CatLABS

Focal Plane Metering System

For

Large Format Photography

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INTRODUCTION

The CatLABS image plane metering system allows large-format camera users to meter at any desired point in the image, allowing for control of contrast and correct exposure for both highlights and shadows.

The metering system comprises:

- A hand-held metering unit
- A sensor probe with connecting cable
- A frame that carries the probe and inserts into the camera rear in place of the film holder.

The metering system offers the following features:

- Metering over a wide range of light levels – approximately corresponding to mid-grey intensity on ISO 125 film at exposures from 1/4000 s to 1 hour.
- Optional, adjustable, reciprocity compensation
- All film speeds in 1/3 stop increments from ISO 1 to ISO 8000
- Two “hold” functions allowing the light level at two points in the image to be remembered whilst metering a third point.
- Bargraph display showing resultant negative intensity, in 1 stop and 1/3 stop resolution.
- 4x5 format as standard, frames for 5x7 and 8x10 available as extras.
- Visible-light optimised sensor – peak sensitivity 540 nm.

USING THE METER

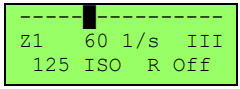
Insert 2x AA batteries in the battery compartment on the rear, noting the correct orientation.

Insert the metering probe into the metering frame, and insert the metering frame into the camera in place of the film carrier.

Plug the sensor into the meter unit.

Switch on the meter.

The meter display will show the following.



Use the UP/DOWN keys to set the intended exposure. The position of the cursor on the bargraph display shows the expected negative intensity. The further to the left, the lower the illuminance and the lighter the negative (and the darker the print). Further to the right indicates a higher illuminance, darker negative and lighter print.

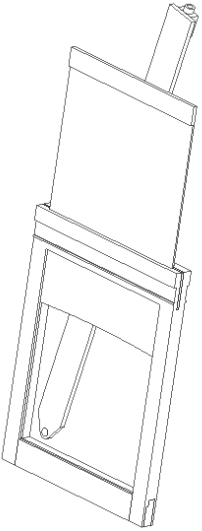
The meter therefore gives an indication of the relative intensity of the negative and the print at the point in the image being measured and at the exposure given.

Adjust the exposure setting using the UP/DOWN keys until all points in the image are within the required intensity range.

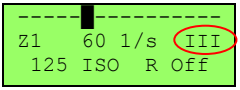
The exposure setting can then be transferred to the shutter and the exposure made.

Note that when metering a dark scene, or with a lot of light behind the camera, light entering the camera through the ground glass can influence the meter reading. The metering frame is therefore

equipped with a sliding shutter to allow excess ambient light to be excluded when necessary.



ZONE DISPLAY

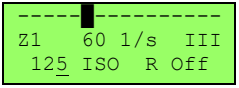


The middle row right hand position displays the Zone in the Adams/Archer Zone system. As the sensor is moved in the image, or the exposure setting is changed, the bargraph changes to reflect the changes in brightness and the zone display will change accordingly.

Zones are displayed from Zone 0 (total black in print) through to Zone X (pure white in print). Zone V represents middle grey (18% reflectance).

SETTING THE FILM SPEED

The film speed setting is shown in the bottom left corner of the display:



To set the film speed, press the SET key and a blinking underscore cursor will appear at the film speed. Press the UP/DOWN keys to select the film speed.

Film speeds from ISO 1 to ISO 8000 can be set.

Press the SET key again to move to the reciprocity setting (see next section) and press again to return to normal exposure setting mode.

RECIPROCITY FAILURE COMPENSATION

This feature allows for compensation of film reciprocity failure.

Reciprocity compensation is applied according to the method described in Ilford technical information sheet “Film Reciprocity Failure Compensation”. The user is urged to read this information sheet if unfamiliar with reciprocity failure compensation.

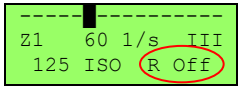
A power law compensation is implemented, whereby:

$$T_C = T_M^P$$

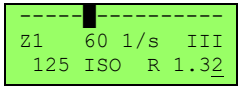
Where T_C is the compensated exposure time and T_M is the metered time. P is a power factor, which depends on the film, typically in the range 1.25 to 1.45.

This compensation is applied only for exposures longer than one second; for shorter exposures compensation is not normally required.

The reciprocity compensation power factor, P, is shown in the bottom right corner of the display – in this example the reciprocity failure compensation is turned off.



