

LEBANON CAMERA CLUB

# Digital Camera Drive Modes

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# Digital Camera Drive Modes

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## Drive modes

Note: On film cameras, the motor drive allowed multiple images to be taken with one shutter press

- Controls how many images are taken at one time
  - ◆ One
    - One shutter button press → one image taken
  - ◆ Multiple
    - One shutter button press and hold → multiple images taken
- Controls special ways to take images
  - ◆ Self-timer
  - ◆ Mirror lock-up
- Can refer to changing settings over several images
  - ◆ Bracketing
    - Changing some variable over a set of images

# Digital Camera Drive Modes

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## Drive modes

- **Single**
  - ◆ Normal mode
    - One shutter button press → one image taken
    - Holding down the shutter button does nothing
- **Continuous (sequential, burst)**
  - ◆ Used for sports and high-speed action shots
    - One shutter button press and hold → multiple images taken



# Digital Camera Drive Modes

## Drive modes

- **Continuous (sequential, burst)**

- ◆ **Different speeds may be available**

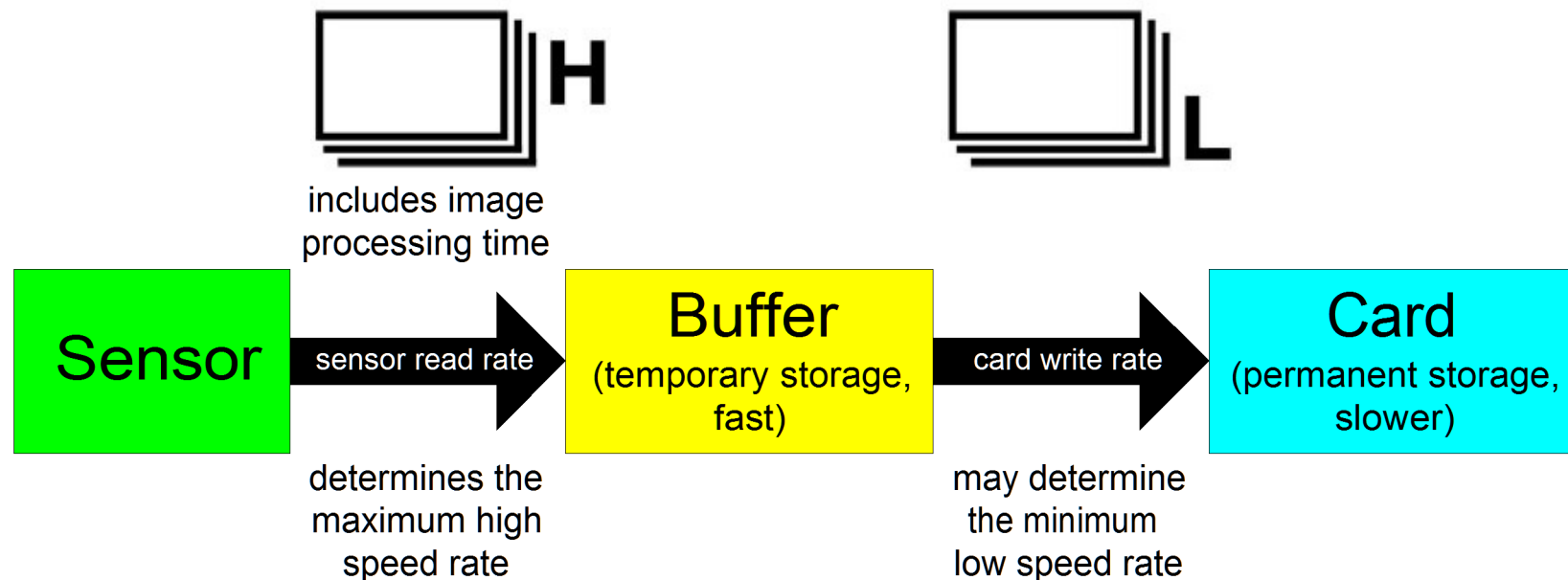
- Often a High and Low speed (example: High = 8 fps and Low = 4 fps)

