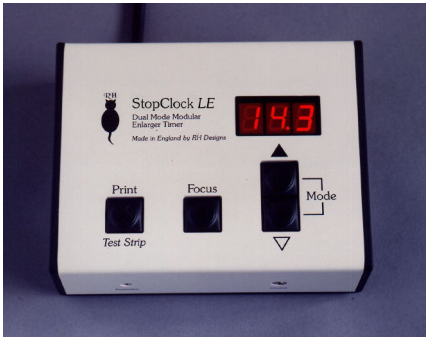
StopClock *LE*

Instructions for use



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CE

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CAUTION

Please read these instructions carefully and fully before installing or using your StopClock LE.

WARNING: To preserve the earthing requirements for your enlarger THIS APPLIANCE MUST BE EARTHED

The mains lead supplied with the unit is fitted with a moulded plug suitable for use with the standard mains outlets in your country. If the lead is not suitable, obtain a replacement. If this is not possible, the plug must be cut off leaving as little free lead as possible *and disposed of immediately*. Severe electric shock hazard will exist if a cut-off plug is plugged into a live outlet! A suitable replacement plug should then be fitted to the lead. If a fused plug is used, it should be fitted with a 5A fuse.

For continued protection against fire hazard, replace only with the same type and rating of fuse. (Fuse rating T5A.) Repair service is available - return the unit to RH Designs if repairs become necessary. ***Do not attempt to open the unit or to remove any covers. Doing so may expose dangerous voltages.*** Do not drop the unit or subject it to mechanical shock or extremes of temperature or humidity.

Like other electronic equipment, StopClock LE can be damaged by water or chemical spillage. Do not install this equipment where it may be subject to water or chemical spillage or splashes. Should such spillage occur, disconnect the equipment from the mains supply before attempting to clean it.

This unit is designed to control photographic enlargers and safelights only. Connection of any other type of equipment to this unit may present a safety hazard and will invalidate all warranties.

GUARANTEE

This equipment is guaranteed against faulty components or manufacture for a period of two years from the date of original purchase. Should a fault develop within this period, please telephone RH Designs (+44 (0) 1442 864114 with a description of the fault. Many apparent problems can be solved over the phone. If not, we will repair or replace the equipment (at our option) at no charge. This guarantee does not affect your statutory rights. Damage due to misuse of the equipment, and any consequential loss arising out of the use of the equipment are not covered by this guarantee.

CE *This product is designed and constructed in accordance with applicable European Standards*

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Features

Timing Range 1.0 to 240 seconds
Two time setting modes, linear and F-Stop
Switching capacity 500W
Pause and resume feature for dodging
Burn-in mode for incremental exposures
Automatic test strip generation
Dimmable display
Optional switch-on delay for stabilised enlargers
Lamp saver function
Can be connected to the ZoneMaster exposure meter
Footswitch included

Introduction

Thank you for choosing the StopClock LE, an enlarger timer designed *by* photographers *for* photographers. Please read these instructions carefully before setting up and using your new timer as there may be aspects of its use and operation which differ from other timers which you may be familiar with.

The StopClock LE is a dual-mode timer; it can operate both in a conventional linear mode in which the time is set in seconds, and also in an f-stop mode in which the time changes in such a way as to keep print density changes constant. It can also be connected to our ZoneMaster Enlarging Exposure Meter when the exposure times calculated by the meter will be automatically set on the timer. This combination provides similar functionality to our widely acclaimed ***Analyser*** Meter/Timer.

StopClock LE is simple to operate and is able to perform many functions using just four buttons. The display can be dimmed for use with colour materials, and the timer can automatically produce test strips in equal exposure increments.

Installation Guide

CAUTION: Like other electronic equipment, StopClock LE can be damaged by water or chemical spillage. Do not install this equipment where it may be subject to water or chemical spillage or splashes. Should such spillage occur, disconnect the equipment from the mains supply before attempting to clean it. Do not install this equipment where it may be subjected to extremes of temperature or humidity.

Dual Voltage models: to prevent damage, ensure the voltage selector switch on the bottom of the unit is set correctly for your mains voltage.

