Enlarging Meter - Timer

1 CONTENTS

2 IMPORTANT NOTE

This manual is provided as advance information to indicate the intended functionality of the DLG Enlarging Meter-Timer. The Enlarging Meter-Timer is currently in the process of an ongoing design and development programme during which significant changes may be made to details of the controls, displays and operation of the unit.

The prospective purchaser is advised to read the formal issue of this manual, specifications and other published information from DLG electronics when it becomes available before making a purchase. This material will be published shortly before the Enlarging Meter-Timer is offered for sale.

3 INTRODUCTION

The DLG Enlarging Meter-Timer is designed as a comprehensive solution for all dry-side darkroom operations. It provides:

- Metering of the projected image for exposure setting
- Metering of contrast range for paper grade selection
- Control of enlarger for precision timing of exposures
- Support for “dodge” and “burn” metering and timing
- Programmable print programmes (up to 99 programmes may be stored), each programme permitting up to 20 programme steps of base exposure, dodge and burn exposures.
- Multiple stored paper calibration data
- User-definable paper types and characteristics
- Timing of Test Strips
- Option of metering in various fractional stop increments (1/16, 1/12 etc)
- User calibration through inbuilt print densitometer
- Optional compensation for enlarger brightness fluctuations

The controls are designed and laid out with ergonomic considerations foremost. Complicated multi-function keypads are avoided, variable and analogue inputs are entered through a rotary control and dedicated keys are provided for the main functions. Displays are safelight-red and dimmable. Panel legends are switches are high-contrast white-on-black. Hands-free operation of exposure start-stop is possible through a footswitch.

Pushbutton switches are illuminated. The illuminations are designed to guide the user through the operating steps by showing which selections are available at each stage in the operation of the unit.

The unit is designed to operate from AC mains supplies worldwide without requiring a separate adaptor, from 100VAC to 250VAC at 50 to 60 Hz. Applicable European and US standards are met.

4 SETTING UP THE ENLARGING METER-TIMER

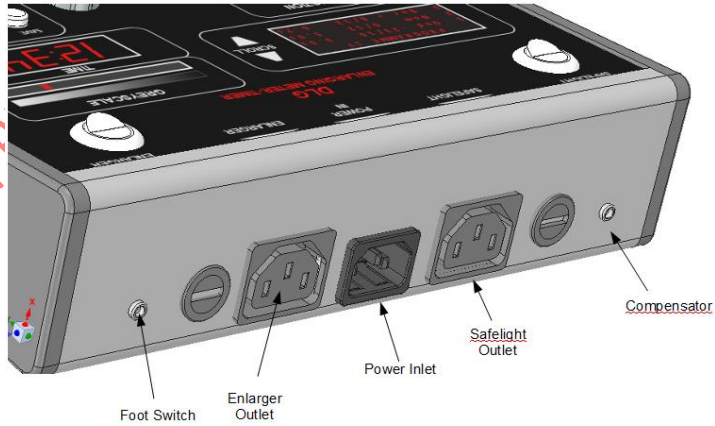
4.1 Precautions

This appliance uses mains voltages which can be hazardous. Please do no misuse the unit and always observe the following precautions

- The unit is mains-powered and should be positioned away from water and other liquids and installed in accordance with local regulations.
- If the unit or cable is damaged, do not use. Please contact your dealer or DLG Electronics directly for repair or service
- Ensure connected appliances are within the rated capacity of the unit (0 to 5 ampls, 100 to 250 VAC)
- Ensure the connected appliances are compatible with the mains supply in your region
- Always replace fuses with the correct type and rating
- The unit should only be disassembled or serviced by someone competent to do so.
- Do not allow the unit to come into contact with, or be immersed in, any liquids.
- Do not operate switches with wet hands.
- Ensure that the unit is securely mounted and that installation is in accordance with local regulations

4.2 Connections

Rear Panel Connections:



4.2.1 Power Connections

The enlarger timer is designed to be connected between the wall power outlet and the enlarger. The enlarger timer is fitted with IEC mains inlet (C14) and outlet (C13) fittings. A mains lead (US, UK or with national adaptor, depending on region) is supplied to connect from the wall outlet to the enlarger timer.

If your enlarger is not fitted with a suitable IEC plug (C14 type) it will be necessary to remove the existing plug and replace with the IEC plug provided with the unit.

The enlarger is connected to the enlarger outlet socket at the rear of the unit.

