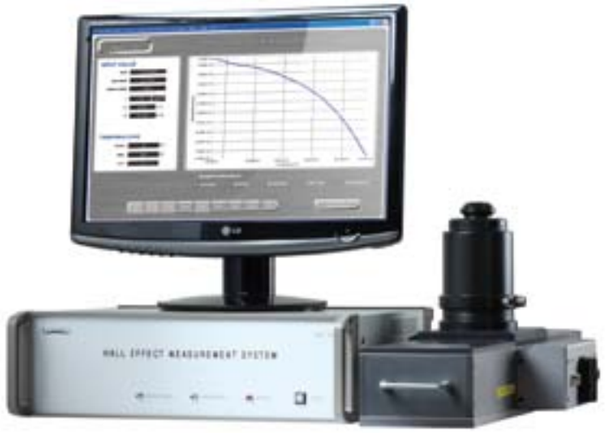
Hall Effect Measurement System

Model No: HMS5000/AMP55T



Very competitive price.
Easy-to-Use
Compact Desktop Design,
Powerfully performing Instrument
Always best customer service

Ecopia's Hall Effect Measurement Systems are complete systems for measuring the resistivity, carrier concentration, hall coefficient , mobility and N / P type decision of semiconductor samples.

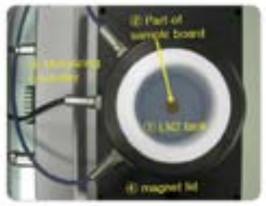
Consists of

1) Main body system.
Constant current source + Van der Pauw method terminal conversion system

2) 0.55Tesla Magnet Kit (Model No: AMP55T)
Magneto flux density: 0.55Tesla
Gap between round magnet: 26mm / Round magnet diameter: 50mm
Measurable temp: 80K ~ 350K. Accuracy: +/- 0.5°C
This AMP55T can be compatible with HMS5000.
The magnet moves automatically by controlling on s/w, PC.
Sample holder, LN2 tank (Round LN2 tank and Square LN2 tank) were integrated with magnet kit.

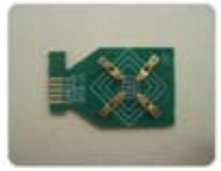
Sample mounting kit construction

- Round LN2 tank
- Phosphorous copper sample mounting board,
- temperature sensor
- heater.
- magnet Lid
- cable



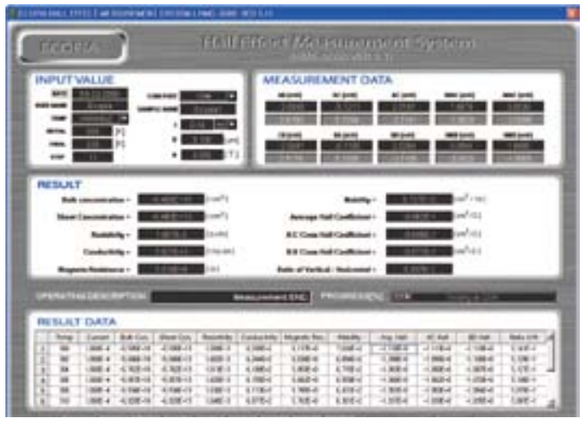
AMP Magnet kit top view

- Motorizing magnet controller.
- Round type LN2 tank.
- Magnet lid.
- Cable



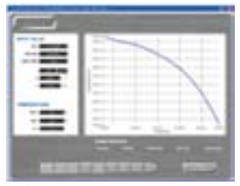
3) Sample board with magnet lid only for Room Temperature test
- Optional accessory (Not included HMS5000 full set)
- When you test at RT (Room Temp), you can use this optional accessory by exchanging sample holding kit of AMP55 (magnet kit of HMS5000).

4) S/W program.

