

Membrane Test System – 740 MTS

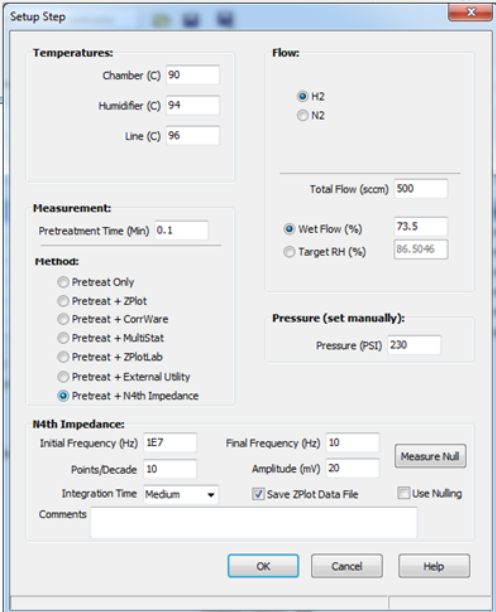
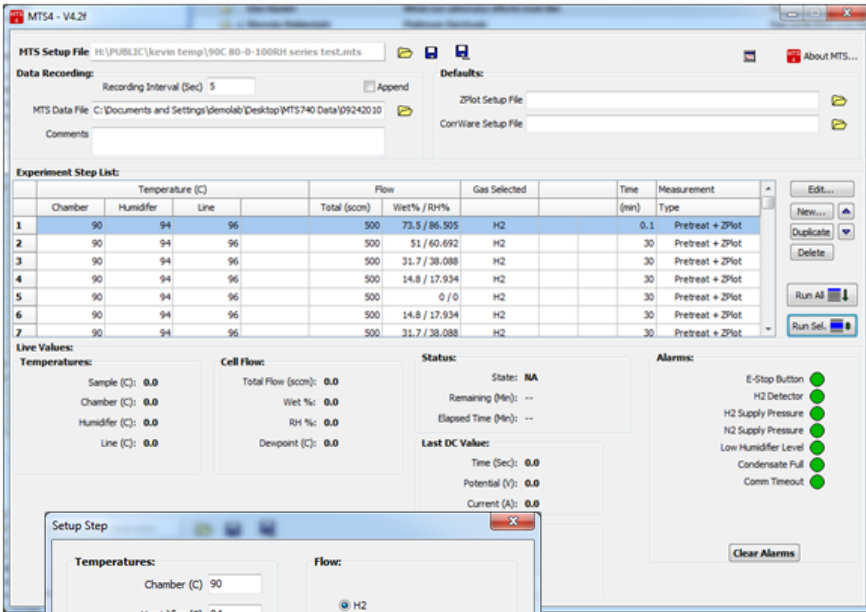
A Versatile Tool for Membrane R&D and Manufacturing QC

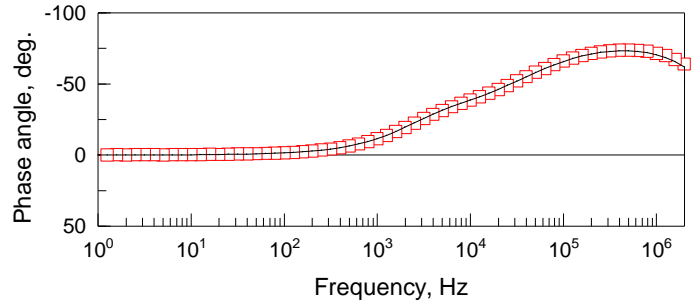
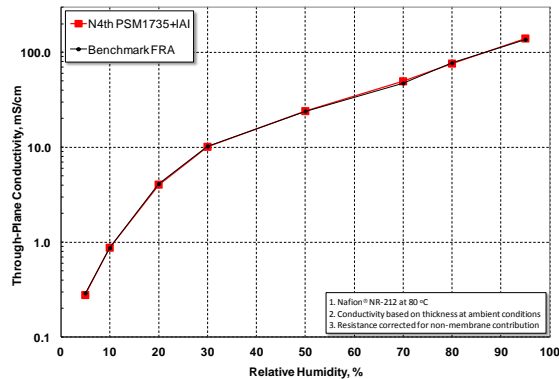
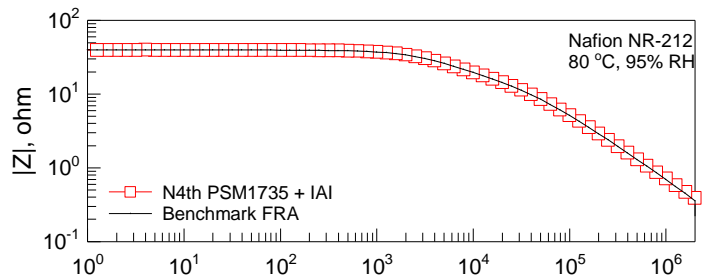
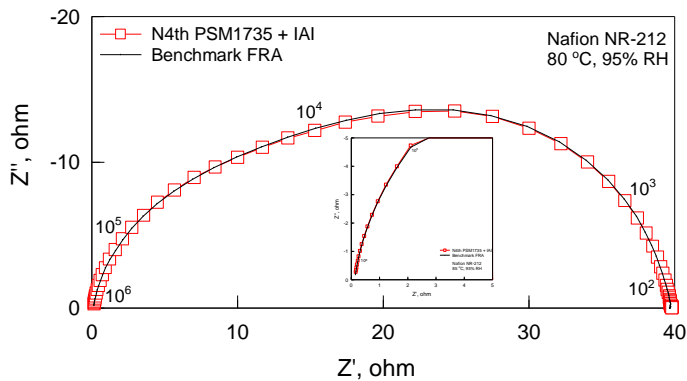
The 740 MTS is ideally suited for development of new ionomers and solid electrolytes. It offers rapid and accurate measurement of the through-thickness membrane resistance and conductivity as a function of temperature, humidity level and pressure.