A second outlet at the rear of the unit is provided for optional safelight connection.

CAUTION – electrical wiring and connections should be carried out by a competent person and in accordance with any local regulations. If in doubt please contact a qualified electrician.

When using with an enlarger using a low voltage lamp and transformer, the transformer should be between the enlarger timer and the enlarger.

4.2.2 Lamp Compensation Sensor

The enlarging meter-timer provides the option for light level compensation. This feature allows the timer to automatically compensate for variation in enlarger light output, notably when using cold-head light which gradually increases in brightness in the first minutes after power-on. The exposure timings will then automatically allow for the brightness variation, with the internal timings in the unit running more slowly when the light is dimmer, and speeding up as the light brightens. This will also automatically compensate for any start-up delay in the lamp by slowing the exposure timings to a standstill when the lamp has not started.

Use of the light level compensation is optional – if the sensor is not connected to the enlarger the internal compensation algorithms are disabled.

The light sensor needs to be installed in the enlarger head such that the sensor can “see” a constant illumination level not affected by the enlarger controls or the insertion of a negative. It does not necessarily need to be aimed directly at the lamp, provided a good level of illumination from the lamp can be “seen” be the sensor.

The sensor is housed in a 6mm (approx. ¼”) metal sleeve, which is secured in a 12mm (approx. ½”) hole using the gland fitting provided. This requires a 12mm / ½” hole to be drilled in the enlarger head.

The location for the sensor should not be subject to excessive heat – temperature <70ºC. If the location is cool enough to touch without pain then it is cool enough to fit the sensor.

Caution should be exercised when making the drilling and fixing the sensor. Ensure that the sensor does not contact any electrical parts in the enlarger. Installation should be carried out by a competent person – if in doubt consult a qualified electrician.

The sensor is connected to the 3.5mm jack socket in the rear of the unit.

It is desirable to “normalise” the unit after fitting a light sensor, such that during steady state brightness levels the timer operates at real time. This is done in the setting menu, as described in section

4.2.3 Footswitch

A 3.5mm jack socket at the rear of the unit connects the optional footswitch. The footswitch duplicates the function of the ENTER key.

4.2.4 Light Sensor

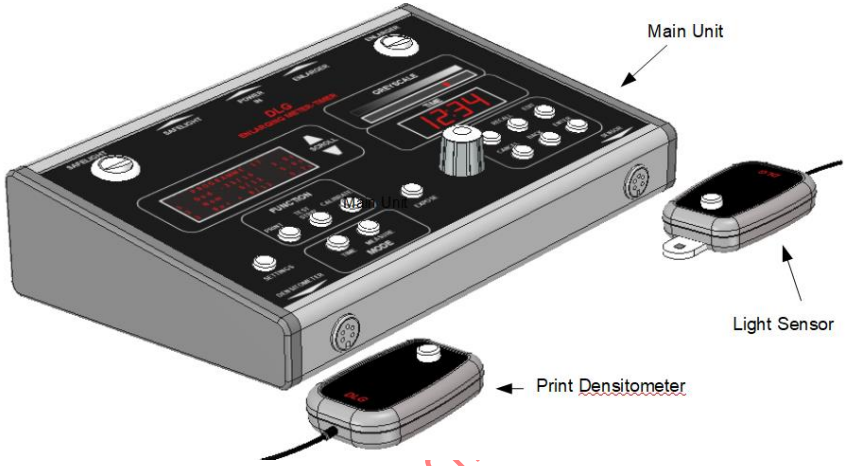
A 5-pin DIN-type connector on the front edge of the unit is provided for connecting the light sensor.

