

# Digital Dictionary

---



## CCD Sensor

- **CCD (Charged Coupled Device):** A silicone chip comprised of millions of tiny, square light-gathering diodes called Picture Elements, or pixels, laid out in a checkerboard pattern. This is the "film" of a digital camera. The light data gathered from these tiny pixels needs to be "processed" by the camera's image processor into Recorded Pixels.
- **Super CCD:** A proprietary CCD system, produced by Fujifilm, which utilizes larger, octagonal-shaped, light-gathering diodes called Picture Elements, or pixels, that are laid out in a saw-tooth pattern. Super CCDs can capture more light information than ordinary CCDs; the extra information is used by the camera's image processor to improve color accuracy and ISO Speed.
  - **Super CCD HR (High Resolution):** Is capable of nearly doubling the Number of Effective Pixels that are processed and stored as additional detail in the Recorded Pixel file.
  - **Super CCD SR (Sensitivity and Range):** Uses a combination of small and large octagonal-shaped pixels to further enhance color accuracy, while improving detail in the areas of shadows and highlights, much like traditional film.
  - **Super CCD EXR:** The new Super CCD EXR provides superior picture quality, enabling a "3-in-1" sensor combination of "Fine Capture Technology" (High Resolution), "Pixel Fusion Technology" (High Sensitivity & Low Noise), and "Dual Capture Technology" (Wide Dynamic Range). With an innovative color filter array and image processing technology, the EXR ensures an advanced reproduction in imaging with exceptionally balanced quality.

## Number of Effective Pixels

- **Effective Pixels:** The number of light-sensitive picture elements, or pixels, actually used by the camera's image sensor (CCD) to record light, and which are "effectively" reflected in some way to the final number of Recorded Pixels stored on the memory card. For cameras equipped with Super CCDs, the number of Effective Pixels can often be less than the value than the of Recorded Pixels, which is the final number of pixels produced by a digital camera after image processing is complete.
- **Recorded Pixels:** Represents the number of output, or printable, pixels in a picture that was recorded on the Storage Media after the camera processes the Effective Pixel data from a CCD.
- **Total Pixels:** A specification for the image sensor (CCD) that indicates the total number of pixels contained in an image sensor. Not all the cameras' CCD pixels are used to form a final image; only the Number of Effective Pixels is actually used to capture light for an image.

## **Aperture**

An opening in the lens that controls the amount of light that reaches the image sensor (CCD). Apertures are calibrated in f/stops and may be adjusted on some cameras.

## **Shutter Speed**

Determines the length of time the shutter lets light pass through the lens to the CCD. Shutter speed and aperture together determine exposure.

## **Exposure Modes**

Exposure modes allow photographers more control over the amount of light used to capture images.

- **Automatic Exposure (AE Mode):** Will detect light levels and set exposure accordingly.
- **Manual Exposure (M Mode):** Allows photographers to set aperture area and shutter speed for hands-on control over exposure.
- **Aperture Priority (AP Mode):** Camera will compensate with appropriate shutter speed to give the best picture.
- **Exposure Compensation (EV Mode):** Gives photographers the ability to alter auto exposure settings for artificial control over the amount of light in a picture.
- **Program AE (P Mode):** Functions much like auto exposure, but gives photographers more detailed control over a number of possible settings.
- **Shutter-Priority Auto Mode (S Mode):** Allows photographers to select a shutter speed while the camera sets the aperture for correct exposure.

## **White Balance**

Some cameras allow photographers to establish custom white balance to improve the color of the final picture. Automatic white balance will determine light conditions and adjust color balance automatically.

## **Interface**

The way that a camera connects to a computer. There are several common interfaces.

- **USB Ports (Universal Serial Bus):** A type of input/output bus.
- **FireWire Ports:** A high-performance serial bus standard.
- **Serial Ports:** Used for serial data transfer.
- **Audio/Video Ports:** Used by some cameras to connect to TVs and VCRs.

## **Focus**

Adjusts the distance between the lens and image to make the sharpest possible picture. There are several kinds of focus available for improved picture taking.

