed. White balances changes rapidly during twilight: 6000-8000. The camera will not be able to determine white balance through the dense ND filters, hence, manual setting is needed.
- Set your LCD screen (or electronic view finder) brightness to +5 (brighter), so that you can see through the ND filter.
- Image review: turn on highlight clipping indicator and the RGB (not just the white) histogram, maybe also the shooting info.



## Consideration

- As always, take only photos, leave only footprints. Don't litter, disturb, graffiti spray, or party.
- You are not alone
  - Be considerate of residents, workers, fellow citizens and other photographers
  - Don't block walkways
- Your tripod is larger than you think, don't turn around and knock someone out!
- You may be watched, be friendly to people and law enforcement approaching you
  - But know your rights, too. If in doubt, walk away, it's just a photo.

## Exposure Settings

### ISO

- Do not use auto-ISO, it doesn't work through the ND filters. You want to control it and shoot at the lowest ISO possible, sometimes even at ISO 50/32.
- Set camera to lowest native ISO (most common: 100, some are 64 or 200)



- Exceptions: want longer exposure or even less noise: ISO 50 (32)
- If the image isn't bright enough with these settings, consider changing the ND filter from 10 stops to 6 or such.
- You may have to enable ISO 50 in the menu to see it as an option on your dial.

## Aperture

Choose the aperture for creative reasons or to enable long exposures

- To shoot with a shallow DOF, you will need to use a 16 stop filter, and in bright sunlight, that might not be enough.
- In most cases, DLE is shot at f/5.6 to 16, avoid using f/22, which gives you diffraction blur, and wide apertures, which may not be sharp in the corners.

## Exposure time / shutter speed

With ISO low and aperture chosen for creative reasons, exposure time is defined

- All you need to do is figure out exactly how long you need to expose
- Use the High ISO Preview (HIP) technique, described next, or [read up more details here](#).

## High ISO Preview (be HIP, save time)

Don't waste 10 minutes just to figure out that it wasn't enough or too much. Here is how to determine your exposure time (for a given aperture/ISO combination):

- Set ISO 6 stops higher, which gives you exposure time 6 stops shorter
  - Example: your native ISO is 100
  - 6 stops higher is: → 200 → 400 → 800 → 1600 → 3200 → **6400**
  - An exposure time of 1 second at ISO 6400 is as bright as 1 minute at ISO 100 (60" → 30" → 15" → 8" → 4" → 2" → 1").
- With camera at ISO 6400, figure out how many seconds you need for the right exposure. "Right exposure" means that you expose to the right, without clipping any desired highlights. Use your RGB histogram for this. This step is trial and error, but costs only seconds.
  - Example: you determined 3" exposure time at ISO 6400 for best exposure
  - Set your camera back to ISO 100 and the seconds become minutes (in this example: 3 minutes).

**1 second at ISO 6400 becomes 1 minute at ISO 100!**

- Consider that the sun may be coming in or out of the clouds, making the scenery darker or brighter during your long exposure.
- My camera's lowest ISO is 200!
  - 6 stops up: ISO 12800. 1" at 12800 is the same as 1 minute at ISO 200.
- My camera's lowest ISO is 50 (or: I want to shoot at ISO 50 for noise and longer time)
  - 6 stops up: ISO 3200. 1" at 3200 is the same as 1 minute at ISO 50.

- I changed my mind, instead of f/11, I want to shoot at f/16
  - 11 to 16 is -1 stop less light: select twice the exposure time (half for f/8)
- Practice this! Make it second nature.
- Also, it becomes much easier, if you stick to full stops for the settings:  
Exposure time: 1 - 2 - 4 - 8 - 15 - 30 - 60 (seconds or minutes)  
ISO: 50 - 100 - 200 - 400 - 800 - 1600 - 3200 - 6400  
Aperture: 2.8 - 4.0 - 5.6 - 8 - 11 - 16 - 22 (doubling = 2 stops!)

**Enjoy Daytime Long Exposure Photography, it is serene and beautiful, and adds another dimension to your landscape photography skill set!**