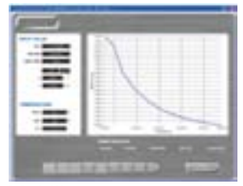


HMS5000 model's test main page

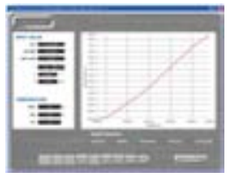
I-V, I-R graph as per temp variation



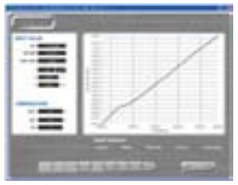
Carrier concentration vs temp variation



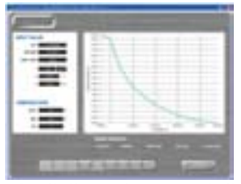
Mobility vs temp variatio



Resistivity vs temp variati



Hall Coefficient vs temp variation



Conductivity vs temp variation

Model No: HMS3300/ HT55T

Product Specifications

1) General Factors

Input Curren	Resistivity (Ω cm)	Carrier Concentration (1/cm3)	Mobility (cm2/Volt·sec	Magneto Flux Density(T)	Temperature (K)	Sample Testing Boar
1nA - 20mA	10^{-4} ~ 10^{7}	10^{7} ~ 10^{21}	1 ~ 10^{7}	0.55Tesla only	80K ~ 350K. +/-0.5°C accuracy	5 x 5mm ~ 20 x 20mm Less than 2mm thickness sample

2) Sample Structure

3D of Measurement Sample

3) S/W Operation Environment
Windows 98 / ME / 2000 / NT / XP / VISTA

4) Data Index
- N / P type decision
- Bulk, Sheet Carrier Concentration
- Resistivity
- Mobility, Hall Coefficient
- Magneto resistance
- The ratio of Vertical/Horizontal resistance value)

5) Dimension
- Mainbody(HMS5000)
- Size: 440 x 420×140 mm (W×H×D) / Weight : 8.5 kg
- Magnet Kit
- Size: 700×220×280 mm (W×H×D) / Weight : 15.5 kg

6) Materials for Measurement
Si, SiGe, SiC, GaAs, InGaAs, InP, GaN, TCO(including ITO), AlZnO, FeCdTe, ZnO and all of semiconductors.

Certificate of the performance

1- Acquired CE Mark:
We ‘ve acquired HMS5000 model’s CE mark on Oct, 2009year to export to European countries.

2- Patent :
We already applied for the Korean government to acquire patent.

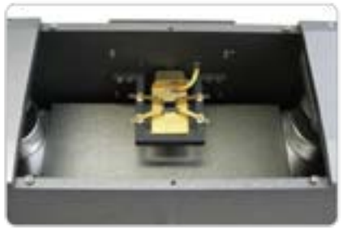
Model No: HMS3300/ HT55T

HMS3000's main body system image

And, Model No. “HMS3300/HT55T” consists of “Model No. HMS3000’s main body system” plus “Model No HT55T” magnet and accessories.

"NEW" Model No: HT55T

Magneto flux density: 0.55Tesla
Two 0.55T magnets on a ball bearing slide are included.
Measurable temp: RT ~ 300°C . Accuracy: 0.1°C
This HT55T can be compatible with existing HMS-3000 systems.
If you already purchased HMS3000 system and you are interested in variably high temperature test (max 300°C), we recommend you to purchase this magnet kit (Model No: HT55T)



HT55T's sample board and inside view

- Both round magnet was horizontally positioned as opposed to MS55T and AMP55T
- The temperature is set manually and controlled via the digital controller.

Magnet introduced from North to South Polarty

Magnet introduced from South to North Polarty

Model No: HMS3000/ HT55T

HMS3000 main body

1) S/W Operation Environment
Windows 98 / ME / 2000 / NT / XP / VISTA

2) Data Index
- N/P type decision.
- Bulk, Sheet Carrier Concentration
- Resistivity
- Mobility, Hall Coefficient
- Magneto resistance
- The ratio of Vertical/Horizontal resistance value)

3) Size
360×300×105 mm (W×H×D), Weight : 7.7 kg

4) Materials for Measurement
Si, SiGe, SiC, GaAs, InGaAs, InP, GaN, ITO, ZnO and all of semiconductors.

Technical specs

Input Curren	Resistivity (Ω cm)	Carrier Concentration (1/cm3)	Mobility (cm2/Volt·sec	Magneto Flux Density(T)	Temperature (K)	Sample Testing Boar
1nA - 20mA (HMS3000) 10nA - 20mA (HMS2000)	10^{-4} ~ 10^{7}	10^{7} ~ 10^{21}	1 ~ 10^{7}	MS31T MS37T MS55T MS100T MP55T HT55T	77K(LN2), 300K(RT)	SPCB-00 SPCB-01 SPCB-02 SPCB-03 SPCB-11 SPCB-12 SPCB-13 Max 30mm size sample Max 5.5mm thickness sample.

