Ecopia - Semiconductor test instrument Catalogue

SEL-TEK LIMITED

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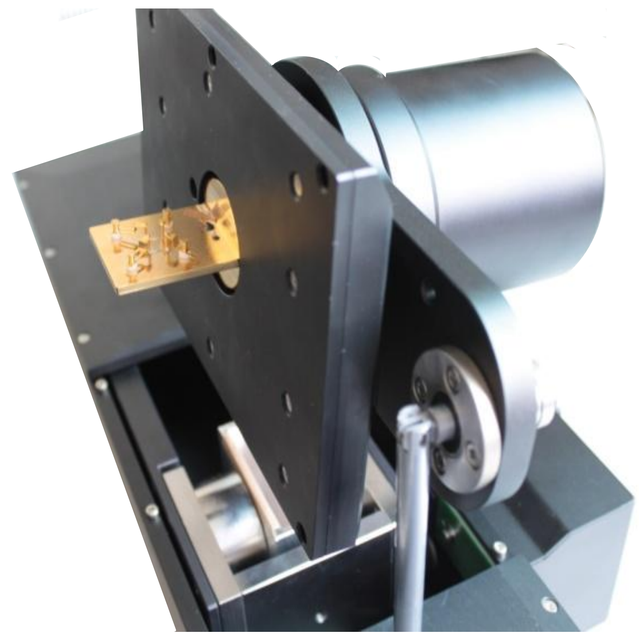
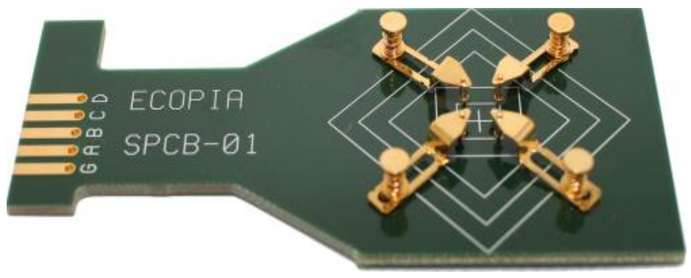
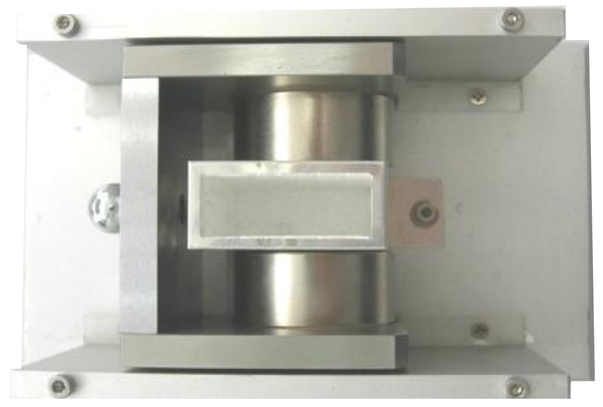




Hall effect, Probe station, and Accessories

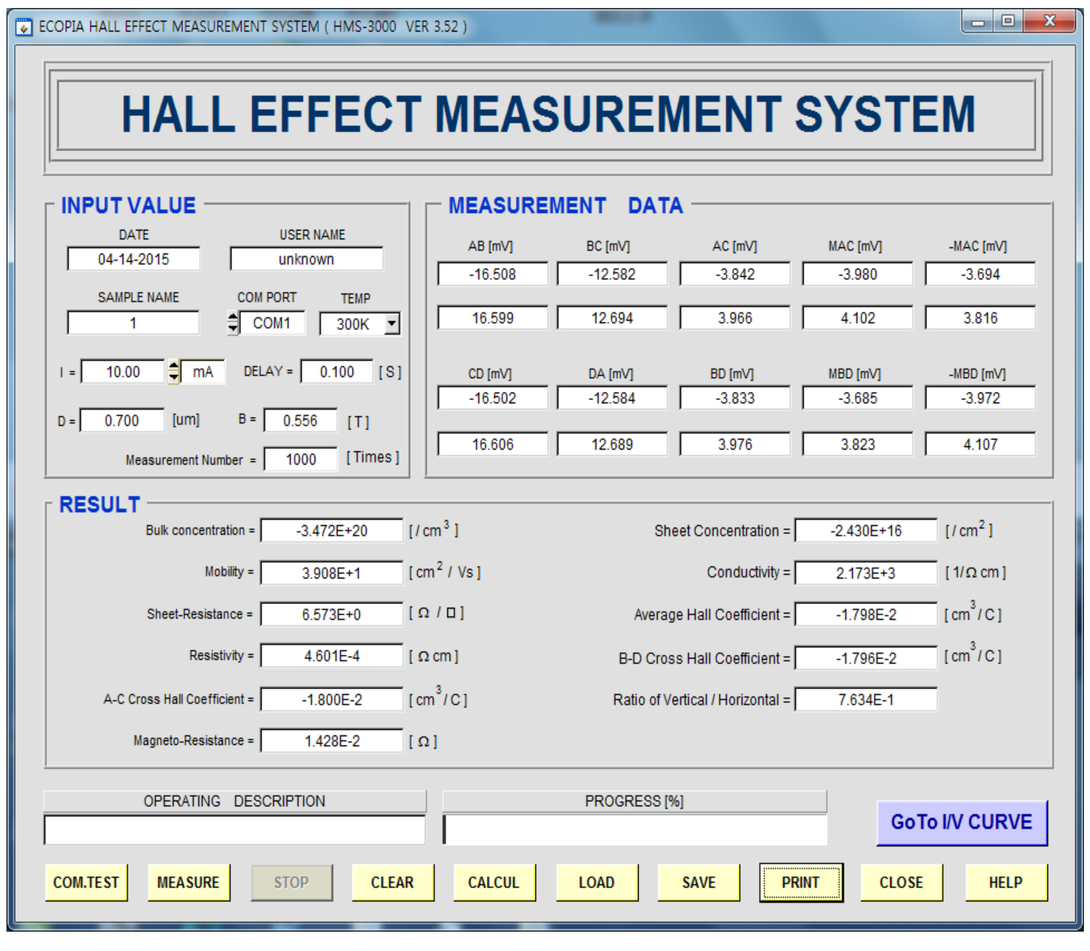
Hall Effect Measurement system

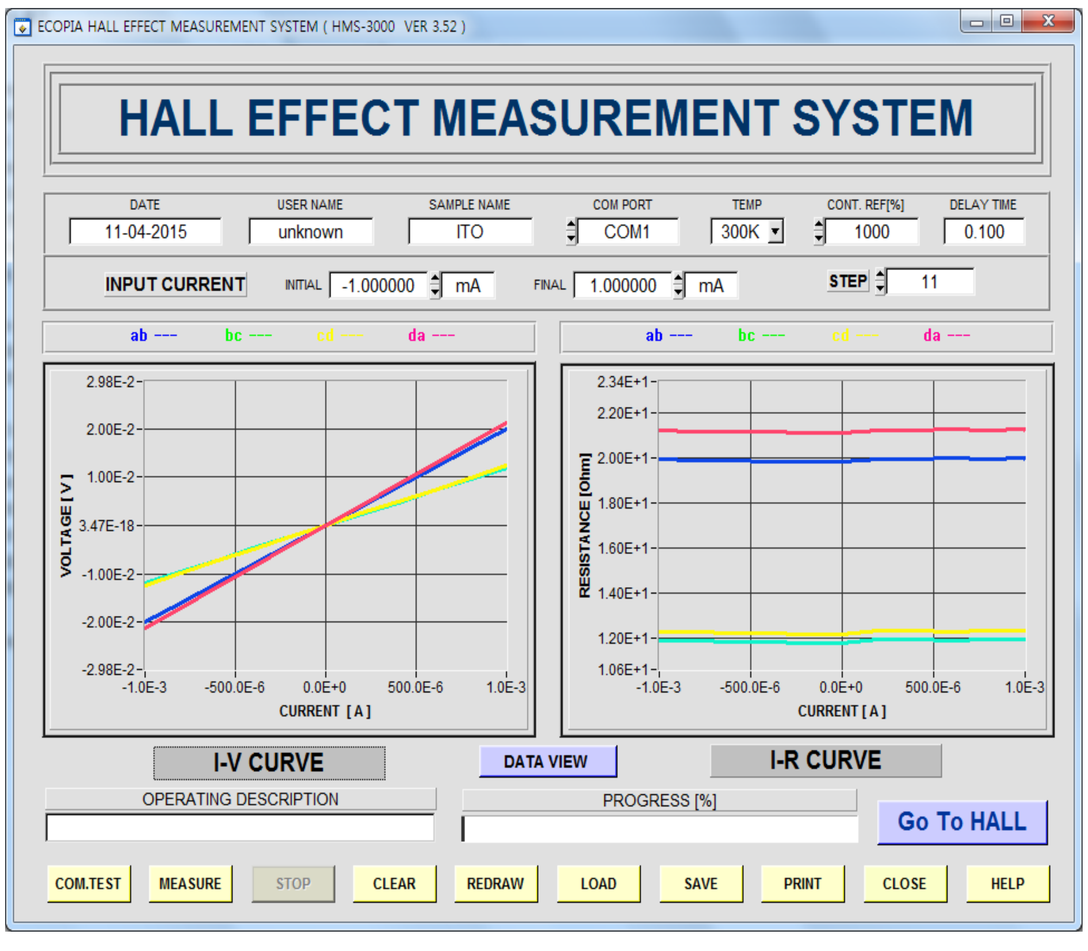
Model no. HMS-3000 + MS55T magnet.



NO	HMS-3000 Main body	Description
1	Size	32 x 30 x 10.5cm(W x D x H)
2	Weight	7.7kg
3	Carrier density	10e7~10e21(cm-3)
4	Resistivity	10e-4 ~ 10e7 (ohm.cm)
5	Mobility	1~10e7 (cm2/Vs)
6	Input current range	1nA ~ 20mA (DC type)
7	Output voltage	12V
8	Software	Win XP, Vista, Win7 , Win 8
9	Others in s/w	IV, IR graph plot. Hall coefficient, MR.

Software





Basic theory for hall effect – Vander pauw Technique

The van der Pauw Method is a technique commonly used to measure the Resistivity and the Hall Coefficient of a sample. Its power lies in its ability to accurately measure the properties of a sample of any arbitrary shape, so long as the sample is approximately two-dimensional (ie. it is much thinner than it is wide) and the electrodes are placed on its perimeter.

