

Light

COLLABORATORS

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Chapter 1

Light

1.1 Light Activated Sensor

LIGHT SENSOR

Typed and edited by Craig

Diagram by Craig

Applications:

- o Burgler alarm - trips alarm when beam is broken.
- o Get your Amiga to wake you up when it gets light.
- o Use your Amiga to time moving objects.

What you will need:

Veroboard (at least 11 strips by 18 holes).

Light-dependant Resistor (LDR).

BC177 Transistor Miniature DIL relay (single pole, 5 volts) - Maplin Order number FX88V.

14-Pin DIL IC socket for the above.

10K preset resistor Connecting wire.

9-pin D-type joystick socket.

Power supply.

Misc. - A box to suit.

Instructions:

Refer to the circuit diagram to see how to build it.

First cut the veroboard to size. This is best done with a hacksaw, although if you repeatedly score the board with a very sharp knife and a steel rule you will eventually be able to snap the board to size.

You won't need to make any holes on the track side for this project, so you can start soldering straight away. The best component to start with is the socket for the miniature relay. Once this is in place, the position of the other components can be more readily seen. When soldering the transistor, keep the heat to a minimum. Ask someone to hold the transistor's leg in a

pair of pliers to transfer some of the heat away.

The LDR may be put on the end of a long pair of trailing wires if you prefer. A small cylinder made from black insulation tape will help to blinker the LDR so that only a direct beam make a difference to it's resistance.

Connection to the computer is via the spare joystick port. It might be possible to take power from the port, but I recommend that you use a separate supply, such as a battery eliminator transformer, set to provide 5 to 6 volts. When connected, you will need to calibrate the circuit for the amount of light preset. The small resistor should be adjusted with a screwdriver until the relay just clicks when light falls on it.

Using the Light Switch from your favourite programming language is not difficult - you just need to be able to read the joystick port. All BASICs provide functions for this, as does AMOS and even ARexx. Our light switch is connected to the 'FIRE' button, but you could connect a different switch to each of Up, Down, Left and Right if you want. The world's first light-sensitive joystick?

How it Works:

The rinky-dinky little IC lookalike relay replaces the microswitch used in a joystick. It is switched on and off by current flowing through the transistor. The transistor is itself acting as a switch, and will only turn on when the current into it's base terminal reaches a certain level. This level depends on the LDR, whose resistance changes depending on the amount of light available. The preset resistor (really a miniature variable resistor without a knob!) is used to balance the circuit and control exactly how the LDR must change before the transistor becomes active.

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