

Investigating fuses: What happens to the current flowing through a fuse as it is overloaded and 'blows'? – Technicians' Guide

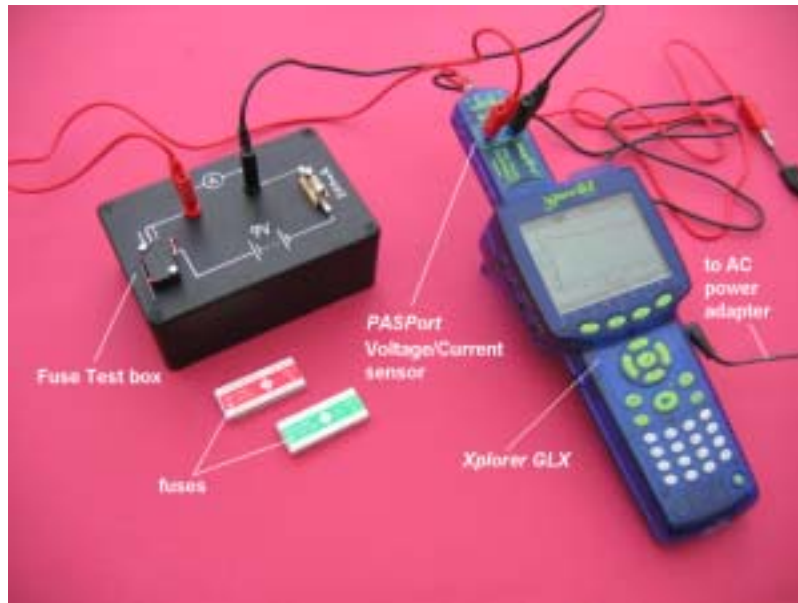


Figure 1 Setup of Xplorer GLX with PASPort Voltage/Current sensor and Fuse Test box

Equipment required

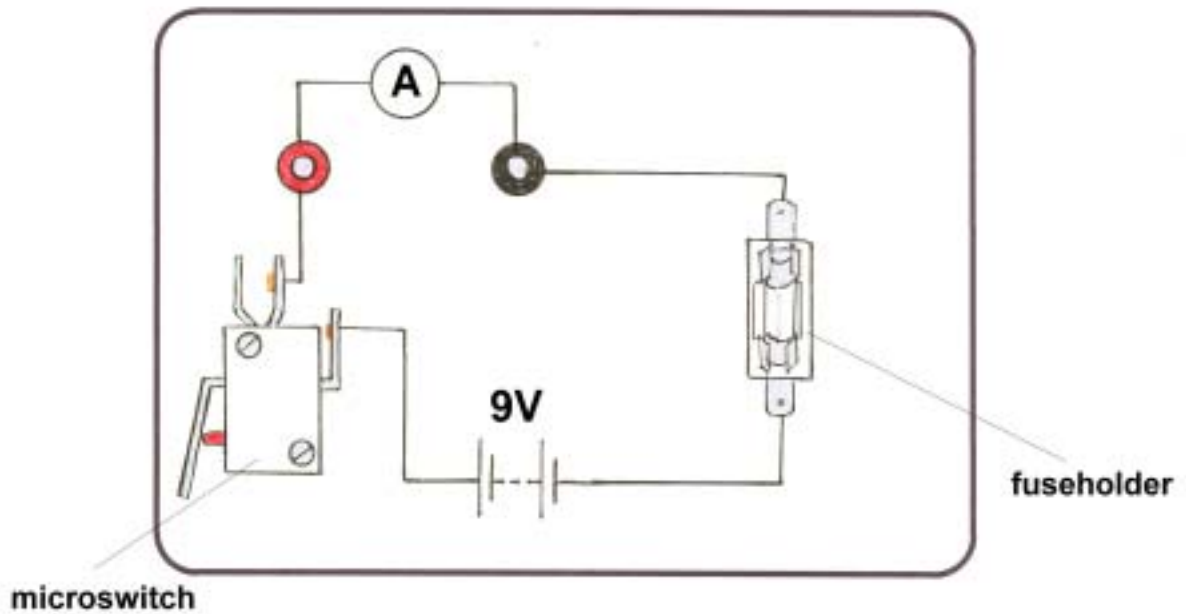
Xplorer GLX with AC power adapter PS-2002
PASPort Voltage/Current sensor PS-2115
Fuse Test box (see construction details)

