

H27507
H27749

Digital Stopclock
Centisecond Timer Module

NFU 618



The Unilab stopclock is a versatile and distinctive piece of apparatus which has become standard in most British school laboratories.

It is suitable for general purpose timing for up to one hour in centi-second (H27749) ($1/100^{\text{th}}$ of a second) intervals.

Two buttons on the top control stopping/starting, lap times and reset. It can also be controlled via three 4mm sockets on the front.

Date/Time Mode

The stopclock doubles as a standard digital clock.

To tell if the unit is in this mode, look at the small two digits on the right of the display.

If they are increasing once per second, the unit is in Date/Time mode.

Pushing and holding the black start stop button on the top will show the date, month and day of the week. Releasing it shows the clock again.

version H27507.16.07



To switch the unit into stopclock mode, push and hold the **red reset button** for **5 seconds**.

To change the date or time, the back cover must be removed. Locate the small 'set' button. Ensure the stopclock is in Date/Time mode and push the set button.

The second digit on the unit will start to flash, indicating that this digit is to be altered. After three seconds, the digit will start to increase by one per second, looping back to zero at the end of the range.

Push the set button again to adjust the next number. Push the start stop button to confirm.

To adjust the date, push and hold the start stop button to display the calendar, and push the set button. Adjust the relevant options in the same way as the time.

Time		
Order	Number	Range
1	Seconds	0-59
2	Hour	0-23
3	10s of minutes	0-5
4	Minutes	0-9

Date		
Order	Number	Range
1	10s of days	0-3
2	Days	0-9
3	Months	0-12
4	Day	Su-Sa

Stopclock Mode

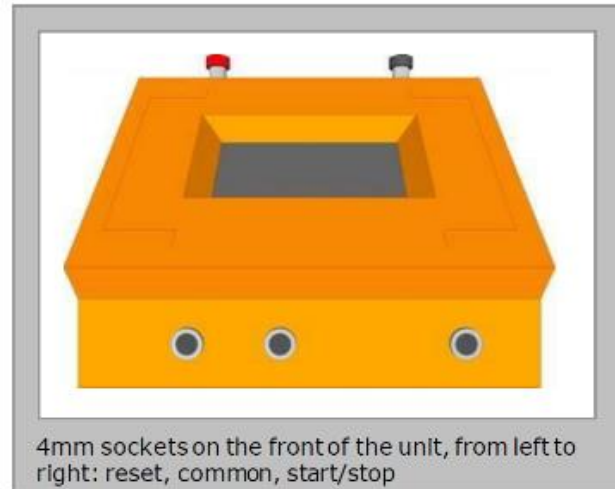
The stopclock starts timing when the black start/stop button is pushed, not when it is released. Similarly, if the timer is running, it will stop when the start/stop button is pushed.

Pushing the start/reset button a third time will continue timing without resetting.

Pushing the red reset button when the timer is stopped will zero the display.

Pushing the red reset button while the timer is running displays the lap time, but the timer will continue to run.

The timer can be stopped and started, but not reset, while the lap time is displayed. To go back to the current time, press the reset button again. Press the reset button once more to zero the display.



The unit can also be controlled using the 4mm sockets on the front.

The centre socket is common ground, the left socket is the reset circuit, and the right socket is the start/stop circuit.

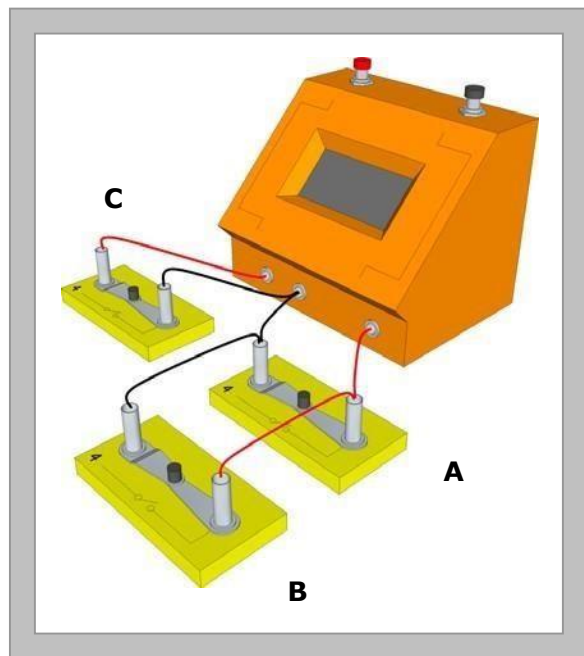
Connecting the reset socket to the common ground has the same effect as pressing the red reset button, and connecting the start/stop socket to the common ground has the same effect as pressing the black start/stop button.