Conventional Enlargers

StopClock LE functions as a mains switch, and in most cases installation simply consists of connecting the timer to the mains, and then connecting the enlarger's mains lead to the socket at the rear of the unit. Most conventional enlargers use low voltage bulbs fed from a transformer (e.g. Durst, LPL etc.), and StopClock LE can control such loads of up to 500W (most enlargers are 100 - 250W). The Leitz Focomat has a built-in transformer and can be connected directly. If your enlarger is of this type, go to "Connecting your enlarger and safelight".

Cold Cathode Enlargers

Most Cold Cathode enlargers can be safely controlled by StopClock LE; the timer's internal relay can cope with the high switch-on currents and voltage spikes generated by such enlargers. The maximum rating of the relay is 10A surge. If you are in doubt, consult the manufacturer of your enlarger, or RH Designs direct.

Stabilisers

Most voltage stabilisers are suitable for use with StopClock LE. If you are in doubt, consult the manufacturer of your stabiliser, or RH Designs direct. Durst and Kaiser users - see page 8 "Soft-Start" Delay.

Connecting Your Enlarger and Safelight

CAUTION: Before proceeding further, in the interests of safety disconnect StopClock LE's mains lead from the supply socket.

In most cases, you will need to remove the existing mains plug from your enlarger and replace it with one of the IEC connectors supplied with the StopClock LE. A wiring diagram is shown in fig.1. If you are in any doubt as to how safely to wire up the connectors, consult a qualified electrician. When you have fitted the connector, plug it into the Enlarger socket at the back of the StopClock LE.

Similarly, if you wish to use the automatic safelight switching facility, fit the second IEC connector to your safelight mains lead and plug it into the Safelight socket at the back of the StopClock LE. NOTE: Sodium safelights such as the Duka 50 must NOT be connected to the timer as they must be left switched on.

Checking the Installation

When you have completed the wiring, plug the StopClock LE's mains lead into a convenient socket and switch on. The safelight (if connected) should illuminate. If it does not, or the timer display does not come on, switch off and check your wiring, and any fuses. If everything is satisfactory, press Focus. The safelight should now be extinguished and the enlarger bulb illuminated. Again, if it is not, or the timer display does not come on, switch off and check your wiring, and any fuses. If everything is satisfactory, you are ready to start printing.

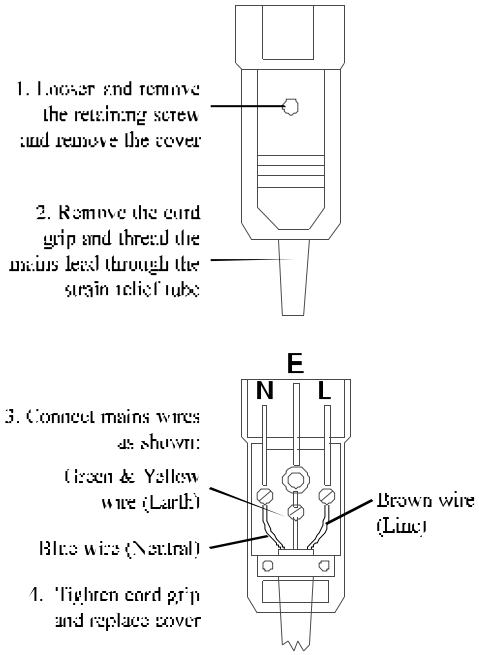

Fig.1 Connector Wiring Diagram

Controls and Indicators

The front panel of the StopClock LE is illustrated in fig.2. There are four push-button switches, and a three-digit LED display which shows the time and occasional brief messages. On the rear panel of the unit are sockets for the enlarger and safelight, and the mains on/off switch.

The Print button

Press briefly to start a full exposure for the indicated time.

Press and hold for one second to initiate the Burn-in function (f-stop mode only).

See also “Test Strips” and “The Burn-in Function”

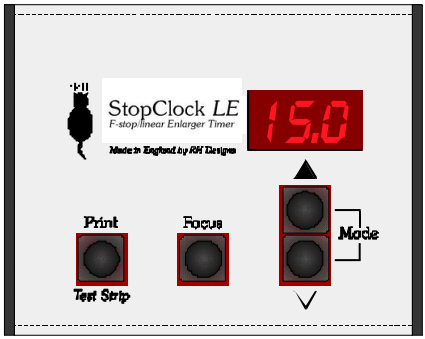

Fig.2. StopClock LE Front Panel

The Focus button

Press briefly to switch on the enlarger independently of the set time, for image composition and focussing.

