Instructions

IPC ELECTRONICS LTD.

GLASS CONDUCTION DETECTOR
IPC-5025-X

IMPORTANT
Please read these instructions carefully
before using apparatus

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Introduction

You can demonstrate a current flowing through a solid electrolyte using hot glass, at room temperature glass is a good electrical insulator, however due to the resistivity of glass its conductivity increases as it becomes hot. You can demonstrate this change in conductivity by applying a voltage across a glass rod, say 30V, and measuring the current flowing through it as its temperature increase. The difficulty is that even at high temperature this current flow is very small and consequently very difficult to demonstrate, however the IPC Glass Conduction Detector features an efficient Light Emitting Diode which detects this very small current and provides a visual indication which both increases and decreases in illumination as the current increases and decreases.

Description

The Glass Conduction Detector requires 30VDC (the IPC High Tension Power Supply, IPC-0294-P is idea), and a 6mm dia. Borosilicate glass rod to connect to. The 30VDC supply is connected to the red and black 4mm input sockets and the glass rod to the two blue 4mm sockets using the leads provided.

Connections

Supplied with the Detector is a pack of 10 x 6mm circular spring clips, fit two of these clips to the glass rod at a spacing of 10mm, then using the leads supplied attach the large crocodile clips over the spring clips, finally switch on the 30VDC supply. **Note:** a Test Switch on the Detector allows you to check the setup, simply touching the connectors together should illuminate the LED.

Demonstration

Once ready use a Bunsen flame to carefully heat the area of the glass rod between the two spring clips, when the rod reaches a sufficient temperature the LED (blue) will begin to illuminate indicating a current has started to flow. Further increases in temperature will increase the illumination further therefore demonstrating the change in conductivity of the glass due to heat.
Note: the glass should not be heated until it starts to deform, soda glass can be used but it melts more easily.

Additional Notes

Care must be taken when using a Bunsen flame and when handling (and cutting) glass, use eye protection at all times. You must also allow both the glass and the connection clips etc. to cool to room temperature before putting the apparatus away.
Due to the effects of the heating process the Detector comes with quick release detachable crocodile clips/leads for easy replacement (IPC-5027-X) and spare 6mm spring clips (IPC-5029-X), note: 8mm clips are also available.