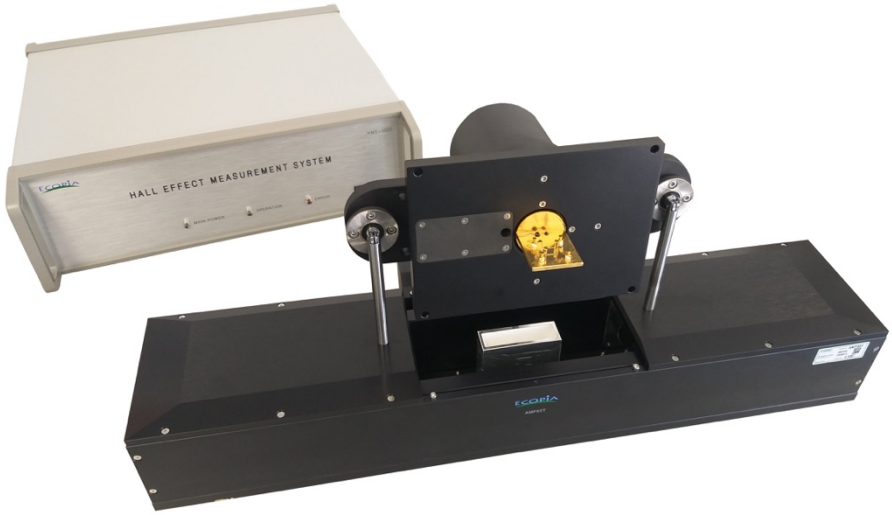
HMS5000

THERMAL HALL EFFECT MEASUREMENT SYSTEM



Hall Effect Measurement System is very useful for measuring Carrier Concentration, Mobility, Resistivity and Hall Coefficient that should be pre-checked in order to grasp the electrical specifications of semiconductor device. Therefore, it is essentially required system to understand the electrical characteristics of semiconductor device.

HMS series consist of constant current source , terminal conversion system by Van der Pauw technique, cold or hot temperature test system and magnetic flux density input system. So, it is well-established system that has all the things needed to Hall Effect Measurement System.

Hall effect Measurement Systems allow the ultra-fast characterization of several intrinsic parameters of conductive, semi-conductive materials. They use the Van Der Pauw method which is perfectly suited to thin film measurements and the Lorentz force in order to monitor around ten characteristics simultaneously under different environmental constraints.

Thanks to several module, the equipment permit to monitor the internal electrical parameters of a layer under different environmental constraints (variable temperature or variable magnetic field).

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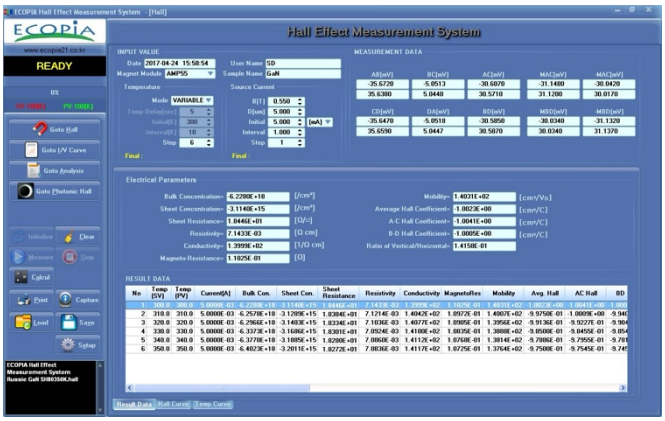
mainbody

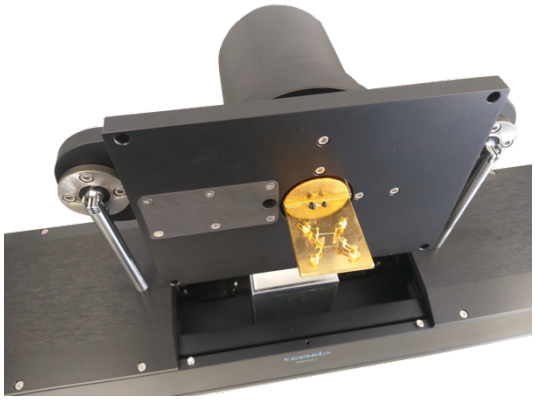
A central unit controls the measurements and the temperature ramps. It integrates an internal SMU with a switch matrix to perform measurements using the Van der Pauw method. It has a communication board that will be connected to an external computer on which software will manage the parameters.

The software is the system's user interface. It consists of a measurement window and a contact test window. This "contact check" module verifies that all four contacts are ohmic and free of defects.

The measurement window allows users to enter measurement parameters (current, temperature steps) and initiate the test.

The software integrates all the necessary formulas and displays the calculated results of the sample parameters directly on an exportable table.





SH80350K

The sample is mounted on a thermal plate equipped with four gold-plated pogo pins for reliable electrical contact. These pogo pins are spring-loaded for easy positioning on the sample (no soldering required). Metallization (indium, silver, etc.) can further optimize contact depending on the material.
The head is equipped with a liquid nitrogen reservoir and a thermocouple for the temperature regulation.

A magnet module is the final component of the system. It allows the sample holder to be inserted between the magnet to perform the Hall effect measurement. Two magnets are mounted on opposite side (N/S and S/N) on a motorized slider. A reservoir allows the sample to be immersed in liquid nitrogen for cold measurement.

AMP55T

Specifications:

Sample size	5 x 5mm to 20 x 20mm
Sample thickness	Max 2mm (other on request)
Mouvement	Semi-automatic
Sample material	SI, SiGe, SiC, GaAs, InGaAs, InPGaN, AlZnO, FeCdTe, ZnO…
Magnetic field	~ 0.5T
Magnet type	Ø50mm Neodym permanent
Pole gap	26mm
Temperature	77K to 350K with SH80350K Ambient or 77K with RTSK5000
Temperature management	Yes (not available for RTSK5000)
SMU	Internal
Current range	1nA to 20mA
Max voltage	10V
Voltage accuracy	+/- 2µV (0.02%) @ 10mV , +/- 2µV (0.2%) @ 1mV
Sheet resistance range	10^{-4} to 10^{7} Ω.cm
Concentration range	10^{7} to 10^{21} cm^{-3}
Mobility range	1 to 10^{7} cm^{2}/Vs
Software	Included (measurement, contact check, calculation, temperature and magnet sequences)
Data export	Yes (.csv)
Computer	Not included (Win10/11 compatible)
Communication	USB
Power	230VAC mono – 2A – 50Hz
Dimensions (w x l x h)	Mainbody: 435 x 415 x 140mm AMP555T: 645 x 220 x 100mm SH80350K: 290 x 135 x 190mm
Weight	Mainbody: 8.3kg AMP55T: 13.8kg SH80350K: 3.7kg

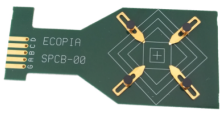
RTSK5000 kit:

This RTSK5000 kit is a substitute of the thermal SH80350K head. It allows measurements at ambient temperature or immersed in liquid nitrogen, without temperature regulation.

Its SPCB-21 sample holder is less fragile and can be easily replaced in case of damage.

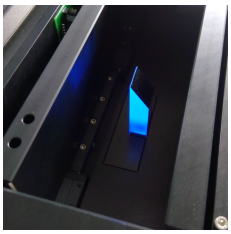
Related products

SPCB holder



Manual hall

Photonic hall



Vacuum hall