

Electronics Design Guide 3: Enclosures

Deciding on an enclosure

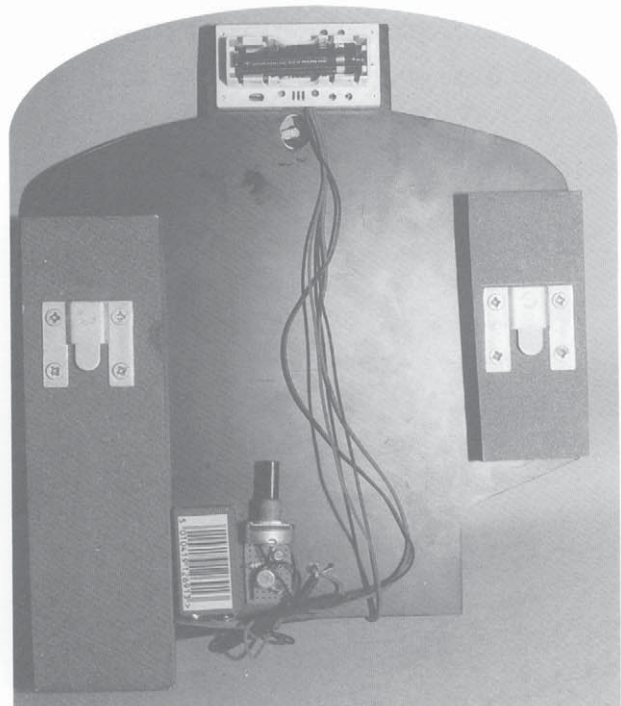
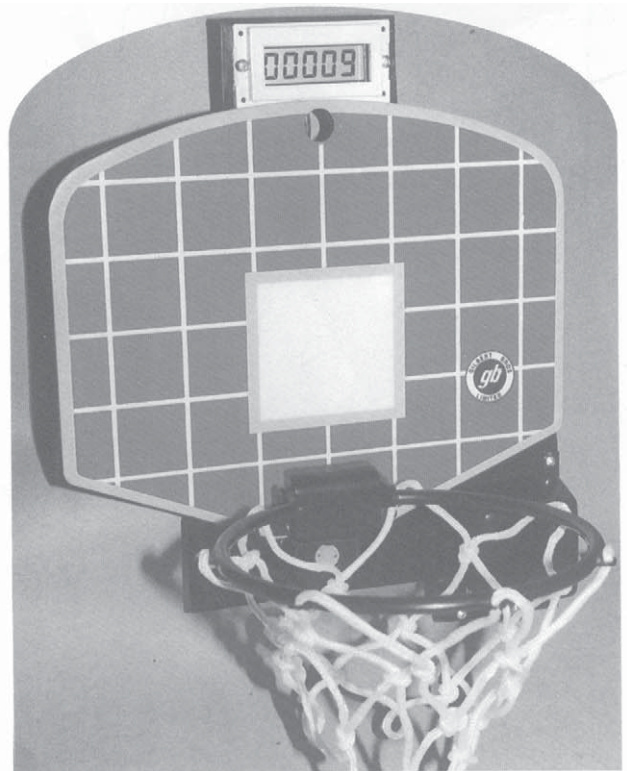
The working parts of your product will be an assembly of PCBs, wires, components and accessories – almost impossible to use as they stand and unlikely to be items that are treasured and valued. In deciding on an enclosure or container for the working parts you have the task of turning an electronic system into an electronic product. Here are some questions to help you.

Thinking about questions 1–5 will help you to decide on the overall size and structure of the product.

- 1 Does your system need to be contained inside an enclosure or can it be located on the rear of a product without enclosing?
- 2 If it needs enclosing, will it need one container or several containers?
- 3 How much of the system needs to be contained on the inside of any enclosure? How much room will this need? How will it be located in position?
- 4 Will it be hand-held?
- 5 Will it be fixed to a surface or clipped onto something?

Thinking about question 6 will help you to decide on user interface details.

- 6 How much of the system needs to come to the surface or outside face of any enclosure? How will these parts be attached to the surface and connected to the rest of the system?



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Thinking about question 7 will help you to decide on assembly and maintenance.

- 7 What sort of access will be required when putting the product together during manufacture and when maintaining the product in use?

Thinking about question 8 will help you to decide on the materials and structure to use for the product.

- 8 How will the product be used? In what conditions will it have to work?

Look at the photograph of the basketball game. A sensor detects each 'basket' and a counter displays the score. There is no need for an enclosure. The electronic system is clipped to the back of the board. The sensor, counter and reset button all need to come to the surface of the backboard. Access during making is straightforward as there is no enclosure. Changing the battery will be easy. A plywood sheet would provide a robust backboard. Compare this with the radical approach of the bag radio in which the electronic system for a radio is enclosed in a clear pvc bag!

Thinking about question 9-12 will help you to decide on the style of the product.

- 9 Who will use it?
- 10 What will make the product look appealing to the user?
- 11 Where will they use it?
- 12 Where will it be sold?

