



LED TOUCH LAMP (Code: LEDTLK)

DESCRIPTION

The *LED TOUCH LAMP* works by connecting the input to a metal plate or metal object. When the plate or object is touched the switch will operate and turn on a LED strip or LED array of your design.

This means that a touch sensitive lamp can be designed.

This circuit enables the student to explore the design and control of a wide range of lamp designs.

**LEVEL:**

Intermediate

HOURS TO CONSTRUCT:

10 - 15 hours

SKILL DEVELOPMENT:

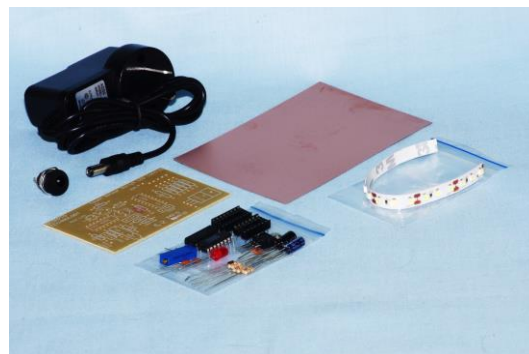
- Planning and Design
- Manufacturing
- Mechanical
- Soldering
- More Complex Electric Circuits
- Circuit diagram symbol identification
- Electrical
- Investigation
- Testing, Fault finding and Troubleshooting





WHAT'S IN THE KIT?

- All the electrical components required to make the *LED TOUCH LAMP* work including the PCB and its parts, a touch plate, LED Strip and 12V DC Plugpack.
- A detailed teaching unit with a complete parts list, design suggestions, general construction guidelines and suggestions for testing the lamp.



WHAT ELSE IS NEEDED?

The following items are required in addition to the kit and must be supplied by the maker – some are available from Scorpio Technology, but need to be ordered separately:

ADDITIONAL REQUIREMENTS	ORDERING CODE
Multi strand hook-up wire in assorted colours	WIREHU10
Material required to make the lamp's base, stand and light unit	---
Wood glue PVA or other adhesive (optional – depending on material used)	---
Stain or varnish (optional – depending on material used)	---

TOOLS REQUIRED

The following tools are required. Some are available from Scorpio Technology, and can be ordered separately if required:

REQUIRED TOOLS	ORDERING CODE
Assorted hand tools (depending on materials used)	---
Ruler and pen	---
Soldering Iron and Soldering iron stand: – a good quality soldering iron, with a fine tip or	SOLDIRN SOLDIRNSTD
Soldering station	SOLDSTN
Solder: – 0.71mm 60/40 solder is recommended	SOLD500
Wire strippers	WIRESTR
Side cutters	SIDECUT or SIDECUTMIN
Multimeter with probes or banana plugs	MULTIM / MULTIM1527
NOTE: The complexity of design and the material chosen will determine what other additional tools and fasteners you may require.	---



ADDITIONAL / USEFUL EQUIPMENT FOR ELECTRONICS

Component lead forming tool (for resistors, diodes etc.)	COMPLFT
PCB Holder	PCBHOLD
IC Inserter	ICINSERT
IC remover	ICEXTRACT
IC straightener	ICSTRAIT

ABOUT THE PROJECT

The major features of this project are the planning, design, construction and assembly stages of a LED touch sensor lamp.

DESIGN PHASE

- ☐ Create your own unique *LED TOUCH LAMP* design using our ideas for reference. You can research other lamp designs to help you decide on both materials and design..
- ☐ The choice of materials and manufacturing processes provides scope for students to individualise their *LED TOUCH LAMP* design and increase their engagement in the project.

During the **Design phase**, students will need to:

- ☐ Evaluate the suitability of various materials, such as PVC, acrylic, timber
- ☐ Evaluate available technologies that can be used, for example:
 - 3D printer
 - milling machine
 - laser cutter (which allows more interesting shapes than usual)
 - vacuum former
- ☐ Produce a detailed sketch / drawing of your final design which includes details of how the individual parts will be assembled and the materials / components required to put all the parts together
- ☐ Consider the practical aspects of construction and assembly. For example, location of the touch pad (switch), how to conceal the wire connecting sensor plate to PCB

MAKING / CONSTRUCTION

Once the Design process has been completed, the students will be able to start **building their design**. They will:

- ☐ Make and assemble the *LED TOUCH LAMP* parts they have designed
- ☐ Mount and solder all the components on the PCB
- ☐ Connect the sensor plate to the PCB
- ☐ Affix the cut LED strip onto the light unit and solder
- ☐ Test and adjust the *LED TOUCH LAMP*
- ☐ Troubleshoot any problems!



DOES THE TEACHING UNIT INCLUDE ANY THEORY?

The Teaching unit has a THEORY section that covers

- ☐ a schematic diagram
- ☐ circuit operation
 - description
 - sensor plate