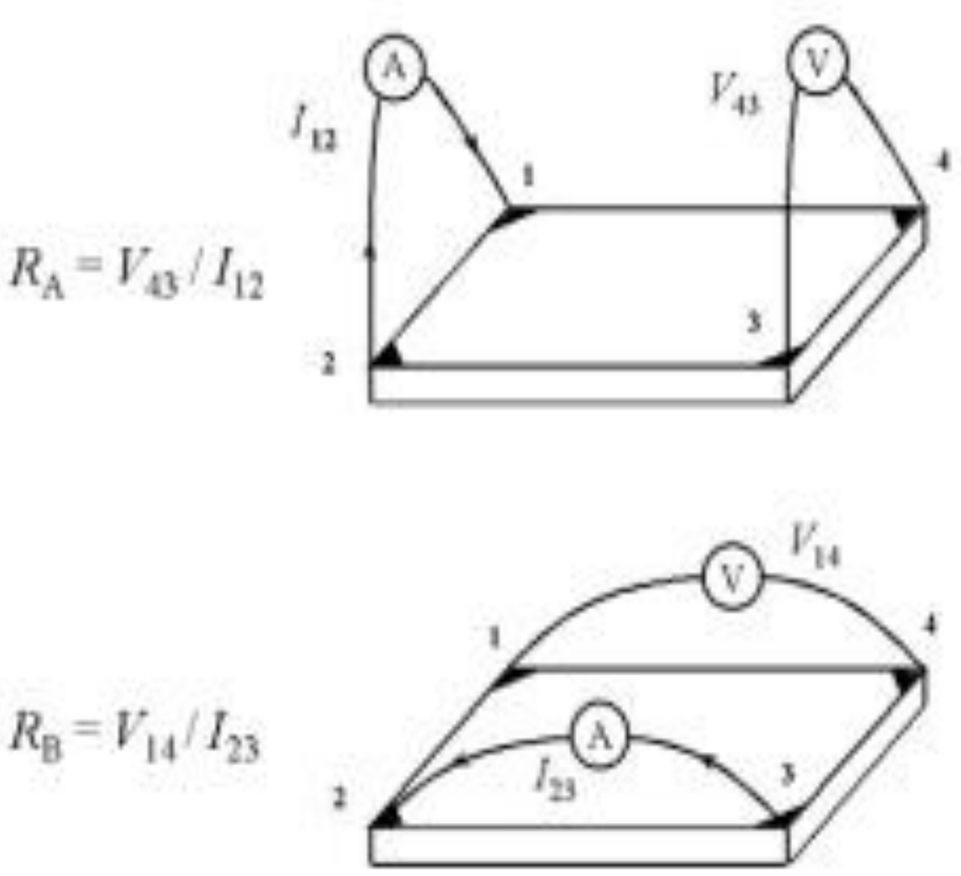


Figure 2

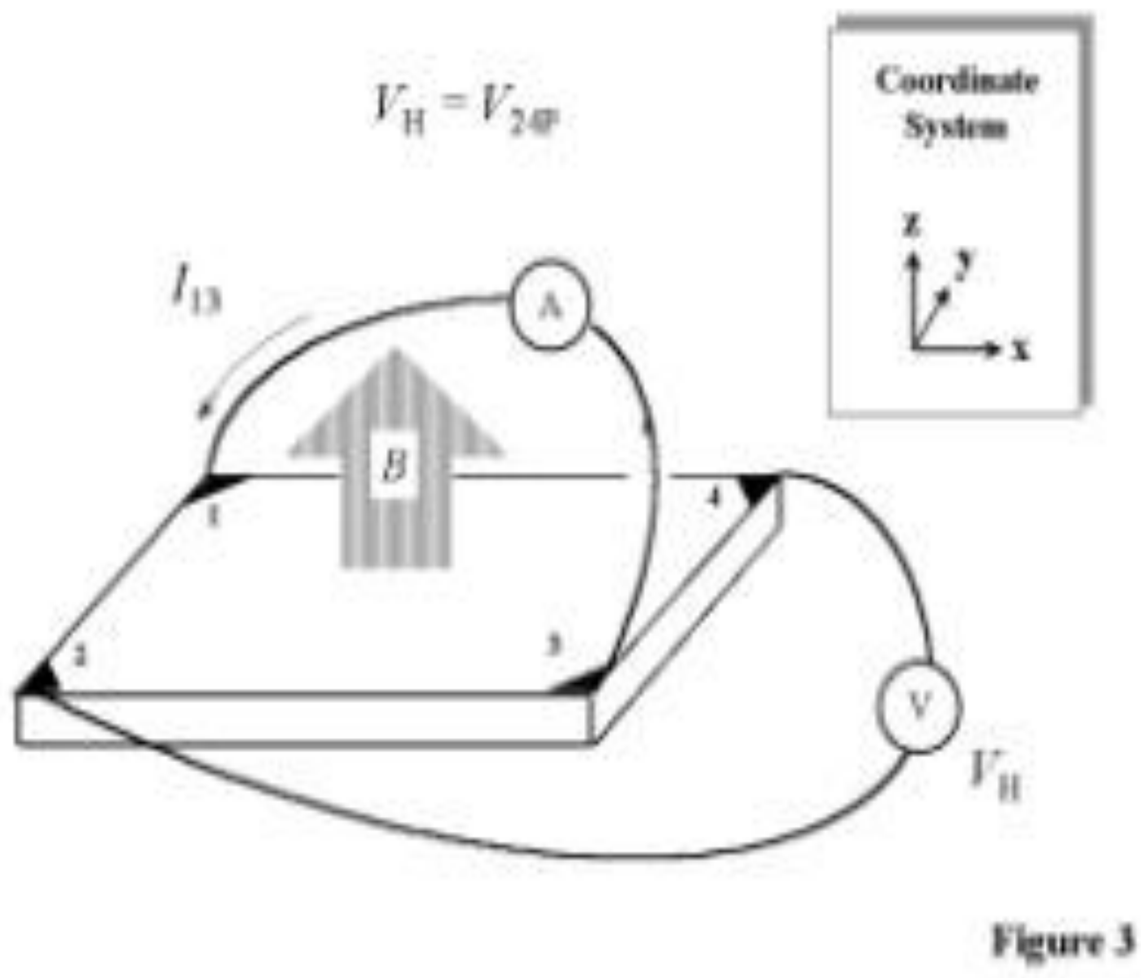


Figure 3

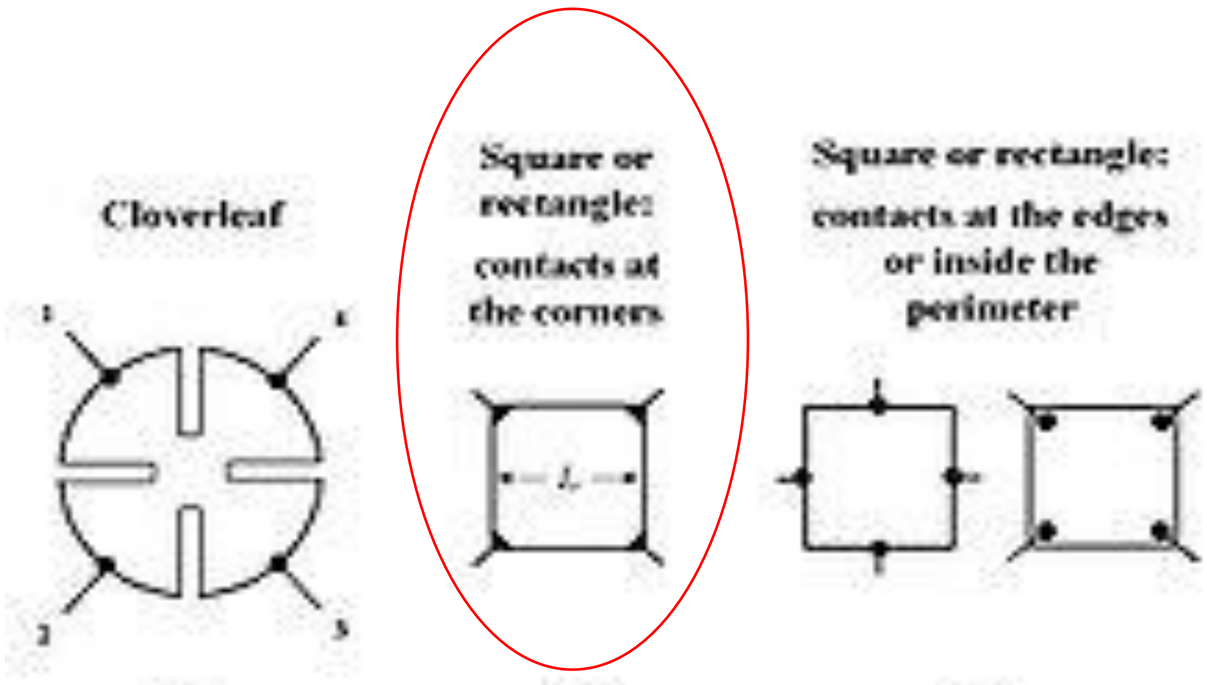
There are five conditions that must be satisfied to use this technique:

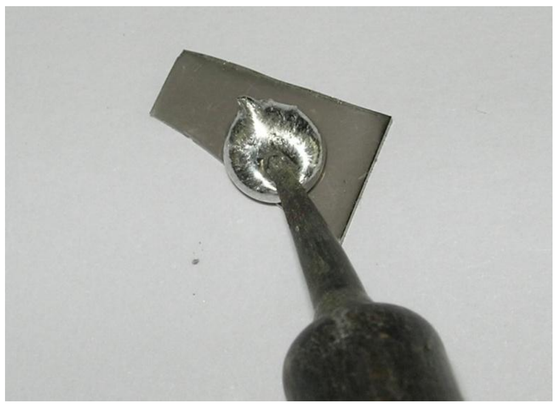
1. The sample must have a flat shape of uniform thickness
2. The sample must not have any isolated holes
3. The sample must be homogeneous and isotropic
4. All four contacts must be located at the edges of the sample
5. The area of contact of any individual contact should be at least an order of magnitude smaller than the area of the entire sample.

Hall Effect Measurement system

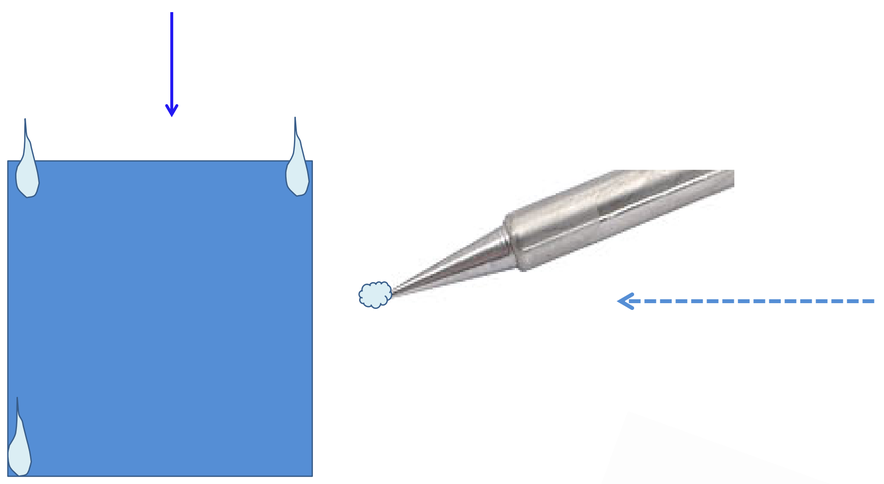
Sample preparation

Sample contact must be prepared like #(b) on the four point corners.



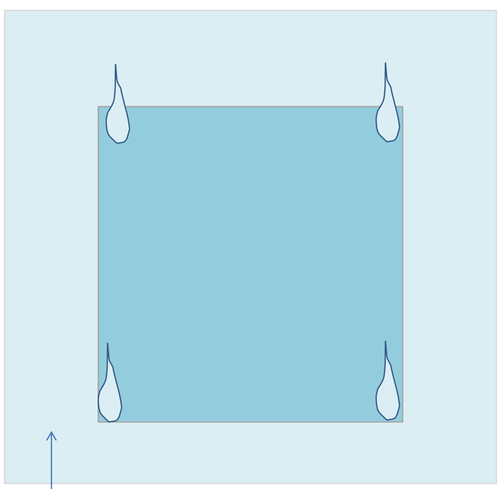


Prepare soldering iron that can control temp upto 400dc.
Set up soldering iron at 300dc~ 400dc and InSn compound is melted as show on the image.
Obsolete glass should be prepared,as shown left.

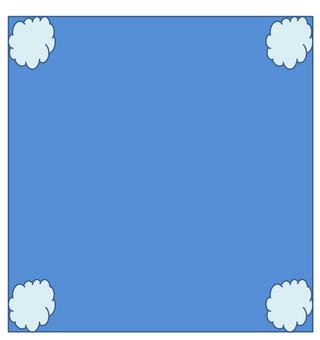


And, then put soldering iron's tip ends with melted InSn compound, on each four point edge. And, if so, shotia type is made as shown left image.

Finally, cover some wax paper on the sample to see each soldering point through, and then push down by some hard hardware such as tweezer's round area, to make soldered point to be flat.



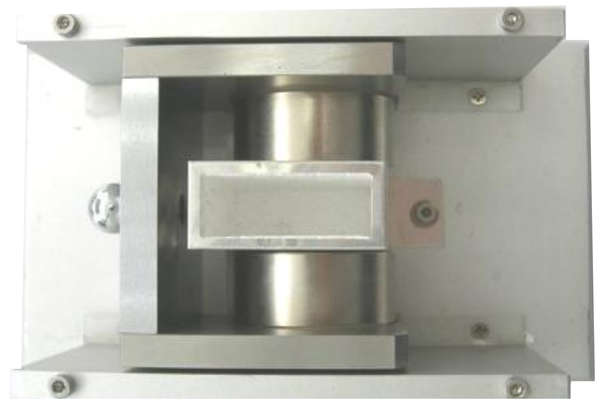
Wax paper



Completed !

Hall Effect Measurement system

Model no. HMS-3000 + MS55T magnet.



