



WELCOME

Discover Scorpio's newest products. Investigate light with LEDs and more.

Remember, we're here to support you, however we can. Contact us at (03) 9802 9913 or email us at sales@scorpiotechnology.com.au

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Feature article:The Illumination Revolution

PRIMARY STEM: LIGHT & COLOUR

Investigate Light Science.

Our planet Earth receives light from our Sun. This light is also a form of Energy. Students can learn about light by completing simple experiments.



- Shine a torch light through a prism or at a lens (convex or concave) to see how light behaves. Our Equilateral Prism (Code: PRHL1056-01) or the Right Angle Prism (Code: PRHL1706-01) would suit this experiment.
- Try experimenting with mirrors. Can you get a light to bounce from one mirror to another around the room? (Note: The darker the room the easier it will be to see the pathway of the light).
- Introduce the terms, light refraction (the bending of light) and light reflection (when light bounces off an object).
- Casting Shadows - Make shadows with hands or other objects.
- Simple electricity experiments using light globes and bulb holders provide a wide range of opportunities suitable for most age and skill levels.
- Try experiments from an activity box such as Science Wiz's Light (Code: SW7802).
- Simple colour mixing using Colour Blending Paddles (Code: LER0352) is an easy way to demonstrate the principles of colour mixing or your students could make their own blending paddles using cardboard and coloured cellophane.

Scorpio has many ideas, projects and activities that provide hands on opportunities. Check our online catalogues for inspirational ideas.

TEACHER CONFERENCES, WORKSHOPS & EVENTS



Scorpio is attending or supports these teacher activities:

[DATTA ACT Conference](#) Daramalan College, Dickson, **Sat 09-09-2023**
[Victorian Model Solar Vehicle Challenge](#) at Parkhill Primary, Ashwood on Sunday **15 October 2023**
[Design and Technologies Week](#) **16-22 October 2023**
[iTE Technology Education Conference 2023 TechExpo](#), Sydney **30-11-2023 – 01-12-2023**
[DATTA WA Conference](#) Bridging the Gap, Perth, **30-11 to 01-12-2023**
[DATTA VIC Conference](#) Future Innovators, NCAT Preston **01-12-2023**

**LEARN TO MAKE,
MAKE TO LEARN**

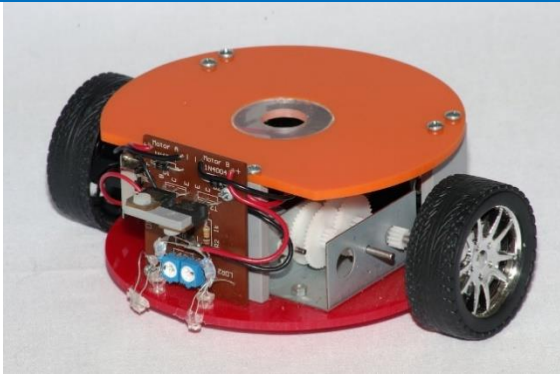
“Light tomorrow with today!”

*Elizabeth Barrett Browning (1806 – 1861)
Popular English poet of the Victorian era.*





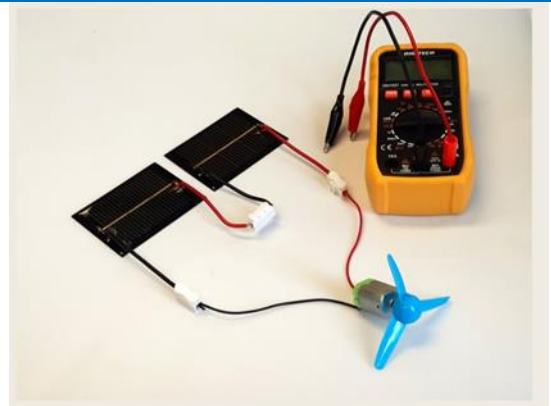
A great range of new products to use in your classroom.



WOMBAT V2 (Code: WOMBATV2)

The *WOMBAT V2* is a black-line-following vehicle, and follows a curved track on a contrasting background. An electronic circuit senses the line position and changes the speed of each driven wheel as required, keeping the *WOMBAT* on track. Each wheel is controlled separately by the PCB, with the output of the LDRs being used to control the steering.

What's changed? The gearbox.



INTRODUCING SOLAR ENERGY (Code: SOLARINTRO)

The *INTRODUCING SOLAR ENERGY* kit allows students to investigate the operation and properties of solar cells and see how electricity is generated by them. By using the supplied components together with a multimeter, students can experiment with Series and Parallel circuits, and carry out simple experiments with sound and motion. Also available in class pack of 10.



LED Flexible Strip Lighting (per mtr) (Code: LEDSTR – 12V)

LEDs per metre: 120pcs, Dimension: 8mm wide, Can be cut every 3 LEDs (25mm), Installation: Using 3M double-sided adhesive fixed on the back.

Specifications on website.



LEDSTR5V – 5V LED strip (Code: LEDSTR5V)

LEDs per metre: 120pcs, Dimension: 8mm wide Available 1 or 5m lengths. Can be cut into individual LEDs, Installation: Using 3M double-sided adhesive fixed on the back.

Ideal for use with the USB to DC Power cable and the USB Adapter / charger). Specifications on website.

USB to DC Power Cable (Code: USBCAB)

USB to DC 5.5 x 2.1mm 5V Jack Barrel Male. 1 metre Power Cable to plug into a wall charger.



