

NAME OF THE INSTRUMENT: AUTOMATIC WEATHER STATION

➤ **PURPOSE FOR MEASUREMENT:**

- A system, with which weather observations may be collected, i.e. observed and disseminated, on real time basis without human interference are known as AWS.
- The automatic weather station (AWS) records the weather data automatically and continuously at programmed time intervals of 15 minutes.
- It does not require personal attendance but formal attention is required to run the instrument.

➤ **DETAILS OF THE INSTRUMENT:**

- AWS comprise of three units- (i) Field units, (ii) communication link and (iii) Ground receiving, processing and disseminating system.
- Field unit consists of (i) sensors for meteorological parameters, (ii) conditioning subsystem, (iii) data conversion, storage and transmission system (DCSTS), (iv) antenna and (v) power supply system.



➤ **SENSORS:**

- **TEMPERATURE SENSOR-** Temperature is sensed by thermistor, which is extremely sensitive and exhibits a large resistance change with small change in temperature.
- A probe, which is electrically identical to temperature probe, also measures soil temperature but physically more rugged.
- The air temperature sensors are kept in a Stevenson Screen, whereas the soil temperature probes are buried in the soil at desired depths.
- **RELATIVE HUMIDITY SENSOR-** This sensor contains RH and temperature probe and is housed in plate gill radiation shield with a 5 feet lead length.

- This shield helps to eliminate radiation loading the sensor.
 - **WIND DIRECTION SENSOR-** The wind vane measure wind direction from 0-360 with a 5^o accuracy. The sensor utilizes a potentiometer to vary the sensor resistance in relation to wind direction.
 - **WIND SPEED SENSOR-** Anemometer measures with speed in the range of 0-45 m/s (0-160 km/hr).
 - This sensor is a three cup wheel assembly utilizing a magnet activated reed switch whose frequency is proportional to wind speed.
 - **RAINFALL SENSOR-** A tipping bucket rain gauge is attached to the probe.
 - It measures rainfall at the rate of 50 mm per hour with an accuracy of 1.1%.
 - It is designed such that one alternate tip of the bucket occurs for each 0 to 25 mm of rainfall. Each tip actuates a magnetic switch.
 - The rain gauge is mounted on a level ground and at least 30 cm above the ground surface.
 - **RADIATION SENSOR-** This sensor is designed for field measurement of sun and sky radiation.
 - The silicon pyranometer puts out a current, which is dependent upon the solar radiation incident upon the sensor.
 - The current is measured as a voltage drop across a fixed resistor.
 - There are vapour pressure, soil temperature, soil moisture, leaf wetness
- ### ➤ **STORAGE MODULE:**
- The storage module provides the user with a method of transporting data from the field to the computer.
 - It is packaged in stainless steel canisters.