- ◆ **Rated speed may only occur until the “buffer” is filled**

- After the buffer is filled, the camera may stop recording

- If recording continues, it is at the slower card write rate

Note: The card write rate is usually slower than the sensor read rate + image processing time, but faster card speeds are reducing the difference: [www.cameramemoryspeed.com](http://www.cameramemoryspeed.com)



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## Drive modes

Note: Continuous autofocus is often referred to as AF-C

- Continuous (sequential, burst)
  - ◆ Autofocus and exposure metering
    - Often done prior to the first shot only → AF cannot track subject
    - Some cameras can do AF for each shot, possibly at a reduced rate



# Digital Camera Drive Modes

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## Drive modes

Note: Some Sony cameras allow the self-timer to trigger a continuous burst of a set number of frames

- **Self-timer**



- ◆ **Waits a specified time to release the shutter**

- 10 seconds → allows time for the photographer to enter the scene
- 2 seconds → often used to reduce camera movement when the photographer is not using a remote shutter release



- ◆ **Restrictions**

- Usually cannot be combined with continuous shooting
- Usually cannot be combined with bracketing

- **Intervalometer**

- ◆ **Can program many images to be shot at a designated interval**

- Select number of images and time between each image
- Useful for time lapse movies and stop motion animation

- ◆ **Restrictions**

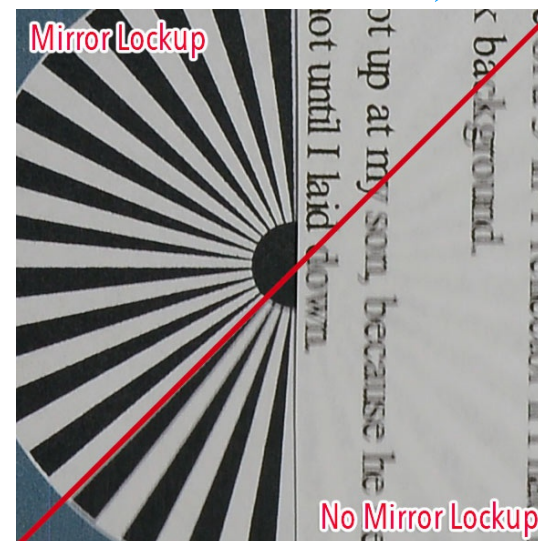
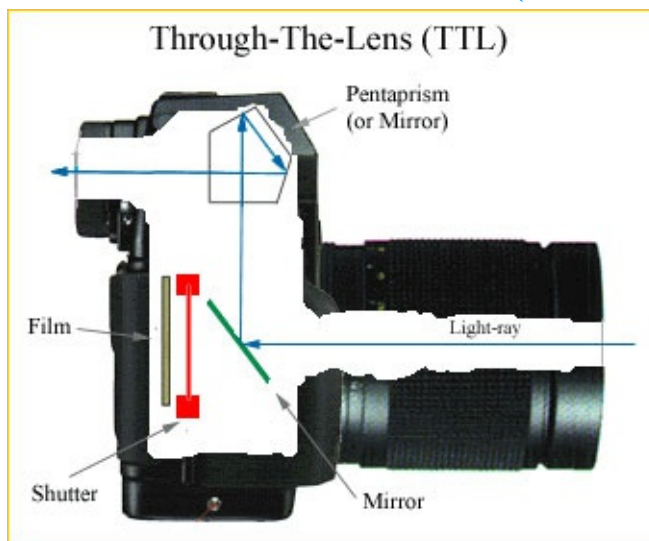
- Usually cannot be combined with any other modes

