



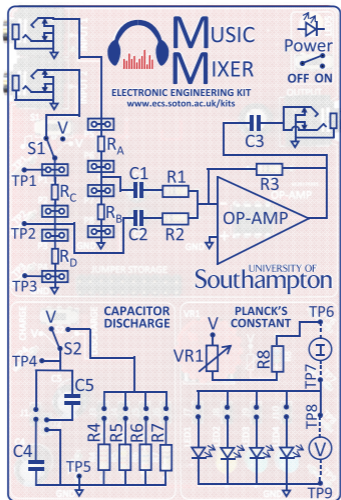
**UK Electronics
Skills Foundation**


Music Mixer

Student Guide



**A-Level Physics
Electronics Kit**




 = Resistor

 = Variable resistor

 = Capacitor

 = Light emitting diode

 = Ammeter

 = Voltmeter

 = Ground (GND)

V = 5V

S = Switch

TP = Test point

 = Pin header

 = Pin socket



- The Music Mixer uses a summing op-amp to add the two input audio signals. The potential dividers change the voltage, and hence volume, of each.
- *The op-amp can also be used to amplify and measure the human heartbeat. Did you know that they can also be configured to subtract signals, or even perform numerical integration and differentiation?*

Capacitor Discharge

- Capacitors can be connected in serial and parallel. Monitor their discharge rate through different resistors.
- *Capacitors are present in most electronic devices, and enable applications including cardiac pacemakers and camera flashes.*

Planck's Constant

- By measuring the current-voltage characteristics of different LEDs you can estimate Planck's constant.
- *This section of the board contains four LEDs. Did you know that a 4K OLED TV contains as many as 33 Million LEDs?!*

Electronic Engineers apply Maths and Science to use components like these to design and build complex systems such as smart phones. Exciting developments in Electronics mean we can develop innovative products and help transform the way we live; from healthcare and energy to entertainment.

UKESF

In the UK, the Electronics sector is big, valuable and growing; however, the demand for capable, employable graduates is currently outstripping supply. The UKESF is an educational charity that operates collaboratively with major companies, leading universities and other organisations to tackle the skills shortage.

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University of Southampton

- Ranked number one in the UK for Electrical and Electronic Engineering (Guardian University Guide 2017).
- Offering a range of degrees in electronic and electrical engineering, including mechatronic, aerospace and biomedical electronics.
- A research led degree including advanced theory underpinned by practical experiments in our £4M teaching labs.

www.ecs.soton.ac.uk

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Find out more

For more resources, including tutorials on how to use the board, videos related to the concepts and technologies used, visit: www.ecs.soton.ac.uk/kits