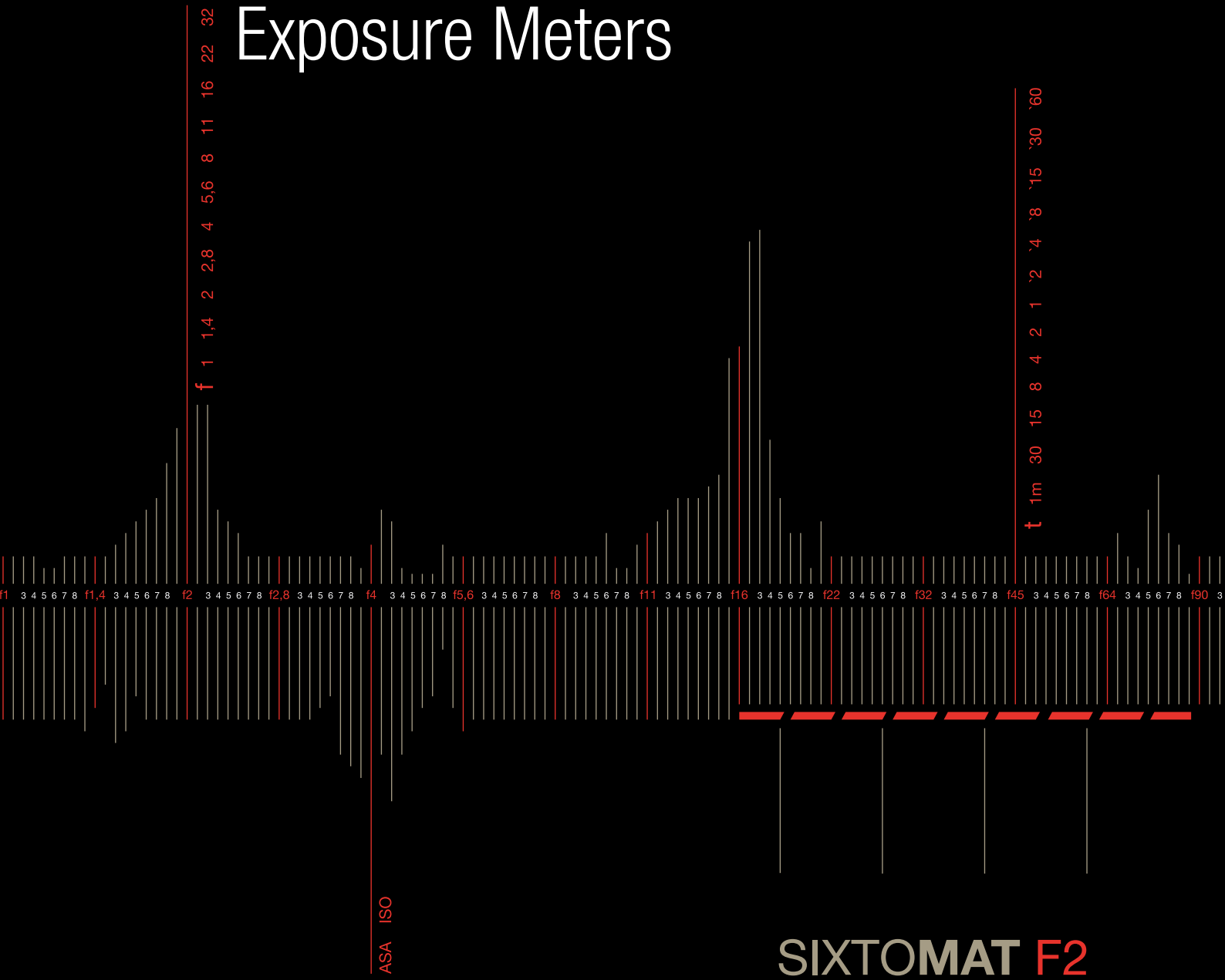


GOSSEN

Exposure Meters





SIXTOMAT F2

With its outstanding diversity and high performance,

the SIXTOMAT F2 is the ideal standard tool for demanding amateurs with their own studio flash kits, lighting specialists and filmmakers. The included technology and features are high quality, and operation is clear-cut and easy to understand. The universal SIXTOMAT F2 is laid out for use in the studio, as well as outdoors. It makes quick work of incident and reflected light measurements for flash and ambient light, displays mixed lighting conditions as well as required multiple flashes, and performs contrast measurements. The calculated exposure values can be displayed either in full, 1/2 or 1/3 increments. It masters all common lighting situations for analog and digital photography, as well as filmmaking, with outstanding precision and time-tested quality.



Simple CINE Meter for Filmmakers

Film speed is specified in the CINE mode. An open aperture angle which deviates from 180° can be taken into account by calculating and entering the filter factor as a correction value (COR). After measurement has been completed, the f-stop value is displayed digitally in 1/10 increments and appears additionally at the analog f-stop scale rounded off to 1/2 increments. The cameraperson is thus provided with basic data for a correctly exposed image.

