

Voltage (± 25 V)

DT001



The Voltage (± 25 V) sensor can be connected to the Nova5000, MultiLogPRO or TriLink data loggers.

The Voltage sensor is a regular voltage sensor, measuring between -25 and 25 V. The Voltage sensor is a differential sensor, capable of measuring both direct and alternate voltage current and it is ideal for use in a wide range of experiments in Physics and Chemistry.

The sensor is housed in the Fourier Systems plastic sensor case, and has two durable banana plugs for easy connection.

The Voltage sensor has floating inputs, meaning you can connect any number of voltage sensors to a circuit without shorting them.

Typical Experiments

- EMF and internal resistance
- V-I characteristics of a wire, a light bulb and a diode
- Connections of batteries
- Resistance of a wire – Ohm's Law
- Series and parallel circuits
- Charging and discharging a capacitor
- Capacitor in alternating current
- Investigating the transformer
- Specific heat



How it Works

The Voltage (± 25 V) sensor should be wired in parallel with the circuit.

The measured voltage passes an amplifier unit and is adjusted to the range of 0-5 V, which is the range accepted by the Analog-Digital converter. The proper result is then recorded and stored in the data logger's memory.

The Voltage sensor is equipped with buffer units, protecting the sensor from voltages of up to ± 60 V.

Sensor Specification

Range:	± 25 V
Input Voltage:	AC or DC
Accuracy:	± 3 % over entire range
Resolution (12-bit):	12.5 mV
Maximum Sample Rate:	20,000 samples per second
Input Resistance:	250 k Ω
Maximum Input Voltage:	60 V

Technical Notes

- Short the two leads of the Voltage sensor before connecting to the data logger.
- For accurate measurements connect its negative input (black) to the power source negative input (ground).

Calibration

The Voltage sensor requires no calibration.

Using the Voltage Sensor with Fourier Data Loggers and MultiLab Software

1. Launch the MultiLab software (from either your PC or Nova5000).
2. Connect the Voltage sensor to the data logger's sensor input (starting from I/O-1). The sensor is automatically recognized by the MultiLab software.
3. Click **Setup** on the main toolbar and program the data logger's sample rate and number of samples. Click **Run** on the main toolbar to start the measurement.

An Example of using the Voltage (± 25 V) Sensor

Charging and Discharging a Capacitor

When a capacitor and a resistor are connected in series to a DC voltage source, the voltage across the capacitor gradually increases (the first part of the graph below).

When the charged capacitor is connected to a resistor, it will discharge and the potential difference across its terminals will exponentially decrease (the second part of the graph below).

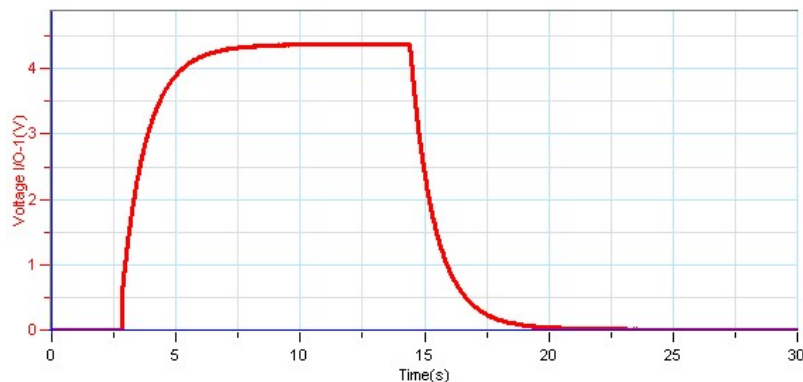


Figure 1: Charging and Discharging a Capacitor

Technical Support

Please contact Fourier technical support as follows:

Web: http://www.fourier-sys.com/support_support.html

Email: support@fourier-sys.com

Consult the FAQs before contacting technical support:

http://www.fourier-sys.com/support_faq.html

Copyright and Warranty

All standard Fourier Systems sensors carry a one-year warranty, which states that for a period of twelve months after the date of delivery to you, it will be substantially free from significant defects in materials and workmanship.

This Warranty does not cover breakage of the product caused by misuse or abuse.

This Warranty does not cover Fourier Systems consumables such as electrodes, batteries, EKG stickers, cuvettes and storage solutions or buffers.