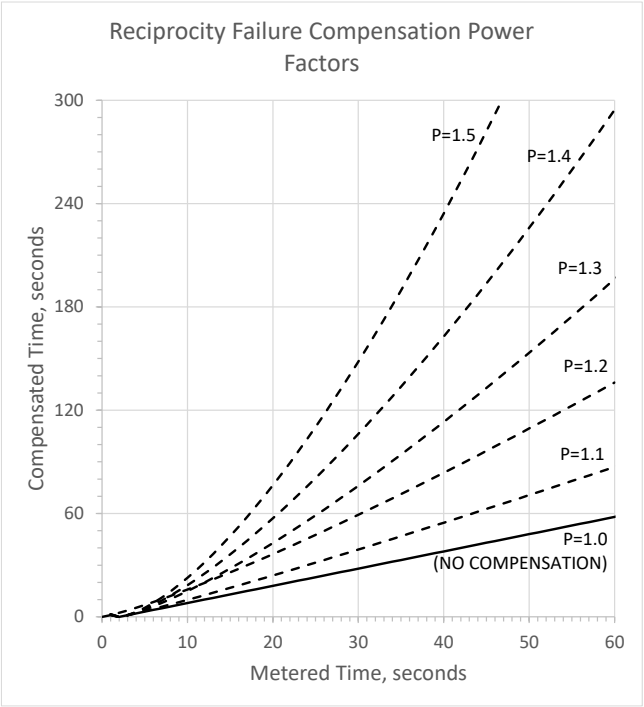
To set the reciprocity failure compensation power factor, press the SET key to move the cursor to the reciprocity failure compensation position. Then press the UP/DOWN keys to choose the desired factor. The compensation can be set to Off, or any value from 1.20 to 1.50.



Press the SET key again to return to the exposure setting screen.

If it is not possible to find out the power factor for your film we suggest 1.30 as a starting point – this should be adequate for most purposes. For precision work at very long exposures it is suggested that some test negatives are made at different settings.

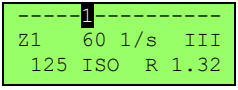
The graph below illustrates the compensation.



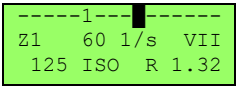
HOLD FUNCTION

The current metered illuminance can be stored in memory while you continue to meter other points in the image. Two “holds” are provided.

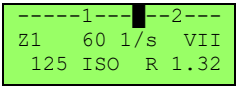
To hold the current measurement, press HOLD1 or HOLD2. The block cursor on the bargraph will now show a 1 or 2 respectively.



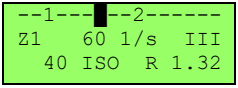
When the meter probe is moved to measure another point in the image, the block cursor will move but the number will remain in the current position.



With both “holds” selected:



Note that the HOLD stores the measured illuminance, so the positions on the bargraph will change as the exposure setting is changed:

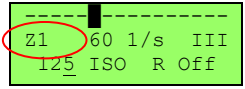


This feature is useful for setting the exposure to suit not only the mid tones but also the shadows and highlights.

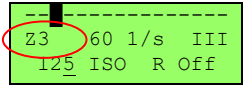
ZOOM FUNCTION

In normal operation, each position on the bar represents one stop of exposure value. This allows a total range of ±8 stops to be shown on the bargraph.

The zoom factor is shown on the left of the screen:



Press the ZOOM key to cycle between one-third stop and one stop resolution.

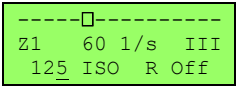


MEASUREMENT FREEZE FUNCTION

Pressing the button on the sensor probe freezes the current measurement. This is useful particularly when metering under a hood or dark cloth as it avoids having to watch the meter while taking measurements.

Pressing the button again releases the measurement freeze.

The display shows a □ symbol to indicate the measurement has been frozen.



When the measurement is frozen the exposure set buttons and other functions work as normal; all that is frozen is the current measurement of illuminance – the display will not move if the illuminance changes.

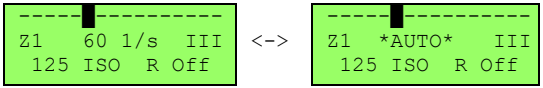
AUTO MODE

Automatic mode allows the user to scan through an image with the sensor probe with the meter automatically recording the high and low values and calculating an optimised exposure.

Before selecting auto mode, set up the sensor probe in the camera and set the desired aperture.