4.2.5 Densitometer

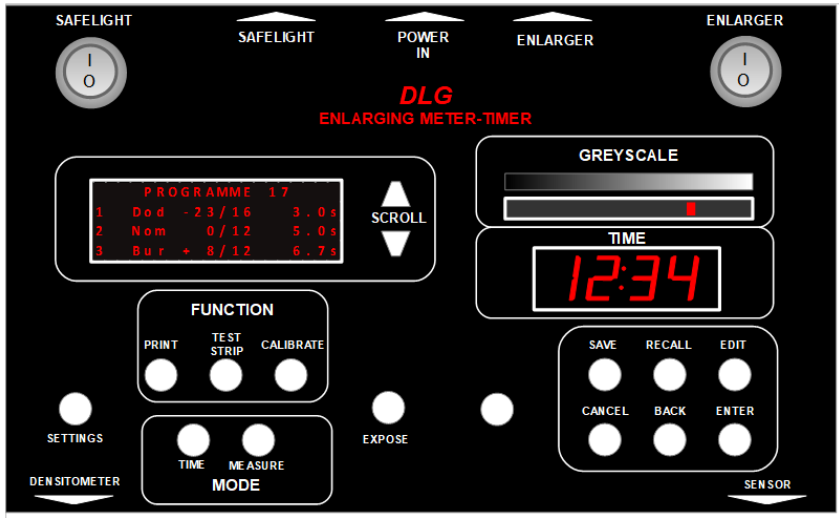
A print densitometer is provided to support calibration. A 5-pin DIN-type connector on the front edge of the unit is provided for connecting the densitometer unit. Use of the densitometer is only required for calibrating the unit and it may be disconnected when not required.

5 DISPLAYS AND CONTROLS

Overview of Unit:



Layout of Front Panel Controls:



The push buttons on the sensor and the densitometer duplicate the function of the ENTER key.

6 OPERATION

6.1 General

It is recommended that you read the manual thoroughly, install the timer-meter as described then work through the operating instructions carefully, practicing each step in a dummy run, before using it to make prints.

For clarity, the operating instructions are given in the following format:

Directions to the user are given in normal text, indented with a step number, for example:

1. Switch on the meter-timer

Where key presses are required, the key name is given in capitals:

2. Press the MEASURE button

Information notes about the meter operation in response to a user action are given in italic text following the relevant instruction, for example:

3. Press the MEASURE button

The time display will show the calculated exposure time.

Where helpful, representations of the display are given.

6.2 Settings Menu

The settings menu is accessed through the SETTINGS key. Selecting SETTINGS brings up a menu of the available settings on the LCD screen. Available settings are:

1. Exposure Step Increment
2. Paper Type
3. Exposure Mode
4. Light level compensation baseline setting

To change any setting, use the scroll keys to move up and down the screen, the press the ENTER key. This will then bring up the options available.

6.2.1 Exposure Step Increment

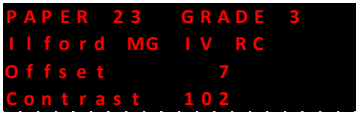
The meter/timer works in fractional stops, as these give constant-ratio changes to the exposure. The “increment” option in the settings menu allows the increment to selected.

Available options are 1 (whole stop increments),1/2, 1/3, ¼, 1/6, 1/8, 1/12, 1/16 and 1/24 stop increments. 1/12 is recommended for general-purpose use, representing a barely-distinguishable difference in print tone with common papers and paper grades.

To set the exposure step increment, press the SETTINGS key, then use the scroll keys to move the cursor to the “Increment” row. Rotate the rotary control to choose the required increment and press ENTER when done.

6.2.2 Paper Type

1. Press the PAPER key
2. Use the scroll keys to move the cursor to the paper type.
3. Press ENTER to select. This will bring up the paper details screen
4. Use the rotary control to choose the paper type.
5. *The LCD display will show the selected paper type, along with the key paper characteristics:*



6. Press ENTER to confirm the selection

6.2.3 Exposure Mode

When carrying out multi-step exposures (for example, when carrying out dodge and burn steps, and when making test strips) it is possible to either:

- Carry out the exposure on a stop-start basis, where the enlarger is extinguished at the end of each step and re-started on command for the next step. This is convenient if various different dodge and burn tools need to be found for the different steps
- Carry out the exposure on a continuous basis, sounding an alert at the conclusion of each step, with the enlarger lamp on throughout the process. This is quicker and simpler but requires swift action by the operator.

The Enlarging Meter-Timer supports both modes of operation, and the mode is selected through the settings menu. Press SETTINGS to bring up the settings menu, use the SCROLL keys to move to the “Mode” line then use the rotary control to select either “Start/Stop” or “Continuous”. Press ENTER to save the selection.

6.2.4 Light level compensation baseline setting

[Section to be completed]

6.3 Printing

Prints can be made either by manually setting the required time, or by using the metering capability within the unit to determine the optimum exposure.

To make a print, press the PRINT key. This will illuminate the MEASURE and TIME keys, to indicate the available options. Press TIME to make a manually-timed print; press MEASURE to use the units metering capability to make a metered print.

