

# EVAPORATION MONITORING



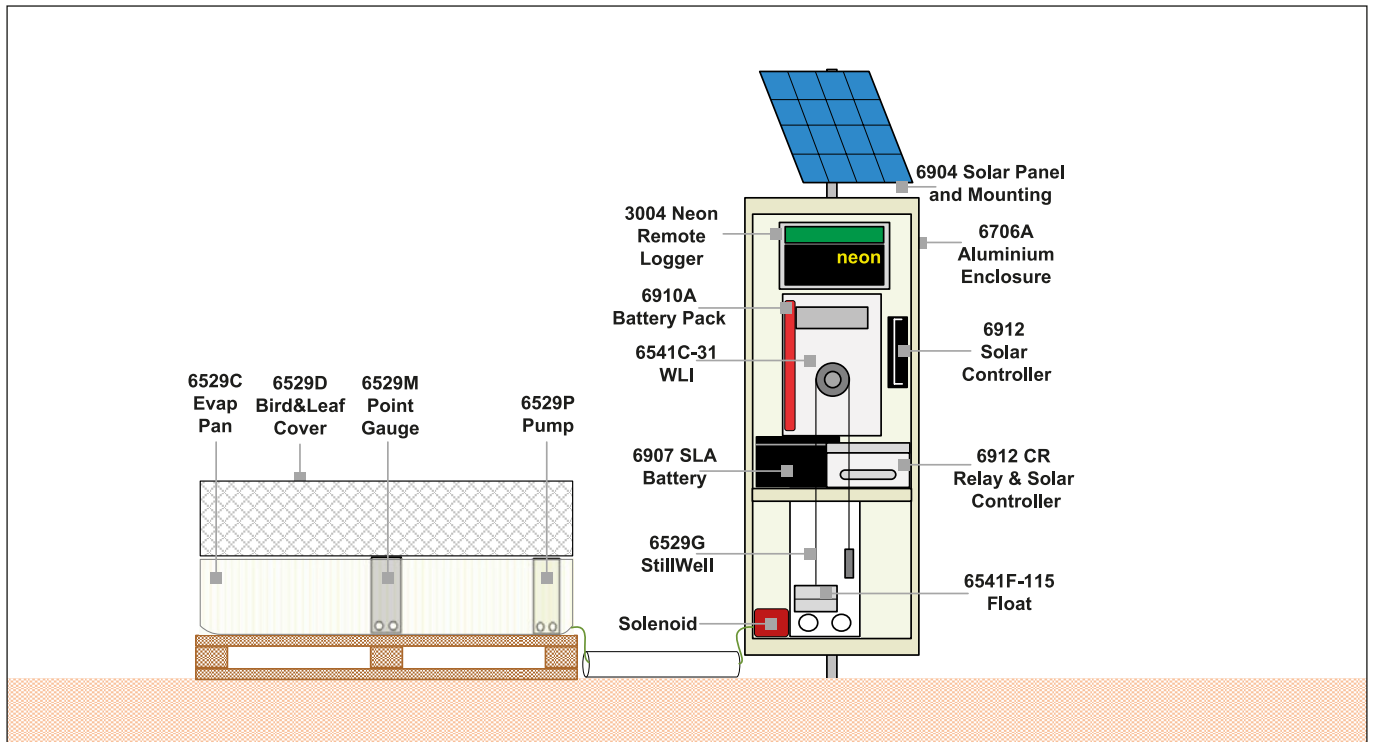
## APPLICATION BACKGROUND

The rate of evaporation is defined as the amount of water evaporated from a unit surface area per unit of time. This parameter is an important indicator of the need for water of agricultural area's and also for hydrologists to monitor the water balance of an area.

Measuring the level of evaporation is especially important in mine sites to determine the rate of improvement in water quality.

All Unidata's evaporation systems measure how much water evaporates from a US Class A evaporation pan by measuring the water level in an adjoining still well.