Construction details for Light Bulb box

- 1 microswitch 78-0705 (Rapid)
- 1 box 150x100x55mm 30-0510 (Rapid)
- 1 PP3 battery snaps 18-0093 (Rapid)
- 1 9V PP3 alkaline battery 18-4230 (Rapid)
- 1 4mm red socket 17-1935 (Rapid)
- 1 4mm black socket 17-1920 (Rapid)
- 1 red lead terminated by 4mm plugs 17-0378 (Rapid)
- 1 black lead terminated by 4mm plugs 17-0377 (Rapid)
- 1 20mm fuse holder 26-7680 (Rapid)
- 1 packet 10 Quickblow 100mA fuses 26-1002 (Rapid)
- 1 packet 10 Slowblow 100mA fuses 26-1044 (Rapid)
- 3 nuts and bolts
- 1 reel single core connecting wire 01-0325 (Rapid)
- 5cm length of sticky-backed hook and loop fastener (stationers)
- 1 silver marker pen (stationers)

Mark out and drill the holes in the lid of the box to match the diagrams shown in Figure 2. Note that small holes need drilling in the box lid to allow through connecting wires. Use a silver marker pen to draw in 'connecting' lines and labels on the lid before mounting any of the components. Use the hook and loop fastener to attach the battery to the base of the box.

VIEW OF OUTSIDE TOP OF LID



VIEW OF INSIDE TOP OF LID

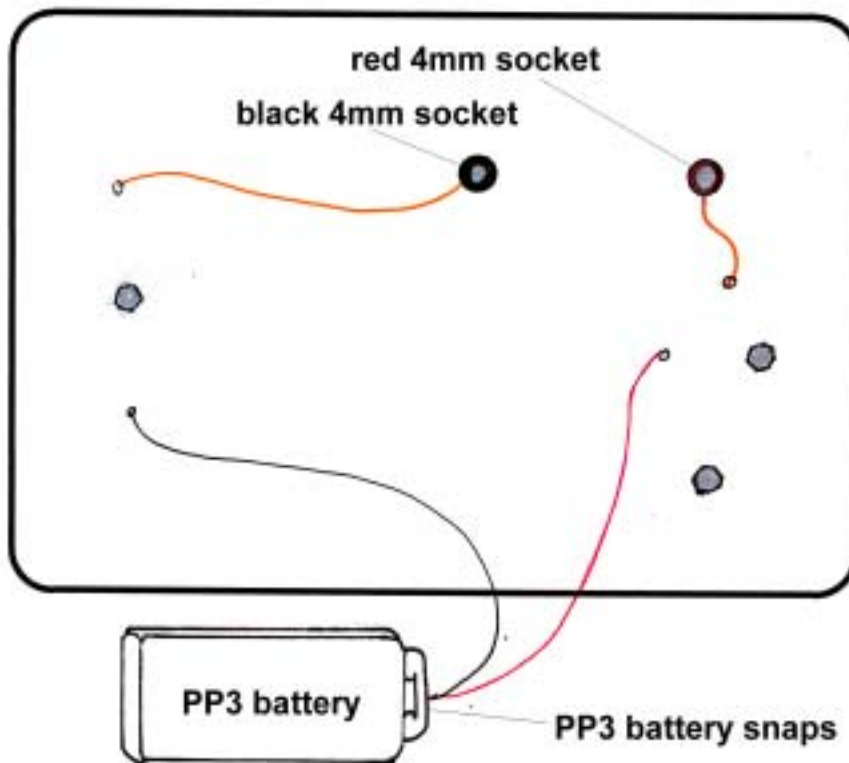


Figure 2 Construction and layout of Fuse Test box

If you have not got the *PASPort* Voltage/Current sensor available to use, you could modify the Fuse Test box and incorporate a 1Ω 3W resistor in series with the fuse and fuseholder, microswitch and battery. Connect the resistor to 4mm sockets and mark in a Voltmeter between them. The *Xplorer GLX* Voltage probe could then be used, plugging it into these voltmeter sockets. Obviously the students' worksheets would need modification to take account of this.

Supplier

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Key setup details

PASPort Voltage/Current sensor PS-2115
Sample Rate Unit: samples/s
Sample Rate: 1000
Reduce/Smooth Averaging: OFF
Current: Visible
Voltage: Not Visible
Power: Not Visible
Data Cursor mode
Connected line mode
Triggering: 0.01A Rising