Test main page s/w

I-V, I-R Curve test page

*** Magnet**
- HMS3000 main body system can be complete system by intergrating with magne kit, mentioned above, such as MS31T ~ HT55T

*** Sample Testing Board and accessories**
- We provide various size of sample testing board and electrical conductives to improve ohmic contact, such as InSn compound, Carbon paste, gold paste and etc.

Model No: HM S2000

HMS2000 main body

Test main page s/w

*** Technical specs**
- Input current range: 10nA ~ 20mA - Auto/ Manual altematively
- Good to use for education purpose.

Magnet series

* General Specs
- Permanent magnet
- Neodium materials.
- Magneto flux density lose its power only 0.2% per 1year.
- Magneto flux density may differ within the range of
- +/-0.03Tesla in a process of assembling magnet.

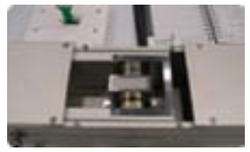
Model No: MS31T, MS37T, MS55T

Magneto flux density :
0.31T,0.37T, 0.55Tesla
Gap between round magnet : 26mm
Measurable temp : 77K, RT.
Same construction each other.
Compatible with HMS3000 system.

Model No: MS100T

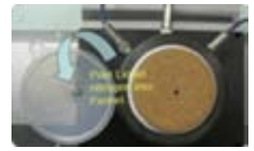
Magneto flux density : 1.0Tesla
Gap between round magnet : 6mm /
Measurable temp : RT only.
Compatible with HMS3000 system

Model No: MP55T



Magneto flux density : 0.55Tesla
Gap between round magnet : 26mm
Measurable temp : 77K, RT.
Two 0.55T magnets on a ball bearing slide are included.
Compatible with HMS3000 system.

Model No: AMP55T



Magneto flux density : 0.55Tesla
Gap between round magnet : 26mm/
Round magnet diameter : 50mm
Measurable temp : 80K ~ 350K.
Accuracy : +/- 0.5°C
This AMP55T can be compatible with HMS5000.
The magnet moves automatically by controlling on s/w, PC.
Sample holder, LN2 tank (Round LN2 tank and Square LN2 tank)
were integrated with magnet ki

"NEW" Model No : HT55T

Magneto flux density : 0.55Tesla
Two 0.55T magnets on a ball bearing slide are included.
Measurable temp : RT ~ 300°C
Accuracy : 0.1°C
This HT55T can be compatible with existing HMS-3000 systems.

SPCB sample board series.

* General Specs
- Mount samples upto 5x 5mm ~ 20 x 20mm square without using bond wires.
- Spring loaded clamps and tips make contact
- Gold plated Non-magnetic phosphor-bronze construction
- Contacts on four sample's corner may still be required for good contact

Model No: SPCB-01

Compatible with 0.31T,0.37T, 0.55T magnet kit.
Measurable sample thickness : less than 2mm

Model No: SPCB-02, SPCB-03

Compatible with 0.31T,0.37T, 0.55T magnet kit.
Measurable sample thickness : 2~4.5mm, 3~ 5.5mm

Model No: SPCB-01

Compatible with 0.31T,0.37T, 0.55T and 1.0T magnet kit.
Measurable sample thickness : less than 1.5mm

