

OK, This Is Probably Way More Than You Ever Wanted to Know About the Use of On-Camera and Off-Camera Electronic Flash Units and Their Accessories....

..... But I'm going to Do It Anyway

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Typical Disclaimers

- Today's flash is complicated and not all information is disclosed by the manufacturers. Don't be too surprised if you ask a question and I don't know the answer, or I may even be wrong, or mis-speak, about one or two things
- Digital flash and film flash behave differently at times. This presentation is for the most part digital based.
- This presentation is not a workshop but is intended to familiarize you with what you and your flash can do.
- Nikon and Canon flash behave similarly although terminology may differ.
- The best way to learn is to experiment and try things because flash is different on different combinations of camera, flash, and generations of lens
- Please hold all questions.

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Flash History

- Until the 1860's the Sun was the only thing that provided enough light to take a photograph.
 - Photographic materials were not very light sensitive
 - True Nonsense: Oscar Gustave Rejlander was credited for using his cat as a flash meter.
- Around 1860 Magnesium was starting to be used to provide artificial light, first as a wire, and later as powder.
- Flash bulbs with magnesium filaments arose around 1930
 - Flash packs
 - Flash cubes

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Flash History – cont'd

- Electronic flash was starting to be used by the 50's and 60's
- First Electronic Flash had constant output and exposure had to be manually computed using dials on the flash
 - Flash mounts in "Hot Shoe"
 - Guide Number (power of the flash), Film ISO, and distance to subject (lens markings), determine f/stop.
- Auto Thyristor Flash arrives in the 70's (Vivitar, Soligor)
 - Flash reads reflectance of light from the subject and shuts off when enough light is bounced back to the flash.
 - Flash charge can now be saved so as to shorten the next recycle time.
- TTL Flash arrives in the 80's
 - Camera reads flash output Through-The-Lens and shuts off flash
- By the 90's Flash and Camera communicate extensively

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Camera/Flash Communication

- Camera and Flash communicate
 - **Electronically** if a Flash is mounted in the shoe -
 - **Electronically** with remote "fully wired" flash (same as being in shoe)
 - **By pre-flash** between "fully wired" flash units and compatible remote flash units
 - Example: Rear Sync 1/250" and 1"
 - Communication is limited to a "fire" flash signal if:
 - Connection is by PC Sync cord
 - Connection is by remote radio transmitter and receiver
 - Connection is by optical transmitters and receivers
- Camera and flash communicate the following
 - ISO and f/stop from c->f, so flash can display flash range
 - Lens type from c->f, so flash can set the flash zoom head
 - Flash Compensation set in flash from f->c, or if set in camera from c->f
 - Flash recycle ready status f->c
 - Turn flash on/off c->f
- Compatible Digital Flash units communicate with pre-flash
 - Who is master and who is slave
 - Power level of each
 - Fire Flash, Stop Flash

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Accessories - Diffusers

- Diffusers address harshness and quality of the light
 - Bounce Flash + white card
 - Sto-fen Omni Bounce
 - Gary Fong Lightsphere
- Diffuser negatives
 - Reduce flash distance
 - Can pick up color tint from environment
 - Can use a custom White Balance if time permits
 - Put a white or grey card in the lighting and shoot only it saving the result as a custom setting

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No Flash



Flash w/White Balance on Daylight



Flash w/ WB set to Auto



Flash w/ WB set to Flash



Bounce Flash



Sto-Fen Omni Bounce



Sto-Fen Omni Bounce - Bounce



Gary Fong Light Sphere



Accessories – Diffusers Camera in Portrait Mode

- Flash creates shadows in portrait mode
- Diffusers address harshness of the light and help with shadows

