

# K148T1. SIMPLE PHOTOGRAPHIC TIMER

The first of a series of timer kits based on the K148 hardware platform. This is a simple down timer with selectable preset times. At the end of the selected time period the output goes 'low' for 2 seconds.

There are six (6) preset times: 60, 90, 120, 300, 600 and 900 seconds (1, 1.5, 2, 5, 10 and 15 minutes). More can be easily added (or deleted) – just let us know.

Refer to the “**K148 4-DIGIT TIMING MODULE**” documentation for details of hardware features, circuit description and assembly instructions.

## TIMER SPECIFICATIONS

<b>Timing ranges</b>	60, 90, 120, 300, 600, 900 secs
<b>Timing resolution</b>	1/10 second
<b>Inputs</b>	Start, Stop and Reset
<b>Output</b>	2 second active low Open collector NPN transistor, 100mA @ 30V
<b>Display</b>	4-digit 7-segment with decimal point, 14mm RED LED
<b>Supply voltage</b>	9 to 12V DC
<b>Supply current</b>	30 to 50mA, depending on the number displayed.
<b>Physical size</b>	51mm x 66mm (2.0" x 2.6")
<b>Connection</b>	10-way right-angle SIL header pins, 0.1" spacing

## OPERATING INSTRUCTIONS

The 'power up' default time is 60 seconds (the display shows **60.0**). Pressing the STOP button cycles through the other preset time delays.

Pressing the START button starts the timer. The display starts running down towards zero in tenths of a second. When it reaches zero (**0.0**) the open collector output pulses low for 2 seconds and the timer then resets itself to the selected time delay.

During the count down time, pressing the START button again has no effect. Pressing and holding the STOP button 'freezes' the timer at its current value. Releasing the STOP button then resets the timer to the previously selected time delay, ready to start again.

At any time the timer can be reset via its RESET input. The timer will reset to the previously selected time, ready to start again.

## APPLICATIONS

This timer was developed after an enquiry from a hobbyist who wanted a simple 60 second timer when printing photographs. At the end of 60 seconds a beeper or buzzer would sound to indicate 'times up'.

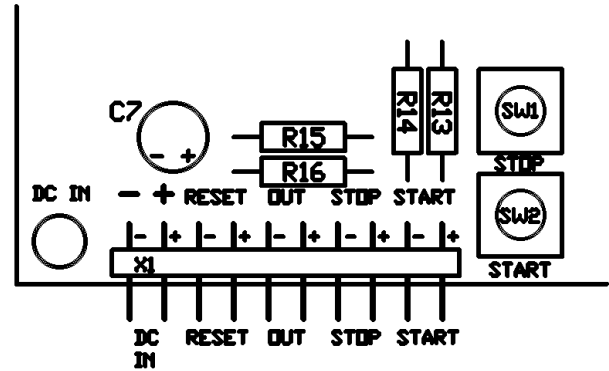
After some discussion about other photographic uses it was decided to add some extra ranges as well. We also decided on an open collector style output rather than an on-board buzzer. This enabled the kit to drive other

devices such as relays, making it more useful in other applications.

**Open Collector Output.** For more information about what an open collector output is read the note at [www.kitsrus.com/zip/opencol.txt](http://www.kitsrus.com/zip/opencol.txt)

## CONNECTING TO THE TIMER

A 10-way header strip provides external connection to the timer, including power. All the inputs and the output are organized as 'pairs' of pins, with each input or output having a corresponding ground pin, as per the following diagram.



The '+' sign indicates the actual input or output pin and the '-' sign indicates its associated ground pin.

**Note:** When using the output to switch a load (relay, buzzer, etc) connect the load between the output pin and a positive DC voltage. For example, if switching a 12V relay connect the relay between the output pin and +12V.

## OTHER TIMING MODULES

There are other firmware IC's available for k148:

1. **K148T2.** Stopwatch with Pause function
2. **K148T3.** 40KHz Auto Ranging Frequency Meter
3. **K148T0.** Programmable Down Timer counting down in seconds from a maximum of 10,000 sec
4. **K148T4** Programmable Down Timer counting down in minutes from a max of 10,000 minutes
5. **K148T5** Programmable Down Timer counting down in hours from a maximum of 10,000 hours

See our website at [www.kitsrus.com](http://www.kitsrus.com) for details.

If you have any questions or changes you would like to the firmware please contact the kit developer at [frank@ozitronics.com](mailto:frank@ozitronics.com)

Note we do not release the source code for these kits.