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1	Size	32 x 30 x 10.5cm(W x D x H)
2	Weight	7.7kg
3	Carrier density	10e7~10e21(cm-3)
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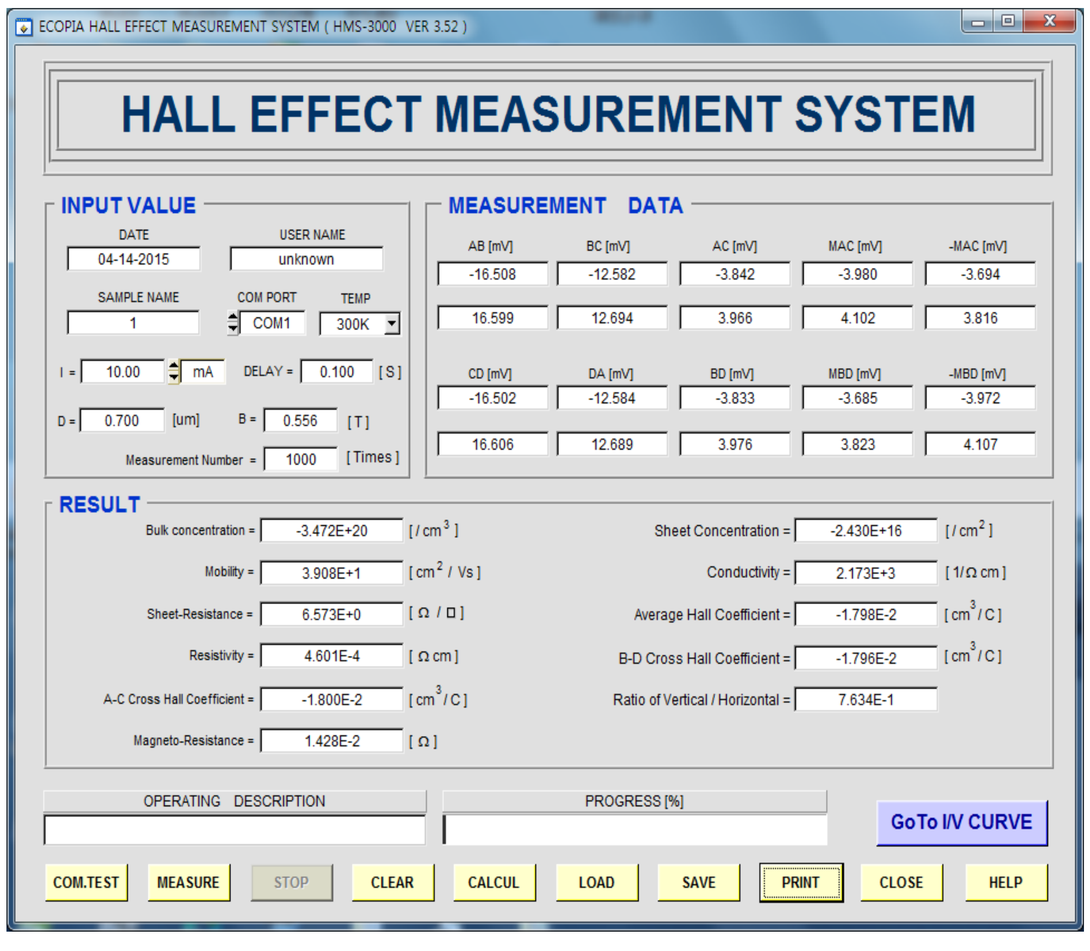
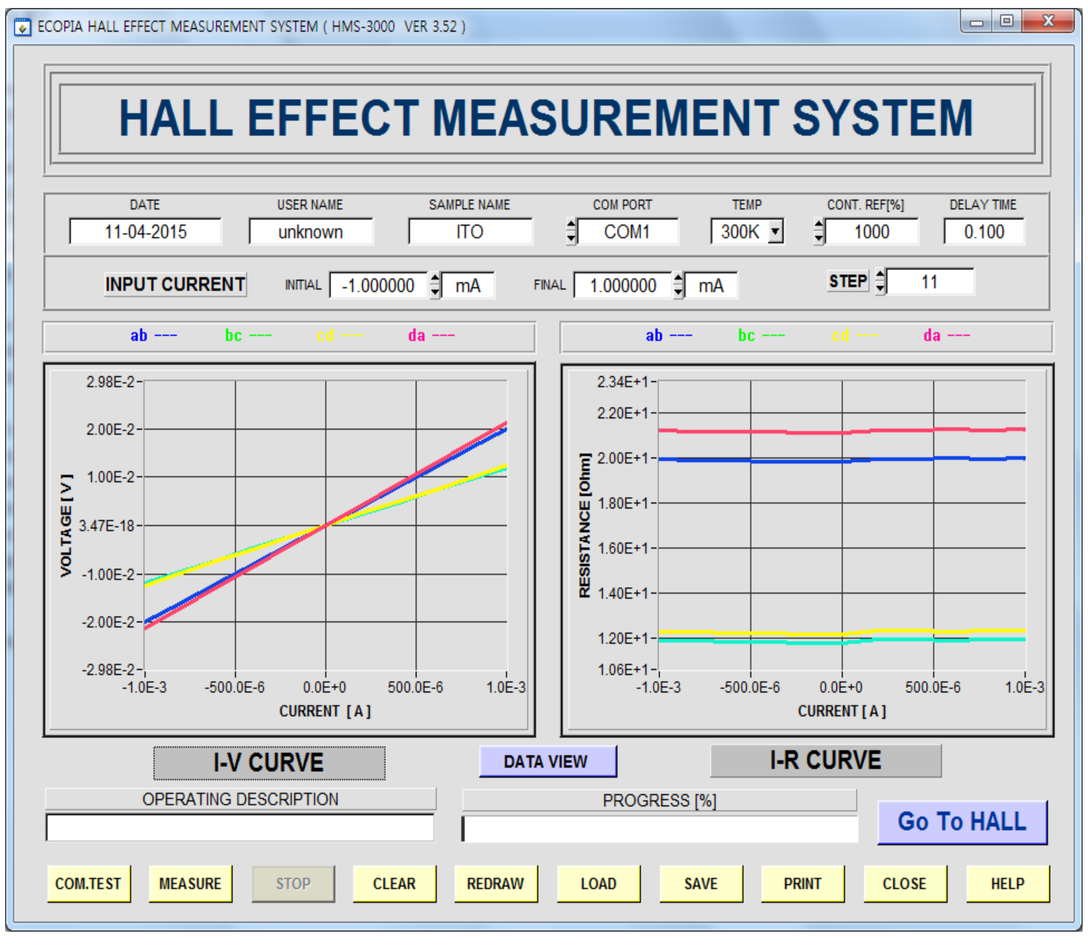
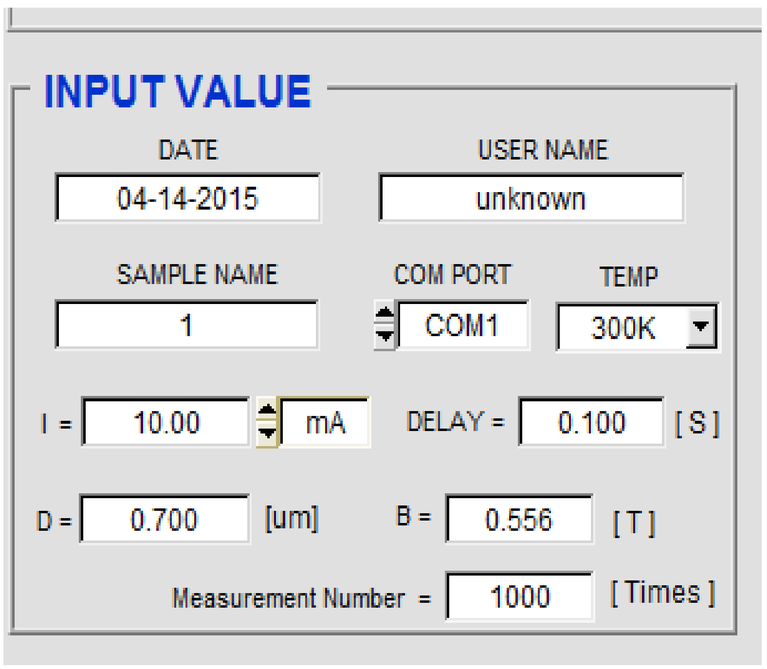
5	Mobility	1~10e7 (cm2/Vs)
6	Input current range	1nA ~ 20mA (DC type)
7	Output voltage	12V
8	Software	Win XP, Vista, Win7 , Win 8
9	Others in s/w	IV, IR graph plot. Hall coefficient, MR.

Software



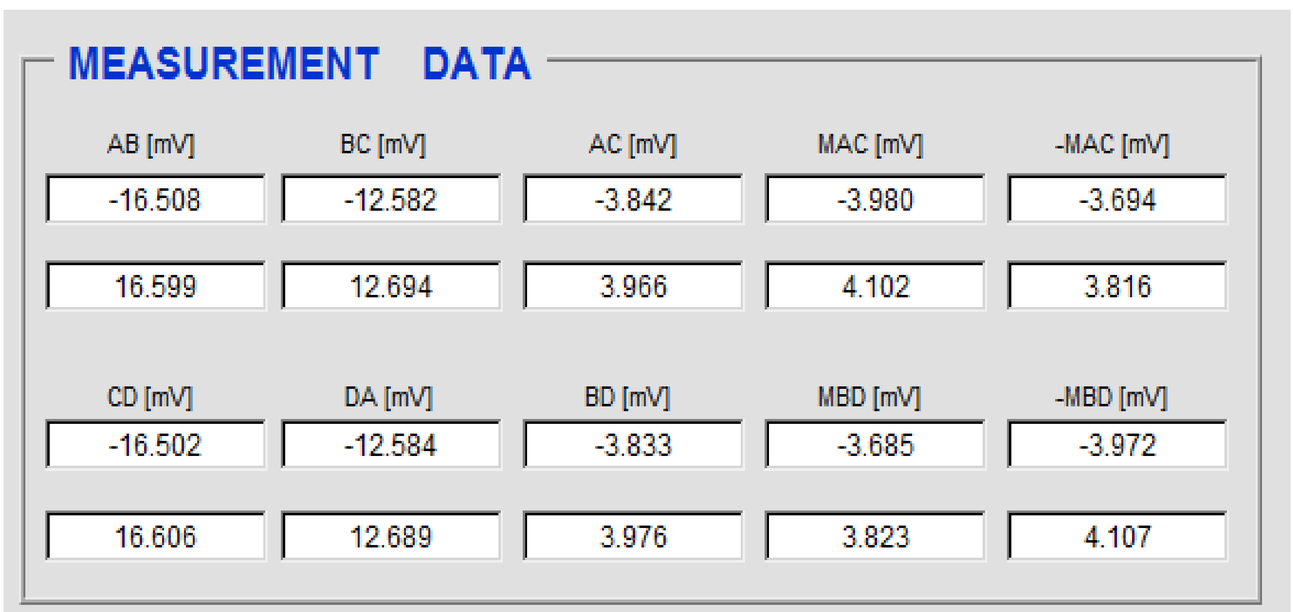


Model no. HMS-3000 software



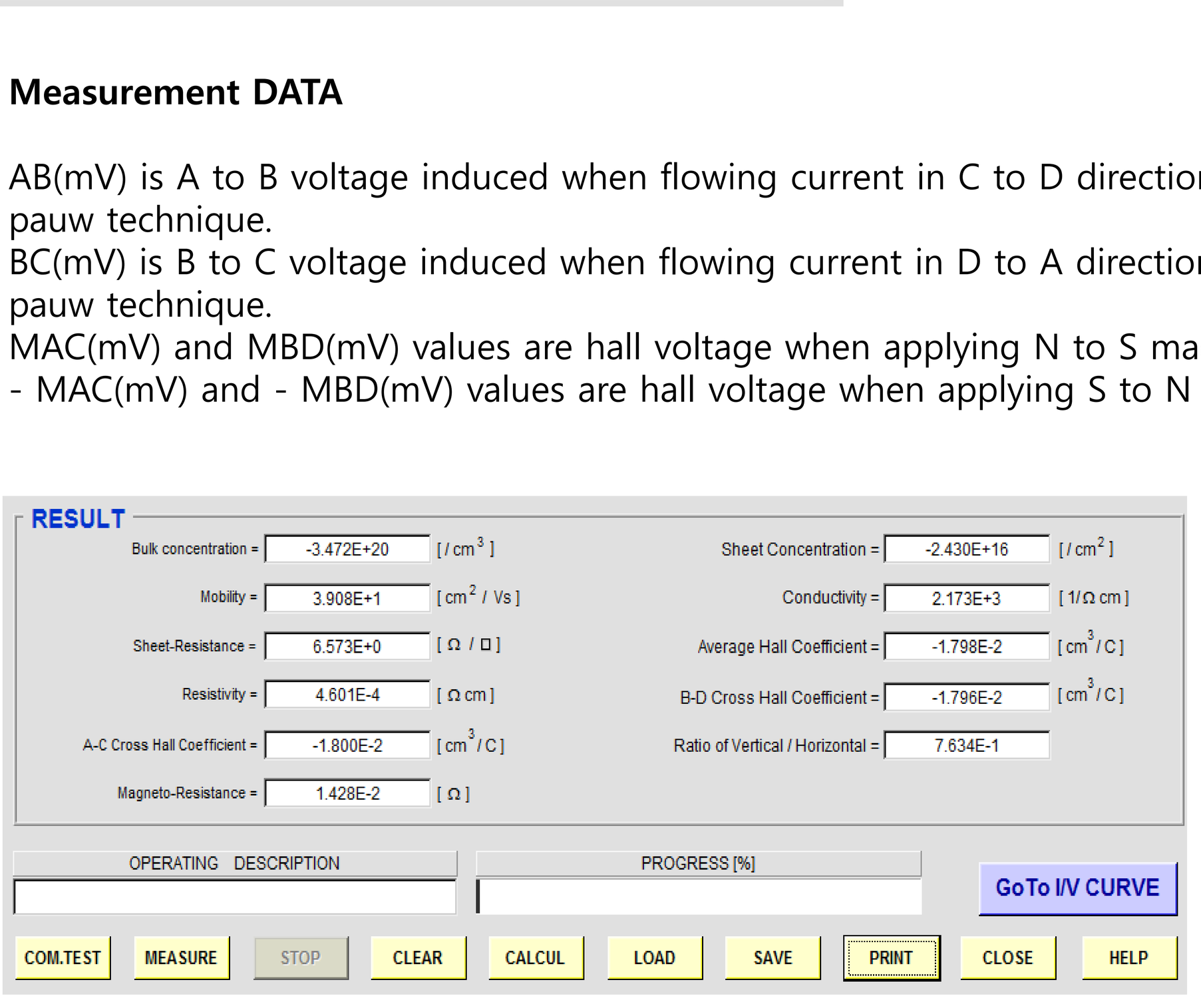
INPUT VALUE

I = input current, ranging from 1nA ~ 20mA
Delay = Delay time. User can control measurement speed.
D = Doped thickness layer.
B = Magnet field strength. It is fixed. We provide it with new instrument.
Measurement number = 1000 times. System measures 1000 times and it shows averaged values.



Measurement DATA

AB(mV) is A to B voltage induced when flowing current in C to D direction, based on van der pauw technique.
BC(mV) is B to C voltage induced when flowing current in D to A direction, based on van der pauw technique.
MAC(mV) and MBD(mV) values are hall voltage when applying N to S magnet field polarity.
- MAC(mV) and - MBD(mV) values are hall voltage when applying S to N magnet field polarity.