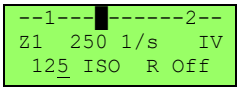
Press and hold the SET key (around 1 second) to enter AUTO mode.

Auto mode is indicated by the exposure setting display alternating with the word “AUTO”:



As the sensor probe is moved around the image, the meter keeps a record of the darkest shadow area and lightest highlight area metered. These are stored in the HOLD 1 and HOLD 2 values. Each time a darker shadow or brighter highlight is metered the HOLD 1 and HOLD 2 values are updated. These are displayed on the bargraph along with the current sensed value.

The optimum exposure is continually recalculated during auto mode. This exposure centres the image brightness range.



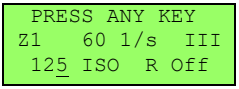
Note how the HOLD 1 and HOLD 2 positions are equally spaced either side of centre and the exposure adjusted accordingly.

During AUTO mode the HOLD1, HOLD2 and UP/DOWN keys are inhibited as these values are set automatically. The settings can be overridden after AUTO mode is exited.

To exit AUTO mode press and hold the SET key. The exposure display stops blinking. The HOLD 1 and HOLD 2 values and the exposure setting are retained. The exposure setting can now be manually overridden with the UP/DOWN keys if desired, for example, to favour shadow details over highlights.

POWER SAVE MODE

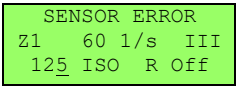
To conserve power, after a few minutes have passed with no key being pressed, the meter will enter power save mode. The display backlight is switched off and power is removed from the sensor. The screen will show the text “PRESS ANY KEY”.



Pressing any key will repower the sensor and switch on the display backlight.

ERROR DISPLAYS

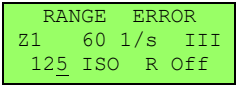
Sensor Error



Indicates that the meter cannot detect the sensor. Ensure the sensor is plugged in correctly and fully.

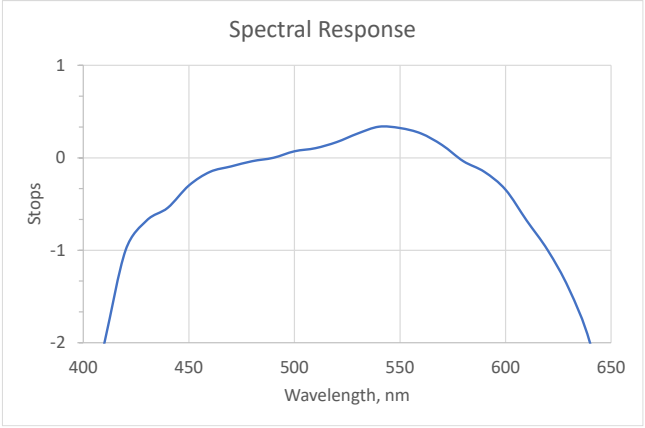
Range Error

A range error is shown when the illuminance exceeds the sensor's measurement range, when the light level is too low or too high. In this event adjust the camera f-stop to bring the light level within the range.



SPECIFICATION

Exposure Range:	1/4000 second to 1 hour at 125 ISO in one stop increments
Film Speed settings:	Every 1/3 stop film speed value from ISO 1 to ISO 8000
	(ISO 1, 1.25, 1.6, 2, 2.5, 3.2, 4, 5, 6.4, 8, 10, 12.5, 16, 20, 25, 32, 40, 50, 64, 80, 100, 125, 160, 200, 250, 320, 400, 500, 640, 800, 1000, 1250, 1600, 2000, 2500, 3200, 4000, 5000, 6400, 8000)
Display Range	± 8 stops either side of selected setting.
Accuracy:	± ⅓ stop
“Hold” duration:	1 hour minimum.
Spectral Response:	540 nm peak. ±1/3 stop from 450 to 600 nm.
Battery type	2x AA 1.5V (also known as R6, ANSI size 15, UM-3, HP7), alkaline or rechargeable NiMH.
Battery life	>100 hrs, with good quality alkaline batteries.
Sensor	Silicon Photodiode with optical filter
Weight	12 oz. approx.
Dimensions:	Meter Unit: 4½” x 6” x 1⅝”
	Metering Probe: 12“ x 3/4” x ⅛” approx
	Frame: 4x5 format supplied, 5x7 and 8x10 available as optional extras.


Spectral Response
1
0
-1
-2
Stops
400
450
500
550
600
650
Wavelength, nm