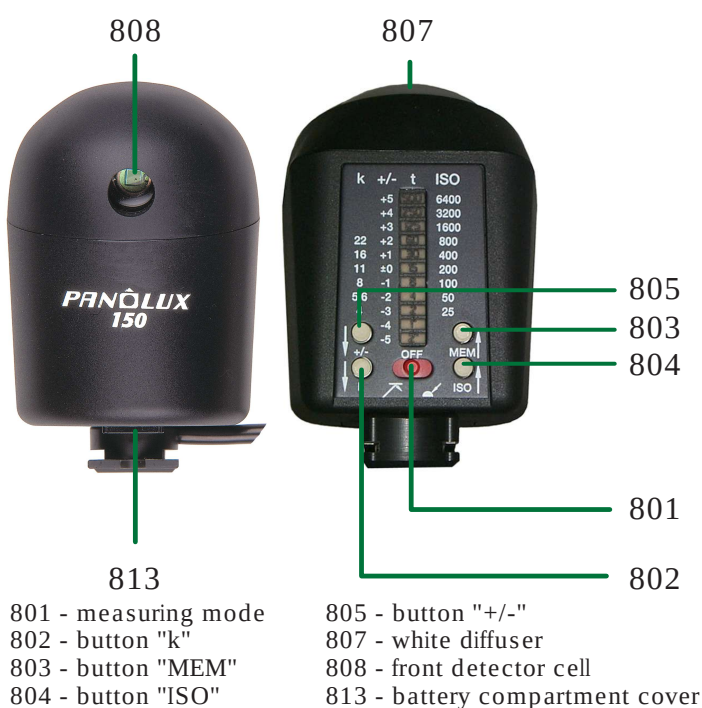


PANOLUX 150

The PANOLUX 150

The PANOLUX 150 is an exposure metering and control module which you can purchase in addition to your NOBLEX 150/175. The PANOLUX automatically controls the exposure time of your camera. There are two measuring methods for this: reflective metering (light metering in direction of the subject), and metering of incident light. The incident light metering offers two different methods of measuring: pure metering of incident light (metering of the light falling on the subject and/or the white diffuser independent of the reflection qualities of the subject) and subject-oriented metering of incident light (simultaneous reading with the front detector cell and the diffuser which means that the reflections of the subject are taken into consideration). When working in reflective metering or subject-oriented metering of incident light it is also possible to enter correction factors into the PANOLUX which influence the drum rotation speed during the exposure process. According to the correction factor set on the PANOLUX, the lens drum moves slower or faster in the corresponding parts of the exposure and different exposure times are produced during one drum rotation. Typically, a slower rotation will 'brighten' that area. Conversely, a faster rotation will 'darken' that portion of the photograph.

9. Designation of Parts and Operating Elements



10. Inserting the Batteries

The PANOLUX requires 2 batteries LR 1, 1.5V. To insert the batteries please follow these instructions:

1. Open the battery compartment cover (813) by sliding the cover in the direction of the arrow.
2. Insert the batteries. Pay attention to the right polarity.
3. Close the battery compartment cover (813) by sliding it against the arrow marking.

Please note

Never use batteries of different types and do not mix old batteries with new ones. Do not use rechargeable batteries. If you do not use your PANOLUX for an extended time, remove the batteries.

11. Getting PANOLUX and NOBLEX started

1. Slide the PANOLUX onto the accessory shoe (13) on the NOBLEX viewfinder from the back. Put the spiral cable of your PANOLUX in the socket (12) on the camera.
2. Turn the shutter speed setting knob (2) of your camera to "A".
3. Turn the camera on at the ON/OFF switch (10).
4. Turn the PANOLUX on by choosing the measuring mode (801) desired.

Please note

Whenever you do not use the PANOLUX take it off the camera and switch it off.

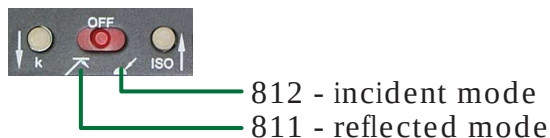
When taking photographs and the shutter speed setting knob (2) is not in the "A" mode, the camera works with the exposure time set at the shutter speed setting knob. If you do not use your PANOLUX, the PANOLUX switches itself off after approx. 5min. Switch the PANOLUX off and afterwards to the measuring method desired. The PANOLUX is now active again.

12. PANOLUX in Reflected Mode (811)

Reflective reading is carried out by the front detector cell (808). The PANOLUX measures the light reflected from your subject. To avoid an overweighting of the bright sky portion, the measuring axis of the front detector cell (808) is angled down by approx. 15°. When normally holding the camera, an area approx. 18 feet in front of the camera is measured. The measuring angle is approx. 33°.