Whether manually-timed or metered prints are made, it is possible to define dodge and burn steps in addition to the base exposure.

6.3.1 Manually-Timed Print

1. Press PRINT to start
2. Press TIME to choose manual exposure
3. Use the rotary control to set the required time
4. Press ENTER to store the time.
5. At this stage it is possible to proceed directly to making the exposure – to do so go to step 11 below. If dodge and burn steps are required, continue from step 6 below.

Adding dodge and burn steps:

6. To add a dodge or burn step, press “TIME”.
7. The LCD display screen will now show the nominal exposure time set as above plus an additional blank step. In this example the nominal exposure was set to 15 seconds and the stop increment is 1/12, which is the default value. The increment can be changed at this stage if desired – refer to section 6.2.1 above.

8. Use the rotary control to adjust the number of stops for the desired dodge/burn increment. *The LCD display screen will adjust accordingly and calculate the associated exposure time.*

Note that the procedure for setting a dodge step and a burn step is the same – the only difference is whether the step is negative or positive relative to the nominal exposure. The unit determines whether the step is a dodge or a burn from the sign of the exposure increment.

Note also that the time displayed is the additional exposure time over and above the time for the previous step. In the above example the nominal exposure is 15 seconds and an additional exposure of 10.2 seconds (9/12 stop) is applied on top of that 15 second nominal, giving a total burn exposure of 15.0 + 10.2 = 25.2 seconds.

9. Press ENTER when done.

10. Additional steps may be added by repeating steps 6 to 9 above. The unit will calculate the exposure times for each step, and sort into time order.

In this example an additional dodge step has been added at -3/12 stops. Observe how the times have been recalculated to show the additional exposure time required over and above the previous step in each case – the nominal exposure is shown as 2.4s, which when added to the starting dodge exposure of 12.6 seconds gives a total nominal exposure of 15.0s.

At this stage it is possible to save the various exposure steps as a programme, allowing it to be recalled for any repeat prints either immediately after or at a future date. Note that the "Programme 0" is not a permanently-saved programme – it is the working "programme" used for the current print. To save the programme, follow steps from step 15. Alternatively, the programme may be saved after the print is completed, or simply discarded if repeat prints are not required.

Making the Exposure:

11. Press EXPOSE to make the print. This will extinguish the enlarger lamp.

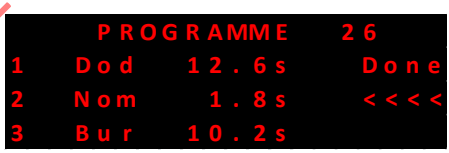
12. Position the printing paper on the easel and prepare for printing. Ensure dodge/burn implements are to hand if required.

13. Press ENTER to start the exposure.

Depending on the selected exposure mode, the exposure will be made continuously, with a "beep" indication at the conclusion of each step, or as discrete steps. Refer to section 1 above for details on how to set the exposure mode.

The exposure will now be run.

If dodge and burn steps have been set, the LCD screen will show which step is currently being run and show a countdown of the exposure time for that step.



The display will automatically scroll as the exposure steps progress in order to always show the current and next exposures in the programme.

14. At the conclusion of the exposure the enlarger is switched off and the safelight on. It is now possible to repeat the same print from step 13 above by pressing ENTER again.

Saving the programme:

15. To save the printing programme for later use on repeat prints, press SAVE.
16. Use the rotary control to select a programme memory in which to save the programme.

    99 programme memories are available. As the rotary control is turned the programme number is displayed at the top of the screen.

    Choose either an empty programme, or one which may be overwritten. To assist in selection the contents of the currently-selected programme are shown on the LCD display screen.

    In this example, the rotary control has been used to select programme 17, the contents of which are displayed. If we want to keep programme 17, and not overwrite it, select another:

    Here an empty programme location has been found.

17. Press ENTER to save the programme. The programme will now be displayed.

6.3.2 Metered Print

A metered exposure uses the capability of the unit to measure the light levels at points in the projected image to determine exposure settings, required paper grade and assess any dodge and burn requirements.

1. Install a negative in the enlarger
2. Switch on the meter-timer
3. Ensure that the ENLARGER and SAFE LIGHT (if a safelight has been connected) rocker switches are set to AUTO, and that the light sensor and footswitch (if desired) are connected
4. Set up and focus the print

5. Press MEASURE to put the unit into measure mode - *this switches the enlarger on and safelight off.*

6. Select the preferred stop on the enlarger for printing. Position the light sensor to measure a highlight (dark negative) area in the print. One segment of the greyscale display will illuminate to show the current light measurement, and the exposure display will show a suggested exposure.

