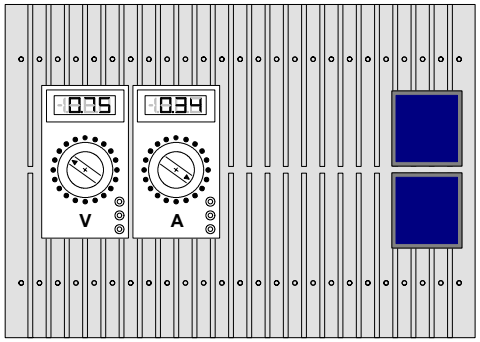
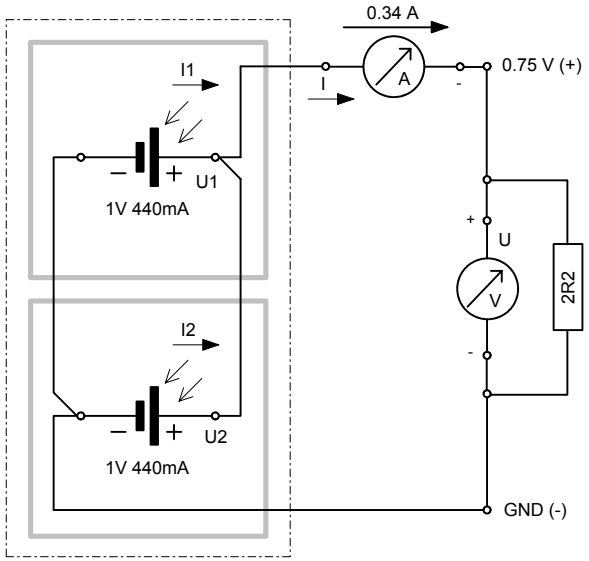
2 x 1 V SOLAR MODULE IN PARALLEL, CLOSED CIRCUIT



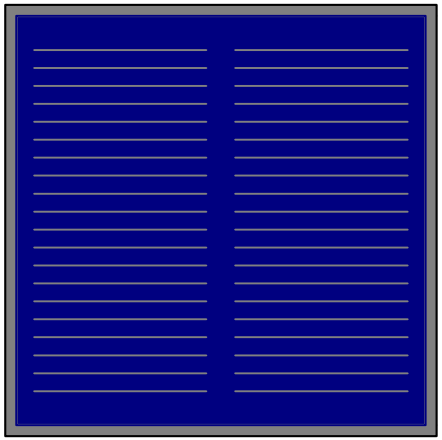
EXPOSED TO BRIGHT SUNLIGHT (about 70000 LUX)



$I = \frac{U}{R}$ $I = \frac{0.75}{2.2} = 0.341\ A = 341\ mA$

$P = U \times I$ $P = 0.75 \times 0.34 = 0.255\ W = 255\ mW$

FT SOLAR MODULE 1V - 440 mA (440 mW) - PN: 146142

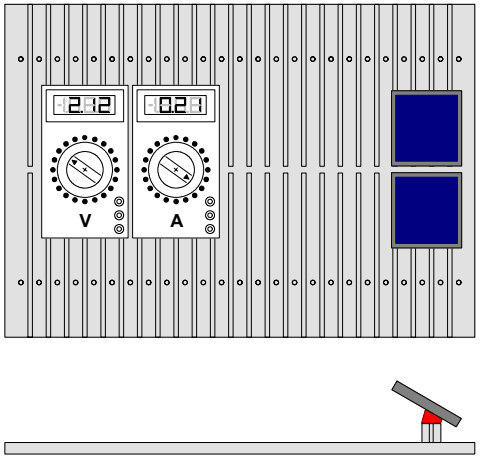


Solar panel output refers to the amount of electricity or power that a solar panel can generate when exposed to sunlight. Solar panels, also known as photovoltaic (PV) panels, convert sunlight into usable electrical energy.

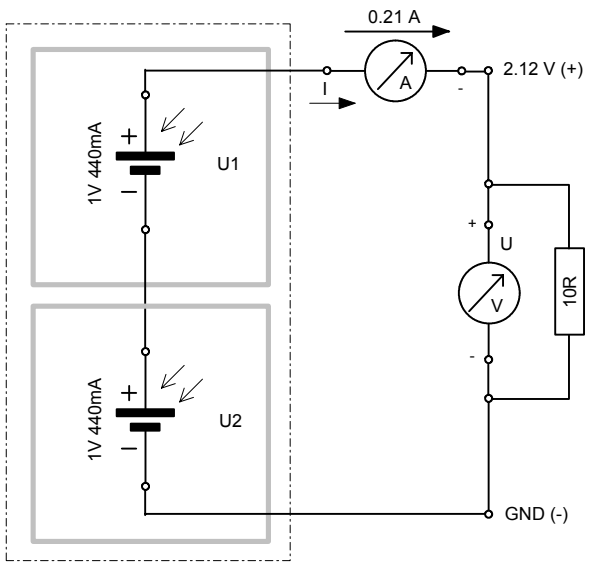
The output of a solar panel is commonly measured in terms of its power rating, which is expressed in watts (W) or kilowatts (kW). It indicates how much electricity the panel can produce under specific conditions.

It's important to note that the power rating of a solar panel is typically given under standard test conditions (STC), which represent ideal laboratory conditions. In real-world scenarios, the actual output may vary due to factors such as weather conditions, shading, and the orientation and tilt of the panel.

2 x 1 V SOLAR MODULE IN SERIES, CLOSED CIRCUIT



EXPOSED TO BRIGHT SUNLIGHT (about 70000 LUX)



$I = \frac{U}{R}$ $I = \frac{2.12}{10} = 0.212\ A = 212\ mA$

$P = U \times I$ $P = 2.12 \times 0.21 = 0.445\ W = 445\ mW$

PARALLEL CONNECTION (1st. KIRCHHOFF'S LAW)

Kirchhoff's Current Law (KCL): This law states that the sum of currents flowing into any junction or node in a circuit is equal to the sum of currents flowing out of that junction. In simple terms, it means that the total amount of current entering a junction is equal to the total amount of current leaving that junction.

$I = I1 + I2$ $I = I1 + I2 + I3 + I...$ I = Current (A)

EXAMPLE WITH RATED MAX. CURRENT VALUES:
I = 0.44 A + 0.44 A = 0.88 A = 880 mA

SERIES CONNECTION (2nd. KIRCHHOFF'S LAW)

Kirchhoff's Voltage Law (KVL): This law states that the sum of all the voltage drops (or rises) around any closed loop in a circuit is equal to the sum of all the voltage sources in that loop. In other words, the total voltage around a

$U = U1 + U2$ $U = U1 + U2 + U3 + U...$ U = Voltage (V)

EXAMPLE WITH RATED MAX. VOLTAGE VALUES:
U = 1 V + 1 V = 2 V

FIGURES ARE APROXMEDIATELY, DUE TO COMPONENT TOLERANCES!
FOR FULLY COMPONENT SPECS. SEE MANUFACTURER DATASHEETS.
BRANDS AND NAMES ARE MENTIONED PURELY FOR INFORMATION PURPOSES.

STEM-S01	A4	udo@elgers.com	ue-ERT20230602-08	02-JUN-2023
018	A	SOLAR PANEL, 2 x 1 V, IN PARALLEL & SERIES		