When applying reflected light metering for taking pictures please follow these instructions:

1. Start the PANOLUX as described in chapter 11. (switch (801) is in position reflected mode (811))



2. Press button “k” (802) to get to the aperture setting mode. Now the indicator will blink red/green in the last aperture set.
3. Set the aperture desired by pressing the buttons marked with the respective arrows. When pressing button (805) or (802) a lower aperture is set. When pressing button (803) or (804) a higher aperture is set. Begin this operation within 3 seconds after pressing button “k” (see 2.). Otherwise the PANOLUX automatically leaves the setting mode.
4. When the aperture desired lights up, wait for approx. 3 seconds. The PANOLUX automatically saves the set aperture.
5. Press button “ISO” (804) to get to the ISO setting mode. Now the indicator will blink red/green in the last ISO measurement set.
6. Set the ISO measurement by pressing the buttons marked with the respective arrows. When pressing button (805) or (802) a lower ISO measurement is set. When pressing button (803) or (804) a higher ISO measurement is set. Begin this operation within 3 seconds after pressing button “ISO” (see 5.). Otherwise the PANOLUX automatically leaves the setting mode.
7. When the ISO measurement desired lights up, wait for approx. 3 seconds. The PANOLUX automatically saves the ISO measurement.
8. Now, the PANOLUX will automatically control the exposure speed. To take a picture simply advance the winding disk (5) in the direction of the arrow until it stops and press the shutter release button (4).

Please note

Pay attention to the fact that the aperture set on the PANOLUX is the same as the aperture chosen on the aperture selector wheel (1). Otherwise inaccurate exposures are possible.

If the PANOLUX gives an exposure time in the slow speed range (LED indicator shows red), the slow speed range must be set on the control ring (702) of the long time exposure module. If the PANOLUX afterwards shows an exposure time in the fast speed range again (LED indicator shows green), the fast speed range must be set with the control ring (702) as well. The LED indicators on PANOLUX and camera must show the same color. Otherwise inaccurate exposures are possible. During the exposure process, the indicator blinks with the exposure time selected by the PANOLUX. Should it be too bright for an accurate exposure, the speed indicator blinks at the shortest exposure time. Use either a higher aperture or a less sensitive film. Should it be too dark for an accurate exposure the speed indicator will blink in the slowest exposure time. Use either a lower aperture or a more sensitive film.

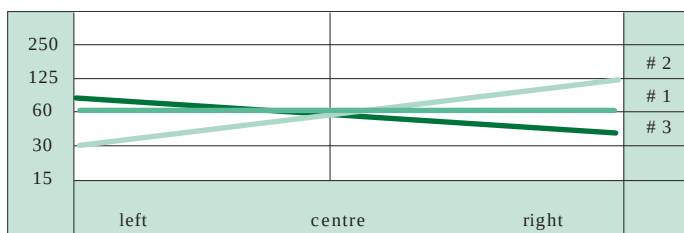
13. Reflective metering with exposure correction (811)

It is possible to influence the exposure time measured by reflective metering by entering correction factors. This results in a dynamic change of the shutter speed rotation during the exposure. That means when using correction factors the lens drum moves slower or faster in the corresponding parts of the exposure and different exposure times are produced during one drum rotation. When taking pictures in the reflected mode with exposure correction please follow these instructions:

1. Start camera and PANOLUX as described in chapter 12.
2. Press button “+/-“ to get to the correction mode. Now the indicator will blink red/green in the correction factor +/- 0.
3. Set the correction factor desired by pressing the buttons marked with the respective arrows. When pressing button (805) or (802) a negative correction factor is set. When pressing button (803) or (804) a positive correction factor is set. Begin this operation within 3 seconds after pressing button “+/-“ (see 2.). Otherwise the PANOLUX automatically leaves the setting mode.
4. When the correction factor desired lights up, wait for approx. 3 seconds. The PANOLUX automatically saves the correction factor.
5. To take a picture simply advance the winding disk (5) in the direction of the arrow until it stops and press the shutter release button (4).

Examples

#	measurement t	correction factor +/-	left portion of the picture	centre part	right portion of the picture
1	1/60 s	0 (standard)	1/60 s	1/60 s	1/60 s
2	1/60 s	+2	1/30 s	1/60 s	1/125 s
3	1/60 s	-1	1/250 s - 1/60 s (intermediate value)	1/60 s	1/60 s - 1/30 s (intermediate value)



As you can see from the table the middle part of the picture is always exposed with the shutter speed measured by the front detector cell (808). According to the correction factor set, the exposure time changes from the right to the left or vice versa. The direction is determined by the sign of the correction factor:

- + means that the left part is overexposed (+ = more light); the left portion of the picture is brighter (the lens drum moves slower in the left part of the exposure)
- means that the left part is underexposed (- = less light); the left portion of the picture is darker (the lens drum moves faster in the left part of the exposure)

The correction factor affects the entire exposure. That means a factor of +2 produces a correction of 2 shutter speeds over the whole picture beginning brighter in the left part.