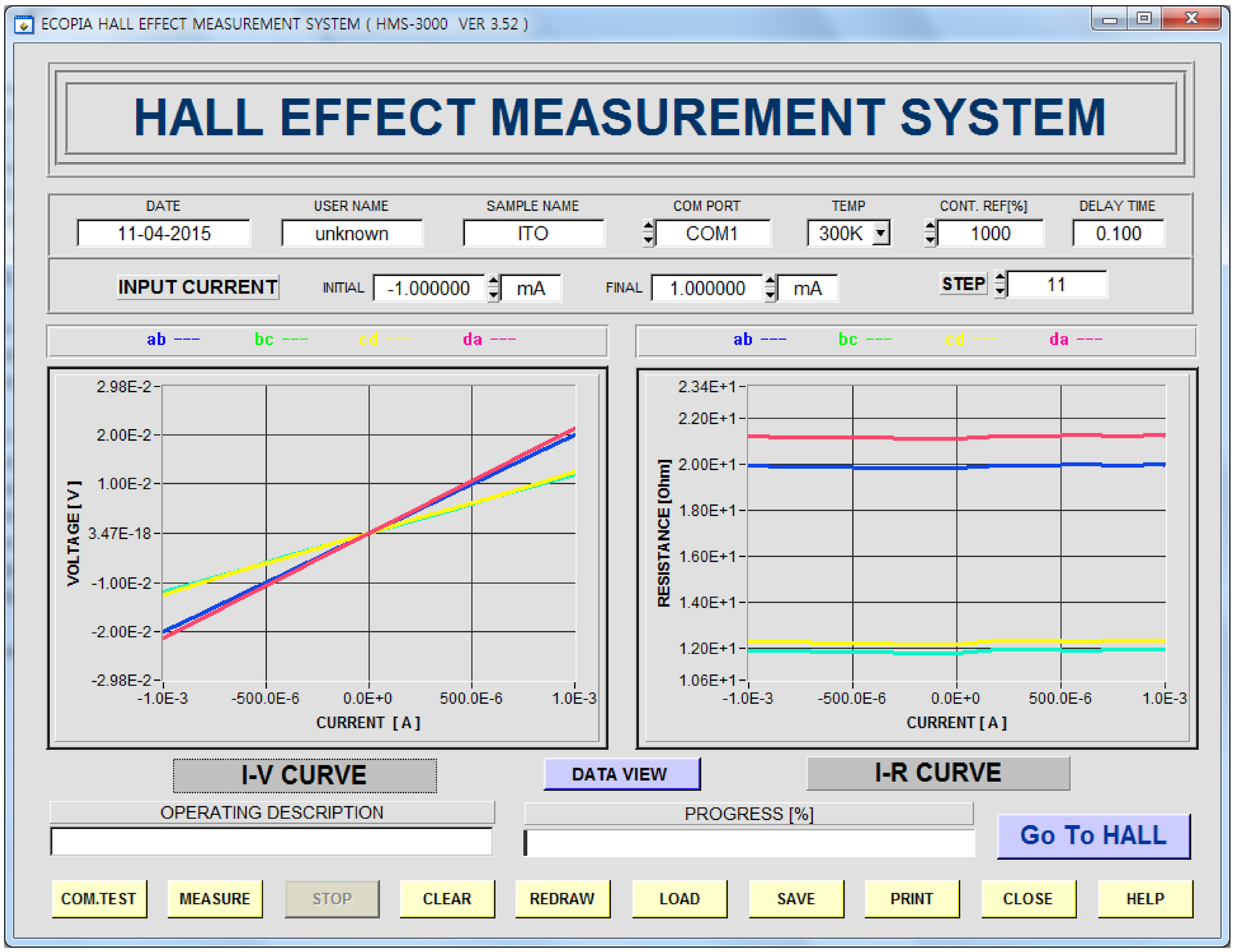


Model no. HMS-3000 software

RESULT

Electrical parameters are shown on the RESULT. The following values are calculated.

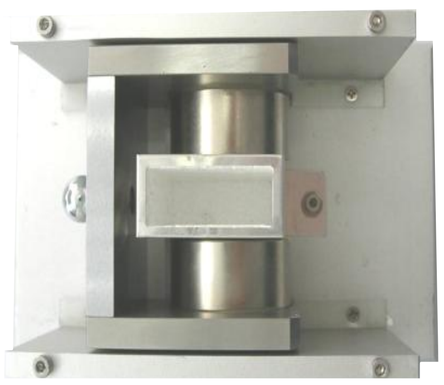
Carrier concentration , Sheet concentration, Mobility, Conductivity, Sheet resistance, Average hall coefficient, Resistivity, B-D Cross Hall Coefficient, A-C Cross Hall Coefficient, Ratio of Vertical / Horizontal , Magneto-Resistance.



Magnet kits compatible with HMS-3000

Main body	MS magnet	MP magnet	EVM magnet	High temp
HMS-3000 & HMS-3000R	MS31T	MP31T	EVM-100R	HT55T3
	MS37T	MP37T	EVM-100N2	HT55T5
	MS55T	MP55T		
	MS100T	MP100T		
Remark			Variable magnet field	

Model no. MS55T

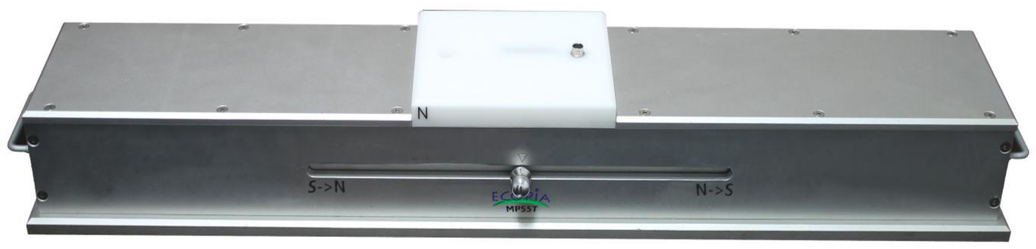


* Compact desk top design.
• 0.55 Tesla permanent magnet.
• Measurable temp: RT, 77K

Model no. MS100T

* 1.0 Tesla permanent magnet.
• Measurable temp: Room Temperature only.

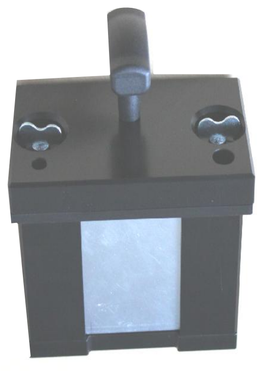
Model no. MP55T



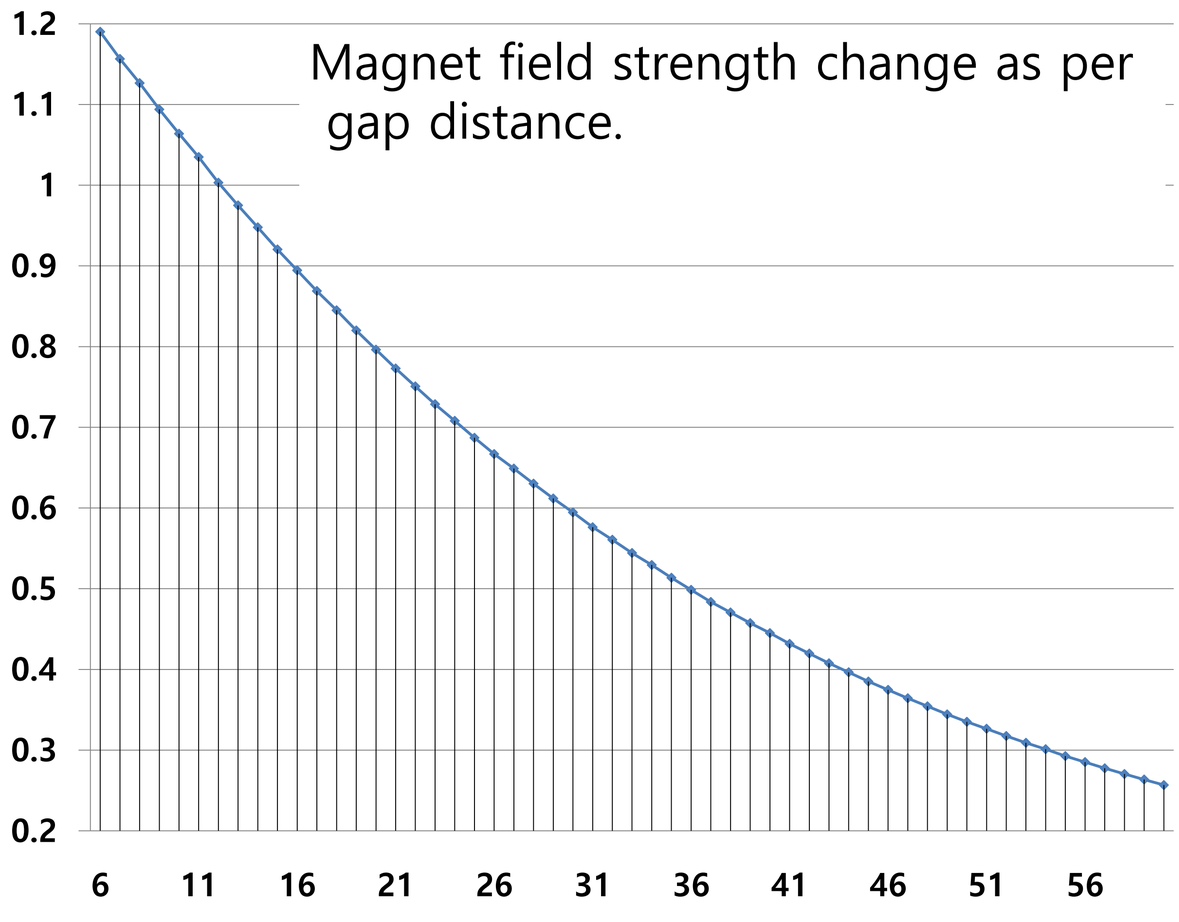
* Easy slide magnet moves on the rail.
* Round magnets positioned on both ends , apply N to S and S to N polarity.
• 0.55 Tesla permanent magnet.
• Measurable temp: RT, 77K

Model no. EVM-100R/ EVM-100N2

• Variable magnet kit
• Magnet field: 0.25 ~ 1.0 Tesla
• Measurable temp : RT, 77K.
• Compatible with HMS-3000



• LN2 tank with sample board holding kit



Hall Effect Measurement system

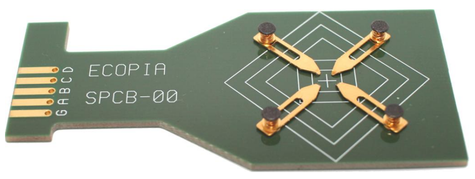
Magnet kits compatible with HMS-3000

Model no. HT55T3/ HT55T5

* 0.55 Tesla permanent magnet.
• Measurable temp: RT ~ 300°C / 500°C.
• Temp controller box is also supplied with.
• Purge gas can flow inside the chamber.
• Good to perform with PPM level gas , mixed with inert gas.

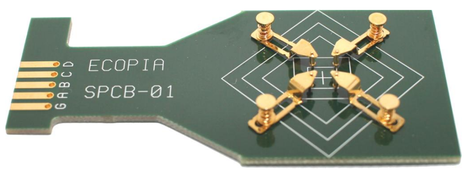
* Sample mounting board

Model no. SPCB-00



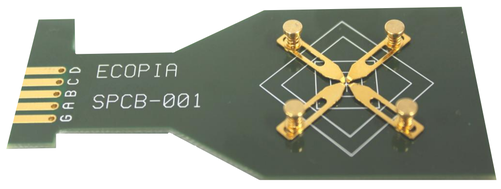
• Measurable size: 5mm x 5mm ~ 20mm x 20mm
• measurable thickness: less than 1.5mm
• gold plated clip and tip

Model no. SPCB-01



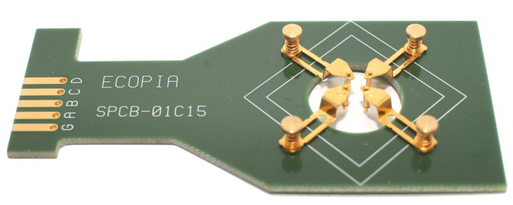
• Measurable size: 5mm x 5mm ~ 20mm x 20mm
• measurable thickness: less than 2mm
• gold plated clip and tip

Model no. SPCB-001



• Measurable size: 2mm x 2mm ~ 12mm x 12mm
• measurable thickness: less than 1.5mm
• gold plated clip and tip

Model no. SPCB-01C15



• Measurable size: 5mm x 5mm ~ 20mm x 20mm
• measurable thickness: less than 2mm
• gold plated clip and tip

• **We have more sample mounting boards and if you need different kinds of sample board, please visit our website (www.ecopia21.co.kr).**

* Contact materials.

- Contact material is to improve electrical conductivity by soldering it on four point corners.

• **In95% Sn5% compound**

- **50g**
- **100g.**

• **Gold paste 2g.**
- silver extender is also provided.

