HMS7000

PHOTONIC HALL EFFECT MEASUREMENT SYSTEM

Hall Effect Measurement Photonic 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 under illumination. 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, photonic illumination system, cold or hot temperature optional 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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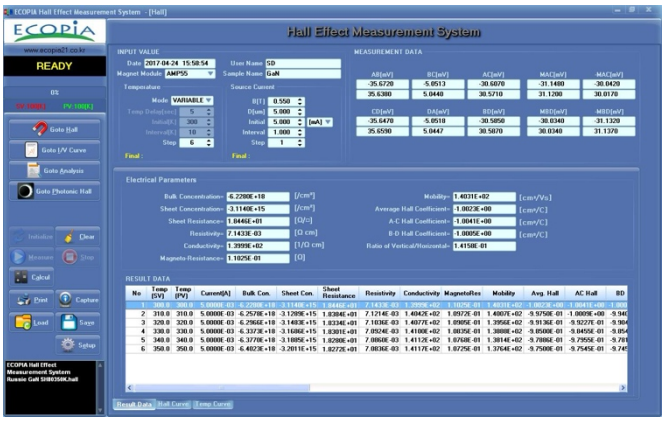
mainbody

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, illumination parameters) 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.



RTSK7000

The sample is mounted on a PCB board 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.

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 prism with 3 LED (RGB) is on the central position. A selection box and an external power supply gives the desired power and color of the
LED.

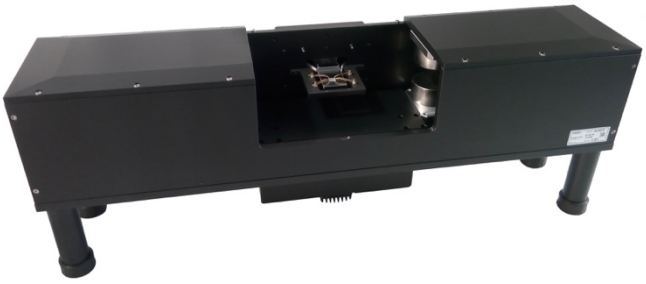
AMP55T

Specifications:

Sample size	5 x 5mm to 20 x 20mm
Sample thickness	Max 2mm (other on request)
Probe	4 x gold plated pogo-pin
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	Ambient RTSK7000 77K to 350K with SH80350K 300K to 570K with AHT55T3 300K to 770K with AHT55T5
Temperature management	Yes (not available for RTSK7000)
Illumination source	3 LED (R, G, B)
Illumination power sypply	Included external SMU with software remote
Illumination color selection	Manual
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, illumination management)
Data export	Yes (.csv)
Computer	Not included (Win10/11 compatible)
Communication	USB
Power	230VAC mono – 2A – 50Hz + 230VAC mono – 1.6A – 50Hz
Dimensions (w x l x h)	Mainbody: 435 x 415 x 140mm AMP555T: 645 x 220 x 100mm LED Power supply : 230 x 400 x 150mm SH80350K: 290 x 135 x 190mm AHT55T: 645 x 210 x 270mm
Weight	Mainbody: 8.3kg AMP55T: 13.8kg LED power supply : 8.8kg

	SH80350K: 3.7kg AHT55T: 16.2kg

AHT55T# module:

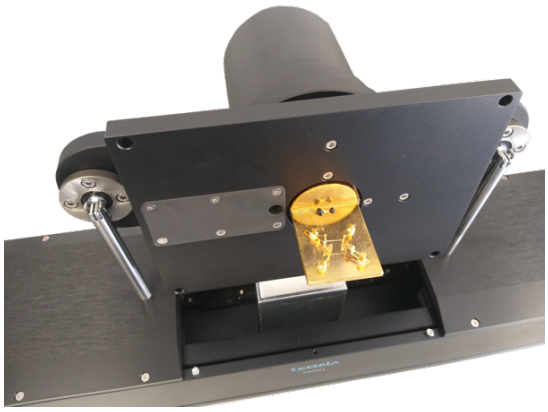


It is possible to connect other modules to this series. The heating module allows temperatures up to 570K (AHT55T3) or 770K (AHT55T5). This module consists of two magnets and a heating element. A sealed chamber can circulates gas to prevent oxidation of the layer being measured.

AMP55T/SH80350K module:

The system is compatible with cold applications. An additional module can be connected in place of the heating module. It consists of a dual motorized magnet, a heating plate, a sample holder, and a liquid nitrogen reservoir. It allows measurements between 77K and 350K.

The software has a function that imports data from both modules and thus plots a temperature response of your sample across the entire range of 77K to 570K/770K.



LED power supply:

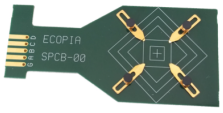
LED selection box

Model maker:

HMS7000/photonic	Ambient temperature with illumination
HMS7000/AHT55T3/photonic	300K to 570K + ambient illumination module
HMS7000/AHT55T5/photonic	300K to 770K + ambient illumination module
HMS7000/AMP55T/SH80350K/photonic	77K to 350K + ambient illumination module
HMS7000/AHT55T3/AMP55T/SH80350K/photonic	77K to 570K + ambient illumination module
HMS7000/AHT55T5/AMP55T/SH80350K/photonic	77K to 770K + ambient illumination module

Related products

SPCB holder



Manual hall

Thermal hall

Vacuum hall