Ergonomic Design

The SIXTOMAT F2 is laid out for convenient one-hand operation. Operation is simple and intuitive with just a few keys. The high-contrast LCD panel is highly legible and displays values in a clear-cut fashion.

Its compact, but nevertheless rugged design, ensures that the exposure meter fits into the user's hand perfectly and accompanies the photographer through all of his tasks as an indispensable tool.



Universal Exposure Meter for Photographers

Ambient light measurement can be performed with either aperture or shutter priority pre-selection, as well as with exposure values. The sliding diffuser can be used to switch back and forth between incident and reflected light measurement. After measurement has been completed, f-stop/shutter speed combinations can be queried by pressing the value keys. Measured values are displayed digitally in 1/10 increments, and f-stop values appear at the analog scale in 1/2 increments. If the measuring key is pressed and held in the shutter pre-selection and exposure value function, contrast range is ascertained and displayed at the f-stop scale – an ideal function for matching the subject's contrast range to the recording medium. The wide measuring range from f-stop 1.0 to 90 and 1/8000 s up to 60 minutes supports the available light photography with fast aperture lenses as well as night photography in extremely dark environments. The measurement or setting of correction values up to ± 7.9 EV can be used for exposure time extension with neutral density filters.

In the case of flash measurement, this can be triggered manually or by means of a synchronizing cable. If wireless flash triggering systems are used, the transmitter can be operated manually or via the synchronizing output depending on the selected measuring mode. After measurement has been completed, the f-stop value for the specified synchronizing speed appears at the display. This is displayed at the analog f-stop scale along with the f-stop value for the ambient light ratio. The relationship between flash and ambient light can be influenced by changing synchronization speed, making it possible to adjust fill-in flash or soften ambient light. If the measurement indicates that the desired working aperture is not possible with a single flash, it can be adjusted with the upper value key. The digital time display is then replaced with an indicator showing the number of flashes required for the working aperture.

Specifications

Comprehensive metering methods –
incident and reflected light measurement with adjustable
measured value display in full, 1/2 or 1/3 increments

Wide measuring range –
f-stop from 1.0 to 90,
exposure time from 1/8000 s to 60 minutes

Precise measurement and display –
repetition accuracy of ± 0.1 EV,
measured value display in 1/10 increments

Flexible ambient light measurement –
aperture or shutter priority pre-selection as well as
exposure value display

Easy subject contrast control –
analog contrast display in half f-stop values

Individualized adaptation –
entry or measurement within a range of ± 7.9 EV
correction values in 1/10 increments

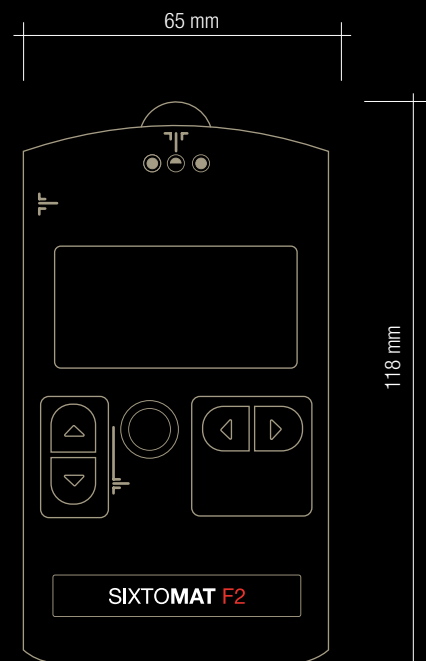
Comprehensive flash measurement –
flash exposure measurement (cord/non-cord)
with adjustable synchronization speed up to 1/1000 s,
display of ambient light ratio and multiple flash calculation

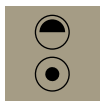
CINE function for filmmakers –
determination of f-stop for adjustable film speeds ranging
from 8 to 64 fps, including 25 fps and 30 fps for TV,
as well as correction factor for sectors deviating from 180°

Ergonomic design –
compact housing with clear-cut fashion display and
one-hand operation

Diverse warnings –
battery level, over-range or under-range

Automatic shutdown –
most recent settings and last measured values are retained





MEASUREMENT METHOD



Reflected Light Measurement

Where reflected light measurement is concerned, the exposure meter acquires light reflected from the object to the camera from the standpoint of the photographer. This value, based on all of the various reflective objects within the image, is used as a mean tonal value for which required exposure is calculated. Tonal range, color, contrast, background brightness, surface structure and reflectivity of the objects influence the measurement results, although they are not taken into consideration in evaluating the subject.

Monochrome subjects are reproduced in neutral gray with this measuring method. A bright subject reflects more light and is represented as darker. A dark subject reflects less light, and is thus represented as brighter. In other words, if a white and a black car are photographed, both images will depict the same gray car.