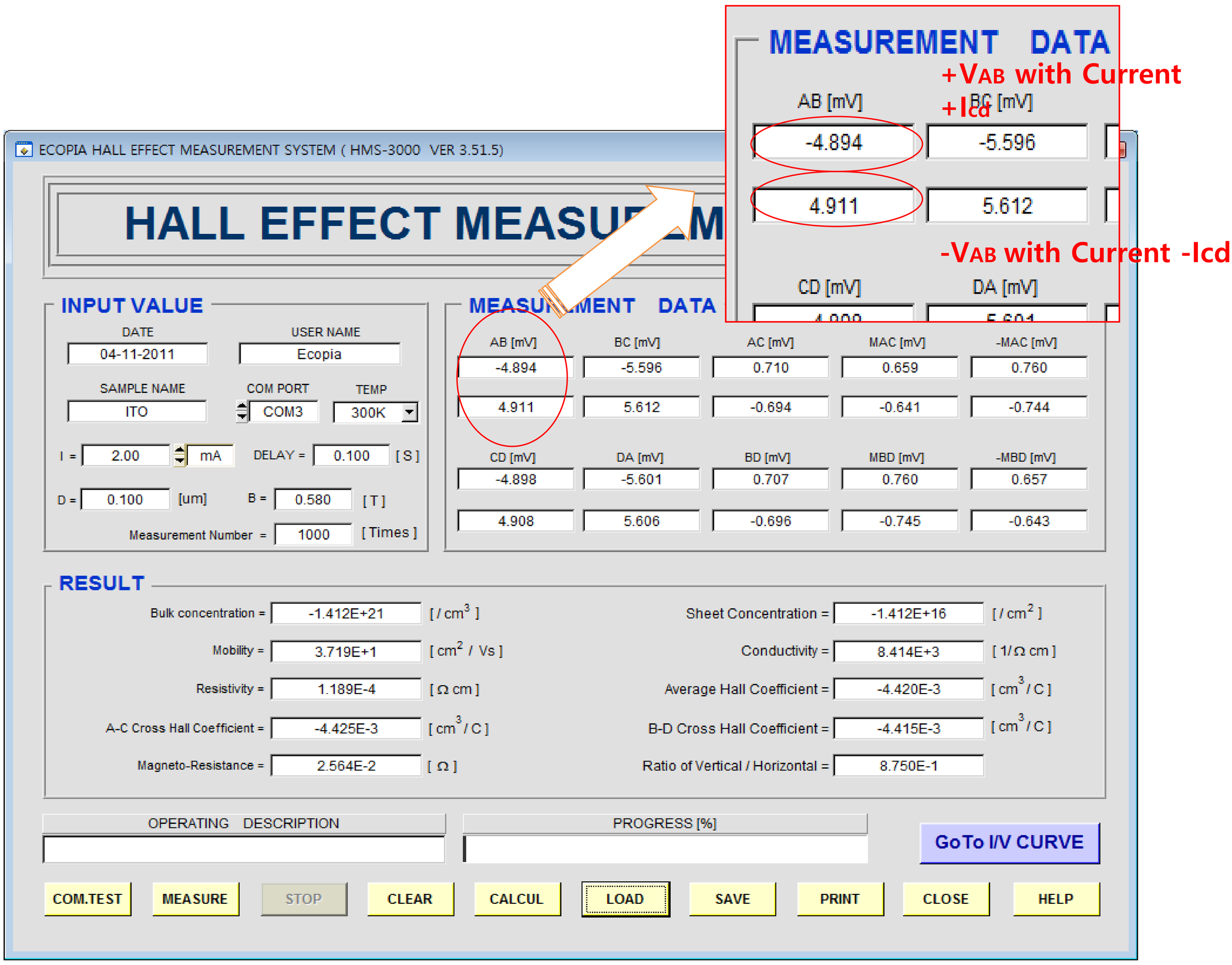
Magnet kits compatible with sample mounting boards

	SPCB-00 SPCB-001	SPCB-01 SPCB-02 SPCB-03	SPCB-11 SPCB-12 SPCB-13	SPCB-01C05 SPCB-01C10 SPCB-01C15	SMB-06 SMB-20	Temperature	Remark
MS31T, MS37T, MS55T	O	O	O	O	O	RT,77K	
MS100T	O	X	X	X	O	RT only	
MP31T, MP37T, MP55T	O	O	O	O	O	RT,77K	
MP100T	O	X	X	X	O	RT only	
EVM-100R	O	O	O	O	O	RT only	
EVM-100N2	O	O	O	O	O	RT,77K	
HT55T3	X	X	X	X	X	RT~300°c	HT55T3 has it's own sample board.
HT55T5	X	X	X	X	X	RT~500°c	Same as above.

Magnet kits technical specs

NO	Magnet type	Magnet field (+/-0.03T)	Temp	Temp uniformity	Weight (apprx)	Size (apprx)
1	MS31T	0.31T	RT, 77K		3 ~ 5kg.	20x12x9 cm
2	MS37T	0.37T	RT, 77K			
3	MS55T	0.55T	RT, 77K			
4	MS100T	1.0T	RT			
5	MP31T	0.31T	RT, 77K		14 ~ 18kg	82x15x12 cm
6	MP37T	0.37T	RT, 77K			
7	MP55T	0.55T	RT, 77K			
8	MP100T	1.0T	RT			
9	EVM-100R	0.25~ 0.97T	RT		14kg	
10	EVM-100N2	0.25~0.55T	RT,77K			
11	HT55T3	0.55T	RT ~ 573K	+/- 1%.	15kg	70x24x16 cm
12	HT55T5	0.55T	RT ~ 773K	+/- 1%.		

How to make sure the test results are reliable - A



The first voltage value, Vab should have minus type.
(According to Vab der Pauw law, supposing each corners of sample A,B,C and D, Vab is the induced voltage between A and B when flowing current C to D.)

How to make sure the test results are reliable - B

ECOPIA HALL EFFECT MEASUREMENT SYSTEM (HMS-3000 VER 3.51.5)

HALL EFFECT MEASUREMENT SYSTEM

INPUT VALUE

DATE	USER NAME
04-11-2011	Ecopia

SAMPLE NAME	COM PORT	TEMP
ITO	COM3	300K

I = 2.00 mA DELAY = 0.100 [S]

D = 0.100 [um] B = 0.580 [T]

Measurement Number = 1000 [Times]

MEASUREMENT DATA

AB [mV]	BC [mV]	AC [mV]	MAC [mV]	-MAC [mV]
-4.894	-5.596	0.710	0.659	0.760
4.911	5.612	-0.694	-0.641	-0.744

CD [mV]	DA [mV]	BD [mV]	MBD [mV]	-MBD [mV]
-4.898	-5.601	0.707	0.760	0.657
4.908	5.606	-0.696	-0.745	-0.643

RESULT

Bulk concentration =	-1.412E+21 [/ cm^3]	Sheet Concentration =	-1.412E+16 [/ cm^2]
Mobility =	3.719E+1 [cm^2 / Vs]	Conductivity =	8.414E+3 [1/Ω cm]
Resistivity =	1.189E-4 [Ω cm]	Average Hall Coefficient =	-4.420E-3 [cm^3 / C]
A-C Cross Hall Coefficient =	-4.425E-3 [cm^3 / C]	B-D Cross Hall Coefficient =	-4.415E-3 [cm^3 / C]
Magneto-Resistance =	2.564E-2 [Ω]	Ratio of Vertical / Horizontal =	8.750E-1

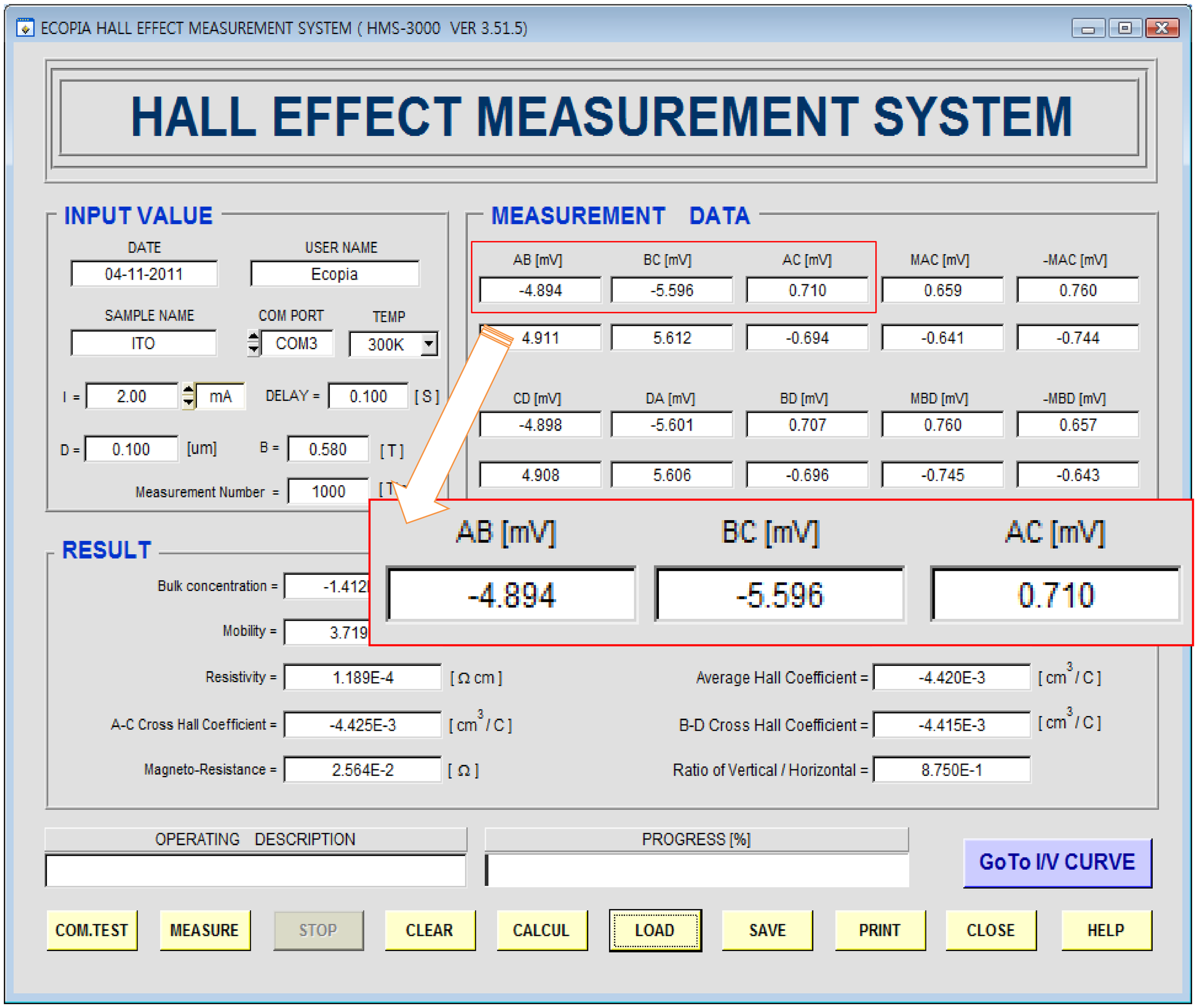
OPERATING DESCRIPTION PROGRESS [%] GoTo I/V CURVE

COM.TEST | MEASURE | STOP | CLEAR | CALCUL | LOAD | SAVE | PRINT | CLOSE | HELP

Each pair above in red round circle should be similar in absolute value.
The closer both values are , the better ohmic contact is.
The reason is that the system flows the same amount of current in forward and reverse.
So, output voltage also should be similar each other, even if type must be opposite.

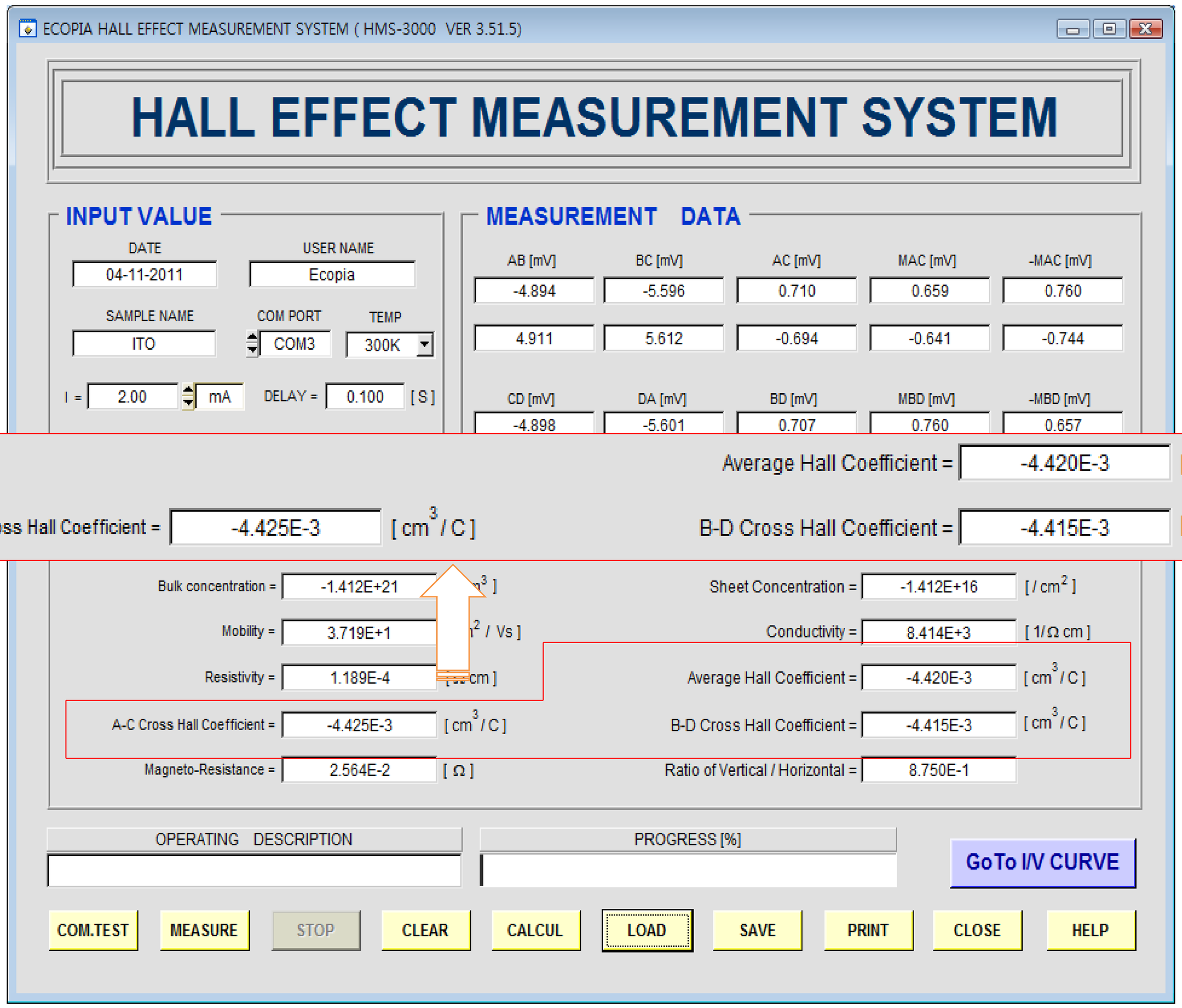
However, in case of high resistive or very low resistive sample(high conductive), the level of similarity in absolute values should be applied less strictly.

