

ComTime Instruction Manual

Introduction

The JOBO ComTime is an electronic exposure meter and timer for the determination of exposure times for black and white and color enlargements. It is suited for the following applications:

- Determination of exposure time for all black and white enlargements
- Determination of exposure time for color enlargements of slides and negatives
- Determination of the correct contrast grade for black and white papers

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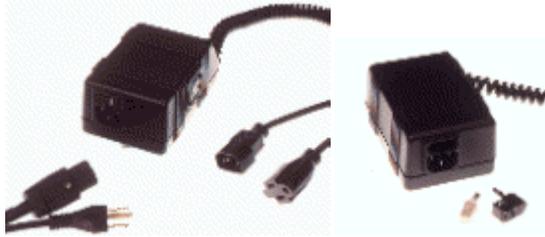
Controls and Parts of the ComTime



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1. **Balancing LED's** for exposure time adjustment. Correct exposure time is reached when the green LED is lit.
2. **Sensitivity adjustment knob** to adjust the unit for paper sensitivity.
3. **Measuring cell**
4. **White area** to aid in finding a suitable area of the image for measuring.
5. **LED display** indicating the recommended contrast grade. Half grade steps are indicated when two adjacent LED's are lit.
6. **ON-OFF switch**
7. **Rotary potentiometer** for adjusting the paper grade display.
8. **Start/Stop key** for starting and stopping the enlarger exposure.
9. **Lamp key** for turning the enlarging lamp ON or OFF and to RESET an interrupted exposure time.
10. **Rotary wheel** with integrated LED display for adjusting exposure time.
11. **Power supply** contains power and switching functions.
12. **Power supply socket** for incoming power cord (#15).
13. **Fuse and line-voltage selector** 230/115 volts.
14. **Switch outlet**; the enlarger is connected here via the adapter cord (#16).
15. **Power cord**; connected between the wall socket and the power supply socket (#12).

16. **Adapter cord**; connected between the enlarger and the switch outlet (#14).



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Important Safeguards

When using electrical appliances, especially when children are present, basic safety precautions should always be followed, including the following:

Read all instructions before using!

Keep away from water.

Warning: To reduce the risk of death by electric shock

1. Always unplug it immediately after using.
2. Do not place or store appliance where it can fall or be pulled into a tub or sink.
3. Do not place in or drop into water or other liquid
4. If an appliance falls into water, unplug it immediately. Do not reach into the water.

Warning: To reduce the risk of burns, electrocution, fire or injury to persons

1. This appliance should never be left unattended when plugged in. Do not pull, twist or wrap line cord around the motor.
2. Close supervision is necessary when this appliance is used by or near children or invalids.
3. Use this appliance only for its intended use as described in the manual. Do not use attachments not recommended by the manufacturer.
4. Never operate this appliance if it has a damaged cord or plug, if it is not working properly, if it has been dropped or damaged, or dropped into water. Return the appliance to an authorized service center for examination and repair.
5. Keep the cord away from heated surfaces.

Save these instructions!

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1. Supplies Included



- ComTime
- Instruction manual
- Diffuser for integrated measurement
- Adapter cord
- Power cord
- Power supply

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2. Technical Data

Dimensions: (H x W x L)

Control Unit: 2.5 x 7.5 x 14 cm

(1 x 3 x 5½")

Power Supply: 6 x 8 x 14 cm

(2 x 3 x 5½")

Weight:

Control Unit: approx. 200 g

(approx. 7 oz.)

Power supply: approx. 500 g

(approx. 18 oz.)

Voltage: 230 V 50/60 Hz;

115 V 50/60 Hz

Power: 20 watts

Switching capacity: up to 900W at 230 V

up to 470W at 115 V

Operating conditions: 16-35° C (61 - 95° F)

maximum 60% relative humidity

Calibration: manual

Measurement modes: Spot and integrated

Probe: 4 mm

Paper Channels: 1

Display: LED

Key illumination: None

Paper types: Neg., Pos., B/W, VC

Exposure time: 0.1 up to 60 sec.