Press briefly again to switch off the enlarger prior to making an exposure.

If you inadvertently leave the enlarger switched on, StopClock LE’s Lamp Saver feature will switch it off after five minutes.

See also “Test Strips”

The Time Set buttons

Press briefly to increase or decrease the exposure time by one increment.

Press and hold continually to increase or decrease the exposure time.

See also “Changing Timer Modes”

The Footswitch

The Footswitch plugs into the connector on the front of the StopClock LE and exactly duplicates the functions of the Print button at all times. When the footswitch is connected, either it or the Print button can be used at any time. Switch off the timer before connecting or disconnecting the footswitch.

Setting the time

Change the exposure time using the Up and Down buttons. If you keep one of

the buttons pressed, the time changes continuously. In Linear mode, the time changes in 0.1 second increments up to 15 seconds, 1.0 second increments up to 60 seconds, and 2.0 second increments above 60 seconds to the maximum of 240 seconds. In f-stop mode, the time changes in selectable increments of 1/12, 1/6, 1/4 or 1/3 of a stop over the range of 1.6 to 240 seconds. (See "Changing Timer Modes".) When first switched on, the time is set to 16.0 seconds and the increment is set to 1/6th of a stop.

Changing Timer Modes

Press the Up and Down buttons simultaneously to change between timing modes. The display will show the currently set mode, i.e "Lin" (for Linear mode) or "12h", "6th", "4th" or "3rd" (for F-Stop mode) as appropriate. Use the Up and/or Down buttons to select the desired mode, then press them both simultaneously to store the chosen mode.

When the mode changes from FSt to Lin, the set time stays the same allowing small adjustments to be made. When the mode changes from Lin to FSt, the original f-stop time is remembered. This can be useful when you want to return to the original time after some experimenting, burning-in, etc.

Focussing and Printing

The Focus button turns the enlarger on and off for image composition and focussing. When the enlarger light is on, the safelight is switched off and vice versa.

The Print button has different functions at different times. If the enlarger is off, pressing Print briefly will start an exposure of the indicated time. If Print is pressed for a longer period (approx. one second) this will start a burn-in exposure; see "The Burn-in Function". If the enlarger is on, pressing Print briefly will start a test strip sequence; see "Test Strips".

Pressing Print briefly *during an exposure* will interrupt the exposure and switch off the enlarger. "PSE" (for Pause) is displayed; press Print again to resume. The exposure can be thus interrupted several times if desired; the total exposure time will be the same as if no interruption had occurred. When an exposure is interrupted, pressing any key *other than Print* will cancel the remaining time.

Test Strips

In f-stop mode only, seven-step test strips can be timed automatically. The test strip increment is the same as the currently-set time increment, so test strips can be made in coarse or fine intervals as required. Switch on the enlarger using the Focus button. Press Print briefly; the enlarger will be switched off again and the display will show "Str". Place a piece of paper on the easel and press Print again to expose it for the whole of the indicated time (which will be three

increments shorter than the time originally set). Cover approximately one seventh of the paper and press Print again. Repeat a further five times, progressively covering the paper. The result will be a test strip centred on the set time, together with three shorter and three longer exposures. If the optimum exposure on the test strip is not the centre one, it's very easy to set the time required. Simply count the increments from the centre of the test strip. If the desired exposure is two increments less, press Down twice. If it's one more press Up once and so on.

To exit test strip mode before the sequence ends, press Focus.

The Burn-in Function

The Burn-in function allows you to burn in an area of your print very easily. It works only in f-stop mode. To use this feature, first make your base exposure as usual. Then, increase the time setting by the desired burn-in time. For example, to burn in an area by half a stop, when the increment is 1/4 stops, press Up twice. Press and hold the Print button for approximately one second and release. After a four second delay during which you can pick up your burning-in mask, Timer 2 will turn on the enlarger for the *difference* between the current and previously set times giving you a correct burn-in exposure. This feature can be used as many times as you wish, until the next short press of the Print button which establishes a new base exposure. See the section on F-Stop Printing for more information.