Introducing the Newtons4th PSM1735 for use with the 740 MTS Outstanding performance at an unbeatable price

Benefits of the Newtons4th FRA solution

- High-accuracy over a wide frequency & impedance range
- Equivalent or better performance than industry benchmark FRA
- Built-in open circuit & short circuit compensation
- Very cost competitive





740 MTS impedance data from Newtons4th & industry benchmark FRA for Nafion® NR-212

Sample Chamber Gas Control System:

Humidifier: 316LL SS material, designed for 100% gas saturation, auto water fill
 Mass Flow Control: Two; Wet and Dry, 0 - 500 sccm each (allows variable wet gas % and RH control)
 Sample Gas Selector: Selects N₂ or H₂/other
 Gas Pressure Switches: Two, N₂ and H₂/other
 Gas Dewpoint Meter: One, capacitance-type sensor in sample chamber
 Measurable Dewpoint: 0 to 100 °C
 Set and Report Accuracy: ±0.25% of span, ±1 least significant digit
 Set and Report Resolution: 0.1 °C
 Sensor Type: Thermocouples, Type T
 Temperature (max): 180 °C (chamber and sample) / 120 °C (humidifier) / 130 °C (gas transfer line)

Sample Chamber:

Open/Close Mechanism: Threaded, screw-in cell head with integrated electrodes
 Electrode Clamp Mechanism: Manual, spring-loaded, integrated with cell head
 Electrodes: Platinum, proprietary four-terminal design (U.S. Patent No. 7,652,479)
 Temperature Range: Ambient to 180 °C
 Back Pressure Range: Ambient to 30 PSIG (207 kPa)

Post-Chamber Gas Flow Path:

Heat exchanger, condensate tank, precision backpressure regulator, vent port

Electrochemical Interface and Impedance Measurement:

User-supplied impedance analyzer - Solartron Analytical 1260 or Newtons4th PSM1735 FRA + Impedance Analysis Interface recommended
 MTS4 software controls ZPlot® and FRA

Physical and Environment:

Operating Temperature: 15 - 35 °C
 Power Source: 100-120 VAC; 50/60 Hz
 Size (inches): 18H x 11W x 19D (excluding sample chamber top)



Software inputs for each experiment:

Chamber, humidifier and gas transfer line temperature set point; Pre-treatment time (equilibration time); Total gas flow rate, Wet gas %, Gas type (H₂/other or N₂), and Back pressure (manually set).

Number of steps per experiment:

Up to 100

Live Data Display:

Sample temperature, Gas dewpoint and RH, Wet and dry gas mass flow rates, Measured impedance for a single frequency from ZPlot®, save ZPlot to respective file types (when enabled), remaining step time.

Data File Format:

Tab delimited ASCII file. Contains time, total flow, wet and dry flow, % wet, temperatures (dewpoint, sample, chamber, humidifier, gas transfer line), RH, pressure, gas type. ZPlot® and Newtons4th impedance data saved as standard *.z file compatible with ZView®.

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