

MEASURING INSTRUMENTS

Student 3 – Bel

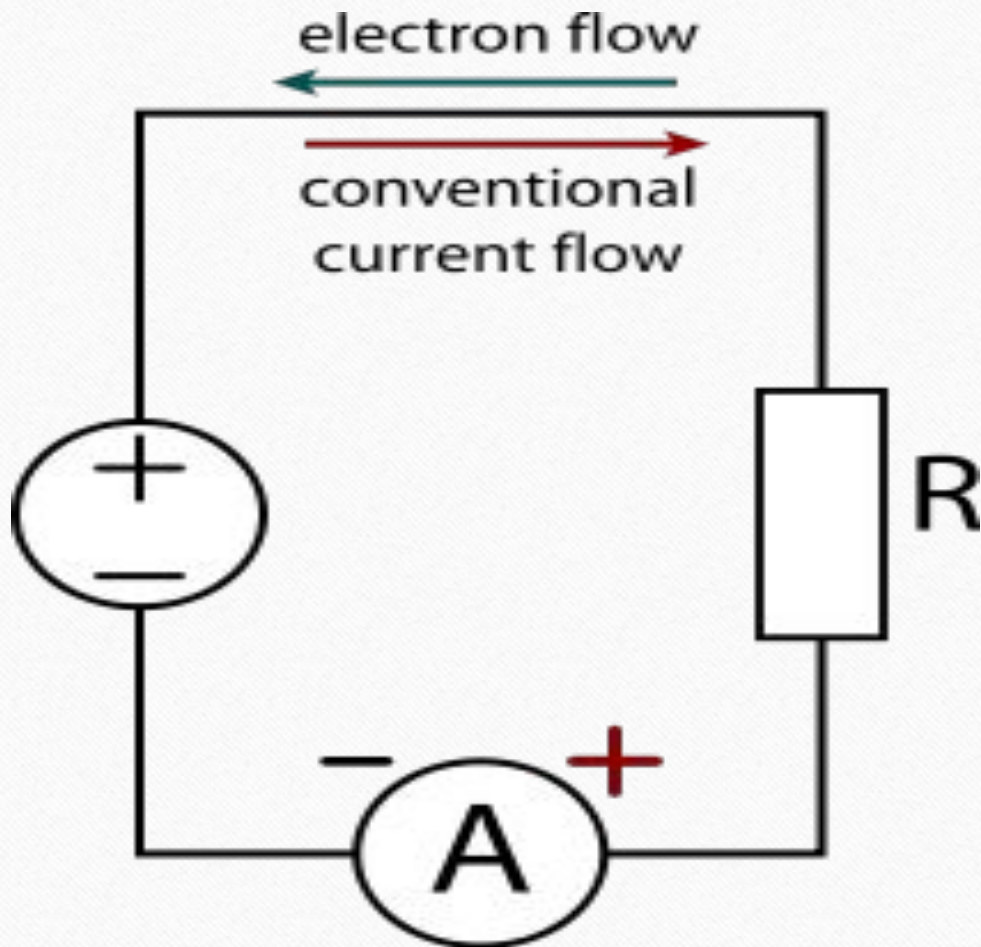
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Measuring instrument - a measuring tool designed to obtain the values of the measured physical quantity in the specified range. Often a measuring device is called a measuring device for generating a measurement information signal in a form accessible to the operator's immediate perception.



