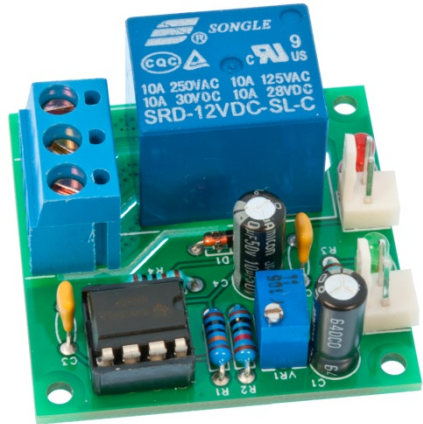# EK004 – Time Delay Relay

Kit description:

EK004 is a multi-functional time-delayed relay. Each time the trigger input (IN) is grounded and each time the circuit is powered on, the relay will switch and hold for a preset time length, set by the trimmer. When the time runs out, the relay switches back again and a new cycle can be initiated. Since the relay has both a normally open and a normally closed contact, this kit can be used for either delaying turn on or turn off for a connected apparatus. This kit will always begin with a delay when powered on. To prevent an initial delay cycle, the trigger input should be tied to V+ at start-up. The delay time is adjustable from about 120ms to 12s. For longer delay times, replace capacitor (C4) with a higher capacitance value and/or the resistor (R2) with a higher resistance value.

* Supply voltage: 12VDC
* Current draw: 20mA (relay inactive) / 50mA (relay active)
* Delay time: 120ms – 12s
* Relay contact: 1-pole SPDT / 10A 250VAC, 10A 30VDC
* Dimensions: 38.1 x 38.1 x 20mm
* Mounting holes: c-c 33 x 33mm, ø2.54mm

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!

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Component list:

RefDes	Value	Qty.	Part.no.	
V+, IN	2.54mm 1x2p	2	41001167	
CON1	5mm 1x3p	1	41010754	
C1, C4	10uF	2	40520003	
C2, C3	100 nF	2	41003038	
D1	1N4148	1	40310010	
R1	100 kohm	1	40811510	
R2	10 kohm	1	40811410	
R3, R4	1 kohm	2	40811310	
K1	SPDT 12V	1	40230002	
LED1	3mm green	1	41004450	
LED2	3mm red	1	41004448	
VR1	1 Mohm 3266Y	1	40900520	
U1	NE555P Timer	1	40350001	
U1	DIP-8	1	40410008	

Schematic:

$$T = 1.1 \times (R1+R4) \times C1$$

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