

Vu Voltage sensor

This Voltage sensor is for use with the Vu data logger. It is used to measure the voltage across a component in a **0 to 3 V** DC low voltage circuit.

The sensor has 4 mm plugs that will plug into the 4 mm sockets fitted to most electronic kits. The 2 crocodile clips (also supplied) can be used to connect to bare wires.

Product No. 2325

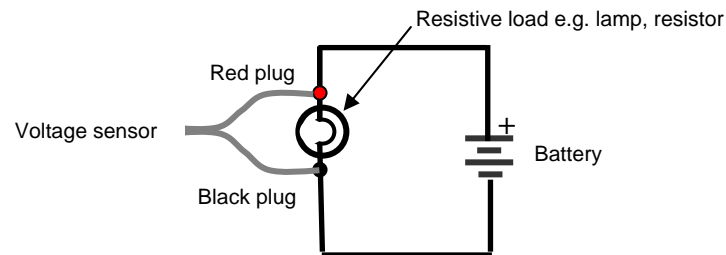


Specifications

Range (V)	0 to 3 V
Resolution (V)	0.1
Protected to a maximum voltage (V)	± 4.5
Impedance (Meg ohm)	1

Practical information

Voltage, referred to as potential difference or electromotive force (emf) is the electrical potential energy between two points in a circuit and is the driving force pushing the electricity around a circuit.



- The Voltage sensor is used to measure the potential difference between the ends of an electrical component so is connected across (i.e. in parallel) the component.

IMPORTANT: The sensor will only measure a positive voltage so observing **correct polarity** when connecting is important i.e. connect the black lead from the sensor to the negative terminal of the cells.

- Batteries are the first choice as the source of energy.

An alternative is to use a fully isolated mains power supply with a regulated DC output (smoothed and fully rectified) capable of being **limited to 3 V** (a voltage higher than ± 4.5 V will damage this sensor).

Note: Be aware that some power supplies are $\frac{1}{2}$ wave rectified producing an average rather than true DC. The Voltage sensor will 'pick up' the fluctuations in voltage and current from this type of power supply

- If a Voltage sensor is connected to Vu, without being part of a complete circuit, then data collected may appear 'noisy'. To measure voltage accurately you need high impedance (resistance). The Voltage sensor is a high impedance device and will pick up any electrical 'noise'.

Note: Zero impedance can be demonstrated by briefly shorting out a Voltage sensor (connecting its black & red plugs together).

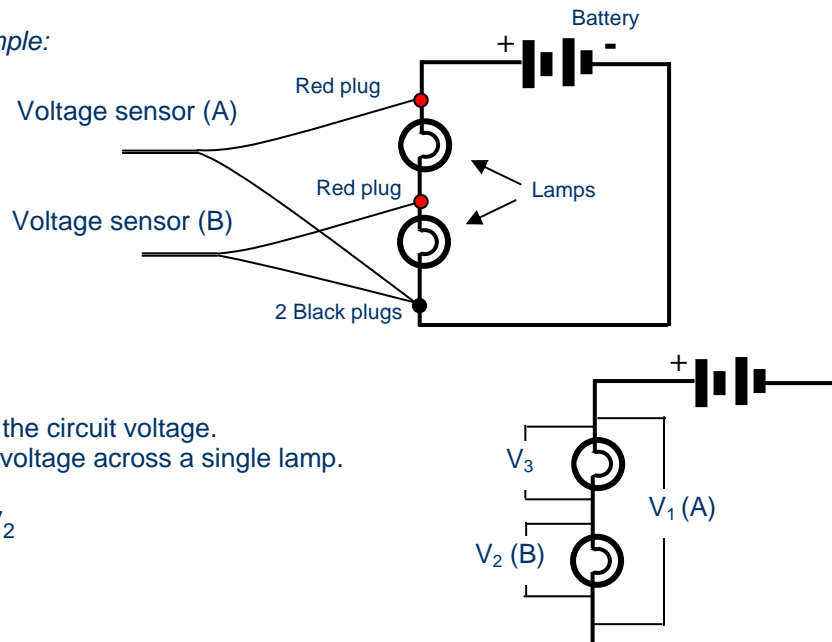
Primary investigations

- Battery life
- Bulb / LED comparisons
- Conductor and non-conductors
- Series and parallel circuits
- Ohm's law
- Alternative power investigations e.g. Solar cells.
- Power House e.g. Electricity from solar energy: Clouds in front of the sun, following the sun's path, angle of elevation, reflected and concentrated sunlight, the closer the brighter.
A wind power plant for your house: At the right angle? Will fewer blades work? Airflow resistance.
- To measure the voltage from a homemade battery e.g. Fruity volts

Advanced User information

- The black plug lead of the sensor will be 0 V of the Vu logger which if connected to USB will also be the 0 of the PC and potentially connected to Earth through the PC. Therefore all black plug leads in a circuit should be connected together at a common point.
- It is best to only use one Voltage sensor in a circuit at the same time but if more than one Voltage sensor is used, ensure they share a common earth (the same black lead).

For example:



V_1 measures the circuit voltage.
 V_2 measures voltage across a single lamp.

$$V_3 = V_1 - V_2$$

Warranty

All Data Harvest Sensors are warranted to be free from defects in materials and workmanship for a period of 12 months from the date of purchase provided they have been used in accordance with any instructions, under normal laboratory conditions. This warranty does not apply if the Sensor has been damaged by accident or misuse.

In the event of a fault developing within the 12 month period, the Sensor must be returned to Data Harvest for repair or replacement at no expense to the user other than postal charges.

Note: Data Harvest products are designed for **educational** use and are not intended for use in industrial, medical or commercial applications.



WEEE (**W**aste **E**lectrical and **E**lectronic **E**quipment) Legislation

Data Harvest Group Ltd is fully compliant with WEEE legislation and is pleased to provide a disposal service for any of our products when their life expires. Simply return them to us clearly identified as 'life expired' and we will dispose of them for you.