

Solar Agro Probe

**Abstract:**

Solar-AgroProbe is an all in one sensor device with all the required sensor such as temperature, humidity, soil moisture and solar radiation sensor’s integrated in one unit which is driven by solar energy.

This data from the sensors assists the producer in monitoring his crop by getting the real time readings and solutions for any issues using the smart onboard AI.

**Key Features:**

* Measure five major parameters.
* Web connectivity.
* Powerful onboard processor.
* Smart AI predictor.
* Solar powered.
* User friendly operation.
* Ergonomic design.

**Introduction:**

As the stats show that nearly 30 percent of the earth’s land is under vegetation. We at Tree-D labs saw the growing demand for smart tech at agricultural sector and come up with a simple and smart device which will help in monitoring and maintaining crop. This device uses all the latest smart embedded technology which are quite powerful and cheap.

Five key aspects which play a vital role in the overall output of a crop, and our product helps the producer tackle these issues.

* Preparing the field.
* Monitoring the crop.
* Adapting to the conditions.
* Timely harvest.
* Improving for the future.

This product is designed in keeping the view of all the agricultural enthusiasts which will help them in farming.

We have also planned to start a community of all the Tech-Farmers who can assist each other with any crop related issues.

**Working:**

Solar-AgroProbe measures the five major elements that should be monitored for a healthy crop.

* Soil moisture
* Soil temperature
* Atmospheric temperature
* Atmospheric humidity
* Solar radiation

These five elements are measured using suitable sensors which are integrated in a single and simple design. All the data recorded is sent to a web API where this data is processed for Irrigation control, Advanced mapping of the crops, Growth of the crop, Yield prediction of the crop, Alerts on upcoming issues to the crop.

Each sensor can be used to monitor soil conditions of about 2qmt.

Soil moisture sensor features capacitive plates that measure soil moisture through the plastic, at a radius of 10 cm. These modules can be daisy-chained together to form a sensor of up to 1.2 meter length. This sensor doesn’t get corroded by the moist soil conditions as they are made up of corrosion free materials which are long lasting.

This probe has two configurations one being the Master Sensor and the other is the Node Sensor.

This device is equipped with a high efficiency monocrystalline solar panel and an internal battery which provides days of power even without sunlight.

All the sensors in the field communicate with each other with the help of a Master sensor which uses a SIM to connect to the Internet. Typically one master sensor is required for a field.

These probes can be designed in different lengths depending upon the soil and the type of crop it’s used for.

**Key Specs:**

* High efficiency monocrystalline 2W Solar Panel
* Internal battery providing months of power even without sunlight
* Solar Irradiance (IR + visible light) – Range: 300~1100nm – Accuracy: 16bit
* Air Temperature – Range: -40~125°C – Accuracy: +/-0.3°C
* Air Humidity – Range: 0~100%RH – Accuracy: +/- 2%
* Soil Temperature – Range: -10~85°C – Accuracy: +/-0.4°C
* Capacitive Soil Moisture – Accuracy: 28bit