Flash shadow



6 Feet from Wall



6 Feet From Wall with LightSphere



LightSphere Next to Wall



Accessories – Brackets & Stands

- Hand-held bracket
 - Moves flash away from lens to eliminate red-eye, the bounceback off of the retina
 - Allows flash to stay above camera in portrait mode
 - Need "fully wired" connection for complete hot-shoe functionality
 - **Lindahl Bracket (\$149)**
- Telephoto Bracket
 - For use with lenses that have rotating collars
 - **Wimberley Telephoto Bracket (\$196)**
 - Works with Arca Swiss Type clamp (notched along side of plate)
 - Needs "fully wired" connection for complete hot-shoe functionality
 - Should work with Regular and Gimbal type heads
- Light Stands
 - **Treat flash as a studio light**
- **Hands and Arms**

Accessories – Camera/Flash Connections

- **Camera Hot Shoe**
- Fully wired
 - **Nikon SC-17**
- PC Synch
 - Camera and flash need to support PC synch
 - Single male-to-male
 - **2 Male-to-household + female-female electrical cord**
- Remote Radio transmitter and receiver
 - Used like PC Synch cord
- Remote Optical Receiver
 - May be built in to flash

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Accessories – Increasing light

- Flash X-tender
 - For 300mm+ lenses
 - **Mounts on Flash**
 - Specific to Flash type with 6 different models
 - Fresnel rings concentrate the light
 - Increases Flash distance by increasing flash 2-3 stops
 - Care must be taken when leaving it on the flash in the sun. May act as a magnifying glass and melt the flash.

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Accessories - Power

- **Camera Battery Pack**
- **Nikon/Canon Battery Pack for flash**
 - Recycle time cut by 75%
 - Doubles battery life
 - This is what you want for a wedding or a party – light weight
 - Too many shots in a row can overheat and destroy a flash – see your manual
 - Other packs (Quantum) exist as well
- **Rechargeable Low Discharge Batteries (2100 vs 2700)**
 - Sanyo Eneloop NiMH batteries \$9 - \$10 for a set of 4
 - Hold 85% of charge up to 1 year
 - Thomas Distributing <http://www.thomasdistributingshop.com/>
 - **Buy a good recharger that supports 8 batteries at a time**
 - Supports slow recharge to extend the life of the batteries
 - Recondition batteries that no longer hold full charge

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Flash Functions Set on Camera

- Normal (lightning bolt)
- Set-up of Minimum and Maximum Adjustable Flash Shutter Speeds (1/60 – 1/250)
- Red-eye reduction (CBS logo)
 - Red-eye caused by flash bouncing off of red retina. Cats have green eye
 - Pre-flash causes eye's iris to close down
- Slow synch
 - Overrides camera's minimum synch speed
- Rear-synch
 - Shutter Opens, Flash fires at end of exposure instead of beginning, Shutter Closes
 - Creates more natural blur, blur is trailing a moving subject
- High Speed Flash – to stop action on moving subject
 - Shoot above Camera's Sync Maximum (>250 or 320)
 - Bypasses Leaf Shutter limitation
 - Multiple flashes occur during exposure
- White Balance

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Flash Functions Set on Flash

- Nikon Modes
 - Matrix Balanced Fill Flash – TTL-BL – “Party Mode”
 - Camera tries to balance available light and flash
 - May underexpose flash by up to 1 stop but you'll never know
 - TTL Flash – TTL – For normal or fill flash or compatible off-camera
 - Flash operates for normal exposure
 - Photographer to compensate if less flash is needed
 - Nikon flash compensation can be in camera or on flash
 - Manual – M – For off camera flash or to eliminate pre-flash
 - Flash and camera do not communicate other than trigger signal
 - Photographer reduces power of flash 1/2, 1/4, 1/8, 1/16, 1/32, 1/64, 1/128
 - Automatic – A
 - Flash and camera do not communicate other than to trigger the flash
 - Flash determines proper exposure with its own meter as in the old days

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Flash Functions Set on Flash – cont'd

- Compensation of flash
- Power level if Manual
- Zooming the Flash Head
- Wide angle dispersion filter
- Color Correction filters
 - Kit for tungsten, fluorescent, lighting
- Off camera flash relationship
 - Remote Slave
 - Group and channel