Ecopia' s items that we have made and installed

HMS 2000 Hall Effect system 	10nA ~ 20mA Auto/Manual alternatively	**HMS 3000 Hall Effect system** 	1nA ~ 20mA Auto type. Best-selling mode	**NEW HMS 5000 Hall Effect system** 	Variable temp 80 K ~ 350 K. +/-0.5° C accuracy
SPCB and accs 	5x5mm~20x20mm Gold coated probe tip Very convenient to use	**MS 55T and more Magnet Kit** 	We have more, such as, 0.31T, 0.37T, 1.0T and MP 55T	**NEW HMS3300 High temp Hall Effect system** 	RT ~ 300 °C. Manual It can be used with HMS3000 main body
EPS 300 Probe station 	Reasonable price and compact design	**EPS 500 Probe station** 	0 °C~ 300 °C We have mor	**EPS 1000 Probe station** 	RT~ 300 °C We have more
EMP-7, EMP-9 Manipulator 	Reasonable price including probe arm, tip and cable	**ETCP 1000 Heating and cooling probe statioin** 	Reasonable price including probe arm, tip and cable.	**RTP1000 Rapid Thermal Processor** 	RT ~ 1200 °C 1000 °C /40seconds
RTP 2000 Controlled by PC s/w. 	RT ~ 1200 °C 1000 °C /40seconds	**ELT-1000 LED Tester** 	IV, IR curve, Optical characteristic	**NEW HMS5300 High temp Hall Effect system** 	RT ~ 300 °C. Controlled by PC. Use with HMS5000
Electro - conductives. 	To improve ohmic contact by electrical conductivity materials. We have more such as Gold paste, Carbon paste	**Dark Box and accs** 	We have more accs for probe station, such as probe tip, Triaxial cable	**Custom - made** 	- Photonic hall effect - Integrating sphere system - Photo detector test system

Probe Station

Model No: ETCP-1000

Probe Station is test system which is used to get the electrical characteristics of semiconductor samples , such as I-V and I-R properties of semiconductor wafer or device.

It can make it possible to probe even micro distance and contact on semiconductor sample by using microscope and manipulator

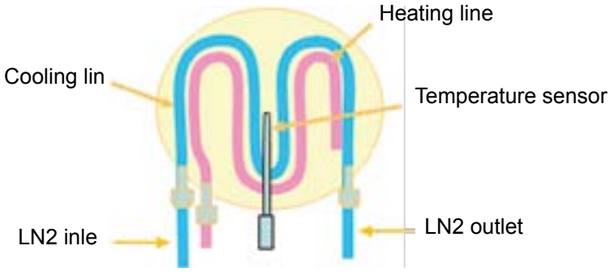
Heating and Cooling System

Probe station and chamber inside

Vacuum chamber view

LN2 container

Temperature controller



Heating and cooling chuck

1) Heating & Cooling Chuck
   - Variable Temp : 80K~500K),
   - Resolution : +/- 0.1°C

2) Vacuum Chamber to have enough room to make LED testing system inside of chamber.

3) Semi-Auto type Manipulator operated by motorizing system (Option)

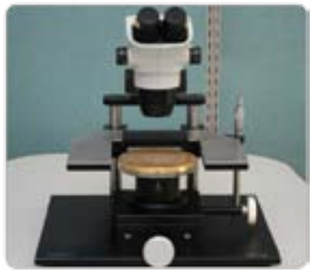
4) Glass window that make it easy to see through in Vacuum chamber.

5) Useful connector that installed at the chamber wall,
   to make feed-through which can make it easy to apply DC,RF signal.

Various Heating and Cooling System Probe Station

Model No: EPS1000

- Reasonable price and compact design
- 4inch, 6inch, 8inch chuck alternatively.
- RT ~ 300°C heating chuck as option.
- 0 °C ~ 300 °C heating and cooling chuck as option
- Maximum 6ea manipulators can be installed.



Model No: EPS500(general type)

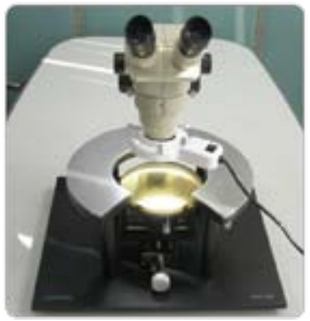
- Reasonable price and compact design
- 4inch, 6inch, 8inch chuck alternatively.
- RT ~ 300°C heating chuck as option.
- 0 °C ~ 300 °C heating and cooling chuck as option
- Max 6manipulator can be installed

Model No: EPS500 (Heating & Cooling Chuck)

- Reasonable price and compact design
- 6 inch chuck
- 0 °C ~ 300 °C heating and cooling chuck was installed in the left image.
  Chiller, dryer and air compressor also needed.
  (Humidity removal as option)
- Magnify : x 120 microscope (trinocular type) was installed

Model No: EPS500 (High quality microscope)

- Reasonable price and compact design
- 4~ 8 inch chuck can be installed.
- RT ~ 300°C heating chuck as option.
- 0 °C ~ 300 °C heating and cooling chuck as option
- High quality BXFM microscope (Olympus) was installed.