Display of time: Countdown; time can be interrupted at any point

Contrast gradation: 0-5 in ½ grade steps

Measuring range: approx. 4 decades (13 *f*-stops)

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3. Setup

Before connecting the cords to the power supply, check the voltage rating in the small gray window of the fuse and line-voltage selector (#13) and make certain it is correct for the current in your darkroom. There are only two settings; 230 or 115 volts. If you need to change the setting, make certain the power supply is **not** plugged in, then press the flat springs (on either side of the voltage window) toward the center to release the fuse assembly from the power supply socket. Once you have removed the fuse and line-voltage selector pull out the gray fuse socket, rotate it 180° and re-insert it. Then re-install the fuse and line-voltage selector.

1. Connect the adapter cord (#16) into the switch outlet (#14).
2. For enlargers with power supplies, connect the power supply of the enlarger to the adapter cord (#16). On some fan-cooled enlargers, there may be a cord attached to the power supply labeled "to timer". With such enlargers, attach this cord to the adapter cord (#16). If your enlarger has no external power supply, simply plug the enlarger's power cord into the adapter cord (#16).
3. Connect the power cord (#15) into the power supply socket (#12).
4. Connect the other end of the power cord to the power socket in your darkroom.
5. The ComTime is now ready for use.

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4. Programming the ComTime

Note: During programming and during all measuring processes, the safelight and all other darkroom illumination must be off. the measuring cell will respond to any light.

To program the ComTime, you must first make what you consider to be an ideal print without using the ComTime. All factors which affect exposure (enlarger height, *f*-stop of the enlarging lens, paper grade, filtration if any, and exposure time) must then be used to program the ComTime for future use. The JOBO Varioformat Easel (#6810) and Test Printer (#6815) are valuable aids in determining the correct exposure.

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4.1 Entry of the Determined Exposure Value (Spot)

The enlarger height and lens aperture should be the same as for your ideal print, and the negative for that print should be in the negative carrier of the enlarger. Turn on the enlarger. Turn off all darkroom light. With the ON/OFF switch (#6), turn on the ComTime. The rotary wheel (#10) is set to display the exposure time you used for your ideal print.

Place the ComTime on the easel or baseboard of the enlarger so the lightest part of the projected negative that still shows some details is covered by the measuring cell (#3). Select this spot as close to the central area of the negative as possible. With the ComTime in place, turn the sensitivity adjustment knob (#2) until the balancing LED's (#1) change from a red triangle to the green center LED. Once the green LED is lit, do not change the adjustment knob (#2) any more.

Your ComTime is now set for the paper you have been using. It is "programmed". In order to assure that you will be able to use the ComTime again with this box of paper, you should mark the paper package with the measuring method used and the reference value. (See section 7.)

Now you can determine exposure time for an unknown negative used with this paper. To program and determine the paper grade required, proceed to section 4.2.

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4.2 Entry of Paper Grade by Spot Readings for B/W

After completing the steps in section 4.1, select the darkest area of the projected negative which has details important to the picture and place the measuring cell (#3) under that area. An LED (#5) will light up to indicate the recommended paper grade.

If this indicated paper grade does not correspond to the grade of paper used in your ideal print, the ComTime can be adjusted by turning the rotary potentiometer (#7) with the screwdriver until the correct contrast grade is displayed.

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4.3 Entry of the Determined Exposure Value for Integrated Measurements with B/W and Color

The diffuser supplied with the ComTime should be placed under the enlarging lens in the light path of the projected negative or slide. Place the ComTime directly on the easel or baseboard under the center of the projected light and turn the sensitivity adjustment knob (#2) until the balancing LED's (#1) change from a red triangle to the green center LED. Once the green LED is lit, do not change the adjustment knob (#2) any more. In order to assure that you will be able to use the ComTime again with this box of paper, you should mark the paper package with the measuring method used and the reference value. (See section 7.)

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5. Measuring of Exposure Value

Place an unknown negative or slide in the enlarger, focus, and select the picture details to be printed. Turn the ComTime on with the ON-OFF switch (#6) as well as the enlarger light by pressing the lamp key (#9). Place the ComTime on the easel or baseboard so that the lightest spot of the negative or slide which just shows detail is projected onto the measuring cell. (#3). The new exposure time can now be determined in two ways.

