

SWR

SWR



## Multirange Voltage Sensor

### Multirange Voltage Sensor

**Product No.: TS2128**

**Measuring range: -200~200mV**

**Resolution: 0.1mV**

**Accuracy:  $\pm 1\%$ F.S**

**Measuring range 2: -2V~2V**

**Resolution: 0.001V**

**Accuracy:  $\pm 1\%$ F.S**

**Measuring range 3: -20V~20V**

**Resolution: 0.01V**

**Accuracy:  $\pm 1\%$ F.S**

SWR

Address: No.14 Junnong Road, Qinhuai District, Nanjing, China.

Website: //www.sinoswr.com

Post Code: 210007

Tel: +86-400-828-8387

## Introduction:

Multirange Voltage Sensor is used to measure the electric potential difference at both ends of the electrical equipment or circuits. Multirange Voltage Sensor divides the voltage it collects to measure the electrical potential difference in DC circuit and AC circuit.

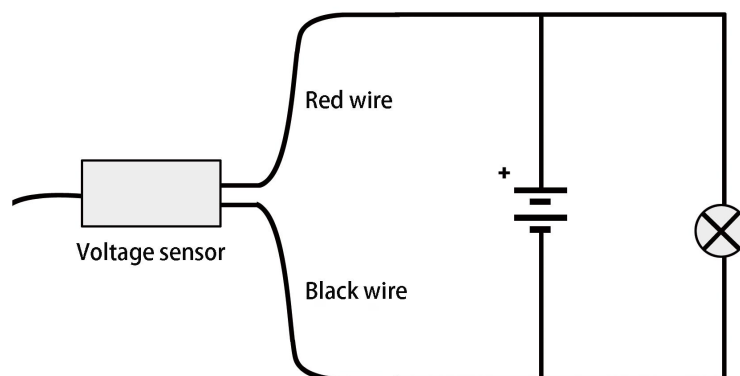
Multirange Voltage Sensor should be parallel connected to the circuit during using. The internal resistance of Multirange Voltage Sensor is extremely huge. Thus, connecting Multirange Voltage Sensor will not affect circuit in most cases. In any part of circuit, Multirange Voltage Sensor can be used with current sensor.

## Calibration:

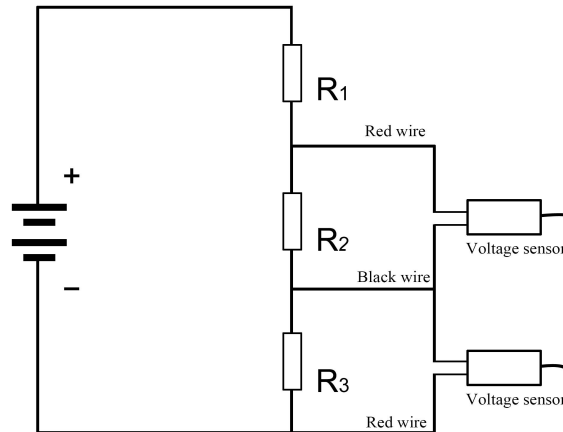
TS2128 Multirange Voltage Sensor needs to be calibrated before using. Connect sensor to datalogger. Open SWR iLab. Short connect red and black alligator clips to calibrate it.

## Usage:

During using, connect red wire to high voltage end and black wire to low voltage end. In this case, the measured voltage is positive as shown below:



If there are multiple voltage sensors in the circuit, to increase the accuracy, make sure they share the same ground (black wire) as shown below:



