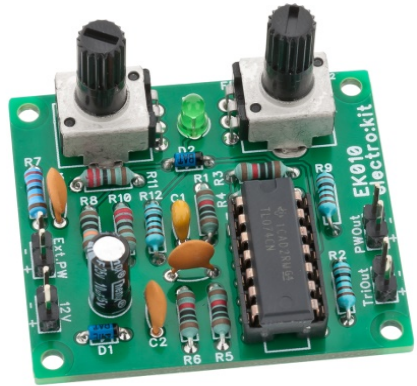


# EK010 – PWM Generator

## Kit description:

EK010 is an oscillator built around an OP-amplifier. The oscillator has simultaneous triangle and square wave outputs and the square wave has an adjustable pulse width from 0 – 100%. The pulse width can be controlled using the on-board potentiometer or an external voltage between 0 and 10V. To limit the range of the PW potentiometer, increase value of resistors R10 and R11. The frequency is adjustable from 300Hz to 3kHz. For greater frequency range, replace the 100k potentiometer with 1Mohm. If lower or higher frequencies are required, replace the timing capacitor C1 with a smaller or larger value. The outputs are protected with 1kohm resistors, which also sets the output impedance. This kit alone is not suited for driving motors or LEDs directly, but when combined with kit EK010b, it can be used for driving loads up to 24V 5A. To use this kit for audio purposes, a series capacitor should be mounted on the outputs to eliminate the DC offset.



- \* Supply voltage: 12-24VDC
- \* Current draw: 10mA (@12V)
- \* Frequency range: 300Hz – 3kHz
- \* Pulse width: 0 – 100%
- \* External CV: 0 – 10V (@12V)
- \* Dimensions: 45.72 x 40.64mm
- \* Mounting holes: c-c 40.64 x 35.56mm,  $\varnothing$ 2.54mm

## Assembly guide:

Before you begin mounting components, make sure the board is free from damage and scratches. Make sure all the components are included and are of correct value. Compare with the component list!

Begin mounting the lowest components and work your way up to the largest. IC sockets, resistors, ceramic capacitors and diodes go first. Electrolytic capacitors, connectors and potentiometers go last. Some components are polarized and must be mounted in the right way. Please observe the markings on the board!

## Component list:

| RefDes         | Value      | Qty. | Part.no. |  |
|----------------|------------|------|----------|--|
| HDR            | 2.54mm     | 4    | 41001167 |  |
| C1             | 10 nF (Ct) | 1    | 41011998 |  |
| C2, C3, C4     | 100 nF     | 3    | 41003038 |  |
| C5             | 10 uF      | 1    | 40520003 |  |
| D1, D2         | BAT42      | 2    | 40311042 |  |
| D3             | LED 3mm    | 1    | 41004450 |  |
| R1, R3, R5, R6 | 10 kohm    | 4    | 40811410 |  |
| R2, R9, R12    | 1 kohm     | 3    | 40811310 |  |
| R4             | 8.2 kohm   | 1    | 40811382 |  |
| R7             | 220 kohm   | 1    | 40811522 |  |
| R8             | 100 kohm   | 1    | 40811510 |  |
| R10, R11       | 2.2 kohm   | 2    | 40811322 |  |
| U2             | TL074      | 1    | 40350074 |  |
| U2             | DIP-14     | 1    | 40410014 |  |
| VR1, VR2       | 100k lin   | 2    | 41017263 |  |

## Schematic:

