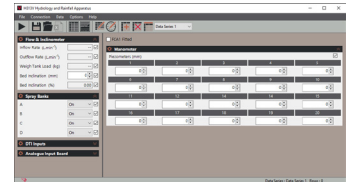
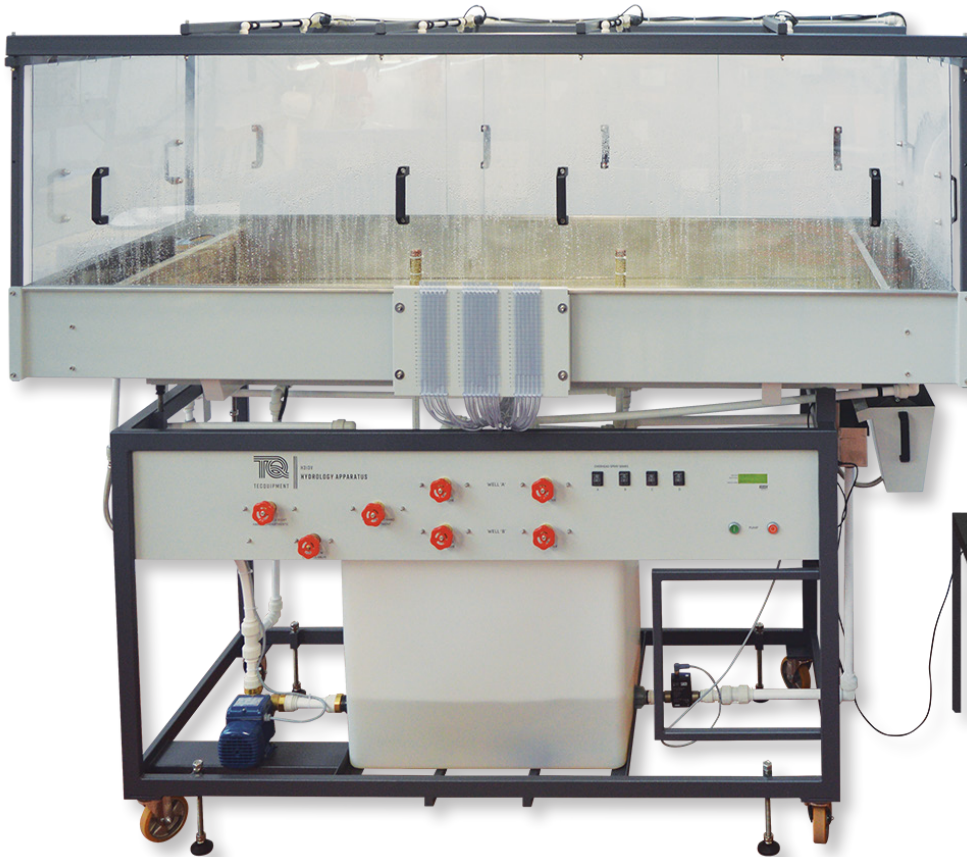


ADVANCED HYDROLOGY AND RAINFALL APPARATUS

VDAS[®] ONBOARD H313V

For studying hydrology principles, including rainfall, through flow and movement of water over land and rivers.



SCREENSHOT OF THE VDAS[®] SOFTWARE



KEY FEATURES

- Permeable catchment area fed with 'rain' from overhead spray nozzles and/or by groundwater flow from ends of tank
- Four groups of switchable spray nozzles supply the catchment area
- Piezometer tappings to measure water table profile
- Can measure 'drawdown' due to single or two interacting wells
- Adjustable inclination of catchment area angle
- Includes electronic flow meter to measure flow to the catchment area
- Run-off end well flows measured by electronic flow meter
- Self-contained – requires only an electrical supply
- Comes with VDAS[®] Onboard featuring data acquisition via USB
- VDAS[®] data acquisition works with software to capture flow rates, sedimentation rate (with the optional FCA1 pressure readings may also be captured)

ADVANCED HYDROLOGY AND RAINFALL APPARATUS



DESCRIPTION

The apparatus is a sturdy metal frame which holds a large rectangular stainless-steel tank (catchment area) and a reservoir tank. Students can fill the catchment area with a granular medium (not included) to form a permeable catchment area.