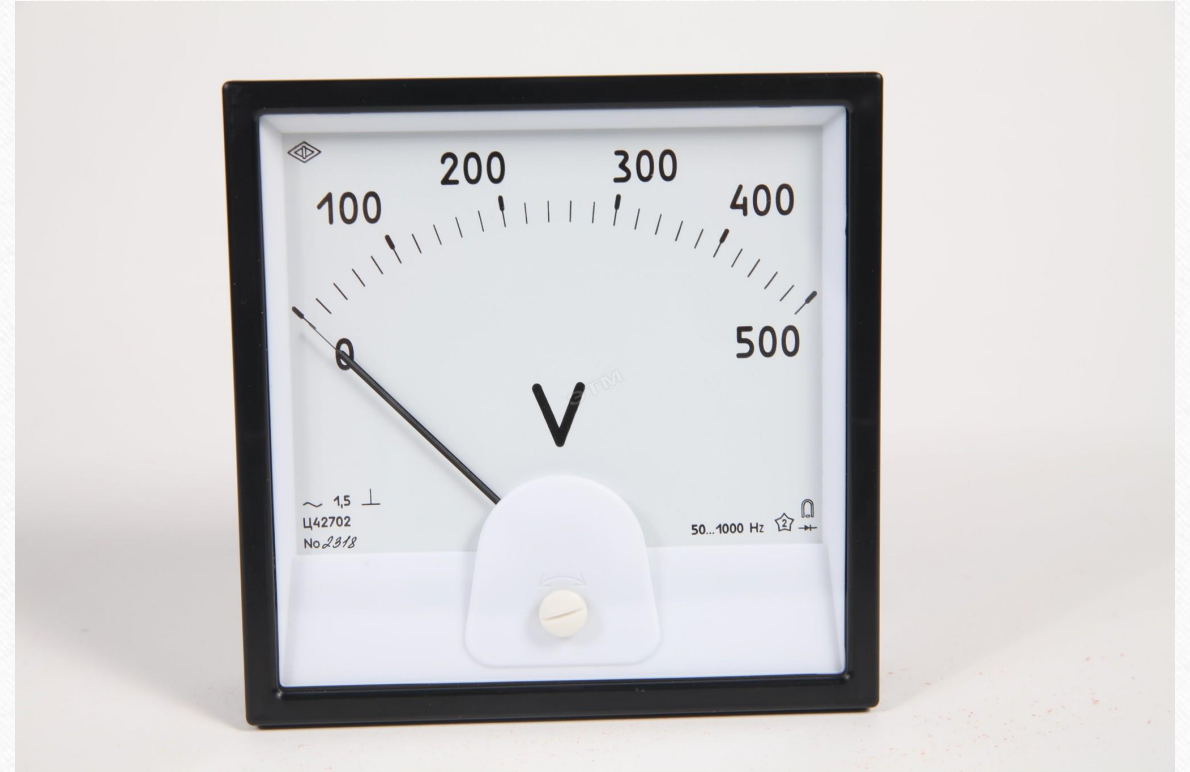
Ammeter (from ampere + μετρέω - I measure) is a device for measuring current in amperes. The ammeter scale is graded in microamperes, milliamperes, amperes or kiloamperes in accordance with the measurement range of the instrument.



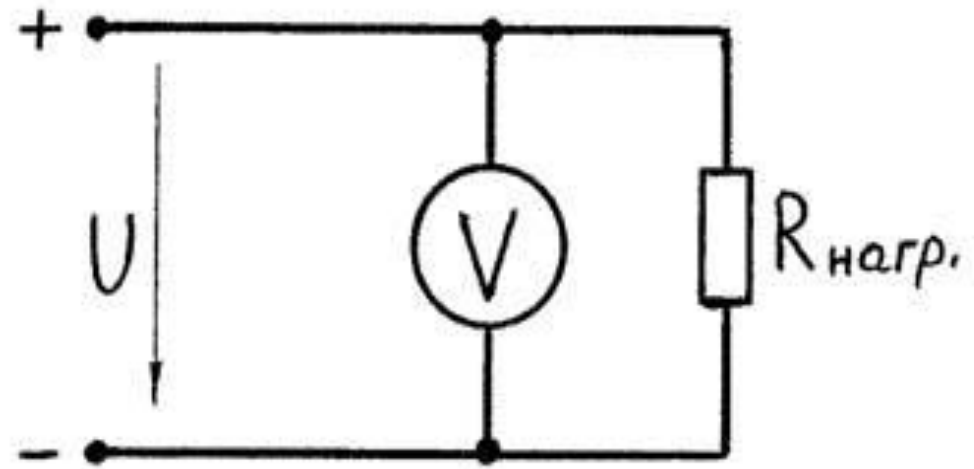


In the electrical circuit, the ammeter is connected in series with that portion of the electrical circuit whose current strength is measured. Therefore, the lower the internal resistance of the ammeter (ideally - 0), the less will the effect of the instrument on the object under study, and the higher the accuracy of the measurement. To increase the measurement limit, the ammeter is supplied with a shunt (for AC and DC circuits), a current transformer (only for AC circuits), or a magnetic amplifier (for DC circuits). It is very dangerous to try to use an ammeter as a voltmeter (connect it directly to a power source): this can lead to short circuits!

The voltmeter (volts + gr. Μέτρησ measure) is a direct reading instrument for determining the voltage or EMF in electrical circuits. It is connected in parallel to the load or the source of electrical energy.



An ideal voltmeter should have an infinitely large internal resistance. Therefore, the higher the internal resistance in a real voltmeter, the less influence the device has on the measured object and, consequently, the higher the accuracy and the more diverse the field of application. Voltmeters are connected to the network in parallel.





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The ohmmeter (Ohm + other-Greek $\mu\epsilon\tau\rho\epsilon\omega$ "measure") is a direct reading device for determining electrical resistive (ohmic) resistances. Normally, the measurement is done by direct current, however, in some electronic ohmmeters, alternating current can be used. Varieties of ohmmeters: mega-ohmmeters, giga-meters, terameters, milliammeters, micro-meters, differing in the ranges of measured resistances.

Electricity meter (electric meter) is a device for measuring electricity consumption of alternating or direct current (usually in kWh or Ah).



The end

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