How to make sure the test results are reliable - C



In case of good ohmic contact,
if the AB minus BC should close to AC, you can think that ohmic contact is good.
Ex) –4.894 – (–5.596) ≒ About 0.710

How to make sure the test results are reliable - D

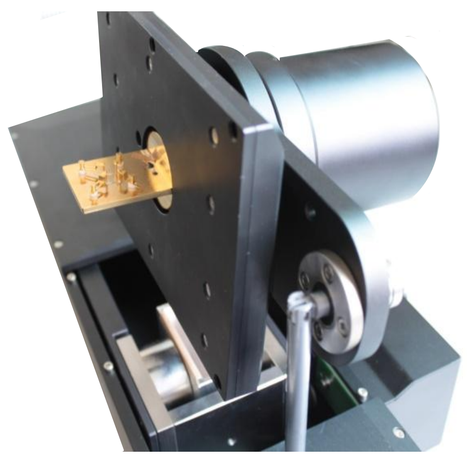


1) A tester measures several times and the value shows the same type (N type or P type)
   If carrier concentration shows minus(-), it is N type sample, and if it shows plus(+), it is P type sample.

2) The average hall coefficient is average value between RHA (A-C cross hall coefficient) and RHB (B-D cross hall coefficient). And, therefore, both RHA and RHB should be similar each other.

Hall Effect Measurement system

Model no. HMS-5300 + AMP55T magnet.

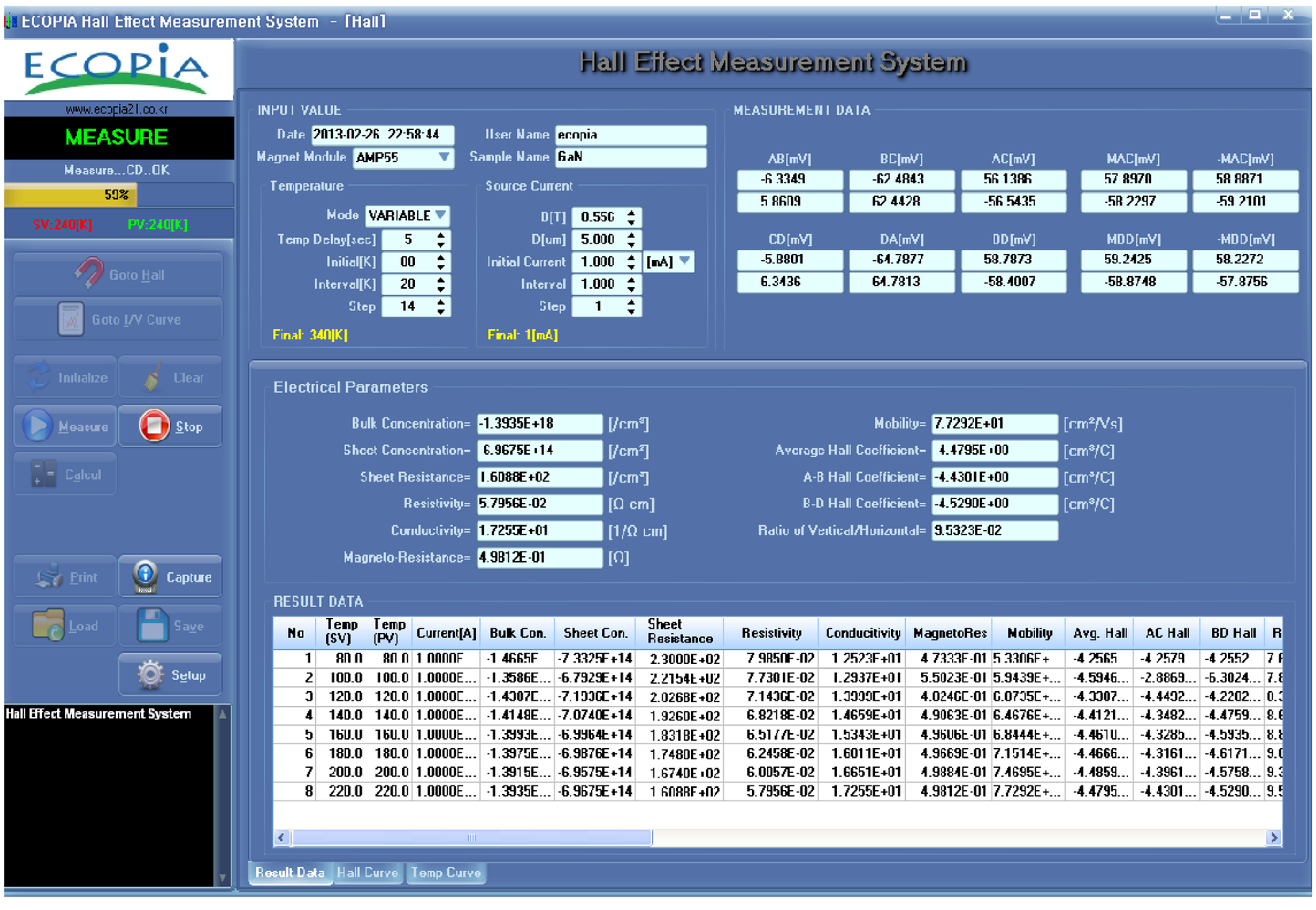


HMS-5000 + AMP55T is also same with HMS-5300 + AMP55T in configuration.

But, HMS-5000 main body controller is only able to use with AMP55T, and not possible to use with high temp magnet kit (AHT55T3)

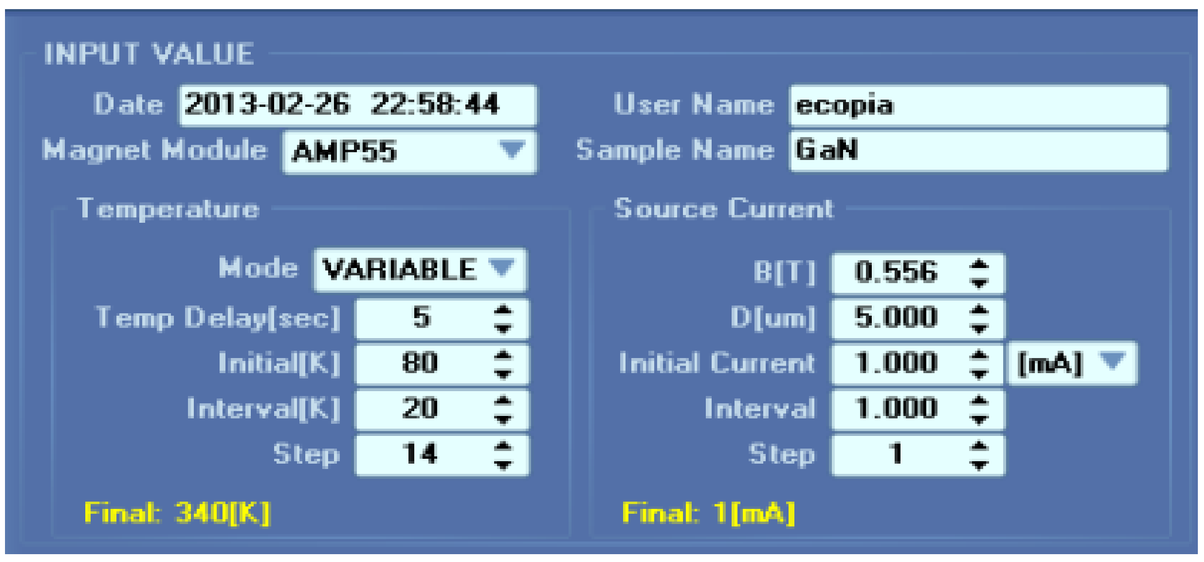
NO	HMS5300 Main body	Description	NO	Magnet kit (AMP55T)	Description
1	Size	44 x 42 x 14cm (W x D x H)	1	size	68 x 22 x 11cm (W x D x H)
2	Weight	8.5kg	2	Weight	16kg
3	Carrier density)	10e7~10e21(cm-3)	3	Temp	80K~350K
4	Resistivity)	10e-4 ~ 10e7 (ohm.cm)	4	Magnet flux density	0.55Tesla (+/-0.03T)
5	Mobility)	1~10e7 (cm2/Vs)	5	Temp Uniformity	+/- 0.5dC.
6	Input current range	1nA ~ 20mA (DC type)	6	Sample size	5mm x 5mm ~ 20mm x 20mm
7	Output voltage	12V	7	Sample holding kit (SH80350K) weight	3kg
8	Software	Win XP, Vista, Win7			
9	Others in s/w	IV, IR graph plot. Hall coefficient, MR.			

Software – main measurement page



Software for Model no. HMS-5300 + AMP55T magnet.

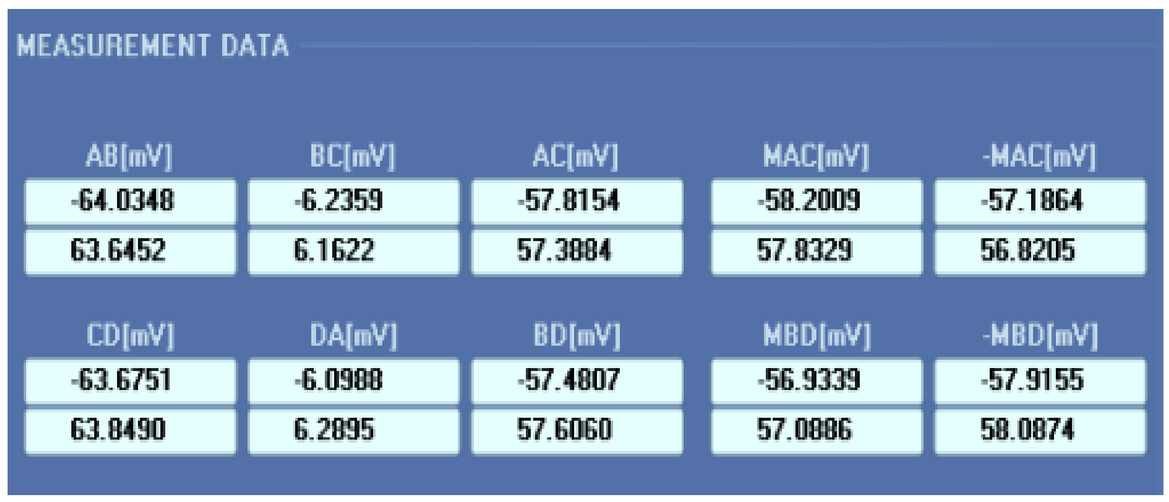
Fill all input value factor as below.



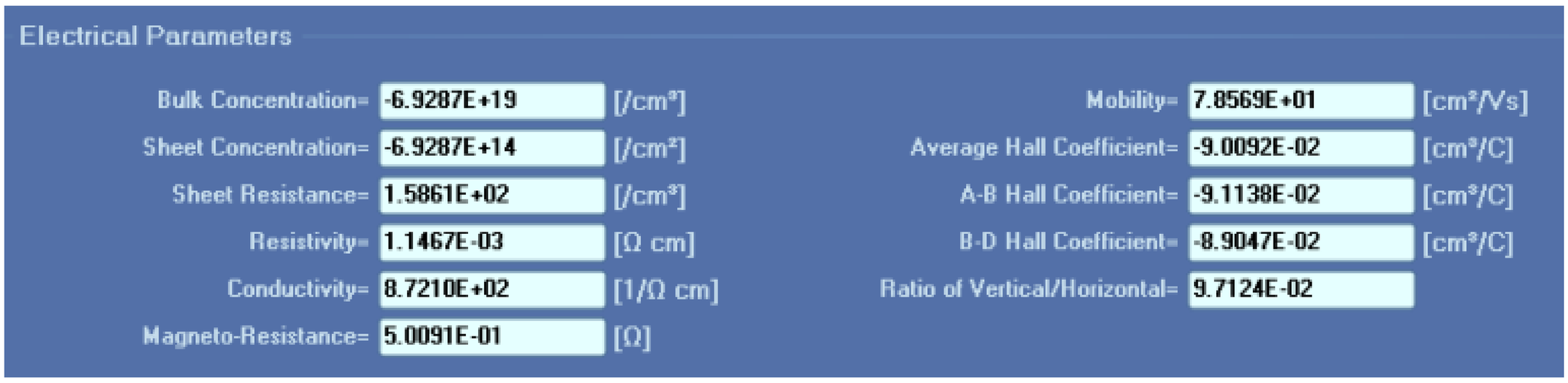
Initial(K) is “start temp”.
Interval (K) is temp interval.
Step is number of measuring points.

B(T) is magnet field strength.
D(um) is doped thickness layer.
Initial current is start current.
Interval is current interval.
Step is number of measuring points.