USB Adapter (Code: USBPL)

Accepts All USB Charge Cables. Charge Quickly and Efficiently. Smart Fuse Circuit-Breaker Protection.

Specifications on website.



For no-solder requirements

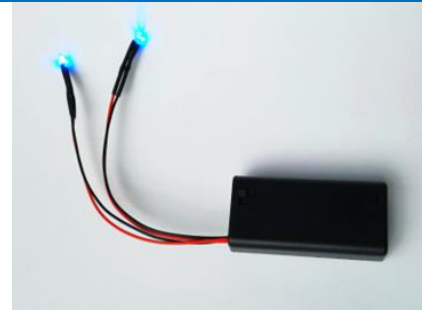
CONNECTOR - LED STRIP LIGHTING TO BARE WIRE (CONN-LEDSTR)

A simple clip-on connector suitable with any single colour 5050/5060 SMD LED strip lights. A 12V or 24V battery can be connected depending on the LED strip light without the need for soldering the connections.



CH-2 PUSH WIRE CONNECTOR (SPRING LOADED)

Electrical spring loaded quick wiring terminal connector (push-in connector).



FLASHING 3MM LEDs WITH ATTACHED BATTERY HOLDER (Code: LEDBH)

Two 3mm LEDs with preset changing flashing light sequence, attached to a battery holder with ON/OFF switch by 150mm (approx.) leads. 2 x AA batteries required (sold separately).



Mr. John Lennon, what do you predict about the future of the light bulb?

A: LED it be.

What do you call an airship made up of lights?

A: An LED Zeppelin

At first, I was sceptical about replacing my florescent bulbs with newer LED ones...But once I did, I started seeing things in new light.

"I started a charity to make sure that everyone has convenient lighting in their homes. Because I've always had a wish to be a PhiLAMPthropist.



BIOLOGY MODEL CLEARANCE

Help us make way in our warehouse for a new range of products. **Limited stock available.** Check out our low prices.

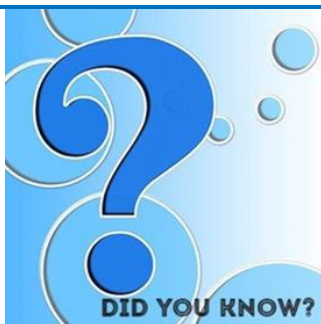
Click here: <https://www.scorpiotechnology.com.au/sale-items>



Remember to check out our **Snap Circuits** range, which is being **drastically reduced to clear**, while stocks last.

See our website for prices. Great for small groups and also home education settings.

Click here: <https://www.scorpiotechnology.com.au/snap-circuits>



Traffic lights

Due to their long life and low running costs and brightness most traffic lights now use LEDs. Typically, LEDs last up to 50,000 hours or about six years of continual use.

LEDs are arranged in a diverse pattern. When an LED stops working the ones around it will continue to glow. Meaning less maintenance is required.



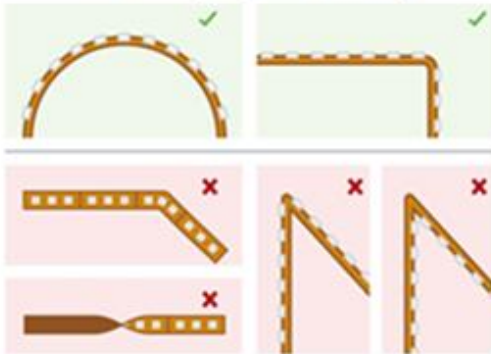
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THE ILLUMINATION REVOLUTION

LED Strip Light Flexibility



A LED strip light is a flexible circuit board that is populated with LEDs allowing it to be mounted on curved and uneven surfaces. They can bend up or down but not on its horizontal axis (left or right). They have the advantage of being longer lasting and energy efficient.

LED strips come in a very wide variety of sizes, densities and colour quality. The most basic type of colour changing LED strip will include red, green and blue channels allowing you to achieve virtually any colour.

The strip can be cut with scissors on the copper ovals that act as electrical connection points where power is fed through. The size

and type of power unit will depend on the type of LED strip light, length required, and dimming option required.

LED strips produce no heat which is a definite advantage over incandescent bulbs. This means the lighting source does not need to be turned off at night.

How do LEDs produce light?

In the middle of the LED SMD there is an N-type and a P-type semiconductor. The N-type has electrons and the P-type has holes. The holes and electrons move rapidly across the gap and then merge together. As they combine, it produces photons which in turn produces particles of light. All LED strips are dimmable when paired with the correct equipment.

Brightness

LED strip brightness is typically described in lumens per foot (or metre). LED strip brightness is primarily determined by three factors:

- Light output and efficiency per LED emitter
- The number of LEDs per metre
- The power draw of the LED strip per metre

The cons

There are some cons to using LED strips.

- In a strip some LEDs will fail earlier. This leaves light gaps.
- The whole system may need to be replaced rather than single globes. Often it is difficult to replace the strip from the same manufacturer.
- The strip may need to be enclosed to protect it from water damage. There are also Waterproof LED for use in bathrooms and outdoors (distinguished by their IP rating). These don't need to be enclosed if you don't want them to be.
- The sticky adhesive glue on the back may damage surfaces when the strip needs removal.
- Power surges can destroy LEDs.



REFERENCES:

<https://www.waveformlighting.com>
<https://www.flexfireleds.com/>