Model No: EPS300

- Reasonable price and compact design
- 4 inch, 6 inch chuck alternatively.
- RT ~ 300°C heating chuck as option.
- 0 °C ~ 300 °C heating and cooling chuck as option
- Max 6 manipulator can be installed.

Microscope

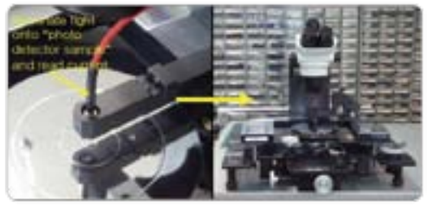
- We can provide more various microscope as per customer's request,
  from reasonable price to high quality microscope, such as Olympus.

- Magnification : x 90 ~ x 1,000
- CCD (option)

Custom-made system

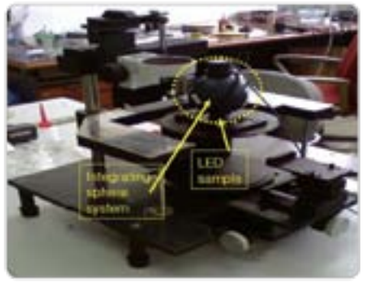
We have made and installed various "custom-made" systems, and we introduce below two systems, although below two systems are not the all that we have, and we have mores...

If you are interested in decorating your own system to meet your needs, please do not hesitate to contact us.



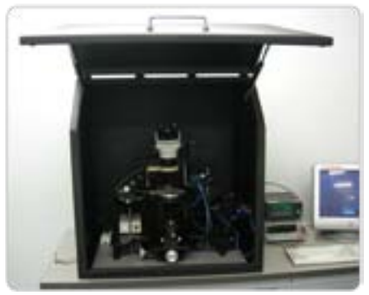
"Photo detector" test system with probe station

- By using Optical power and cable.
- Illuminate light onto "photo detector sample" and read "current".



Integrating sphere system with probe station.

- Integrating system can be put on either sample's above or below as per user's request.
- Very useful testing system for optical characteristics (Spectra, Light Intensity) of the LED chip, Lamp, SMD Type



Dark Box

- Size : 750 x 660 x 660 mm
- Material : Steel
- We can provide various size of dark box as required customer's needs.

Isolation table

- Anti-vibration table
- We also can provide anti-vibration table as required customer's needs, although the image was not loaded in this page.

Manipulator

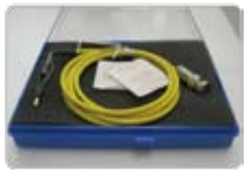
As one of the most important part in Probe_Station, manipulator is an accurately probing system that can probe even micro distance(μm) and contact on the electrode of semiconductor wafer, device.

ECOPIA's Manipulator is very easy to use and probe arm's elastic plate function as protecting sample's surface, from damage during Z axis movement.

Model No: EMP-7

Model No: EMP-9

Probe arm with BNC cable



Probe arm with Triaxial cable

Probe tip

1- X.Y.Z travel: 10 x 10 x 10mm

2- Probe arm Holder

3- X, Y, Z Fine motion control(5μm/pitch)

4- Manipulator frame body

5- Probe Arm (Elastic plate)

6- Magnets for firmly fixing manipulator onto probe station's base unit.

7- Probe tip assembly

8- Electrical noise: Less than 300fA.

Technical specs comparison among standard models

	EPS300	EPS500	EPS1000	Remark
1) Chuck siz	4inch (100mm)	6inch (150mm)	6inch (150mm)	8 inch (200mm) chuck is option
2) Microscope Mount X.Y Stage	O	O	O	Option
3) Microscope	X 90 ~ X 1,000	X 90 ~ X 1,000	X 90 ~ X 1,000	Option
4) CCD camera	O	O	O	Option
5) Chuck rotation	N/A	360° rotation	360° rotation	
6) X,Y, Z travel	X : 50mm Y : 50mm Z : 12mm	X : 100mm Y : 100mm Z : 25mm	X : 100mm Y : 100mm Z : 40mm	
7) Heating chuck (RT~300°C)	O	O	O	Option
8) Heating chuck (0°C~300°C)	O	O	O	Option. Heating & Cooling capability
9) Size and Weight	Similar with EPS500	450 x 500 x 550 (mm) 13~15KG	575 x 485 x 430 (mm) 27KG	It may differ as per option specs.