In agriculture people rather talk of evapotranspiration, meaning the combined evaporation of the soil and the transpiration of plants.



## APPLICATION DETAIL

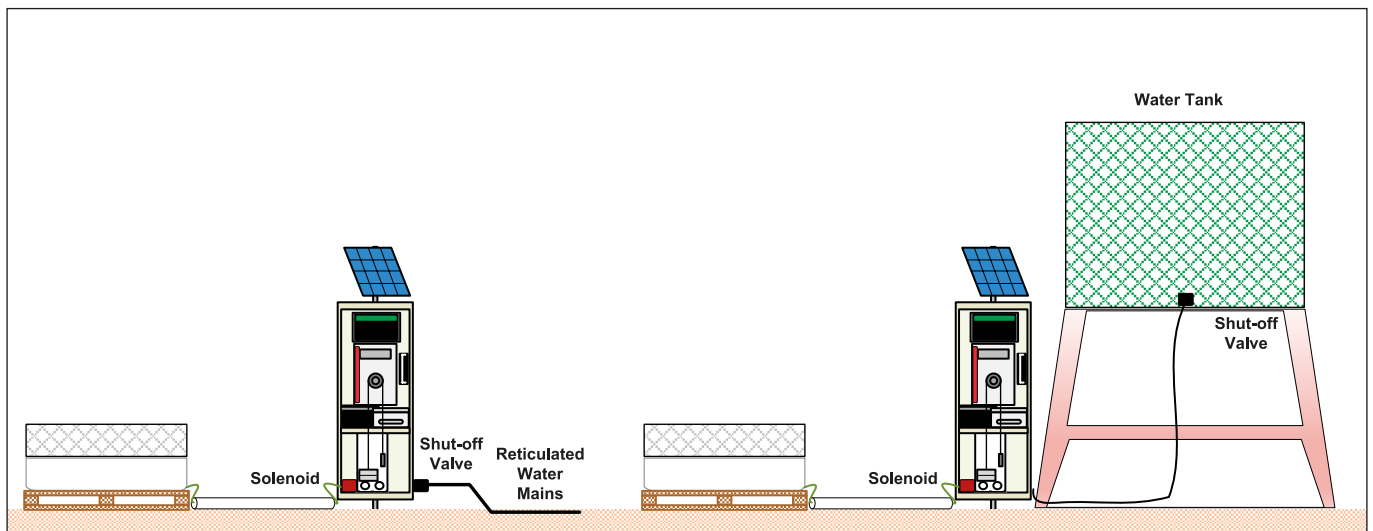
Unidata supplies three models of evaporation system that cover nearly all evaporation measurement applications. Typically these systems are able to be used in dams and other water bodies, mines and remote installations, farms and pastoral leases, salt producers, fresh water producers and irrigation systems. The simplest model is a manually operated unit while the most sophisticated is automated to the point where it requires only infrequent intervention by an operator.

The more complex evapotranspiration monitoring can be performed on a site if weather parameters such as wind, relative humidity, temperature and solar radiation are available. When these parameters are analysed as well, evapotranspiration can be determined by formulae such as Penman / Monteith.

Using a stillwell 6529G reduces the impact of fluctuations in the pan's water level caused by wind. The water level in the stillwell is measured using a modified 6541 Water Level Instrument. This arrangement delivers measurements with a resolution of 0.2mm. An optional thermistor probe float assembly can be purchased separately. This assembly floats on the surface of the water in the evaporation pan to obtain a surface temperature reading.

The simplest model, known as the 6529-1 Evaporation Monitoring System, comprises of an evaporation pan with a bird and leaf cover and a manual measurement system.

These systems need a water supply which may be from a water tap or from a tank on a tank stand.







If an underground tank / water supply is used then water needs to be pumped from that supply to the system.

The 6529-2 Evaporation Recording System is similar to the 6529-1 but includes a precision water level instrument complete with a logger and an LCD display that shows the current depth of the evaporation pan. The addition of the logger means that you can record evaporation measurements over time and have access to its other features such as SDI-12 communications, intelligent battery supervision, telemetry and all the programmability found in loggers.