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5.1 Measurement with Constant Exposure Time

For this method, the exposure time is pre-set with the rotary wheel (#10). The aperture of the enlarging lens is now adjusted until the balancing LED's (#1) display only the green LED. You may now expose the paper for the time indicated on the rotary wheel (#10) at the aperture determined through this procedure. If you are unable to illuminate the green central LED (#1) you may be out of range for the exposure time selected. Try the same procedure with a different time selected.

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5.2 Measurement with Constant Lens Aperture

For this measuring method, pre-set the enlarging lens to the desired aperture (f -stop) and turn the rotary wheel (#10) until only the green LED (#1) is illuminated. If you are unable to illuminate only the green central LED (#1) you may be out of range for the aperture selected. Try the same procedure with a different aperture.

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6. Determination of B/W Paper Grade

The ComTime is an effective tool for determining the negative contrast, and therefore the correct paper grade needed to make the best print to show the full tonal range of the photograph. Selecting the correct paper grade means that the lightest and darkest areas in the negative which still show some detail, will also show detail in the final print.

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6.1 Determination of B/W Negative Contrast

With the unknown negative placed in the enlarger, switch on the ComTime (#6) and focus the image and adjust it for the desired composition. Place the ComTime on the easel or baseboard with the measuring cell (#3) under the lightest spot of the projected negative in which detail can be seen. Turn the rotary wheel (#10) until only the green LED (#1) is illuminated. Now move the ComTime to position the measuring cell (#3) under the darkest part of the negative that still shows detail. The paper grade indicators (LED's) (#5) will now indicate the correct grade for this negative.

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7. Reference Value

Once the ComTime is programmed, the paper sensitivity can be read-out as a reference number. This value makes it possible to calibrate different paper types, and to re-program the ComTime to each.

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7.1 Displaying the Reference Value

- Turn unit off with ON/OFF key (#6)
- Turn unit on while pressing the lamp key (#9)
- Read out reference value in the display and note number accordingly (1 - 99 possible)
- Turn unit off
- After turning unit on, normal operation is restored.

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7.2 Adjusting the Reference Value

- Turn unit off with ON/OFF key (#6)
- Turn unit on while pressing the lamp key (#9)
- Adjust the desired reference value in the display by turning the rotary wheel (#10)
- Turn unit off
- After turning unit on, normal operation is restored.

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8. Starting Exposure

Turn the enlarger off by pressing the lamp key (#9). Place the paper in the easel and press the Start/Stop key (#8). The enlarger will switch on and the time will count down on the display. The exposure count-down can be interrupted by pressing the Start/Stop key. The exposure will resume when you press the Start/Stop key again. This procedure can be repeated as many times as desired.

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9. Special Indications

Digital LED display of rotary wheel does not illuminate.

- No current or fuse defect

Right LED (of the balancing LED's #1) lights up and no adjustment will change it.

- Too much light

Both red arrows (of the balancing LED's #1) light up.

- Too little light

Two LED's (of the contrast grade display #5) light up.

- Unit is indicating a contrast grade half way between the two full grades. Example: LED's 2 and 3 light up; the unit is indicating contrast grade 2½.

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10. Mounting the Diffuser

If your enlarger has a red under-the-lens swing out filter, you may be able to remove the red filter and mount the diffusion material in its place. Use the original filter as a template for cutting the diffusion material to fit in the holder.

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11. Maintenance and Care

The ComTime does not need any special maintenance. However, the measuring window should be kept clean, because dust and dirt on the sensor can cause incorrect measurements. The measuring cell (#3) can be cleaned with a Q-tip or cotton ball. **Do not** spray any liquid onto the measuring cell.

When not in use, the ComTime should be stored in a cool and dry place. Just like any other precision measuring instrument, the ComTime must be protected from excessive heat, shock or impact. Handle it with care!

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12. Service

If the ComTime does not work, or if there appears to be a problem with its operation, we recommend that you send it to your local JOBO Service Department to be checked or repaired.

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13. Warranty

ComTime units, purchased in the USA, are covered by a one year parts and labor warranty against manufacturing defects. Damage caused by inappropriate handling will void the warranty.