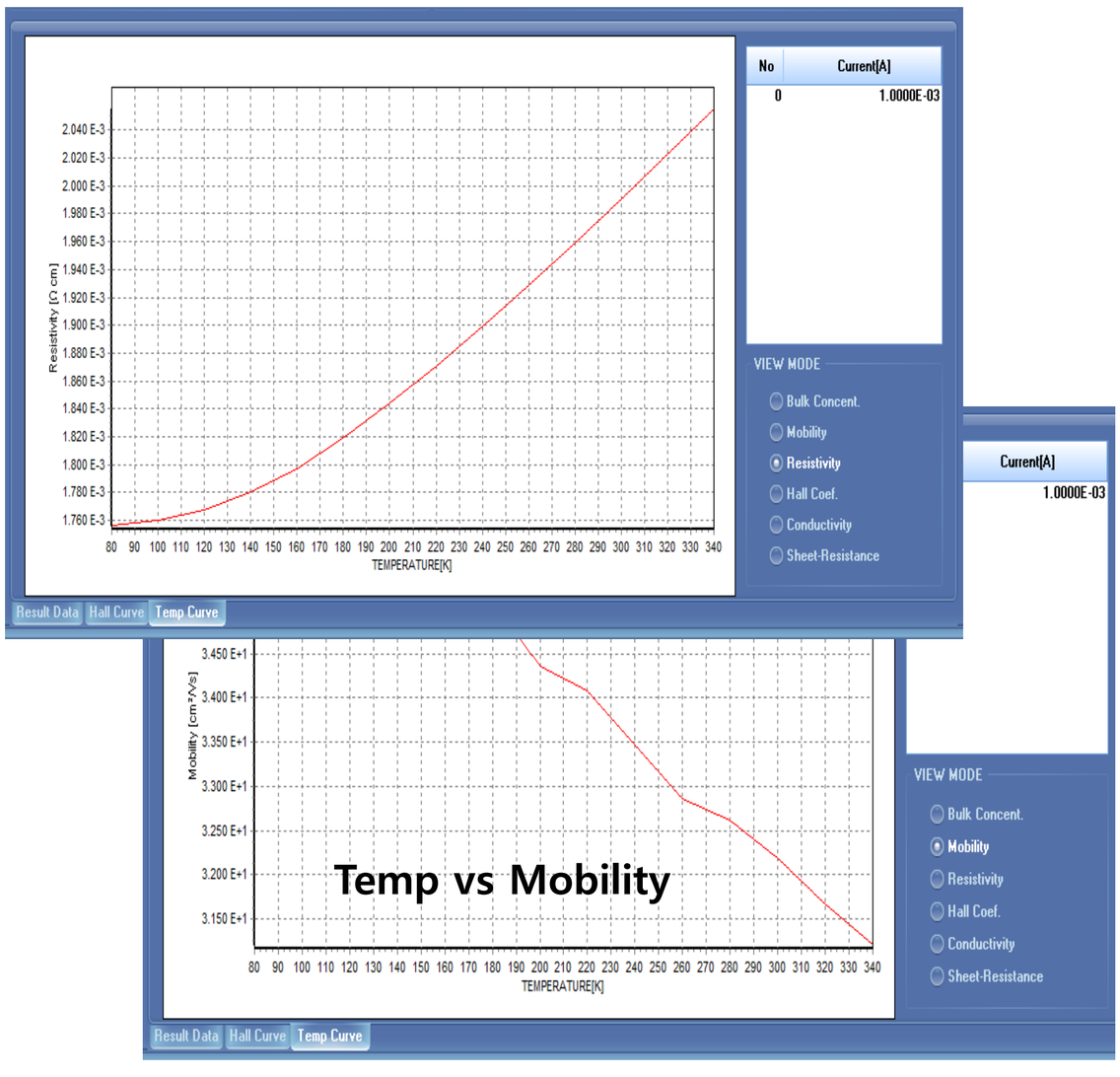
Raw data ->



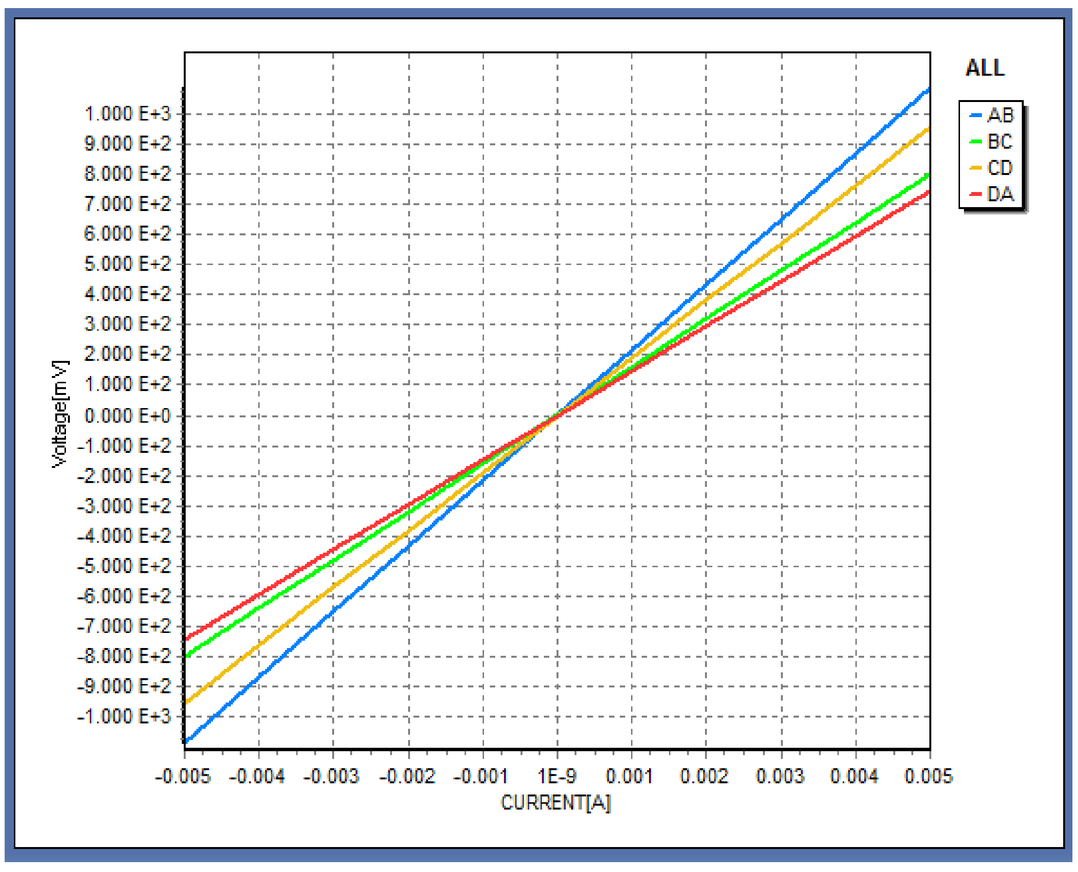
Electrical parameters



Temp vs Resistivity



IV curve (IR curve also can be plotted)

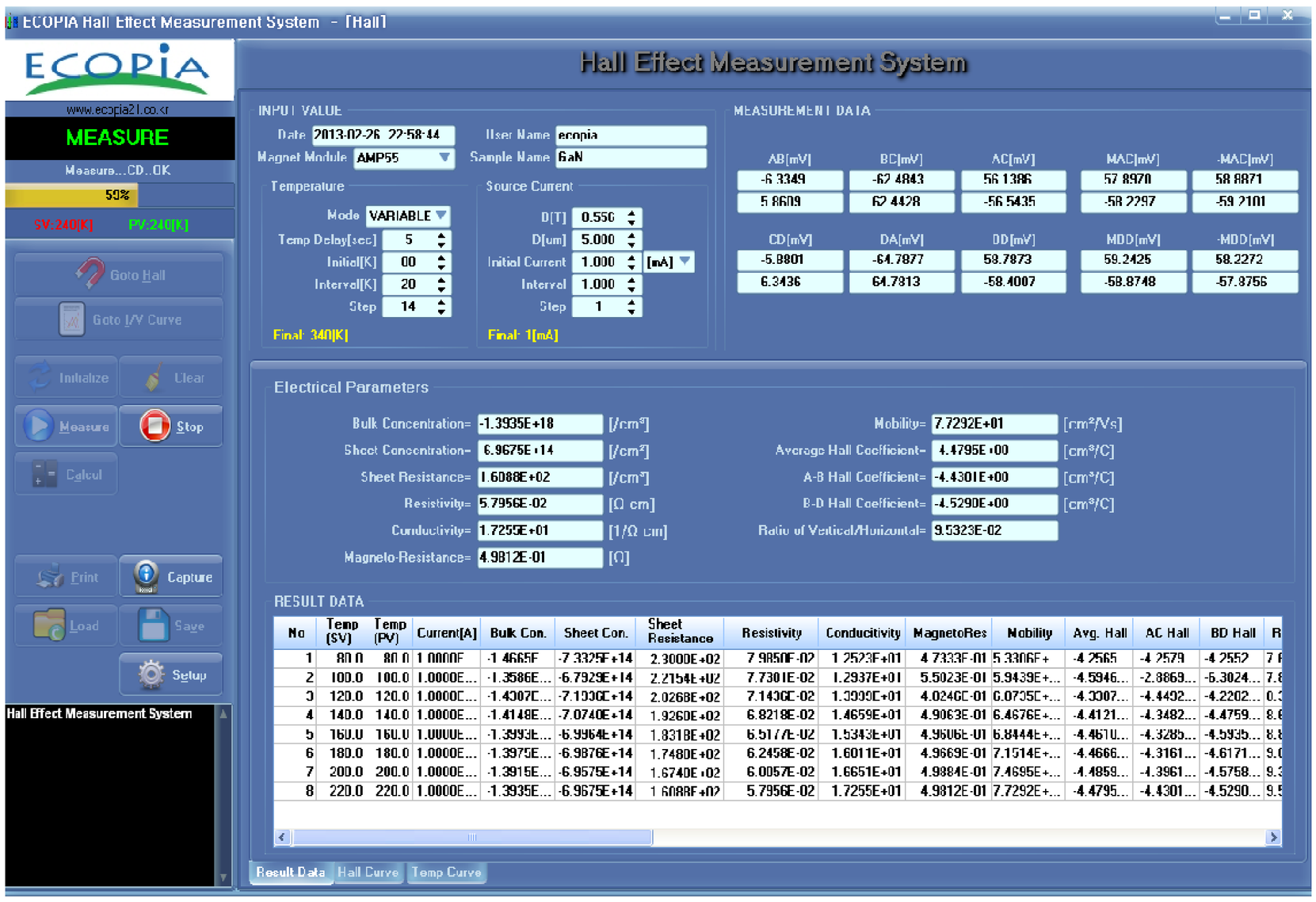


Hall Effect Measurement system

Model no. HMS-5300 + AHT55T3 magnet.

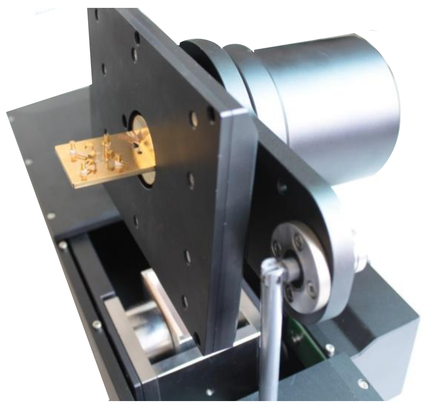
NO	HMS5300 Main body	Description	NO	Magnet kit (AHT55T3)	Description
1	Size	44 x 42 x 14cm (W x D x H)	1	size	68 x 24 x 24cm (W x D x H)
2	Weight	8.5kg	2	Weight	16kg
3	Carrier density)	10e7~10e21(cm-3)	3	Temp	AHT55T3(RT~ 300dC)
4	Resistivity)	10e-4 ~ 10e7 (ohm.cm)	4	Magnet flux density	0.55Tesla (+/-0.03T)
5	Mobility)	1~10e7 (cm2/Vs)	5	Temp Uniformity	+/- 1%.
6	Input current range	1nA ~ 20mA (DC type)	6	Sample size	5mm x 5mm ~ 20mm x 20mm
7	Output voltage	12V			
8	Software	Win XP, Vista, Win7			
9	Others in s/w	IV, IR graph plot. Hall coefficient, MR.			

Software – main measurement page



Hall Effect Measurement system

Model no. HMS-5500 + AHT55T5 + AMP55T



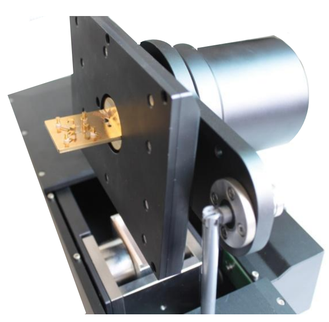
HMS-5500 model is able to integrate with AMP55T and/or AHT55T5.

NO	HMS5500 Main body	Description
1	Size	44 x 42 x 14cm (W x D x H)
2	Weight	8.5kg
3	Carrier density	10e7~10e21(cm-3)
4	Resistivity	10e-4 ~ 10e7 (ohm.cm)
5	Mobility	1~10e7 (cm2/Vs)
6	Input current range	1nA ~ 20mA (DC type)
7	Output voltage	12V
8	Software	Win XP, Vista, Win7
9	Others in s/w	IV, IR graph plot. Hall coefficient, MR.