# Digital Camera Drive Modes

## Drive modes

Note: Mirrorless cameras have no mirror, and therefore are not affected by “mirror slap” – however, shutter actuation can also cause slight shaking in both mirrorless and DSLR cameras

- **Mirror lock-up (MLU)**
  - ◆ **Delay between mirror movement and shutter actuation**
    - Used to avoid camera shake caused by mirror movement
  - ◆ **Implementations**
    - Automatic → a specific interval is inserted by the manufacturer
    - Manual → first shutter press moves the mirror, second shutter press activates the shutter (should use a remote shutter release)



# Digital Camera Drive Modes

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## Bracketing

Note: High Dynamic Range (HDR) photography combines multiple images taken with different exposures into a final image with more dynamic range

- Exposure (AEB)

- ◆ Allows for different exposures in a set of images
  - Used in difficult exposure situations to ensure correct exposure
  - Also used in HDR photography to record more dynamic range
  - Example → 3 images taken: 0 stops, -2 stops, +2 stops
  - Can be done manually, but easier and faster with bracketing



normal exposure



-2 stops



+2 stops



# Digital Camera Drive Modes

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## Bracketing

Note: Many cameras allow the user to set the order in which bracketed shots are taken: 0/-/+ , -/0/+ , etc.

- **Exposure (AEB)**
  - ◆ **Allows for different exposures in a set of images**
    - Used in difficult exposure situations to ensure correct exposure
    - Also used in HDR photography to record more dynamic range
    - Example → 3 images taken: 0 stops, -X stops, +X stops
  - ◆ **Parameter to be varied depends on exposure mode**
    - **P** (program) → aperture and shutter speed
    - **S** (shutter priority) → aperture
    - **A** (aperture priority) → shutter speed
    - **M** (manual) → shutter speed
  - ◆ **Number of images and number of stops varies by camera**
    - 3 images; 1/3, 2/3, or 1 stop
    - 3 or 5 images; up to 3 stops in 1/3-stop increments
    - 3, 5, 7, or 9 images up to 1 stop in 1/3-stop increments

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## Bracketing

Note: Basic camera functions are well established, so adding bracketing modes is one way for manufacturers to add value to new products

- Other bracketing types

- ◆ ISO

- ISO changed similar to exposure bracketing

- ◆ White balance

- Changes to two different color axes in specified steps

- ◆ Flash

- Changes flash intensity similar to exposure bracketing

- ◆ Art filter

- Different “art filters” are applied to the image



Original



Dramatic Tone I



Dramatic Tone II

art filter examples:

- dramatic tone
- soft focus
- grainy film
- pinhole
- watercolor

# Digital Camera Drive Modes

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## Bracketing

- Other bracketing types
  - ◆ Focus
    - Not really a “bracket” since it varies focus in one direction only
    - User can set “focus differential” from narrow to wide
    - Useful when achieving proper focus is critical



# Digital Camera Drive Modes

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## Bracketing

- Other bracketing types

- ◆ Focus

- Not really a “bracket” since it varies focus in one direction only
- User can set “focus differential” from narrow to wide
- Useful when achieving proper focus is critical
- Useful for “focus stacking” to achieve more depth of field
- Alternative to moving the camera with a motorized macro rail

Note: Focus stacking can be done by moving the camera and not changing focus, or by keeping the camera still and only changing focus. In some cases one method works better than the other.



front of fly in focus



rear of fly in focus



images stacked

# Digital Camera Drive Modes

## Bracketing

- **Single vs. continuous**

- **Some cameras have single and continuous bracket modes**
  - **Used when bracketing is one of the drive mode menu selections**
  - **Single → each shutter press takes the next shot in the sequence**
  - **Continuous → holding down the shutter button takes all images**

Note: Manufacturers can treat bracketing as a true drive mode, or as a modifier to the single/continuous drive setting → affects how they organize their menu system, and how the user chooses modes



**BRK S**  
**0.3EV**

**BRK C**  
**0.3EV**