Display Dimming

The display can be set to a dimmer level for colour printing. To set dim level, press and hold the Focus button while switching the unit on. When the display dims, release the Focus button. The dim level will remain until the unit is switched off and then on again.

"Soft Start" Delay

Some enlarger voltage stabilisers, notably Durst and Kaiser, feature a "soft-start" delay which means that there is a period of half a second or so after power is switched on before the lamp illuminates. This behaviour makes test strips inaccurate and prevents the accurate building up of a longer exposure using a series of shorter ones. StopClock LE can compensate for this and insert its own delay period. To enable this feature, hold down the Print button while switching the unit on. When the message "dLy" (for Delay) appears on the display, release the Print button. When the delay is enabled, StopClock LE waits half a second after switching the enlarger on before commencing the exposure time countdown.

The delay remains set until the unit is switched off and then on again.

If you need both the delay and dim modes, hold down Print *and* Focus while switching the unit on. Release the buttons when the display (dimly) shows "dLy".

Using StopClock LE with the RH Designs ZoneMaster Exposure Meter

Setting up

Switch off both units before connecting them together using the supplied lead. Press the jack plugs firmly into the sockets provided on the StopClock LE front panel and the top of the ZoneMaster. The first couple of times you connect the lead, it may require significant pressure to push it fully home into the ZoneMaster - this is normal. (If the connector is very stiff it may help to "wobble" it. After two or three insertions the connector should mate more easily.) This connection enables the ZoneMaster to send exposure and grade information to the StopClock LE.

Switch the StopClock LE on first, followed by the ZoneMaster, to synchronise communications correctly. If for any reason the communication is lost, switch the ZoneMaster off and then on again. Note that synchonisation will not occur if the StopClock LE is in Test Strip Mode when the ZoneMaster is switched on.

Test the link by pressing the Darker or Lighter button on the ZoneMaster; the time should change on the StopClock LE to match that shown on the ZoneMaster's display.

Using the ZoneMaster

When measurements or exposure adjustments are made on the ZoneMaster the displayed time will be echoed on the StopClock LE, so after any measurements, time or grade adjustments the StopClock LE will be ready to control the enlarger. An added benefit is that the safelight will be extinguished during measurements automatically.

When the ZoneMaster is connected to the StopClock LE the Print button on the ZoneMaster is disabled; all printing, test strips or greyscales are made using the Print button on the StopClock LE.

Using the StopClock LE

Some of the StopClock LE's functions and features will change slightly when it is connected to a ZoneMaster:

1. Only the F-Stop mode of the StopClock LE is used.

2. The step-size setting on the ZoneMaster will be set also on the Timer.

3. Test Strips will be made in increments corresponding to the ZoneMaster's step size.

4. Press and hold the Print button while the enlarger is on to set up a fifteen-step test strip, used for making greyscales. Refer to the ZoneMaster handbook for full instructions; the greyscale is made in a similar manner to a normal test strip but with a blank negative in the enlarger.

5. Exposure changes can still be made using the Up and Down buttons on the StopClock LE and will stay in force until an adjustment is made by the ZoneMaster, as a result of making a measurement or adjusting the paper grade or exposure settings.

6. The ZoneMaster will still switch into low-power mode to conserve battery power (it is *not* powered from the StopClock LE when connected to it). Any key press will awaken it, and a subsequent action as in 5 above will synchronise the StopClock LE if necessary.

F-Stop Printing

The F-Stop Printing method is a logical and simple method of printing which once mastered will save you considerable time and effort in the darkroom. Basically, print exposure times are adjusted by fractions of a stop rather than in seconds; this is just like the adjustment of a lens aperture or camera shutter speed. If print exposure times are expressed in f-stops, a given *change* of exposure time will produce the same change in print density, *whatever the initial exposure time.*

Suppose you make a test strip in a sequence such as 5, 10, 15, 20, 25 seconds; you will see that the difference in density between the 5 and 10 second strips is much greater than that between 20 and 25 seconds because the relationship between density and time is not linear. Instead, expose your test strip for 5.6, 8, 11, 16, 22 seconds. This time the density changes will be equal. Do these numbers look familiar? Yes - they represent full stops of aperture on your camera lens. In terms of time, they are half-stop steps. Steps of half a stop are quite coarse when printing, so it's usual to use quarter stops or even finer intervals.