Please note

When switching the PANOLUX on as well as after every single exposure the correction factor is automatically set to ± 0 . There is no exposure compensation. The film is exposed by a single constant shutter speed. We recommend for a first estimation of possible correction factors the following: Switch camera and PANOLUX on, set the aperture desired as well as the ISO measurement and pan camera and PANOLUX over your subject. Pay attention to the exposure time indicator of your PANOLUX. This procedure will give you the necessary information needed for a first subjective estimation (see also chapter 17).

14. PANOLUX in Incident Mode (812)

When working with the pure metering of incident light the light falling on your subject (respectively on the white diffuser (807)) is measured. The measurement does not take into account any reflected light. The incident light is measured by two light sensors oriented to the back right and to the back left under the white diffuser (807). When measuring the incident light the average value between both light sensors is determined. This average exposure time is basis for the complete exposure. When applying pure metering of incident light measurement please follow these instructions:

1. Start the PANOLUX as described in chapter 11. (switch (801) in position of incident mode (812))
2. Press button "k" (802) to get to the aperture setting mode. Now the indicator will blink red/green in the last aperture set.
3. Set the aperture desired by pressing the buttons marked with the respective arrows. When pressing button (805) or (802) a lower aperture is set. When pressing button (803) or (804) a higher aperture is set. Begin this operation within 3 seconds after pressing button "k" (see 2.). Otherwise the PANOLUX automatically leaves the setting mode.
4. When the aperture desired lights up, wait for approx. 3 seconds. The PANOLUX automatically saves the aperture.
5. Press button "ISO" (804) to get to the ISO setting mode. Now the indicator will blink red/green in the last ISO measurement set.
6. Set the ISO measurement by pressing the buttons marked with the respective arrows. When pressing button (805) or (802) a lower ISO measurement is set. When pressing button (803) or (804) a higher ISO measurement is set. Begin this operation within 3 seconds after pressing button "ISO" (see 5.). Otherwise the PANOLUX automatically leaves the setting mode.
7. When the ISO measurement desired lights up, wait for approx. 3 seconds. The PANOLUX automatically saves the ISO measurement.
8. Press button "+/-" to get to the correction mode. Now the indicator will blink at the correction factor +1.
9. Set the correction factor to ± 0 by pressing button (805) or (802). Begin this operation within 3 seconds after pressing button "+/-" (see 8.). Otherwise the PANOLUX automatically leaves the setting mode.
10. When the correction factor ± 0 lights, wait for approx. 3 seconds. The PANOLUX automatically saves the correction factor.
11. Now, the PANOLUX will automatically control the exposure speed. To take a picture simply advance the winding disk (5) in the direction of the arrow until it stops and press the shutter release button (4).

Please note

When working with the pure metering of incident light the correction factor ± 0 must be set always.

The pure metering of incident light and the reflective metering produce comparable exposures only when the light falls on the subject from the back or from the side (measuring range of the white diffuser (807)) and when the subject has an average remission degree of $p=0.17$ (bright grey). As these requirements are not given always the subject-oriented metering of incident light is described in the following.

15. Subject-oriented Metering of Incident Light (812)

When working with the subject-oriented metering of incident light all three light sensors (807 and 808) are active. This kind of metering results in an automatic exposure compensation by different drum speeds during the exposure process. The compensation is intensified when entering positive correction factors or can be reversed when entering negative correction factors (verticals). Here an example: Sunlight falls from the back over your right shoulder on the subject. Consequently, the left part of your subject is brighter (too bright) and the right part of the subject is darker (too dark). The different measurements of the two light sensors under the white diffuser (807) result in a faster rotation of the lens drum in the left part of your subject and in a slower rotation of the lens drum in the right part of your subject. An exposure compensation takes place during the lens rotation. The exposure time for the middle part of the subject is measured by the front detector cell (808).

When applying subject-oriented metering of incident light for taking pictures please follow these instructions:

1. Start the PANOLUX as described in chapter 11. (switch (801) is in position incident mode (812)).
2. Press button "k" (802) to get to the aperture setting mode. Now the indicator will blink red/green in the last aperture set.
3. Set the aperture desired by pressing the buttons marked with the respective arrows. When pressing button (805) or (802) a lower aperture is set. When pressing button (803) or (804) a higher aperture is set. Begin this operation within 3 seconds after pressing button "k" (see 2.). Otherwise the PANOLUX automatically leaves the setting mode.
4. When the aperture desired lights, wait for approx. 3 seconds. The PANOLUX automatically saves the aperture.
5. Press button "ISO" (804) to get to the ISO setting mode. Now the indicator will blink red/green in the last ISO measurement set.
6. Set the ISO measurement by pressing the buttons marked with the respective arrows. When pressing button (805) or (802) a lower ISO measurement is set. When pressing button (803) or (804) a higher ISO measurement is set. Begin this operation within 3 seconds after pressing button "ISO" (see 5.). Otherwise the PANOLUX automatically leaves the setting mode.
7. When the ISO measurement desired lights, wait for approx. 3 seconds. The PANOLUX automatically saves the ISO measurement.
8. Press button "+/-" to get to the correction mode. Now the indicator will blink at the correction factor +1.
9. In case you would like to chose another correction factor (see table), set the factor by pressing button (805)/(802) or (803)/(804). Begin within 3 seconds after pressing button "+/-" (see 8.). Otherwise the PANOLUX automatically leaves the setting mode.