7. Press ENTER to store the reading. The display will show a suggested exposure time in seconds.

8. If desired, a print can simply be made at this exposure setting. To do so, go directly to step ?? below. It is however generally preferable to determine the paper grade required prior to printing, in order that the full range of tones can be satisfactorily reproduced. To do so, proceed as follows:

9. Re-position the sensor at a shadow area of the image.

10. Press the ENTER key

The exposure display will now show the density of the negative relative to the previously-measured highlight in logarithmic units. The greyscale display will show graphically where the shadow area will sit on the paper greyscale. The shadow area would normally be placed near the maximum density that the paper can reproduce, if a washed-out print appearance is to be avoided.

Adjust the rotary control so that the indicated print intensity is at or near the dark end of the greyscale indicator. *This action changes the paper grade to accommodate the image range - The paper grade will be displayed on the LCD screen*

The extreme end position on the greyscale display indicates that the print intensity is beyond the linear range of the paper, and may result in blocked-out shadows on the print.

Moving the sensor probe around other areas of the image will give an indication on the grey scale display of the expected print tone in these areas. This is useful to determine whether required details in shadow and highlight areas will reproduce satisfactorily, or if some dodging and/or burning will be required to obtain a satisfactory print. If the image tonal range can satisfactorily be accommodated within the print range, and no dodging and burning is required, the exposure can be made now, in which case go to step ??.

Adding Dodge and Burn Steps

*Dodge and burn steps can be applied either manually or by metering. To apply manual dodge and burn steps refer to "**Error! Reference source not found.**", starting at step 6 above. For metered dodge and burn proceed as follows.*

You set a "nominal" exposure by metering the shadows and highlights that fall within the normal printing range, then add dodge and burn steps by metering for the extreme shadows and/or highlights that fall outside that range. This may mean re-metering the image at different points to set the base exposure differently – the BACK key allows the user to progressively step backwards through previous operations.

The Enlarging Meter-Timer sorts all the dodge and burn steps according to their time, and allows you to expose them all consecutively.

Up to 16 exposure steps can be measured and timed; these steps may be either dodge or burn.

11. Press BACK if necessary to return to the previous step(s), if it is necessary to re-meter in a different area to suit the intended dodge and burn operations

12. Move the sensor around the image to view the resulting print intensity at different points of interest. Repeat steps 5 to 10 above, if required, to take readings in the light and dark areas for the base exposure.

    Having set the nominal exposure, dodge and burn settings can be determined as follows:

13. Take a reading within a dodge or burn area. Press ENTER to store the reading. The LCD screen will show an additional dodge/burn step and the greyscale display will show the expected print intensity at the nominal exposure. This of course will not be the intensity that is required, as the dodge or burn exposure has not been applied.

14. Use the rotary control to adjust the exposure for this dodge/burn step. The effect on the print intensity will be shown on the greyscale display. The LCD screen will show the dodge/burn step together with the exposure.

    Note that the exposure is shown relative to the base exposure – in the example shown below the total exposure for the burn is 25.2s – the 15.0s base exposure plus an additional 10.2s for the burn.

    Note also that the procedure for setting a dodge step and a burn step is the same – the only difference is whether the step is negative or positive relative to the nominal exposure. The unit determines whether the step is a dodge or a burn depending on whether the total exposure required is greater than or less than the base exposure.

15. Press ENTER to finalise the dodge/burn step.

16. Additional steps may be added by repeating steps13 to 15 above. The unit will calculate the exposure times for each step, and sort into time order.

Making the Exposure:

17. Press EXPOSE to make the print. This will extinguish the enlarger lamp.
18. Position the printing paper on the easel and prepare for printing. Ensure dodge/burn implements are to hand if required.
19. Press ENTER to start the exposure.

    The exposure will now be run.

    If dodge and burn steps have been set, the LCD screen will show which step is currently being run and show a countdown of the exposure time for that step.

20. *The display will automatically scroll as the exposure steps progress in order to always show the current and next exposures in the programme.*

    Depending on the selected exposure mode, the exposure will be made continuously, with a "beep" indication at the conclusion of each step, or as discrete steps. Refer to section 1 above for details on how to set the exposure mode.

