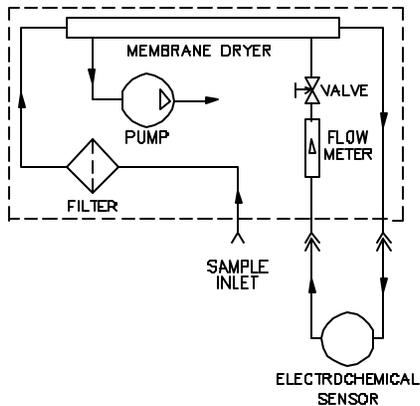


## PRINCIPLE OF OPERATION

The ACES system incorporates a Perma Pure Nafion® membrane dryer, disposable 0.1 micron pre-filter and sample pump to supply a clean sample to an electrochemical sensor. The dryer is sized to supply a 20-80% RH sample from ambient air at a flowrate up to 2 L/min.

After the ACES provides clean sample to the analyzer, it flows back to the conditioning system where it is expanded by a vacuum pump and used as purge air for the dryer (refer to flow schematic below).



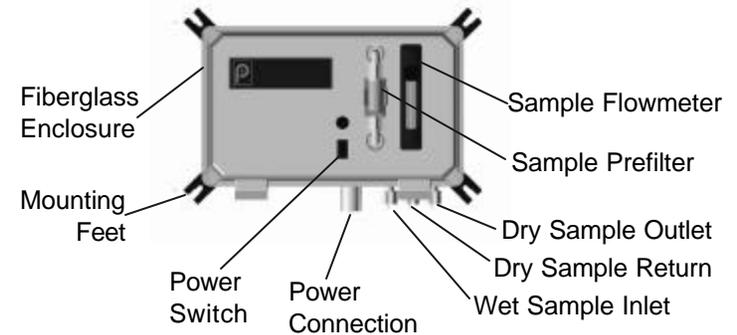
## SPECIFICATIONS

Description	Specification
Dimensions	12"W x 7"H x 6"D
Electrical Requirement	110/220 VAC, 2/1 Amp
Sample Flow	0.1 - 2.0 L/min
Disposable Filter	95% of 0.1 micron
Inlet Humidity Range	0-99%RH
Outlet Humidity	0-80%RH
Piping Connection	1/4" O.D. tube, polypropylene compression fitting

## INSTALLATION

Mount system close as possible to probe and analyzer to reduce response time and flow restriction. Enclosure is NEMA 4X rated. Since unit is not heated, dewpoint of sample entering system can be no higher than ambient.

1. Mount system to wall.
2. Connect sample tube to fitting (labeled Wet Sample Inlet).
3. Connect tubing from Dry Sample Outlet fitting to analyzer.
4. Connect sample return from analyzer to fitting (labeled Dry Sample Return).



## OPERATION

1. Turn power on. Pump will come on and sample will flow.
2. Adjust valve on top of flowmeter to set desired sample flow rate. Optimal operating range is 0.5 to 1.5 liters per minute.

## MAINTENANCE

Filter Replacement:

To determine if filter needs to be replaced, monitor pressure drop and flow output of pump. If output begins to drop, it indicates clogged filter element.

1. Take notice to orientation of filter for replacement.
2. Pull lock ring on black elbow fitting away from filter to release internal gripper.
3. Pull tube stubs from fittings.
4. Replace with new filter (part number: AG-DIF-N70).

Pump:

The pump is warranted against failure for 10,000 hours of continuous operation from Hargraves (model BTC™). If pump fails, it will be repaired or replaced at manufacturer's discretion free of charge. The pump is not serviceable after warranty period and must be replaced.

# ACES™

## Ambient Air Conditioning

### User Manual



**PERMA PURE**

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