StopClock LE has been designed to make f-stop printing simple by taking care of all the calculations for you. In f-stop mode, pressing the time set buttons gives you increments of a fraction of a stop no matter what the actual time in seconds is set to. So for example, if the StopClock LE is operating in 1/12 stop steps pressing Up once increases the time from 15.0 to 16.0 seconds, a difference of 1.0 seconds. If the time is set to 40.8 seconds, pressing Up once increases it to 43.4 seconds, a change of 2.6 seconds. But both produce the same

change in density on the print.

You will realise from this that if burn-in times are expressed in f-stops, then you can reproduce prints at different magnifications or at different lens apertures simply by changing the basic exposure, as long as the burn-in exposures are expressed in stops. A burn in of half a stop is the same whether the base exposure is 15.0 or 60.0 seconds. StopClock LE's Burn-in function makes this simple. You can make your proof prints at a small size, noting the required burn-in times in f-stops (just count the key presses!). To make your final, larger, masterpiece, determine the new basic exposure, then use the same number of key presses for each burn-in as you used for the proof print.

The test-strip generator makes things simpler still. Suppose you have a landscape with a pale sky which needs some burning in. Establish the base exposure, then make a test strip in the usual way, starting at the base exposure. If the sky is not dark enough even at the maximum exposure on the test strip, increase the base exposure by seven key-presses and make another one. You now have a series of exposures in constant fractional-stop increments over a wide range. Choose the strip showing the optimum exposure, and count the increments from the base exposure. Each strip represents one press of the Up key.

Press the Up key the required number of times, then press and hold Print to invoke the Burn-in function. Mask the areas of the print that are not to be burned

in. StopClock LE will expose the remainder to produce the desired result.

Make a note of the burning-in times in f-stops (key-presses), *not seconds*. Next time you make this print, perhaps at a different size, if you use the same number of key-presses in each relevant area, you will get a print with the same relative densities in those areas.

Once you have mastered the f-stop method, you will wonder how you ever managed without it!

ZoneMaster *II*

Black & White Enlarging Meter with Grey Scale Print Tone Indicator - the ideal companion to your StopClock LE

The ZoneMaster enables a black and white print to be made quickly and easily from almost any negative. This is achieved simply by using a light sensing probe to spot meter the important areas of the image projected on the enlarger baseboard. The ZoneMaster then displays the measurements on a grey scale (patented), indicating the tones which will appear on the print. You can adjust the contrast (paper grade) and brightness of the print using the grey scale indicator to preview the tonal range. As adjustments are made the ZoneMaster calculates the required exposure time to make a print with the desired range of tones. Simply set your enlarger timer and filtration to the ZoneMaster's indications. The ZoneMaster is supplied ready calibrated for Ilford® Multigrade® paper so you can be up and running with a minimum of preparation; however a simple calibration procedure allows the ZoneMaster to be optimised for your own

Features

- Up to eight spot readings of a negative can be taken and the corresponding tonal value of each on the final print will be displayed on the 15 step grey scale. Densitometric readings can also be displayed.
- Simple controls (harder, softer, brighter, darker) allow print contrast and brightness to be previewed without the use of test strips or prints - saves time and paper. Over and under exposure warnings. 9-stop measurement range.
- Exposure times of 1.5 to 240 seconds are calculated automatically by the ZoneMaster using its light sensor in conjunction with paper grade and built-in calibration settings. Exposure times can be adjusted manually and the effects on the resulting print will be displayed on the grey scale. Exposure time will be transferred to the StopClock by a serial link cable - just press the "Print" button on the StopClock!
- Adjustable calibration caters for your preferences of paper, processing, and enlarger characteristics for every grade of paper from 00 to 5, including half-grades.
- Simple calculation of split-filter exposures for burning in difficult areas on a print.
- Audible indication of exposure time for use with a manual enlarger switch if a timer is not used.
- Splash proof case with touch sensitive controls for durability. Powered by easily obtainable 9v battery or optional mains power supply.