- **Auto-Focus (AF):** Automatically adjusts focus. Available in most Fujifilm digital cameras.
- **Continuous Auto-Focus (CAF):** Automatically adjusts, without any action from the photographer, to achieve correct focus as the camera moves.
- **Manual Focus:** Allows photographers to turn off AF for manual control.
- **TTL Contrast Type (Through The Lens):** Allows the camera to automatically focus through the lens, rather than by moving the lens back and forth manually.

## **Flash**

Provides instantaneous bursts of illumination for brighter, clearer pictures. There are a variety of flash options to improve the picture-taking experience.

- **Automatic Flash:** Lights every picture as needed, unless turned off.
- **Auto Flash with Flash Control Sensor:** Detects light level and activates the flash accordingly.
- **Red-Eye Reduction:** Emits a pre-flash to minimize red-eye in low-light conditions.
- **Forced Flash:** Forces the flash to work, even on sunny days or when shooting backlit scenes.
- **Slow Synchro:** Gives clear, crisp details in night shooting.
- **Suppressed Flash:** Keeps the flash from firing.

## **Shooting Modes**

These provide photographers with greater control and creativity in picture taking.

- **Auto Scene Position:** Lets photographers specify the type of pictures they are taking (portrait, landscape, etc.) for beautiful, customized results without having to worry about manual exposure adjustments.
- **Auto Scene Recognition:** Framed scenes are automatically detected and selected into appropriate camera settings: Portrait, Landscape, Macro and Night.
- **Automatic Mode:** Controls camera exposure for optimal picture quality.
- **Continuous Mode:** Lets photographers take multiple pictures with minimal lapse of time between shots. Photographers can sometimes shoot up to 40 frames/second by adjusting the focus.
- **Macro Mode:** Allows photographers to take close-up pictures by adjusting the focus.
- **Manual Mode:** Allows photographers to take total control over elements like focus, white balance, color, and exposure.
- **Movie Mode:** Allows photographers to record digital video clips, sometimes with sound.
- **Film Simulation Mode:** Simulate the distinctive look of 5 different types with just a touch of a button. Modeled on Fujifilm brands loved by professional photographers, each breathes life into your image with a quality that previously only film could capture:
  - **Provia:** Powerful mode for any subject. Produce colors with the natural tone of PROVIA film, trusted by professional photographers.
  - **Velvia:** Mode for distinctive saturation and the colors of Velvia. Produce the vivid colors of subjects in photos with great sharpness and color tones.
  - **Astia:** Mode for soft, fine, smooth tonality. Fidelity of huge and soft tone are the features of this mode.
  - **B&W:** Capture the dramatic honesty of your image in black and white.
  - **Sepia:** Create a sense of nostalgia with the warm brown “antique” tones of Sepia.

## **File Formats**

A program type to store data. Cameras use multiple file formats to store different types of media.

- **RAW (Raw Binary Image Format):** The Raw format is a flexible, cross-platform file format that allows users to include header information (file type, file creator, etc.) with files. This format supports up to 48-bit color information with no compression. Large file size.

- **JPEG (Joint Photographic Experts Group):** A standard, variable compression method for images. When users create a JPEG or convert an image from another format to a JPEG, they are asked to specify the quality of image desired. Since the highest quality results in the largest file, they can make a trade-off between image quality and file size.
- **TIFF or TIF (Tagged Image File Format):** TIFF is a flexible, bitmap image format supported by virtually all image software and computer platforms. Non-compressed, large file size.
- **AVI (Audio Video Interleaved):** A sound and motion picture file format that synchronizes audio and video.
- **WAV or Wave File:** A standard, uncompressed audio file format that interchanges between computer platforms (PC and Macintosh). In addition to audio data, the Wave format stores information on number of tracks, mono or stereo, sample rate, and bit depth.

### **Color Modes**

These allow photographers to control color saturation of the recorded image. There are three common types of color modes.

- **Black & White:** For dramatic and artistic images.
- **Standard:** For portraits and everyday use.
- **Chrome:** Used for landscapes and architectural photography.

