**Enlarging Attachment
for the**

® **GOSSEN
LUNA-PRO**

7909-0097Y0

With the Enlarging Attachment, your Luna-PRO becomes a convenient and reliable darkroom exposure meter. It gives you not only the required exposure for your black-and-white or color enlargements but also enables you to measure negative contrast for the proper selection of the appropriate paper grade.

Reliable exposure measurement results in a considerable saving of time and materials. Furthermore, exact exposure determination for enlarging aids you in improving print quality — makes it easier for you to use your creative ability in producing outstanding prints.

Before you read the following detailed instructions, you should be familiar with the general operating instructions contained in the LUNA-PRO owner's manual. — However,

when using the Luna-PRO as an enlarging meter, its computer dial with scales for film speeds, f-stops, shutter speeds or EV values is disregarded.

**You work only with the upper measuring scales showing the needle deflection of the Luna-PRO.**

## TO ATTACH THE ADAPTER:

Slide the hemispheric diffuser of the Luna-PRO to the right. Insert the lug (3) of the adapter into the slot at the front of the meter housing, pressing the locking knob (2) while you slide the adapter flush onto the Luna-PRO. (The diffuser of the meter fits into a recess of the adapter.) Releasing the locking knob will fix the adapter in place.

1 Measuring window
2 Locking knob for Attachment
3 Lug
4 White locating area

## MEASURING METHOD:

Whether you want to determine negative contrast or correct exposure, the basic operating steps remain the same:

Decide the desired print size and composition by appropriate framing with the enlarging easel, and focus the negative critically on the easel. — Adjust the aperture of the enlarging lens to a medium opening. — During the subsequent measuring operations, switch off the darkroom safelight as it might affect the measuring results.

With the enlarging adapter attached, place the Luna-PRO flat on the enlarging easel so that the measuring window (1) is within the exact area of the projected negative which is to be measured. Press the range selector switch of the Luna-PRO backward or forward in the familiar manner

and, when the indicator needle comes to rest, read the scale value indicated by the needle; releasing the switch will lock the reading on the scale.

Incidentally, you need not be concerned about the exposure factor of any filter used in the enlarger, as the light absorption of a filter is automatically included in the measurement.

## CONTRAST MEASUREMENT:

Contrast is the difference in brightness of the thinnest and densest portion of a negative. It is measured through the adapter as the scale-value difference between the highest and lowest obtainable needle deflection:

**First** — place the measuring window (1) within the brightest portions of the projected negative

image and note the highest needle deflection on the scale.

**Second** — measure the densest portions of the projected negative and note the lowest needle deflection on the scale.

The difference between the highest and lowest scale values expresses the contrast, and the accompanying table shows the corresponding brightness ratio with the appropriate paper grade.

**Example:** Scale value of brightest area: 10; densest area: 5¹/₂. The scale value difference of 4¹/₂ corresponds with a brightness relation of 1 : 20 for which the "soft" or No. 1 paper grade would be appropriate.

## SIGNIFICANCE OF NEGATIVE CONTRAST:
Knowledge of the negative contrast is essential

for the production of a properly scaled enlargement, as it determines the appropriate gradation of paper to be used. If the negative contrast exceeds the copying range of the paper, your enlargements would give you jet-black shadow areas without detail or washed-out highlights, because the paper could not cope with the full contrast. On the other hand, the negative contrast should not be much smaller than the contrast range of the paper, as your enlargements would be flat and lifeless. You would be wasting the quality of your negatives.

## EXPOSURE DETERMINATION:

Adjust the enlarging lens to your usual „working f-stop". Place the measuring window (1) within the brightest area of the projected negative image (i.e. a shadow portion in the finished

enlargement) which still shows some detail. Depress the see-saw selector switch of the Luna-PRO and, after the needle comes to rest, read the scale value. This reading leads to the CALIBRATION VALUE for correct exposure.

If the needle does not stop precisely on a numbered scale line, open or close the enlarging lens until the needle is exactly on the nearest scale line. This slight adjustment will make subsequent operations more convenient and reliable.

