

## MEA2230 Class A Evaporation Pan

The Class A Evaporation Pan has been a standard measure of evaporation for many years in many countries.

Pan evaporation is a measurement that combines or integrates the effects of several climate elements: temperature, humidity, solar radiation, and wind. Evaporation is greatest on hot, windy, dry days; and is greatly reduced when air is cool, calm, and humid.

A Class A Evaporation Pan is cylindrical with a diameter of 1.2065 metres and a depth of 254 mm. The pan should rest on a carefully levelled, wooden base. Evaporation is measured daily as the depth of water evaporates from the pan.

A bird guard, constructed of wire mesh, is used to prevent access to the water by birds or animals.

### MEA2231 Manual Measurement.

Measurements are taken with a fixed point gauge and measuring tube. The fixed point gauge consists of a pointed rod placed vertically at the centre of a cylindrical stilling well.

The measuring tube has a cross sectional area of one hundredth the area of the evaporation pan, and is subdivided into 20 equal divisions each of which is equivalent to 0.2 mm of water in the pan.

At the start of the measurement cycle, the water level in the pan is at the reference point.

At the end of 24 hours, normally at 9am, enough water is added using the measuring tube, to again fill the pan exactly to the apex of the fixed point gauge. The deficit is the evaporation for the day.

### MEA132 Automated Measurement.

The recording process can be automated by electronically measuring the rate of change in the water height.

An ultrasonic Doppler depth sensor housed inside a stilling well measures the height of the water in the pan. The sensor sits about 35mm above the water level and is vented to atmosphere, and can monitor water level falls as low as 50 mm below the set level. (Typical Australian daily evaporation in summertime is about 6 mm per day).

The sensor readings are recorded by the data logger and the rate of evaporation is measured over the course of the day. A 24 hour cumulative total to 9am is calculated.

Evaporated water needs to be replaced, and rainfall volumes removed manually. A rain gauge can be connected to the data logger for net evaporation calculations



### MEA133 Automated Measurement with Automatic Refill.

The MEA133 is a fully automated Class A Pan measurement system which includes an automatic refill option.

The data logger regulates the water inflow and outflow from a local water supply.

A peristaltic pump adds precise volumes of water to the tank at 9am each morning, or draws it out if rainfall has exceeded evaporation.

MEA's Magpie software, running in the system data logger, monitors pan level changes 24 hours per day, and attributes rises in pan water level to rainfall, subtracting it from the daily evaporation total.

Automatic evaporation pans can be used as stand alone units or as part of an MEA Automatic Weather Station.