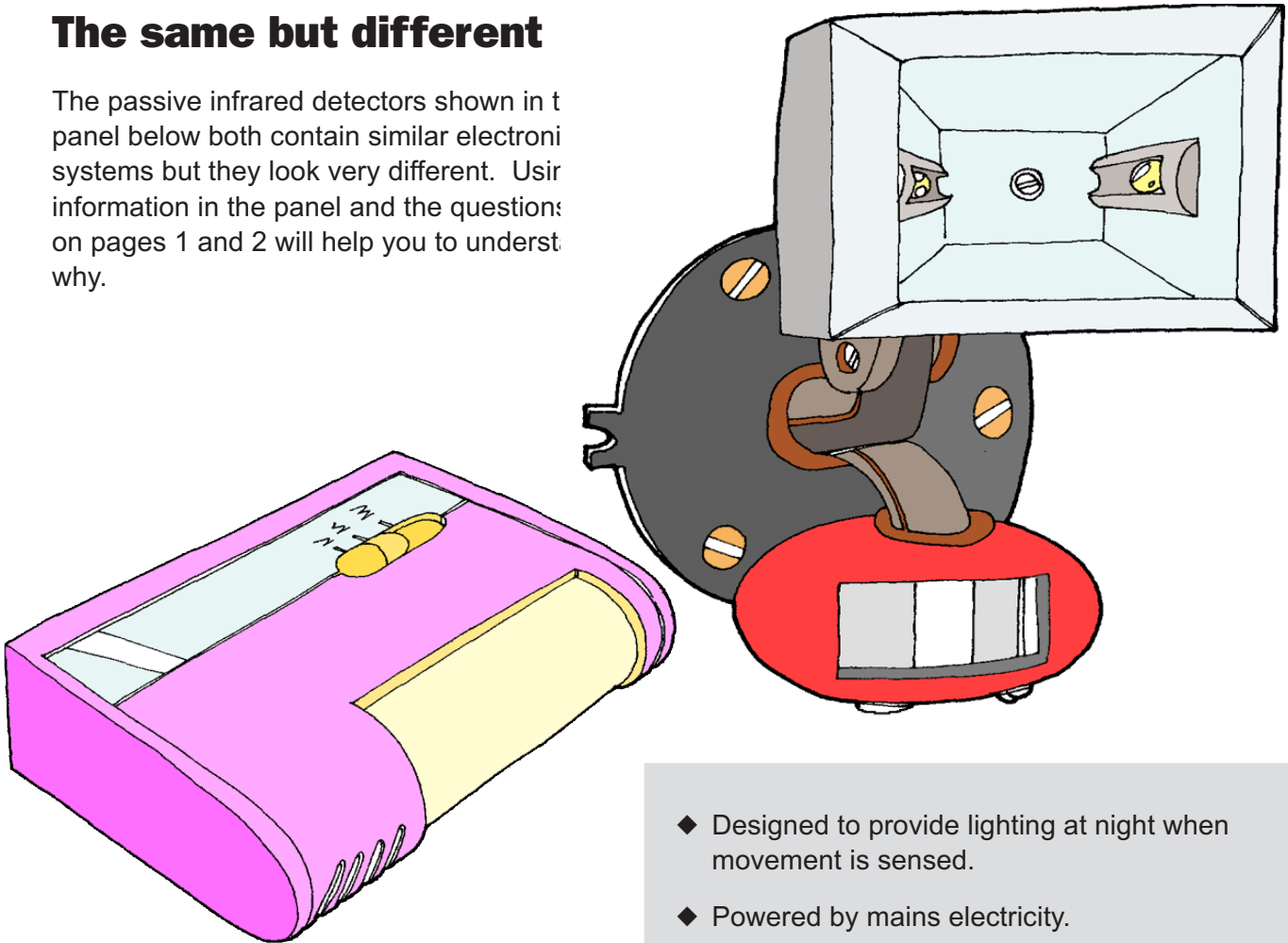


An Ipod, which can contain thousands of music tracks

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The same but different

The passive infrared detectors shown in the panel below both contain similar electronic systems but they look very different. Use the information in the panel and the questions on pages 1 and 2 will help you to understand why.



- ◆ Designed to be portable and with the ability to sound either a chime or an alarm when movement is sensed.
- ◆ Powered by a 9V PP3 battery, giving a standby life of six months.
- ◆ For use in a small shop or in the home so that an outside door can be left open and unattended.
- ◆ Casing made by injection moulding from polystyrene.
- ◆ Functional but smart style.
- ◆ Sold in specialist electronic shops and through mail order catalogues.

- ◆ Designed to provide lighting at night when movement is sensed.
- ◆ Powered by mains electricity.
- ◆ Used by home owners who like a light to come on as they approach their house in the dark.
- ◆ Can be fixed to an outside wall and is waterproof in all weather conditions.
- ◆ Casing made by injection moulding from tough abs plastic.
- ◆ Intended to be an attractive feature on the outside of a house.
- ◆ Sold in specialist electronic shops, through mail order and DIY stores.