### **Zoom**

Allows the photographer to increase and decrease magnification, making the subject appear bigger or smaller within the frame.

- **Optical Zoom:** A physical lens that can be adjusted to increase and decrease magnification. Optical zooms function exactly the same way on digital and film cameras and the image quality is often better than with a digital zoom.
- **Digital Zoom:** This alternative to optical zoom makes the subject seem larger by focusing in on the center of the picture and electronically magnifying the image after it is captured. The image quality is sometimes not as good with a digital zoom.
- **Combination of Digital and Optical Zoom:** Working together, both types of zooms can give greatly enhanced zoom capacity — for example, a 3X optical zoom and 2.2X digital zoom will give an overall zoom of 6.6X.

### **Viewfinder**

Window in the camera through which a photographer views the picture. Used for choosing, composing, and often focusing the image.

- **Optical Viewfinder (Real Image):** The photographer looks through a transparent window to frame and focus the image. The photographer is seeing the real image, through the window of the viewfinder.
- **Digital Viewfinder:** An LCD display built into a camera that gives a digital view of where the camera is pointing. It's used to compose and focus the image.
- **Pixel (Picture Element):** Used to express a picture's detail as stored in memory; also the detail-gathering ability of camera image sensors (CCD) or output devices, such as monitors.

## **Lens**

A cylindrical piece of glass or plastic that receives and focuses light to form an image. Most cameras list an f-number and focal length for each lens.

- **F-Number:** Indicates the size of the lens opening (aperture).
- **Focal Length:** The distance between the image sensor and the optical center of the lens.
- **Lens Adapter:** Allows photographers to use special lens attachments (Macro, Zoom, Filters, etc.) on certain cameras.

## **Focus Range**

The range within which a camera can focus on the subject. Usually, focus range is shown for Standard and Macro Modes.

- **Standard Mode:** Used for normal to long-range photography (1.5 ft. and over).
- **Macro Mode:** Allows photographers to take close-up pictures by adjusting the focus.

## **Sensitivity (Also "ISO Speed")**

The camera's sensitivity to light and the optimal lighting conditions for taking pictures with the camera. Fujifilm digital cameras sometimes allow photographers to choose from a range of sensitivities.

- **Low Sensitivity:** Requires more light for picture taking but creates less electronic "noise" that might lead to picture distortion.
- **High Sensitivity:** Requires less light for picture taking but may create more electronic "noise" than low sensitivity.

## **LCD Monitor (Liquid Crvstal Display)**

A monitor that can be used as a viewfinder or to review photos and video clips already taken. On some cameras, there is a second LCD that provides better viewing in bright daylight.

## **Storage Media**

The type of memory card used to store data for a camera. Functions as the "film" for a digital camera. Fujifilm cameras use a variety of storage media.

- **xD-Picture Card:** Among the smallest compact, removable flash storage on the market.
- **SD and SD-HD media:** a popular media format used by a wide variety of digital devices.
- **MicroDrive:** Compact, removable flash storage developed by IBM.
- **SmartMedia Card:** Compact, removable flash storage.

## **Movie recording**

The ability of Fujifilm's digital cameras to capture short moving pictures that can be played back on a computer or TV. Movie recording capabilities can be with or without sound, depending on the camera. There are a variety of common resolutions with Fujifilm cameras.

- **Sub-QVGA:** Provides 160 x 120 pixel resolution.
- **VGA:** Provides 640 x 480 pixel resolution.
- **QVGA:** Provides 320 x 240 pixel resolution.

### **Vignetting**

Zoom lenses can sometimes suffer from vignetting. The barrel or sides of the lens become visible, resulting in dark corners in the image

### **Aspect Ratio**

The width divided by the height of an image or "aspect ratio" is usually expressed as two integers, e.g. width/height = 1.5 is expressed as width:height = 3:2. 4:3 aspect ratio of most computer monitors and digital compact cameras. 3:2 aspect ratio of 35mm film, 6"x4" prints, and most digital SLRs.