



BT-512 Membrane Conductivity Test System (Complete)

BT-511 Membrane Conductivity Test System (Partial)

The **BT-512 Membrane Conductivity Test System (Complete)** is designed to do in-plane membrane conductivity testing. The hardware and software are fully integrated.

The **BT-511 Membrane Conductivity Test System (Partial)** includes the gas flow and humidification components for in-plane membrane conductivity testing. The customer provides the computer, software, and potentiostat to complete the system.

The differences between these two systems are further discussed below:

- 1) **Computer & Software** – The **BT-512** includes a Dell Computer installed with LabView Basic and Microsoft Office Basic. BekkTech's Conductivity Testing Software is also installed.

The **BT-511** does not include a computer. You will need to provide a computer with LabView 8.2 or higher and Microsoft Excel. The BekkTech Conductivity Testing Software will be provided on a CD for you to install.

- 2) **Voltage Measurements** – The **BT-512** includes the Keithley 2400 SourceMeter for applying current and measuring voltage during conductivity testing.

The **BT-511** does not include the Keithley 2400 SourceMeter. You will need to provide a potentiostat for applying current and measuring voltage and will need a method to integrate this data with the humidity and temperature data collected by the Conductivity Testing Software.

- 3) **Membrane Conductivity Testing Software** – The **BT-512** includes the BekkTech Conductivity Testing Software which automates test procedures to obtain conductivity data at a range of relative humidities and temperatures. Data acquisition and data analysis tools are also included and integrated. Scripts can be utilized for automated control of the system. Or the operator can manually input changes to the test parameters, as needed.

The **BT-511** includes the BekkTech Conductivity Testing Software for control and data acquisition of temperatures and gas flow. The voltage-current data is not integrated in the automated process, however, because you provide your own potentiostat with this system. Integration of the voltage-current data with the temperature and relative humidity data will need to be programmed or manually performed by your staff.

- 4) **Automated Data Analysis** – The **BT-512** Testing Software collects all the data needed for In-Plane Membrane Conductivity Analysis. The BekkTech Data Analysis Tools filter the data collected and generate graphs from the data collected.

All Data Analysis with the **BT-511** will require the operator to manually enter potentiostat data in order to have a complete set of data for analysis.

Please see detailed information on each system on the following page to determine which system will better suit your needs.

Shipping Address: 2367 West 8th Street Loveland, CO 80537
Mailing Address: PO Box 2876 Loveland, CO 80539
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www.bekktech.com



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BekkTech In-Plane Membrane Conductivity Test Systems	BT-511	BT-512
Automated Control and Data Acquisition		
<i>BekkTech Conductivity Testing Software in LabView (LabView Software Required)</i>		
Automated control of gas flow and temperatures. Automated data acquisition of gas flow and temperatures.	X	X
Automated control of scanning DC Sweeps for obtaining membrane conductivity.		X
Sample scripts are included to demonstrate testing a sample at multiple relative humidities during a given run.	X	X
Graphical view of real-time data: gas flows and temperatures	X	X
Graphical view of real-time data: resistance and relative humidity		X
<i>BekkTech Data Analysis Software in MS Office Excel (MS Excel Required)</i>		
Excel Spreadsheet for data filtering and analysis	X	X
Generates graphs of temperatures, gas flows and relative humidity over time	X	X
Generates graphs of conductivity as a function of relative humidity and time		X
NRE 212 conductivity data is included for comparison to your membrane conductivity data.	X	X
Computer and USB Director		
One Dell computer & monitor with LabView Basic & Microsoft Office Basic installed		X
One USB Director – RS-232 & RS-485 connections for communication to temperature controllers and mass flow controller	X	X
System Hardware		
Wetted gas components are brass and 316 stainless steel upstream of the Mass Flow Controllers and 316 stainless steel and Teflon downstream of the Mass Flow Controllers.	X	X
Gas Delivery – Assembled on a panel for easy access. Place on your desktop or under a ventilation hood.		
Gas line with Hydrogen/Nitrogen Mass Flow Controller – 1000 SCCM	X	X
Hydrogen flashback arrestor	X	X
Back pressure regulator – 0-50 psig	X	X
Dew Point / Relative Humidity Control		
Temperature Control System separates electronics from gas delivery and water delivery for safety	X	X
Five 2 Amp Temperature Controllers and five Type T thermocouples for measurement & control of test equipment (120 VAC, 60 Hz)	X	X
Ability to interlock to your external safety system for emergency shutdown	X	X
One BekkTech Saturator - Appropriate for testing at dew points from 40C to 120C	X	X
Heated Gas Lines (120VAC)	X	X
Low Relative Humidity Add-On (OPTIONAL)		
Enables gas-mixing (wet & dry gas) for membrane conductivity testing at dew points below 40C		X
Includes additional 1000 SCCM Mass Flow Controller, gas line for dry gas, and on / off valve on gas mixing line		X
Includes BekkTech Conductivity Software for Gas Mixing		X
Test Hardware		
One set of Fuel Cell Technologies 5 cm ² cell hardware for testing to 120C	X	X
One BekkTech Conductivity Cell for testing to 120C	X	X
Voltage and Current Control		
One Keithley 2400 SourceMeter (used for DC Voltage Sweeps for Conductivity Testing) – 120 to 240 VAC, 50 to 60 Hz		X
BekkTech Pressurized Deionized (DI) Water System		
Assembled on a stand-alone panel	X	X
Water Reservoir, DI Water Filter, One Diaphragm Pumps, 120VAC	X	X
Step-Down Isolation Transformer (For International Orders Only)		
Converts power to 120VAC	X	X

