

## HMS-5000

Van der Pauw

# Hall Effect Measurement System

Plots temperature dependant  
Variables in the Range from  
80K to 350K

Automated Motorized Magnet  
Movement

PC not included. Runs on MS  
Windows operating systems.

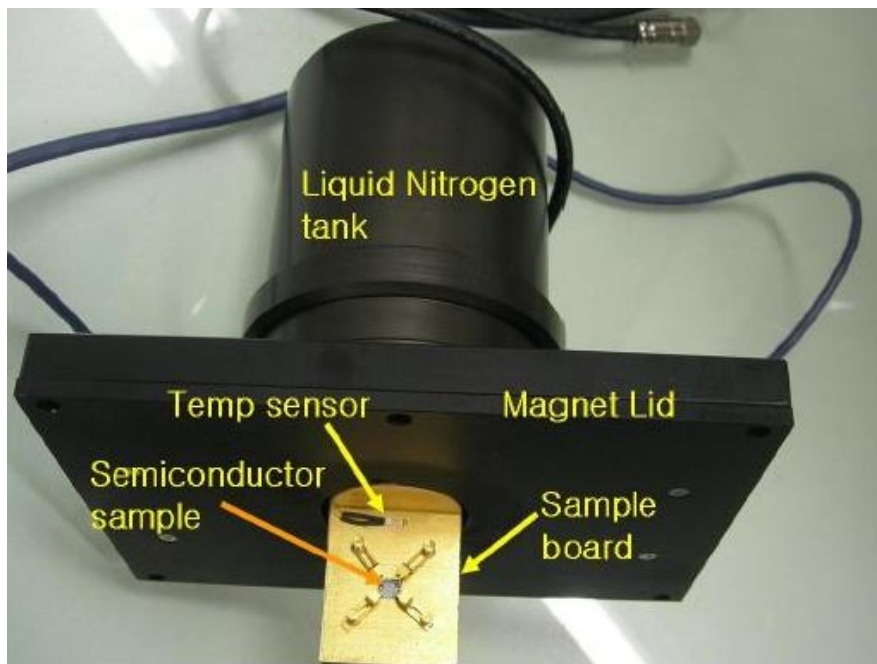


The HMS-5000 Hall Effect Measurement System plots concentration versus temperature, mobility versus temperature, resistivity versus temperature, conductivity versus temperature, and Hall coefficient versus temperature. The system provides the test results as tabular data as well as in graph form. The user defines the desired temperature steps within the range of 80K to 350K, fills the two LN2 reservoirs, and then the system automatically applies and switches the input current, measures the voltages, changes temperature, and moves the magnets all without user intervention. Once the test is finished, the temperature dependent graphs and tabular data are ready for viewing. The magnet movement is motor controlled and automated, variable temperature capability, and powerful analysis software. The system is automated so that without user intervention, it will ramp to each user defined temperature, stabilize, make the measurement (including moving the magnet automatically), and then plot a variety of temperature dependent electrical material properties.

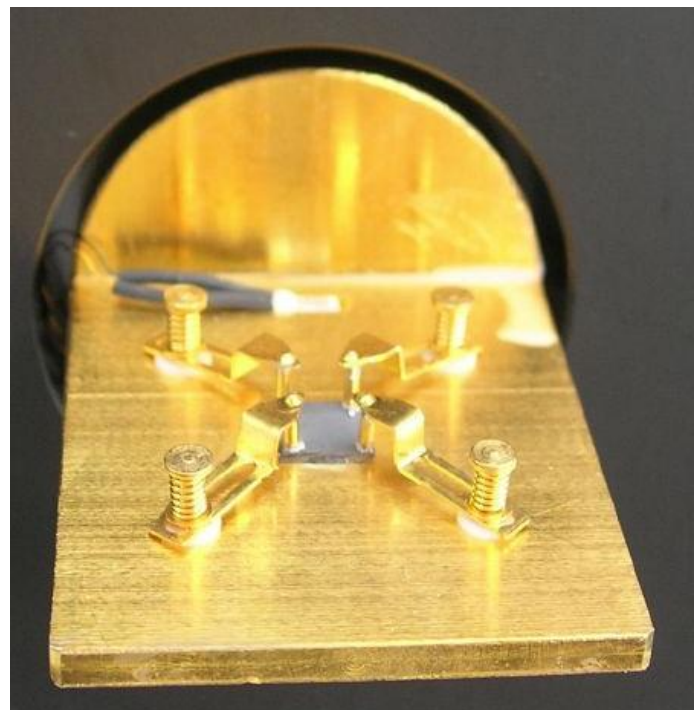
- Sample size: 5 mm x 5mm up to 15mm x 15mm
- Resistivity:  $10^{-4}$  to  $10^7$  (Ohms-cm)
- Magnet : Permanent magnet, 30 mm diameter
- Magnet Flux Density: 0.55T nominal +/-1% of marked value
- Mobility: ( $\text{cm}^2/\text{Volt-sec}$ )  $1 \sim 10^7$
- Concentration: ( $\text{cm}^{-3}$ ):  $10^7 \sim 10^{21}$
- Current Source: Range: 1nA-20mA Compliance: 12V
- Minimum Hall Voltage:  $1\mu\text{V}$
- Temperature Range: 80K to 350K