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The Master and the Slave D300 + SB-800

- Set up Camera to be Master
 - Menu=>CustomSettings=>Bracketing/Flash=>Flash Ctrl for Built-in Flash (Menu E3)
 - Select Commander Mode
 - Set Built-in flash Mode and Compensation/Power Level for Camera Group A and Channel I
 - Set for TTL flash no compensation
 - Set Remote for Manual 1/64 power
- Set Remote Flash to Remote
 - Press and hold select button
 - Select Master/Slave function graphic
 - Select Remote
 - Hit on/off to go to remote mode
 - Insure Flash is in Group A Channel I (default)

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Using Flash

- You are managing two separate exposures. The exposure of ambient light and the exposure of flash.
- Flash duration of SB-800 is 1/1000 to 1/41000. It freezes action
 - Camera shutter speed is slower (1/60 to 1/250 or so). Ambient light can create ghosts and impact final exposure
- Film cameras have a separate flash exposure meter inside the camera that reads the light from the flash reflecting off of the film surface while your taking a photograph.
- Digital cameras use pre-flash to determine the flash reflecting off of the subject.
 - Creates a problem with animals, use manual mode to correct
- Confusion reigns and camera meter seems to have a mind of its own once flash is turned on.
 - Flash max/min limits (and subject distance?) are imposed on f-stop and shutter speed ranges.
 - Minimum flash output may be too much and camera behavior seems counterintuitive.

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Flash as the Main/Only Light

- Indoors or in a studio environment, on-camera or off-camera.
- Darken the background
 - Underexpose the photo 4+ stops (dark to black) or use black background.
 - Move Subject away from background and let light from the flash "fall off". Inverse Square Law (double the distance, quarter the light).
 - The farther the camera is away from the subject, the less the fall-off.
- A Great way to deal with wind. Flash is only exposure at minimum of 1/1000 per second.

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Underexposed Background, Flash Exposes Foreground



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Flash as Fill Light

- Can be used on or off camera
- Use to fill in shadows
 - Use TTL mode not Balanced TTL
 - You won't know what camera/flash is doing and you won't be able to predict the results.
 - Full flash often doesn't look natural.
 - Set flash compensation to -1 2/3 as a starting point to appear as if no flash is used at all
 - Use more flash to fill in deeper shadows
 - Use less flash for a catch light in the eyes

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Next to Window, No Flash



Next to Window, Full Flash



Next to Window, Flash -1/3



Next to Window, Flash -2/3



Next to Window, Flash -1



Minus 1 2/3 or Minus 2



Balancing Available Light and Flash

- Because the flash is being metered separately from the overall scene, you can expose for background and foreground separately
 - E.g. person in front of sunset.
 - Meter the sky near but away from sun to be 1 stop overexposed
 - Put person in front of camera (now a silhouette) and take photo using flash. Sky and person "can" be well exposed.

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Background Properly Exposed



Background Properly Exposed Full Flash



Background Properly Exposed Full Flash-I



Flash Unit as a Primary Studio Light

- Can use flash as a primary studio light
- www.strobist.com will provide a list of what is needed.
- Can only be fully functional flash, controlled by main flash, if set up as a remote with line of sight to camera or “fully wired”
- Usually set up in manual mode with flash power adjusted as needed
- Can use PC cords or transmitters and receivers
- Can use off brand flash (Vivitar) as long as it accepts a PC cord
- Ambient light or bounced flash becomes fill light
- Once you figure out your setup (distance, power level, f-stop, & ISO), only minor adjustments will be needed

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Flash for Macro

- Specialized flash
 - Ring flash with multiple, individually controllable flash tubes.
 - Dual Bracket with smaller lower powered flash.

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Sigma Ringlight

- Approximately \$350



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Nikon RIC1 Wireless

- Approximately \$750.



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Summary

- I hope
 - You found this informative
 - It gave rise to some ideas that you are going to try
 - You will run out tomorrow and do your patriotic duty and buy something.

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