Now, make a test strip print with different estimated exposures (step exposures) on your enlarging paper in the accustomed manner. Develop normally and select the strip with the best exposure. The exposure time of this selected strip becomes standard exposure — or the same time

grade of paper with the same development — if you always adjust the enlarger lens opening to reach the same needle deflection (scale value — see above) on the Luna-PRO scale.

> **EXAMPLE:** The original measurement within a bright area of the projected image gave you a needle reading of "5", and you judged the test strip exposed for 20 seconds to be the best. These two values — 5–20 — represent the CALIBRATION VALUE of the paper grade you are using, and it's a good idea to note them on the paper package.

Naturally, such a calibration value must be established for each type of paper and for each contrast grade you use.

Depending on a negative, it may happen that you cannot reach your established "standard"

needle deflection by opening or closing a lens diaphragm. In that event, you simply use another scale value and a correspondingly modified exposure time, whereby each higher scale value requires reduction of exposure by one-half. For the above example (scale value 5, exposure time 20 sec) the resulting modification would be:

| Scale value | 3 | 4 | **5** | 6 | 7 |
|---|---|---|---|---|---|
| Exposure time | 80 | 40 | **20** | 10 | 5 |

The described methods apply equally to black-and-white and color enlargements. Exposure factors of filters may be disregarded, unless you change filters between original exposure measurement and actual exposure.

Footnote to the described method of "shadow measurement"

Sensitivity" values published by paper manufac-

turers usually apply to a density of 1.0 which means that exposure measurements should be made in an area of medium density. This calls for an estimate of just what this „medium density" is — not a very reliable method, especially with color negatives. On the other hand, the selection of a shadow portion — the brightest area of a negative with some detail — can be a clear-cut decision which, furthermore, can be checked objectively with a series of measurements.

## Some practical hints.

Consistently successful enlarging depends on careful working methods which will give you real time savings with the Luna-PRO-and-adapter combination. Safelights in the darkroom may not affect the paper but they do influence

exposure measurement. Always turn off the safelight while measuring, or use one of the timers or special switches which turn off the safelight when the enlarger is switched on.

It is advisable to keep a constant check on line voltage because fluctuations in voltage negate all relations between measurement and correct exposure. A voltage stabilizer is the best remedy.

Developer should always be standardized and so, naturally, should be the temperature and time of development.

Familiarize yourself with available types of papers. Apart from different contrast grades, be aware of different tints (white, ivory, etc.), surfaces (glossy, matt, textured, grained, etc.) and weight (single, double).

Good enlargements depend on good negatives having a moderate contrast range with detail in highlights and shadow areas. Extreme enlargements demand negatives of utmost sharpness.

NOTE: Manufacturers of photographic papers may not use identical grade designations or numbers. For exact contrast ranges of specific papers, apply to the manufacturer.

## CONTRAST TABLE and PAPER GRADES

| Scale Value Difference | Contrast Range Ratio | Appropriate Paper Grades (see NOTE) Grade Designation | Grade Number |
|---|---|---|---|
| $1/3$ | 1 : 1,25 | | |
| $2/3$ | 1 : 1,6 | Extra Hard | 5 |
| 1 | 1 : 2 | | |
| $1\ 1/3$ | 1 : 2,5 | Hard | 4 |
| $1\ 2/3$ | 1 : 3,2 | | |
| 2 | 1 : 4 | | |
| $2\ 1/3$ | 1 : 5 | Normal | 3 |
| $2\ 2/3$ | 1 : 6,3 | | |
| 3 | 1 : 8 | | |
| $3\ 1/3$ | 1 : 10 | Medium Soft | 2 |
| $3\ 2/3$ | 1 : 12,5 | | |
| 4 | 1 : 16 | | |
| $4\ 1/3$ | 1 : 20 | Soft | 1 |
| $4\ 2/3$ | 1 : 25 | | |
| 5 | 1 : 32 | | |
| $5\ 1/3$ | 1 : 40 | | |
| $5\ 2/3$ | 1 : 50 | | |
| 6 | 1 : 64 | Extra Soft | 0 |
| $6\ 1/3$ | 1 : 80 | | |
| $6\ 2/3$ | 1 : 100 | | |
| 7 | 1 : 125 | | |

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**Erlangen**