Software displaying *Bulk Concentration Versus Temperature* in range from 80K to 340K



**Sample Mounting Fixture with upper cooling reservoir**

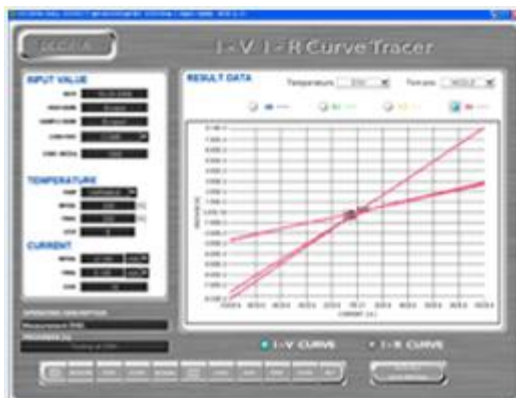


**Sample Mounting Fixture**

Samples should be square in shape and can be from 5mm x 5mm up to 15mm x 15mm in size.



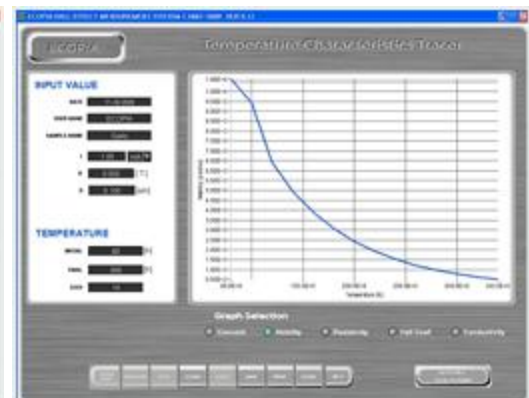
HMS-5000's Main Test Page



I-V, I-R graph per temp variation



Carrier concentration vs temp variation



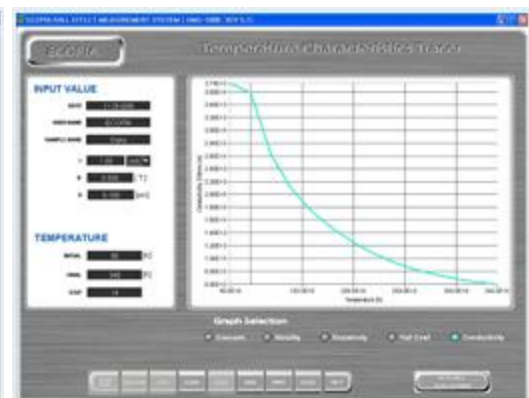
Carrier mobility vs temp variation



Resistivity vs temp variation

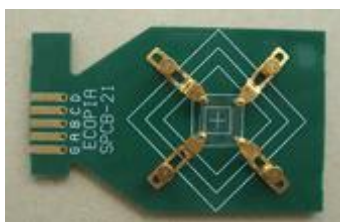


Hall Coefficient vs temp variation



Conductivity vs temp variation

An optional room-temperature / LN<sub>2</sub> temperature sample kit lid with sample board is available as an option for the HMS-5000



SPCB-21 spring mount board for use with HMS-5000 when equipped with the optional room-temperature / LN<sub>2</sub> temperature sample kit. For samples up to 20mm square.



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