21. At the conclusion of the exposure the enlarger is switched off and the safelight on. It is now possible to repeat the same print from step 13 above by pressing ENTER again.

Saving the programme:

22. To save the printing programme for later use on repeat prints, press SAVE.
23. Use the rotary control to select a programme memory in which to save the programme.

    99 programme memories are available. As the rotary control is turned the programme number is displayed at the top of the screen.

    Choose either an empty programme, or one which may be overwritten. To assist in selection the contents of the currently-selected programme are shown on the LCD display screen.

In this example, the rotary control has been used to select programme 17, the contents of which are displayed. If we want to keep programme 17, and not overwrite it, select another:

Here an empty programme location has been found.

24. Press ENTER to save the programme. The programme will now be displayed.

6.4 Making a Test Strip

The Enlarging Meter Time supports the making of test strips. The user can select the number of test strip sectors and the exposure increment.

Test strips can be made either by setting the nominal exposure time manually, or by metering.

6.4.1 Manually-Timed Test Strip

1. Press TEST STRIP to start. The test strip set up menu appears on the LCD screen.

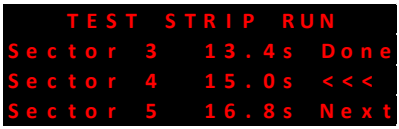
2. To change the settings, use the scroll keys to move through the menu items, the rotary control to change the settings, and press ENTER to confirm.
3. Press TIME to choose manual exposure. The time display will show the exposure time and the test strip set up menu appears on the LCD screen.
4. Press EXPOSE to make the test strip. The enlarger will switch off.
5. Place the test strip paper under the enlarger and have the cover card to hand

6. Press ENTER to start the exposure. The enlarger will switch on and the exposure will start.

7. If you selected start-stop mode, the enlarger will switch off when the exposure for the first test strip sector is complete. Advance the cover card to cover the first sector of the test strip and press ENTER to expose the next sector. Repeat until all sectors are complete.

8. If you selected continuous mode, the timer will beep to notify you to advance the cover strip, and the enlarger will remain on.

   During the test strip exposure, the LCD display will show the status of the test strip exposure. The remaining time for the sector will be displayed as a count-down on the main display.



6.4.2 Metered Test Strip

1. Press TEST STRIP to start. The test strip set up menu appears on the LCD screen.

2. To change the settings, use the scroll keys to move through the menu items, the rotary control to change the settings, and press ENTER to confirm.

3. Press MEASURE to choose metered test strip exposure.

4. Position the light sensor in a highlight (dark negative) area of the image.

5. Press ENTER to take the reading.

6. The time display will show a suggested exposure time

7. To adjust the exposure time, if desired, press TIME and use the rotary control to set. Press ENTER when done. This reverts the unit to the manually-timed test strip mode.

8. Press EXPOSE to make the test strip. The enlarger will switch off.

9. Place the test strip paper under the enlarger and have the cover card to hand

10. Press ENTER to start the exposure. The enlarger will switch on and the exposure will start.

11. If you selected start-stop mode, the enlarger will switch off when the exposure for the first test strip sector is complete. Advance the cover card to cover the first sector of the test strip and press ENTER to expose the next sector. Repeat until all sectors are complete.

12. If you selected continuous mode, the timer will beep to notify you to advance the cover strip, and the enlarger will remain on.

    During the test strip exposure, the LCD display will show the status of the test strip exposure. The remaining time for the sector will be displayed as a count-down on the main display.

6.5 Printing from a Stored Programme

Programmes stored as described in the section above are readily recalled when needed for future re-prints.

1. Press RECALL

   The last-used programme will be displayed on the LCD screen.

2. Adjust the rotary control to obtain the programme required
3. Press ENTER to select. *The programme is now recalled from memory and loaded into the working programme (programme 0).*
4. Press EXPOSE to make the print. This will extinguish the enlarger lamp.
5. Position the printing paper on the easel and prepare for printing. Ensure dodge/burn implements are to hand if required.
6. Press ENTER to start the exposure.

   The exposure will now be run.

6.6 Calibrating

Although a number of standard paper types are stored in the Enlarging Meter-Timer memory, there are a number of reasons why it may be necessary for the user to carry out his or her own calibration. These include:

- Variation in enlarger spectral output. Different papers may respond differently to differing illumination. Cold head enlargers typically emit more light in the blue end of the spectrum than conventional tungsten lamps, reducing the exposure time for the same subjective brightness level
- Using a different paper type which is not in the unit memory when shipped from the factory.
- Differences between developers, and in developing technique.