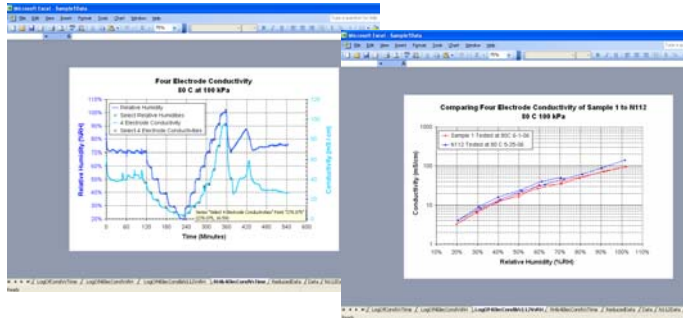
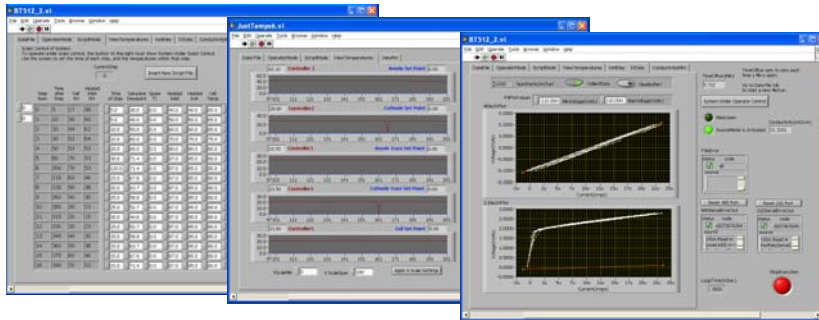
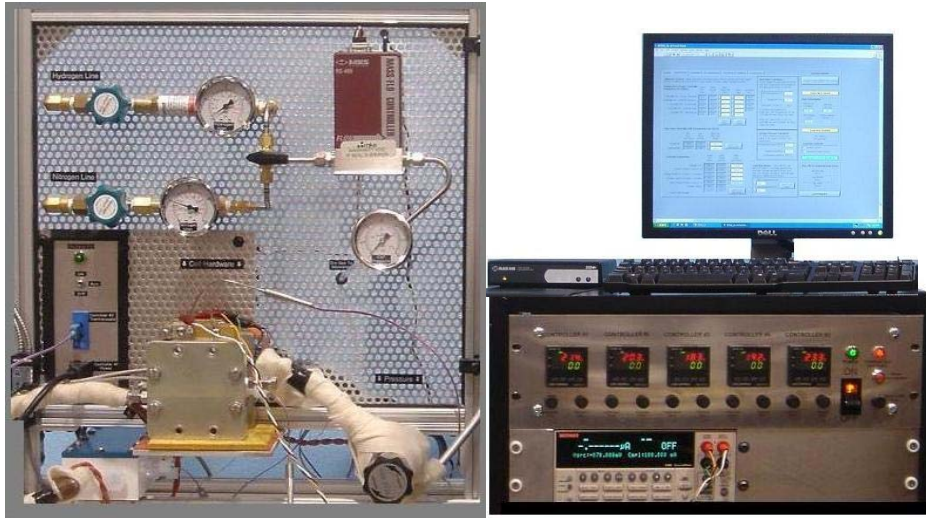
System Requirements – Equipment to be provided by the Customer

Customer Provides (✓)	BT-511	BT-512
Computer with LabView 8.2 or higher and Microsoft Excel	✓	Included
Keithley 2400 SourceMeter or Similar Voltage-Current Equipment	✓	Included
Correlation of voltage data with relative humidity and time data	✓	Included

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