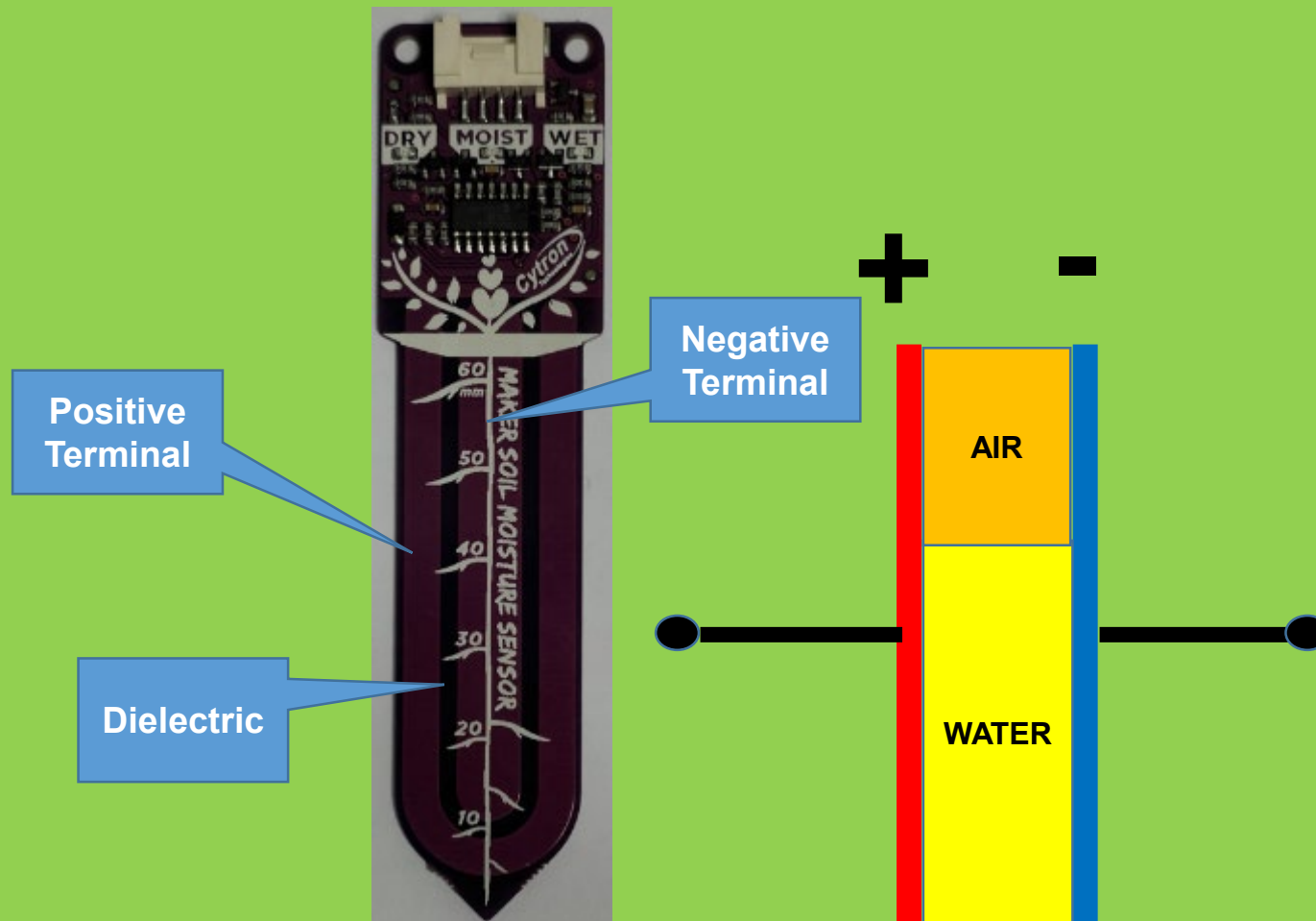


Capacitive Soil Moisture Sensor



$$\text{Capacitance, } C = \frac{\epsilon_0 \epsilon_r A}{d} \text{ Farads}$$

Capacitive Soil Moisture Sensor measures soil moisture by capacitive sensing, where the **presence of water in the soil will increase the probe capacitance.** The output of the sensor is analog output; **higher moisture levels will produce lower output voltage.**

Features of Capacitive Soil Moisture Sensor

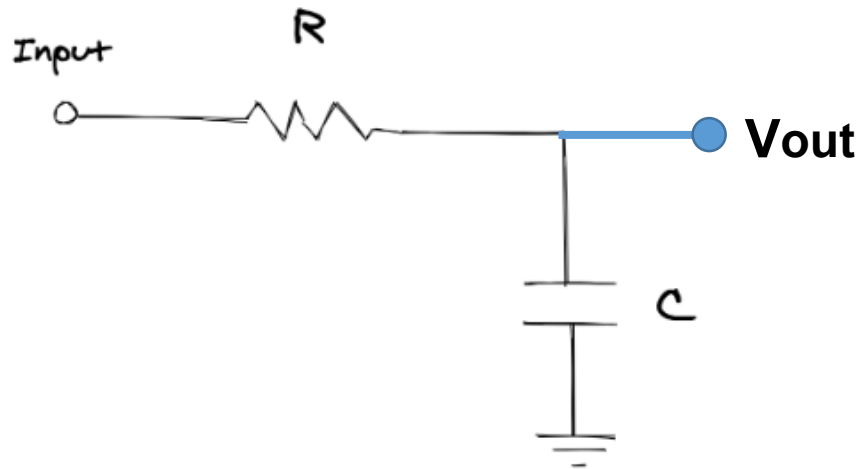
- Operating Voltage: 2.5V - 7.0V
- Output: Analog Voltage
(Higher moisture level → Lower capacitor output voltage)
- LED indicators for dry/moist/wet soil moisture levels.
- Soil Limit (Maximum depth of the probe)
- Double-sided probe (More sensitive to moisture changes)
- Capacitive sensing probe (Corrosion resistant)
- Disable pin (Power-saving application)



Capacitive Soil Moisture Sensor

In any RC circuit like this one, if we apply a positive voltage to the Input, the capacitor C will start charging up through the resistor R. As charges start to accumulate on the capacitor's terminals, the voltage across C starts to rise.

At its heart, a resistor and a capacitor work together to estimate the amount of water in the environment around them. We can represent this RC circuit as the follows:



An RC circuit