The 6529-3 is a fully automated system designed to operate for long periods without maintenance. In addition to the features of the 6529-2, it has the ability to automatically refill and discharge water from the evaporation pan. This enables you to manage a water source such as storing and recycling rainwater.



A water temperature sensor and a range of weather sensors can be added to help identify the relationship between evaporation and other site conditions. Typically these are required for evaporation and evapotranspiration studies and modeling.

You can also connect a Neon telemetry system to the system so you can monitor data acquisition, reprogram the unit, check the health of the site, all from a remote location. Cellular, LoRa and satellite communication links are supported. Using a Neon telemetry system decreases the need for time consuming site visits. Remember that when you use one of the telemetry options you will probably need to provide external power such as a solar panel, external battery, and regulator and use a larger enclosure.



## TYPICAL CONFIGURATION

## APPLICATION SPECIFIC INSTRUMENTS/INPUTS

Options	Unidata Part Number	Description
Evaporation Recording System Manual	6529-1	Manual Evaporation Recording System
Evaporation Recording System Semi-Automatic	6529-2	Semi-Automatic Evaporation Recording System
Evaporation Recording System Automatic	6529-3	Automatic Evaporation Recording System

## NEON TELEMETRY - NRL / RTU / FIELD UNITS

Options	Unidata Part Number	Description
Ethernet	3016A-000 / 3008A-000	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G	3016A-C00 / 3008A-C00	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Ethernet & 3G/4G and LoRa	3016A-CL0 / 3008A-CL0	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat	3016A-00I / 3008A-00I	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Equatorial Orbit Satellite-Inmarsat & 3G/4G	3016A-C0I / 3008A-C0I	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Low Earth Orbit Satellite - Globalstar	3016A-00G / 3008A-00G	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Satellite - Iridium Short Burst Data	3016A-00R / 3008A-00R	Neon Remote Logger-16 or 8 Analog Ch / Touch Screen Display
Standalone RTU/NRL - Industrial	3004A-00 / 3004A-0L	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
Cellular RTU/NRL 3G/4G - Industrial	3004AC0 / 3004A-CL	Neon Remote Logger-4 Analog Ch with or without Touch Screen Display
M – Series Standalone RTU/NRL	3004A-M000 / 3004A-M0B0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Cellular RTU/NRL 3G/4G	3004A-MC00 / 3004A-MCB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series LoRa RTU/NRL	3004A-ML00 / 3004A-MLB0	Neon Remote Logger-4 Analog Ch with or without Li Battery
M – Series Ethernet RTU/NRL	3004A-MEBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Microsatellite RTU/NRL	3004A-MHBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional
M – Series Iridium Short Burst Data RTU/NRL	3004A-MIBL	Neon Remote Logger-4 Analog Ch, Li Battery & LCD are optional

## NEON APPLICATION SOFTWARE - CUSTOMER SERVER

Options	Unidata Part Number	Description
Neon Applications Software	2302A	Neon Server Software Licence Incl 5 NAL
Neon Applications Software	2302A-10	Additional 10 NRT Access Licence
Neon Applications Software	2302A-20	Additional 20 NRT Access Licence
Neon Applications Software	2302A-50	Additional 50 NRT Access Licence

## NEON HOSTING SERVICE - UNIDATA SERVER

Options	Unidata Part Number	Description
Neon Hosting Service	2301A	Neon Data Initial Subscription Setup Fee
Neon Hosting Service	2301A-01	Neon Data Service Fee for 1-50 NRT
Neon Hosting Service	2301A-02	Neon Data Service Fee for 51-100 NRT
Neon Hosting Service	2301A-10	Neon Data Service Fee Metering

## DATALOGGER MANAGEMENT SOFTWARE

Options	Unidata Part Number	Description
Starlog V4 Management Software	6308A-AUE	STARLOG V4 Full Licence Key