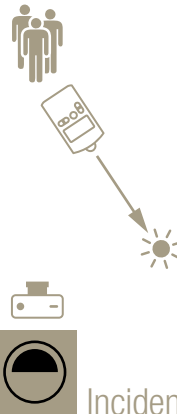
Reflected light measurement of a gray chart in close proximity to the subject delivers more precise results because the gray chart reflects exactly the same light component to which the exposure meter is calibrated. However, this measurement is complicated and in many cases impractical.



Spot Metering

Spot metering is frequently integrated into modern reflex cameras, for which the measuring range is indicated as a percentage of the image area (sensor). The angle of acceptance depends on, and changes along with, the lens's focal length. External spot meters have a fixed, 1° angle of acceptance and are capable of measuring small areas very accurately within a complex scene, and it's also possible to generate a mean value by taking several measurements.

Spot metering is used when unreliable values are provided by reflected light measurement or where incident light measurement is not possible. As a rule, this involves scenes with objects at a great distance, backlighting situations, extreme differences in brightness, reflective surfaces or a moving main subject.



Incident Light Measurement

External exposure meters allow for high precision incident light measurement, which is interesting for portrait, object and fashion photography. They measure and analyze light which strikes the subject, regardless of its reflectivity. Complete control of lighting contrast leads to well-balanced exposure results and allows for targeted use of the available dynamic range. And the meter only takes illuminance into consideration – not object brightness. The user is able to count on obtaining correct evaluation, as well as good results, with both brighter than average and darker than average subjects: optical influences which could lead to erroneous measurement data are eliminated automatically by external exposure meters. Even objects which greatly deviate from the middle gray tone are reproduced with correct color and tonal values, as long as white balancing is correctly executed for the digital camera.



Flash Measurement

Where several flash units or a combination of ambient light and flash is used, exposure meters which are integrated into the camera are inadequate, because all of the sources of light which illuminate the scene have to be individually evaluated and added up. External exposure meters are capable of measuring individual flashes, calculating multiple flashes in the event of insufficient flash power, and analyzing the ratio of flash to ambient light – even where several sources of light interact with each other. A second, and much greater benefit, results from using the meter to adjust the lighting conditions of the individual sources of light to each other. This makes it possible to use flash as a creative means, and to set up any desired lighting mood quickly and repeatedly with any flash system and light shaper. Evaluation of the ambient light ratio makes it possible to adjust fill-in flash for outdoor use, or as the main source of light. Tedious experiments with the power settings of individual flash units are thus a thing of the past.



Contrast Measurement

Subject contrast designates the ratio between the brightest and the darkest portions of the subject which are important to the image. This is ascertained by means of close-up or spot metering and is specified in exposure values or f-stop steps. One exposure value is equal to one full f-stop. Subject contrast is the result of different reflective characteristics of individual portions of the subject, and lighting.

If subject contrast exceeds the dynamic range of the recording medium, i.e. the total number of brightness levels which the medium is capable of reproducing. The bright or dark parts of the subject appear showing no detail and cannot be improved by means of post-processing. An overview of the dynamic ranges of various recording and reproduction media are listed below.

Recording Medium		Dynamic Range [EV / f-stops]
Digital reflex camera	100 ASA	10
	400 ASA	9
Digital compact camera	100 ASA	8,5 ... 9
	400 ASA	7,5
Black-and-white negative film		11 ... 13
Color negative film		8 ... 10
Color transparency film (slide)		6 ... 8
Reproduction Medium		Dynamic Range [EV / f-stops]
Monitor		8 ... 10
Digital projector		9 ... 12
Slide projector		8
Photo paper		4 ... 6
Photo printer		5 ... 8



Use of the Available Dynamic Range – Optimized Workflow

Metrological analysis of both illumination and the subject make it possible for the photographer to take ideal advantage of the available dynamic range of the recording sensor and the output media right from the start. Adaptation by means of tedious post-processing is unnecessary and the fast-paced workflow associated with digital photography remains unimpeded. Suitable measuring functions include:

Contrast measurement:

subject contrast from the brightest to the darkest areas of the subject with detail

Mean value generation:

based on measured values from important areas of the subject

Zone measurement:

assignment of brightness values to defined gray values



The Histogram

The histogram depicts the static distribution of an image's tonal values. Relative to brightness, the camera arranges all of the pixels along a horizontal scale from 0 (black) to 255 (white). The height of the individual line indicates the number of pixels of identical brightness. The fine lines which are very close to each other may result in a gentle curve, a jagged mountain, a picket fence or a combination of any two or all three. A histogram provides information regarding the distribution of tonal values within the image, but does not offer any indication of lighting conditions, the ambient light to flash ratio or whether or not the object is correctly illuminated. An external exposure meter is used to this end in order to achieve best possible and above all repeatable, results as quickly as possible.