Consider the following circuit made using push-to-make switches:

Switches A and B are connected in parallel to the stop start and common ground socket. Switch C is connected to the reset socket and common ground.

Pushing switch A will start the timer, and switch B will stop the timer (or vice versa) and switch C will reset the timer.

This setup can be used as a simple reaction timer. Long leads should be used so the tester can hide switch A and start the timer.



The subject of the test should watch the timer and push switch B to stop the timer as quickly as they can after it starts.

Centi-second Timer Module - H27749

This is a plug-in for the stop-clock that increases overall functionality. It is designed to accept input from devices such as light gates, and time events accurately to 1/100th of a second.

On the front are three 4mm sockets, the centre socket is common ground, and the left and right sockets are labelled A and B respectively. Light gates or switches can be connected to these to control the stopclock.

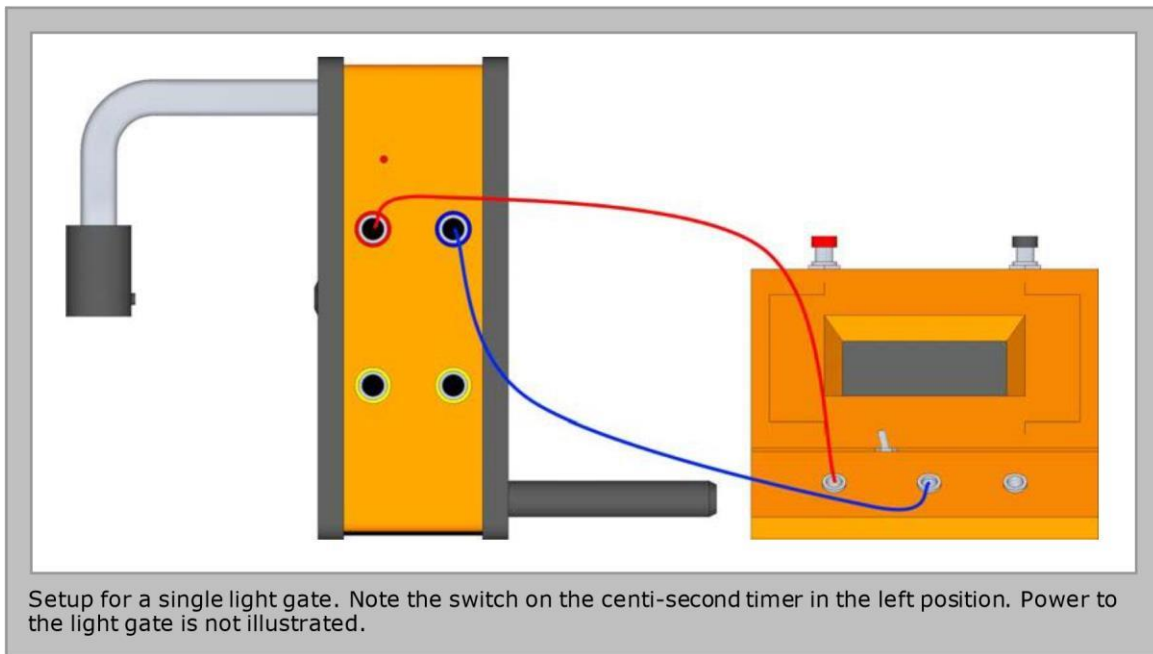
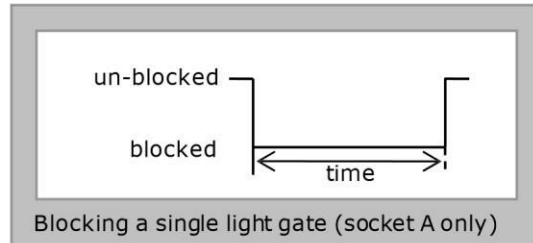
The module functions in two modes, selected by the two-position switch on the top.



Clock controlled by input A

This is the simple mode where the starting and stopping of the stop clock is controlled by one device. Anything plugged into socket B is ignored. In this mode, there is a debounce delay of 12 centi-seconds.

