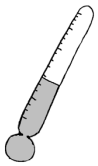
Sensing with Electronics Chooser Chart

When designing the INPUT ask yourself: *What does the system need to detect?*

a change in temperature



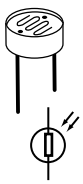
a change in light level

moisture

movement

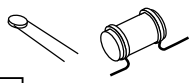
What sensors could I use for this detecting?

light-dependant resistor



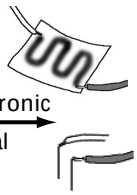
light → light sensor → electronic signal

thermistor



temperature → temp-erature sensor → electronic signal

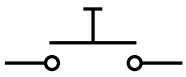
moisture sensor



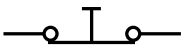
moisture → moisture sensor → electronic signal

What switches could I use for this detecting?

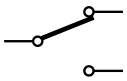
push-to-make



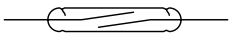
push-to-break



change-over



reed

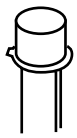


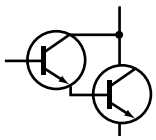
tilt

When designing the PROCESSOR ask yourself: *Do I need to increase the signal from the sensor or switch?*

no – go to *When designing the output*

yes – use a single transistor or a Darlington pair

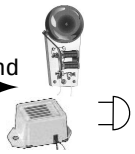




When designing the OUTPUT ask yourself: *What does the output need to do?*

make a sound – use a buzzer or bell

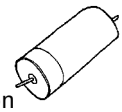
electronic signal → buzzer or bell → sound



make a light – use a bulb or LED

electronic signal → lamp or LED → light

make a movement – use a motor

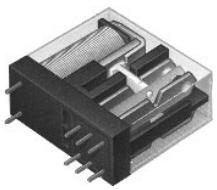


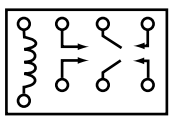
electronic signal → motor → motion

Is the output a high-current device?

no – connect directly to processor

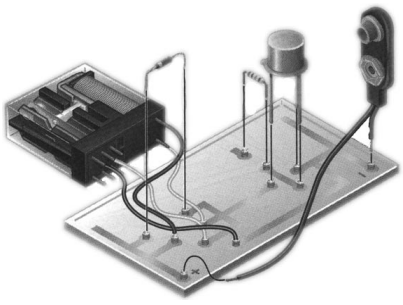
yes – use a relay

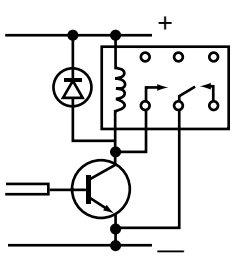




Does the system need to keep the output on after the input has ceased?

yes – use a relay and latch



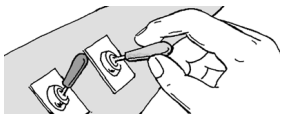


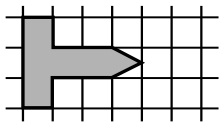
When designing the PRODUCT CASING AND STYLE ask yourself:

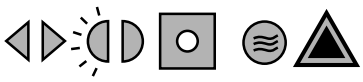
What overall shape and size would be suitable?	large enough to take the contents but small enough for hand-held use – try modelling for fit
What does the user like?	try using an image board
How can I get an appearance that fits in with where it will be used?	try out some ideas against the image board

When designing the USER INTERFACE ask yourself:

What switches, other controls or indicator lights will the user need?	try an imaginary user trip
How can I make the layout of the controls look easy to understand?	try modelling with a plan
How can I make it clear what each switch or indicator light is for?	try labelling with signs or symbols
How can I position switches and other controls so they are easy to operate?	try ergonomic modelling







What if it doesn't work

Ask yourself these questions:

Is the battery working and is it the right way round?

Check to be sure.

Is everything in the right place?

Check to be sure.

Are all the components the right way round?

Check the transistors, LEDs and diodes.

Are there any loose connections?

Look carefully to check.

Are there any dry joints?

Check carefully.

Are there any cracks in the copper tracks of the PCB?

Look carefully to check.