## Typical experiment:

Measure electrical potential of power supply and internal resistance

Measure VA characteristic of small bulb, diode and conductor

Ohm's law

Series and parallel connection of resistor

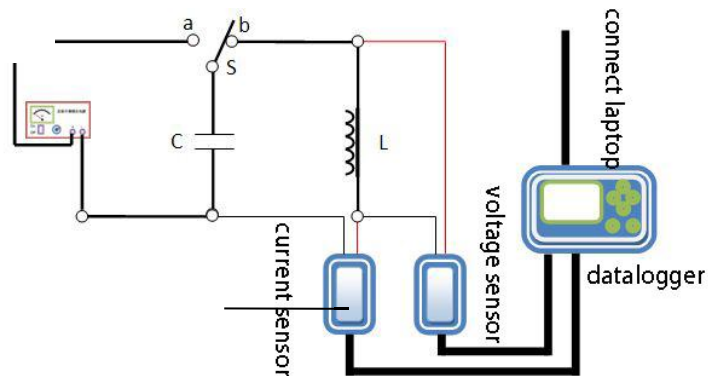
Electromagnetic induction phenomenon

LC oscillation

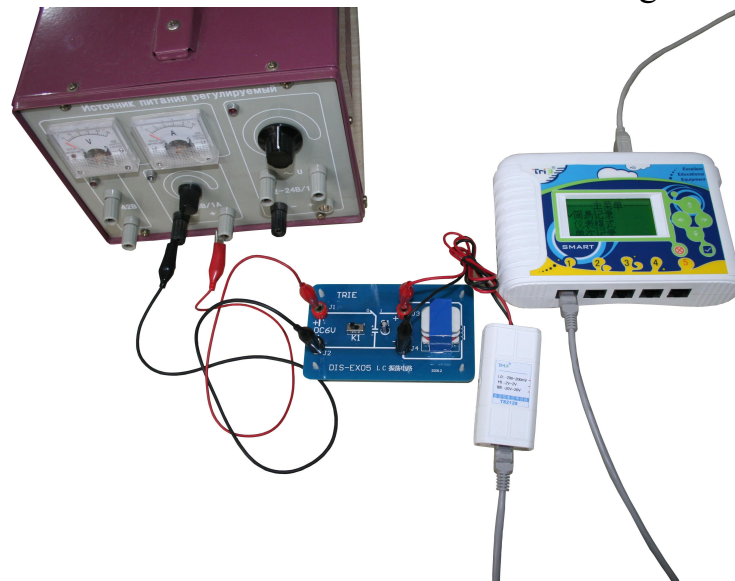
Series-parallel connection, charging and discharging of capacitor

## Experimental case:

LC oscillation:

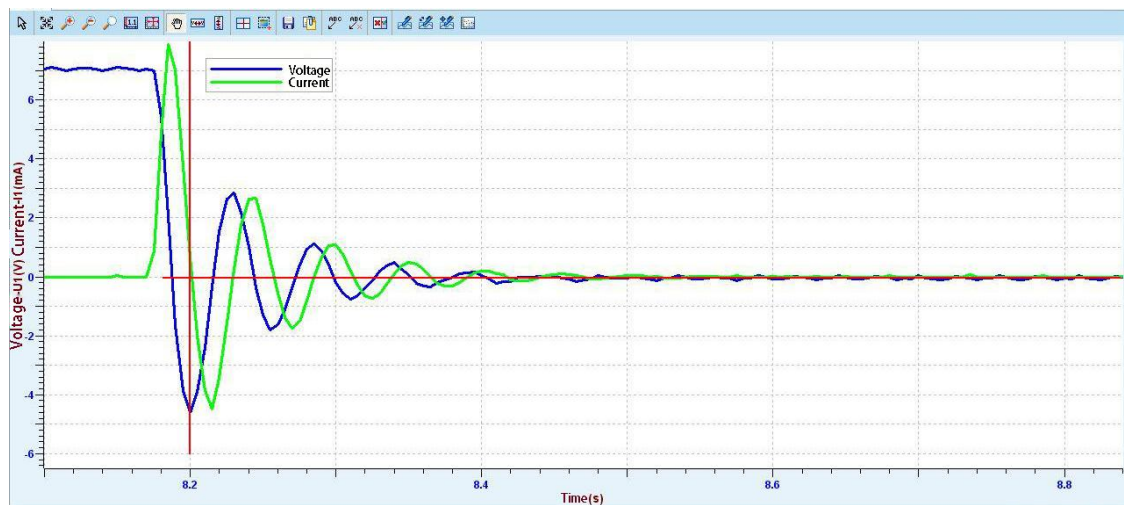


Product General Assembly



Experimental procedures:

1. Connect apparatus as shown above. Calibrate voltage and current sensor.
2. Open the SWR iLab V8.0. Click 'new' to create new experimental template.
3. Click 'new page' to add new folder.
4. Click 'add line' to add 'Voltage-Time' and 'Current-Time' coordinate. Set proper experiment time and acquisition interval.
5. Adjust the switch S to position a to charge the capacitor.
6. Click 'start' after charging. Adjust switch to position b. LC oscillation starts.
7. Click 'stop' when collecting is completed. Observe the figure.
8. Clear up the apparatus.



Voltage, current changing curve

## Notes:

1. Multirange Voltage Sensor should be parallel connected to the circuit during using.  
Multirange Voltage Sensor needs to be calibrated before using.
2. When measuring, please do not make the measured voltage exceeds the range of the sensor.
3. If possible, ground the negative pole (black alligator clip) to ensure high accuracy.