A jacking mechanism allows adjustment of the angle of the catchment area. Above the catchment area is a frame that holds spray nozzles which simulate rainfall on the catchment. Valves select which of the four groups of nozzles are in use. Students can use this facility to vary the lag time on a hydrograph or to simulate a moving storm.

At each end of the catchment area are end compartments, separated from the catchment by weir plates with porous 'port holes'. Students can open the port holes to drain water from the catchment area, or to supply water to it from the end compartments.

In the middle of the catchment area are two 'wells' for experiments with water wells. A row of 20 tapings along the centre line of the catchment area allows students to measure the water table profile. Each tapping has special slotted ends to stop the permeable media entering its pipe. The tapings connect to a bank of piezometer tubes at the front of the catchment area.

A pump takes water from the reservoir and feeds it to the overhead nozzles and to the ends of the catchment area. Students can vary the flow to the nozzles and tank. A magnetic inductive flow meter measures the inflow and outputs to VDAS®. A second magnetic inductive flow meter measures the outflow, and outputs to VDAS®.

An outflow chamber captures sediment and a force sensor connected to the outflow chamber reads the sediment load and displays it on VDAS®.

The unit has VDAS® Onboard. A USB cable (supplied) connects to a suitable PC (not supplied) running TecQuipment's VDAS® software that captures, records and displays data. VDAS® is free to download from the TecQuipment website.

The apparatus is completely self-contained and needs only a mains electrical supply. The permeable medium is not included with the apparatus, but TecQuipment offers a suitable grade of sand as an ancillary.

STANDARD FEATURES

- Supplied with a comprehensive user guide
- Five-year warranty
- Manufactured in accordance with the latest European Union directives
- Excavation site model
- Bridge Piers: Cylindrical, Round Nose, Square Nose and Sharp Nose

LEARNING OUTCOMES

- Investigation of rainfall/run-off relationships for dry, saturated and impermeable catchments of various slopes (surface run-off only)
- Effect of interflow on outflow hydrograph surface run-off (plus groundwater flow)
- Simulation of multiple and moving storms
- Measurement of cone of depression for a single well and comparison with theory
- Interaction of cones of depression for two adjacent wells
- De-watering of excavation sites by use of wells
- Flow from a well in a confined aquifer
- Demonstration of watersheds for a simulated island with rainfall and well flows
- Sediment transport rate and meanders in simulated rivers
- Studies of scour around simulated bridge piers
- Demonstration of erosion caused by water through flow

RECOMMENDED ANCILLARY

- 800kg Permeable Medium (H313a) – Washed, graded sand, 0.5 mm to 1.5 mm
- FCA1 – Pressure Display



ARTIFICIAL RIVER BED

ADVANCED HYDROLOGY AND RAINFALL APPARATUS



OPERATING CONDITIONS

OPERATING ENVIRONMENT:

Laboratory

STORAGE TEMPERATURE RANGE:

-25°C to +55°C (when packed for transport)

OPERATING TEMPERATURE RANGE:

+5°C to +40°C

OPERATING RELATIVE HUMIDITY RANGE:

80% at temperatures < 31°C decreasing linearly to 50% at 40°C

ESSENTIAL SERVICES

ELECTRICAL SUPPLY (SPECIFY ON ORDER):

Single-phase 220 - 230 VAC, 50 Hz, 3A

or Single-phase 110 - 120 VAC, 60 Hz, 6A

FLOOR SPACE NEEDED:

Approximately 3 m x 2 m

SPECIFICATIONS

NETT DIMENSIONS AND WEIGHTS:

2400 x 1080 x 2200 mm and 450 kg

PACKED DIMENSIONS AND WEIGHTS:

5.77 m³ and 600 kg (approx – packed for export)

MAIN PARTS:

- Catchment area: Stainless steel tank 2 m x 1 m
Normal depth of permeable medium 180 mm
- Spray nozzles: Eight, in four banks of two, each bank individually selectable
- Reservoir tank: Capacity approx 273 litres
- Recommended medium: Approx 800kg of washed sand graded 0.5 mm to 1.5 mm



BRIDGE PIER SCOUR