10. When the correction factor desired lights, wait for approx. 3 seconds. The PANOLUX automatically saves the correction factor.
11. Now, the PANOLUX will automatically control the exposure speed. To take a picture simply advance the winding disk (5) in the direction of the arrow until it stops and press the shutter release button (4).

Subject-oriented Metering of Incident Light (Examples for NOBLEX 150)

measurements			weighting factor +/-	exposure of the picture		
measurement of left light sensor	measurement of front detector cell	measurement of right light sensor		left portion of the picture	centre part	right portion of the picture
1/30 s	1/60 s	1/125 s	+1 (standard)	1/125 s	1/60 s	1/30 s
1/30 s	1/60 s	1/125 s	-1	1/30 s	1/60 s	1/125 s
1/30 s	-	1/125 s	0*	1/60 s	1/60 s	1/60 s
1/30 s	1/60 s	1/125 s	+2	1/250 s	1/60 s	1/15 s
1/60 s	1/60 s	1/250 s	+1	1/125 s	1/60 s	1/30 s

* pure metering of incident light

Please note

When the two light sensors under the white diffuser (807) measure a contrast the exposure time is matched around the measurement of the front detector cell (808) for the middle part of the picture. The PANOLUX uses half of the difference measured by both light sensors (807) for this. An exposure compensation requires a measurable difference between both light sensors. If there is no difference, the film is exposed by the constant shutter speed measured by the front detector cell (808). As the correction factors only intensify existing differences the setting of any factor does not lead to a change in this situation.

The correction factor is set to +1 after switching the PANOLUX on and after every single exposure (see also chapter 17.).

16. Verticals

When taking verticals with automatic contrast compensation, it is always necessary to set a negative correction factor. Here is the explanation: Camera and PANOLUX are in a vertical position. The light sensor which points to the sky measures a brighter value, the light sensor which points to the ground measures a darker value. According to the logic used for the exposure compensation the PANOLUX electronics would interpret the brighter part of the subject at ground level (see example in chapter 15.). The contrast between sky and ground would be intensified. However, when using negative correction factors this effect is reversed. The PANOLUX has an effect of a graduated filter. The sky becomes darker and the ground brighter (see also chapter 17).

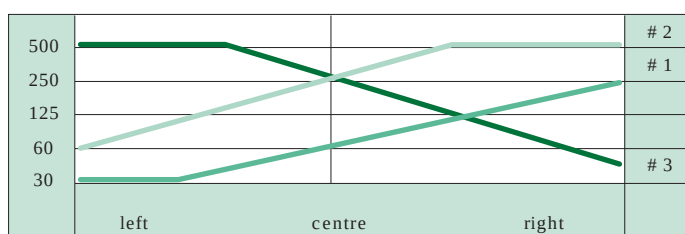
17. Automatic Restriction of Exposure Times

The exposure compensation in the reflected mode as well as in the subject-oriented incident mode takes place in the range

of exposure times offered by the camera only. In case the measurements of the PANOLUX are beyond the range of shutter speeds offered by your camera, the shutter speeds will be automatically restricted. Whenever you would like to work with a large range of shutter speeds we recommend to set the aperture so that your PANOLUX shows the middle exposure time.

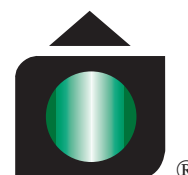
Automatic Restriction of Exposure Times (Examples for NOBLEX 150 in reflected mode)

#	measurement of reflective metering	correction factor +/-	left portion of the picture	centre part	right portion of the picture
1	1/30 s	+4	1/15 s - restricted	1/30 s	1/125 s
2	1/125 s	+4	1/30 s	1/125 s	1/250 s - restricted
3	1/125 s	-5	1/250 s - restricted	1/125 s	1/30 s - 1/15 s



18. The Memory Function – MEM

By pressing the memory button “MEM” (803), the measurement is saved for the next exposure. This function works with all measuring methods of your PANOLUX. After taking the picture, the saved measurement is automatically deleted. In case the indicator of shutter speeds alternates between the short and slow speed range, the speed range desired can be fixed by pressing the button “MEM” (803).



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