



Night Photography Equipment & Basic Settings

Take only photos, leave only foot prints

Equipment

Camera

- Camera with ability for manual exposure (aperture, ISO, exposure time, white balance)
- Remove the strap or tie it down to prevent movement by wind (blurs long exposure images)

Tripod

- **Sturdy tripod**; individual leg adjustments, **ball-heads** are more flexible than 3-way heads.
- Velcro strips are useful to hold timer etc.

Lenses

- Best range is below 100 mm full frame (**70 mm crop sensor**). **Wide angles** are often used.
- You will rarely zoom in, as lens motion is amplified. Remove protective filters (reflections!)
- Important: bring your lens hoods! They avoid flares from street lights.

Intervalometer or Timer

- Many night exposures are >>30 s, most camera's (and internal intervalometer's) limit
- **Intervalometers** are more powerful than remote on/off control. Must-have for star trails

Flashlights (no head lights!)

- Bring a VERY DIM light (pen light or **key chain light**) for camera or lens adjustments
- Brighter or colored **flashlights** for light painting.
- Be considerate of others when using flashlights!

Other stuff

- Hiking boots; Water, snacks; suitable clothing (it's cooler at night and you are standing around, not moving much); **microfiber cloth**, spare batteries (and charge the one in the camera!).

Camera Settings

- It's more difficult to see in the dark: Learn to use your controls blindly (less flashlight use!)
 - You can practice this on your living room couch! Turn off the lights.
- Shoot RAW image format! Much more latitude in recovering highlights and shadows
- Learn to use LiveView and zooming in with +/- controls.
- Turn autofocus **off**, the camera can't focus well in the dark
- Turn auto-ISO off, we want to control the ISO setting.
- Turn VR/VC/OS off, it blurs images when on a tripod
- Turn off LENR = Long Exposure Noise Reduction (default: ON)
 - If you think you got a winner, turn it on for that one shot. Turn on for high ISO star shots
 - We shoot at low ISO, where noise is absent or controllable with software
- City lights require shutter speeds of 10-30 seconds, but with low ISO and small apertures, you can extend that to minutes. Set exposure time to BULB and use the intervalometer/remote.
- White balance: turn it to "K" (Kelvin temperature): 5500 is daylight, twilight is higher. At night, white balance temperature drops gradually to 3450. Make it look natural!
- Set your LCD screen brightness to -2 to -3 (darker), it is too bright at night (makes photo look well exposed when it is underexposed).
- Image review: turn on highlight clipping indicator and RGB (not just the white) histograms

Considerations

- You're not alone
 - Be considerate of residents, workers, fellow citizens and other photographers
 - Don't shine your lights around you, keep it spot on your equipment
 - Ask to make sure you don't ruin somebody's 8-minute light painting
- Your LCD shows up in other's shots: shade it with your body, turn it off, it drains the battery.

Take only photos, leave only foot prints

- Your tripod is larger than you think!
 - Don't turn around and knock someone out
- You may be watched
 - Be friendly to people approaching you
 - Be **very** friendly to law enforcement (but know your rights, too!)
 - If in doubt, walk away, it's just a photo.
- Never, ever leave your equipment out of sight! Keep camera bag under the tripod/on your back.

Exposure Settings

ISO

- No auto-ISO, it doesn't work at night
- Set camera to lowest native ISO (most common: 100, some are 64 or 200)
 - Exceptions: want longer exposure or even less noise: ISO 50
 - Not enough light, don't want to expose for 20 minutes: go up to ISO 200 or 400
 - Star dots and Milky Way: up to ISO 3200 or 6400; try to minimize ISO

Aperture

- Choose aperture for creative reasons
 - Shallow DOF: low f/-stop: 2.8-4
 - All in focus: high f/-stop: 8-16 (also gives you nice starbursts from lights)
 - Stars and startrails? Balance light and DOF: f/5.6-6.3, Milky Way: f/1.8-2.8

Exposure time / shutter speed

- With ISO set to lowest 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
- For star dots (no trails): 400/focal length (sec) for full frame; 300/fl for crop sensor cameras

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

- Don't waste 4 minutes just to figure out that it wasn't enough or too much.
- Choose your aperture and don't change it.
- 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 the same amount of light as 1 minute at ISO 100 (1" → 2" → 4" → 8" → 15" → 30" → 60")
 - With camera at ISO 6400, figure out how many seconds you need for the right exposure (histogram!). Let's say you determined 3" exposure time at ISO 6400.
 - Set your camera back to ISO 100 and the seconds become minutes (in this example: 3 minutes). "6400 ISO seconds become 100 ISO minutes"
- 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/8 (or f/16)
 - 11 to 8 is +1 stop of light (more light): select half the exposure time (double for f/16)

Practice this! Make it second nature, especially if you shoot outside the city in darker environments

Focusing

- Compose, use flashlight to illuminate scenery, then use LiveView, zoom in with +/- controls, focus on the object
- Focus on a small light (use your flashlight pointing at the camera), focus on stars for star trails.

For tips & tricks, follow Jürgen's blog: jmlibert.blogspot.com