

Photo-Instrumentation Glossary

The terms and definitions presented here were developed by the Glossary Subcommittee of the SMPTE Photo-Instrumentation Engineering Committee. The Subcommittee was charged to define those terms generally used in the photo-instrumentation discipline, but for which there were no accepted definitions.

The glossary, as published here, sets forth the terms and definitions agreed to by the Photo-Instrumentation Committee. A. E. Quinn, Chairman of the Photo-Instrumentation Committee, requests that they be reviewed carefully. Comments recommending deletions, additions or modifications should be sent to Alex E. Alden, Staff Engineer, at Society Headquarters, as promptly as possible.

Cinematography. (a) Photography in which a series of photographs of uniform size is taken so that the motions of the subject can be recreated by rapid sequential viewing. (b) The entire complex of activities involved in the staging, direction, photography, editing and presentation of motion pictures. (c) Motion-picture photography.

Continuous Access. A photographic system which records an image continuously during its exposure cycle with no blind periods.

Continuous Writing. Describing a photographic system which, when running, is always able to accept light and to make an exposure; usually used in reference to rotating-mirror cameras with this capability, to distinguish them from those with a significant blind period during some part of a mirror revolution.

Direct Shadowgraph. A shadowgraph wherein no image-forming optical elements are employed, and a silhouette image of the view field is cast directly upon either a photosensitive material or a viewing screen.

Drum Camera. A photographic device utilizing the inside or outside of a rotating drum to support and move the photosensitive recording medium through the focal plane of a lens.

Electronic Flash. A device, which upon command produces a pulse of luminous energy caused by a discharge of electrical energy through a gas. The term usually implies the use of a flashtube and associated power source and trigger circuit.

Flashtube. A sealed, transparent tube with two or more electrodes filled with a gas, usually argon or xenon, at less than half an atmosphere of pressure through which an electrical discharge is passed to obtain a pulse of luminous energy.

Focusing Shadowgraph. A shadowgraph wherein focusing optical elements are interposed between the object field and the photosensitive material, the viewing screen, or the viewing optical system.

Framing Camera. A camera which records sequential photographs of uniform format. The dimensions of the format are determined by the size of the frame.

Guided Spark. An electrical discharge between two electrodes whose path is guided or constrained by the presence of a dielectric material or gas jet.

High-Speed Photography. Photography in which picture taking rates range from 100 to 10,000 frames per second, writing rates range from 10^{-3} to 10^{-1} mm per microsecond, or exposure times range from 10^{-5} to 10^{-8} seconds.

Image Dissection. Any optical, mechanical or electronic process, or any combination of such processes, whereby an optical image is subdivided into discrete segments prior to being photographed, recorded, transmitted, or otherwise processed.

Image-Motion Compensation. Any system whereby relative motion between the image and the photosensitive material in

which the image is to be recorded is reduced or eliminated.

Pulse Camera. A camera designed to operate a frame at a time in response to a command such as an electrical pulse. Each command causes a sequence of events that exposes a single frame, advances the film, and performs all other operations necessary to ready the camera for the next frame.

Rotating-Mirror Camera. A camera employing a rapidly rotating mirror to deflect the image-forming light beam. Usually the image is formed on stationary film and the technique is used when the writing rate required is higher than that obtainable with moving film.

Rotating-Prism Camera. A framing camera employing a rotating, parallel-sided prism to move the image-forming light beam at the same speed as the continuously moving film during the exposure of a frame.

Schlieren. An optical system producing images whose illumination or hue at a given point is related to the angular deflection incurred by a light ray in passing through the corresponding object point. The object is back-illuminated and a straight-edge, circular aperture, or graded density filter or multicolored filter is used in the system to discriminate between deflected and undeflected rays.

Shadowgraph. A device arranged in such manner as to enable photography and/or visual observation of the silhouette of back-illuminated objects placed within the object field of the device and of gradations in luminous intensity resulting from variations in the opacity or in the index of refraction of media contained within the object field.

Spark Source. A device used to produce a short-circuit pulse of luminous energy by an electrical discharge between two closely spaced electrodes either in air or in a controlled atmosphere at a pressure usually greater than half an atmosphere.

Still Photography. Photography that records a single frame of an object.

Streak Camera (Smear Camera — a less popular term for streak camera). A camera in which the image is made to sweep along the film, or vice versa. Usually used with an essentially line-like object, or one made so by masking with a slit, so that the photograph is a record of events along the slit versus time.

Streak Photograph. A photograph made by a streak camera.

Synchro-Ballistic (Also referred to as Ballistic-Synchro but this term is less acceptable). A form of image-motion compensation used primarily in ballistic photography, in which the recording medium (i.e. film) is moved in approximate coincidence with the optical image.

Time-Lapse Photography. A motion-picture technique used to achieve a time magnification of less than unity. The original exposures are made at a frame rate slower than normal and are then projected at the normal rate. The result is an apparent speed-up of the original action.

Time Resolution. The ability of an instrument or technique to measure time. The smallest time interval that can be measured by use of a given recording system.

Very-High-Speed Photography. Photography in which picture taking rates range from 10,000 to 1,000,000 frames per second, writing rates range from 10^{-1} to 10 mm per microsecond, or exposure times range from 10^{-7} to 10^{-5} seconds.

Ultra-High-Speed Photography. Photography in which picture-taking rates exceed 1,000,000 frames per second, writing rates exceed 10 mm per microsecond, or exposure times are less than 10^{-7} seconds.