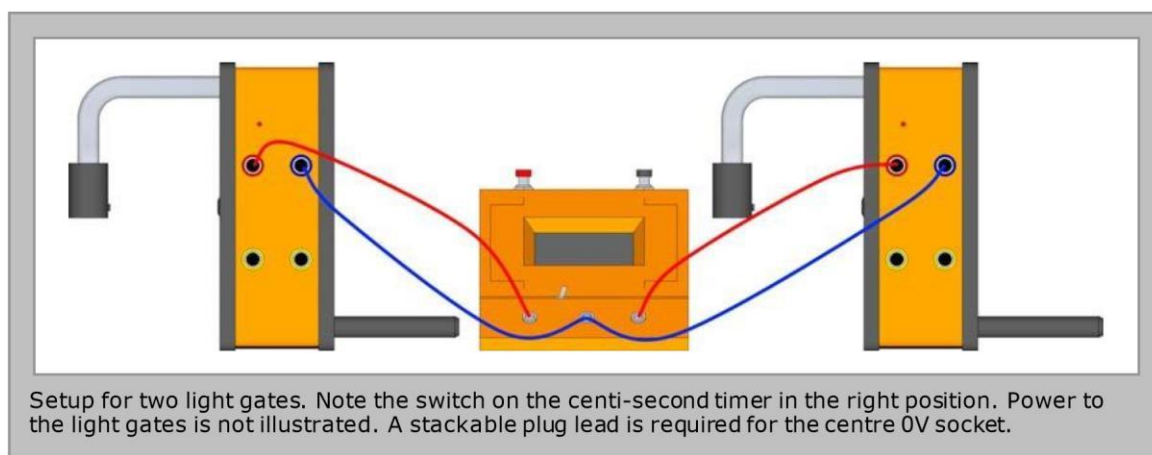
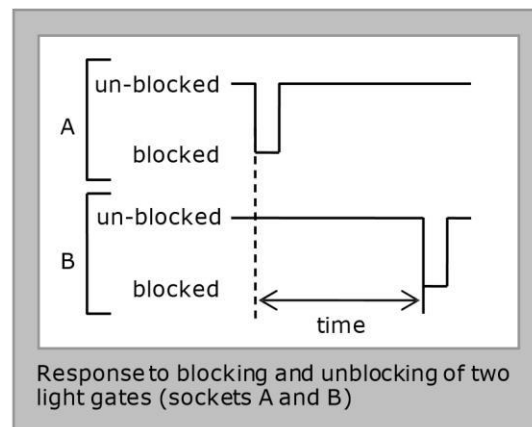
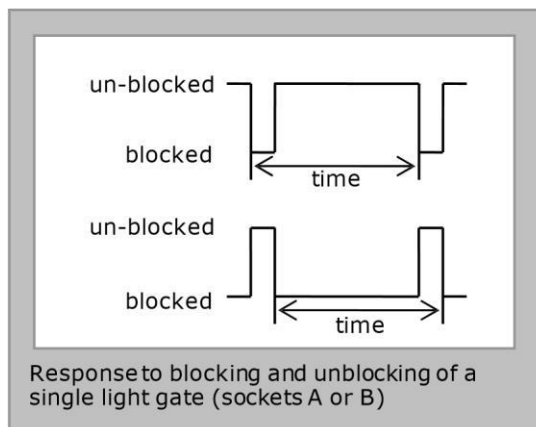
The timer starts when the light gate is blocked (i.e. a falling edge), and stops when the light gate is unblocked (i.e. a rising edge). The diagram to the right illustrates the recorded time.



Clock Controlled by Inputs A and B

This mode is a little more complicated, as input from two devices is used to control the timer. In this mode, the stop clock only responds to blocking of light gates (i.e. falling edges).

For example, a vehicle passes through one light gate, and then through another. The stopclock will start timing as soon as the vehicle blocks the first light gate, and stop timing as soon as the vehicle blocks the second light gate.



Stop-clock battery

Two AA cells should provide at least 12 months use. To replace the cells, remove the two screws from the back plate, and remove the exhausted cells, observing the polarity, and insert a new one. Older stopclocks have a single AA cell.

Centi-second timer module battery

The module requires two SR44 silver oxide button cells. To replace: unplug the module from the stop-clock, remove the base, slacken the retaining screws, replace the cells (observing the polarity), retighten the retaining screws and replace the base.

Light Gates - please refer to the light gate's own instruction manual (NFU 401) for support using this apparatus. Contact Philip Harris for a copy.

Safety advice

This advice is not a replacement for a formal risk assessment, which should be carried out according to your school or LEA policy.

Warnings

For your safety, this product should be used in accordance with these instructions, otherwise the protection provided may be impaired.

Warranty, repairs and spare parts

The stopclock is guaranteed for a period of one year from the date of delivery to the customer. This warranty does not apply to defects resulting from the action of a user such as misuse, improper wiring, any operations outside of its specification, improper maintenance or repair, or unauthorized modification.

Our liability is limited to repair or replacement of the product. Any failure during the warranty period should be referred to Customer Services.

Please contact Customer Services or techsupport@philipharris.co.uk for advice

Supplier details

Philip Harris Education, 2 Gregory Street, Hyde, Cheshire SK14 4RH

Orders and Information Tel: 0845 120 4521

Fax: 0800 138 8881

Repairs Tel: 0845 120 3211

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