- Personal preference in print appearance.
- Using old-stock photographic paper

The enlarging meter is equipped with a print densitometer to allow accurate calibrations to be made from test strips. The procedure to do so is as follows.

The process, in summary, involves making a measurement from a blank negative, running a test strip (set up and timed for you by the meter-timer) then, after processing the test strip, using a built-in print densitometer to measure the test strip from which the meter-timer will automatically calculate the paper characteristic and load it into memory.

The procedure can be followed to re-calibrate an existing built-in paper type, or to create a brand new paper type in the system memories.

The enlarging meter-timer has the capacity to store up to 99 different paper types.

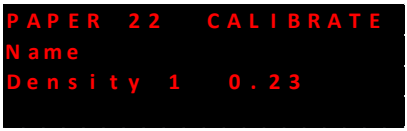
1. Insert a blank negative into the enlarger. This can be a unexposed negative. The intensity of the negative does not matter provided a measurable light level is obtained (it is allowed for in the calibration process) – what matters is that it is uniform over the area of the negative.
2. Select the paper to be calibrated (see section 6.2). This can be a new, blank, paper type in the memory or an existing paper to be overwritten with the new calibration.
3. Press CALIBRATE. This will bring up the test strip set up menu as described in section 6.4. Do not make any changes to the time or other settings.

4. Move the light sensor to somewhere near the middle of the image (to avoid any possible areas of light drop-off near the edges)
5. Press ENTER to take a reading. The LCD screen will show the times for each test strip sector.
6. Press EXPOSE. This will extinguish the enlarger and switch the safelight on.
7. Prepare a test strip. This should be of sufficient size to provide for sectors of at least approximately 20-25mm (1 inch) square, to allow readings of the print density to be taken – i.e. a strip approximately 1 inch wide by 9 inches long.
8. Position the test strip on the easel
9. Press ENTER to start the exposure. Cover the test strip progressively at each step.
10. Develop, fix, wash and dry the test strip.
11. When the test strip is dry, measurements of the print density may be made using the print densitometer. Press CALIBRATE to start the measurement sequence. This will bring up the calibration display on the LCD screen.

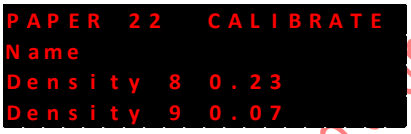
12. Starting at one end of the test strip (it does not matter whether this is the dark or the light end) take readings using the densitometer. Place the densitometer sensor over the test strip sector

13. Hold the densitometer firmly against the test strip, to ensure that the rubber seal around the sensor excludes any extraneous light. It is desirable to do this in dim illumination – e.g. with safelight on instead of the room light.

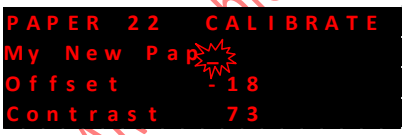
14. Press the ENTER button (either on the densitometer, or on the meter-timer unit, or use the footswitch). The density of that sector of the test strip will be displayed on the LCD screen



15. Move the densitometer sensor to the next test strip sector, and repeat steps 13 to15 above until all sectors have been measured. Each measurement is displayed on the screen.



16. When all sectors have been measured, the unit will calculate the paper characteristics and return to the paper screen showing the calculated values for the paper.



17. It is possible to edit the name of the paper. Use the scroll keys to move along the paper name row and use the rotary control to select the text character. Press ENTER when done.

18. Calibration is now complete.

7 POWER RATINGS AND FUSES

The unit is designed for use on AC mains supplies worldwide in the range 100VAC to 250VAC at 50 to 60 Hz nominal.

Maximum power draw for the enlarger and safelight in total should be no greater than five amps.

The output power from the unit is the same voltage as the input - no conversion takes place in the unit, it simply switches the inlet power to the connected appliance.

The unit is fitted with two fuses, one for the connected appliances (enlarger and safelight) and the other for the internal electronics in the unit. Should these need to be replaced always use the correct rating

- Connected appliance fuse – 5A standard fuse, 25mm
- Internal Electronics – 500mA slow blow 20mm

One spare fuse of each type is supplied with the unit.

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