NO	Magnet kit (AMP55T)	Description	NO	Magnet kit (AHT55T5)	Description
1	size	68 x 22 x 11cm (W x D x H)	1	size	68 x 24 x 24cm (W x D x H)
2	Weight	16kg	2	Weight	16kg
3	Temp	80K~350K	3	Temp	RT~ 773K (500dc)
4	Magnet flux density	0.55Tesla (+/-0.03T)	4	Magnet flux density	0.55Tesla (+/-0.03T)
5	Temp Uniformity	+/- 0.5dC.	5	Temp Uniformity	+/- 1%.
6	Sample size	5mm x 5mm ~ 20mm x 20mm	6	Sample size	5mm x 5mm ~ 20mm x 20mm
7	Sample holding kit (SH80350K) weight	3kg			

Hall Effect Measurement system

Model no. HMS-7000 + AMP55T + Photonic module + AHT55T5



Current source

LED lamp R,G,B color to illuminate on the sample.

HMS-7000 model is also able to integrate with AMP55T and/or AHT55T3(and AHT55T5) .
However, for photonic measurement, only AMP55T model can be applicable.
AHT55T3(and AHT55T5) model is not available for photonic hall effect.

NO	HMS7000 Main body	Description
1	Size	44 x 42 x 14cm (W x D x H)
2	Weight	8.5kg
3	Carrier density	10e7~10e21(cm-3)
4	Light intensity	Light intensity vs electrical parameters (carrier density, mobility, resistivity, hall coefficient)
5	Resistivity	10e-4 ~ 10e7 (ohm.cm)
6	Mobility	1~10e7 (cm2/Vs)
7	Input current range	1nA ~ 20mA (DC type)
8	Output voltage	12V
9	Software	Win XP, Vista, Win7
10	Others in s/w	IV, IR graph plot. Hall coefficient, MR.

NO	Magnet kit (AMP55T)	Description	NO	Magnet kit (AHT55T5)	Description
1	size	68 x 22 x 11cm (W x D x H)	1	size	68 x 24 x 24cm (W x D x H)
2	Weight	16kg	2	Weight	16kg
3	Temp	80K~350K	3	Temp	RT~ 773K
4	Magnet flux density	0.55Tesla (+/-0.03T)	4	Magnet flux density	0.55Tesla (+/-0.03T)
5	Temp Uniformity	+/- 0.5dC.	5	Temp Uniformity	+/- 1%.
6	Sample size	5mm x 5mm ~ 20mm x 20mm	6	Sample size	5mm x 5mm ~ 20mm x 20mm
7	Sample holding kit (SH80350K) weight	3kg			

Probe Station

Introduction

Probe station is mechanical instrument to make it possible to move probe arm and tip precisely, and have them contact on the semiconductor device and wafer successfully.

To make it complete instrument by probing the sample accurately, and sending & reading electrical signal, manipulator, microscope, sourcemeter are required.

Ecopia probe station is compact desktop design, and reasonable price.

Model no. EPS-300

NO	specs	description
1	Chuck size	4inch, 6inch
2	Microscope mount X,Y stage	Option.
3	Microscope magnification.	90x ~ 1000x
4	CCD camera	Option. We provide it as the customer want.
5	chuck rotation	Not possible
6	X,Y, Z travel	X: 50mm Y: 50mm Z: 12mm
7	Heating chuck	Option
8	Size and Weight	520 x 470 x 420(mm) 13~ 15kg.

Model no. EPS-500

NO	specs	description
1	Chuck size	4inch, 6inch
2	Microscope mount X,Y stage	Option.
3	Microscope magnification.	90x ~ 1000x
4	CCD camera	Option. We provide it as the customer want.
5	chuck rotation	360°
6	X,Y, Z travel	X: 100mm Y: 100mm Z: 25mm
7	Heating chuck	Option
8	Size and Weight	450 x 500 x 550(mm) 13~ 15kg.

Probe Station

Model no. EPS-1000

NO	specs	description
1	Chuck size	4inch, 6inch
2	Microscope mount X,Y stage	Option.
3	Microscope magnification.	90x ~ 1000x
4	CCD camera	Option. We provide it as the customer want.
5	chuck rotation	360°
6	X,Y, Z travel	X: 100mm Y: 100mm Z: 40mm
7	Heating chuck	Option
8	Size and Weight	575 x 485 x 430 (mm) 27kg

< Technical spec table for each models >

NO	specs	EPS300	EPS500	EPS1000
1	Chuck size	4inch, 6inch	4inch, 6inch	4inch, 6inch
2	Microscope mount X,Y stage	Optional item.		
3	Microscope magnification.	90x ~ 1000x As the customer want, we can provide various microscope		
4	CCD camera	Option. We provide it as the customer want.		
5	chuck rotation	Not possible	360°	360°
6	X,Y, Z travel	X: 50mm Y: 50mm Z: 12mm	X: 100mm Y: 100mm Z: 25mm	X: 100mm Y: 100mm Z: 40mm EPS1000 has lift lever.
7	Heating chuck	Optional item.		
8	Size and Weight	520 x 470 x 420(mm) 13~ 15kg.	450 x 500 x 550(mm) 13~ 15kg.	575 x 485 x 430 (mm) 27kg

Probe Station

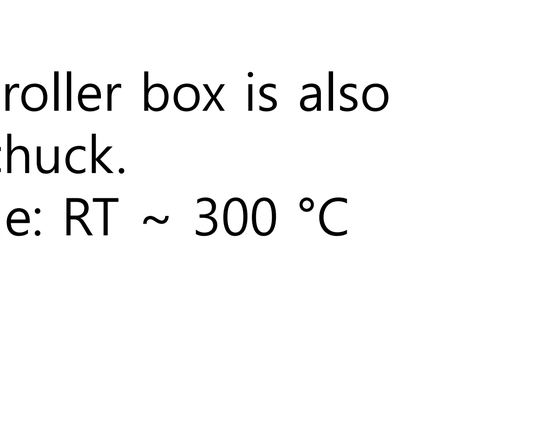
Hot chuck

* 4inch hot chuck
* Temperature controller box is also supplied with hot chuck.
* Temperature range: RT ~ 300 °C
* Resolution: 1 °C

< Temp controller box >

- Temp can be controlled by making a programmable set up on the digital panel in front panel.

Manipulator.
Model no. EMP-11



1) X-Y-Z travel: 10 x 10 x 10mm
2) Probe arm with coaxial cable connection by screw type
3) 115TPI (Thread Per Inch) resolution
4) Probe tip holder with screw lock
5) Fixture : Magnet base(vacuum : option)

Manipulator.
Model no. EMP-9

1) X-Y-Z travel: 10 x 10 x 10mm
2) Probe arm with coaxial cable, and micrometer knob.
3) 48TPI (Thread Per Inch) resolution
4) Probe tip holder with screw lock
5) Fixture : Magnet base(vacuum : option)

Manipulator.
Model no. EMP-7

1) X-Y-Z travel: 10 x 10 x 10mm
2) Probe arm with coaxial cable.
3) 48TPI (Thread Per Inch) resolution
4) Probe tip holder with screw lock
5) Fixture : Magnet base(vacuum : option)

Probe Station

Microscope

* reasonable price microscope

- Microscope body zoom optics
0.67 x 4.5x and 45degree inclination, Trinocular
- Fluorescent bulb for illumination.
- CCD camera as an option
- Magnification: 20 x ~ 90 x, max upto 135 x.

* Nikon microscope

- Industrial microscope, Trinocular
- Hallogen bulb for illumination.
- CCD camera as an option.
- Objective lens: 5x, 10x, 20x, 50x, 100x
- Magnification : upto max 1000 x.

* remark: We can provide various microscope as the customer want, in addition to above models.

Dark box

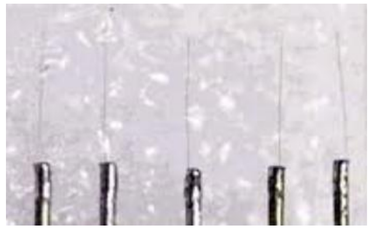
Size: 950 x 730 x 910mm (w x d x h)
material: steel
BNC, triaxial connection adapter can be made on the wall of dark box as an option.

Bnc to Triax adapter

For the purpose of BNC (female) to Triax (female) connection.

Probe tip

Tungsten probe
- straight type
- tip end diameter 2.4um,5um, 10um, 20um, 50um.



Cat-whisker type
- 0.4um, 0.7um tip end.
- thread type.
- shank dia: 0.5mm

* Remark: In addition to above tungsten type probe tip, we can provide gold plated probe tip, BeCu and 45 degree bent probe tip and etc.

Suction pump

Diaphragm pump
- Higher than 6L/min.
- For sample fixture.

Triaxial cable

Basically, we provide coaxial cable with BNC connector. However, we can also provide triax cable as per the customer's request.

Probe Station

- Vacuum and cryogenic probe station

Model no. ETCP-2000

< Standard image only for probe station , microscope, probe control knob >

< complete image that includes LN2 dewar, MFC controller in the front of rack >

< Technical spec for ETCP-2000>

1) Chuck

- Chuck size : 100mm(4inch)
- Stage X, Y travel range : ±25mm, External knob
- Temp control) 80K ~ 573K(300dC) – Alternate option : RT ~ 573K(300dc)

2) Manipulator (Micro-positioner)

- resolution : 12um ± 2um
- X, Y, Z travel : 6mm x 20mm x 6mm
- Basically Micro-positioner 4set : Clamp lock (incl O-ring) and Feed thru.
- Coaxial cable with BNC connectors.

3) Chamber (round cylinder)

- Vacuum : 8 x 10-3 torr
- Size and weight : 320mm diameter x 230mm
- Chamber : NW type Accessories (blank type)

4) Microscope

- 1. 0.63~5X zoom microscope
- FOV 20.5mm~2.5mm
- 2. 2X adapter
- 3. 1X Attachments lens.
- 3. working distance : 95mm ~ 130mm
- 4. illuminator : 60 LED Ring Light Illuminator33

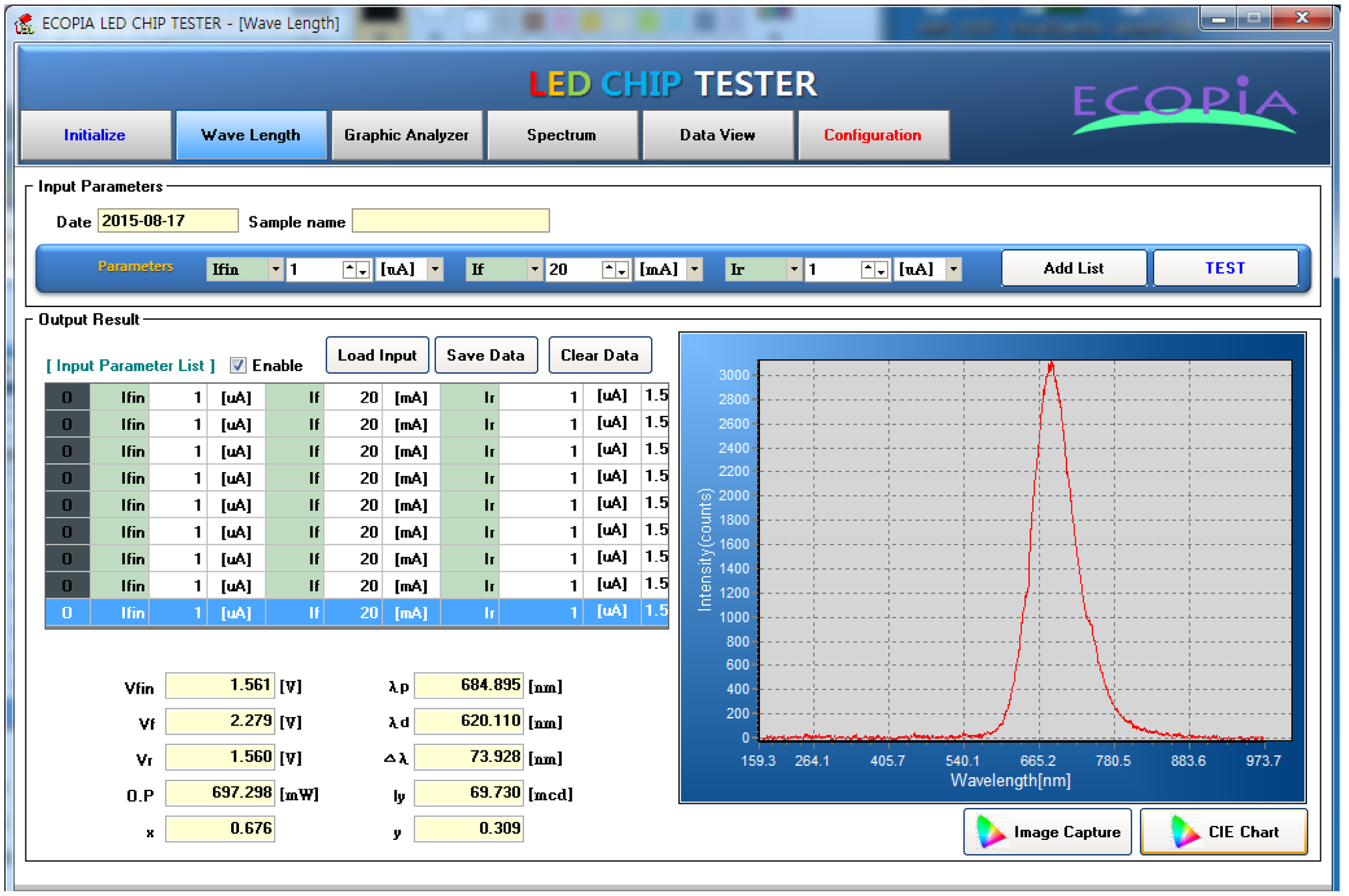
5) Option

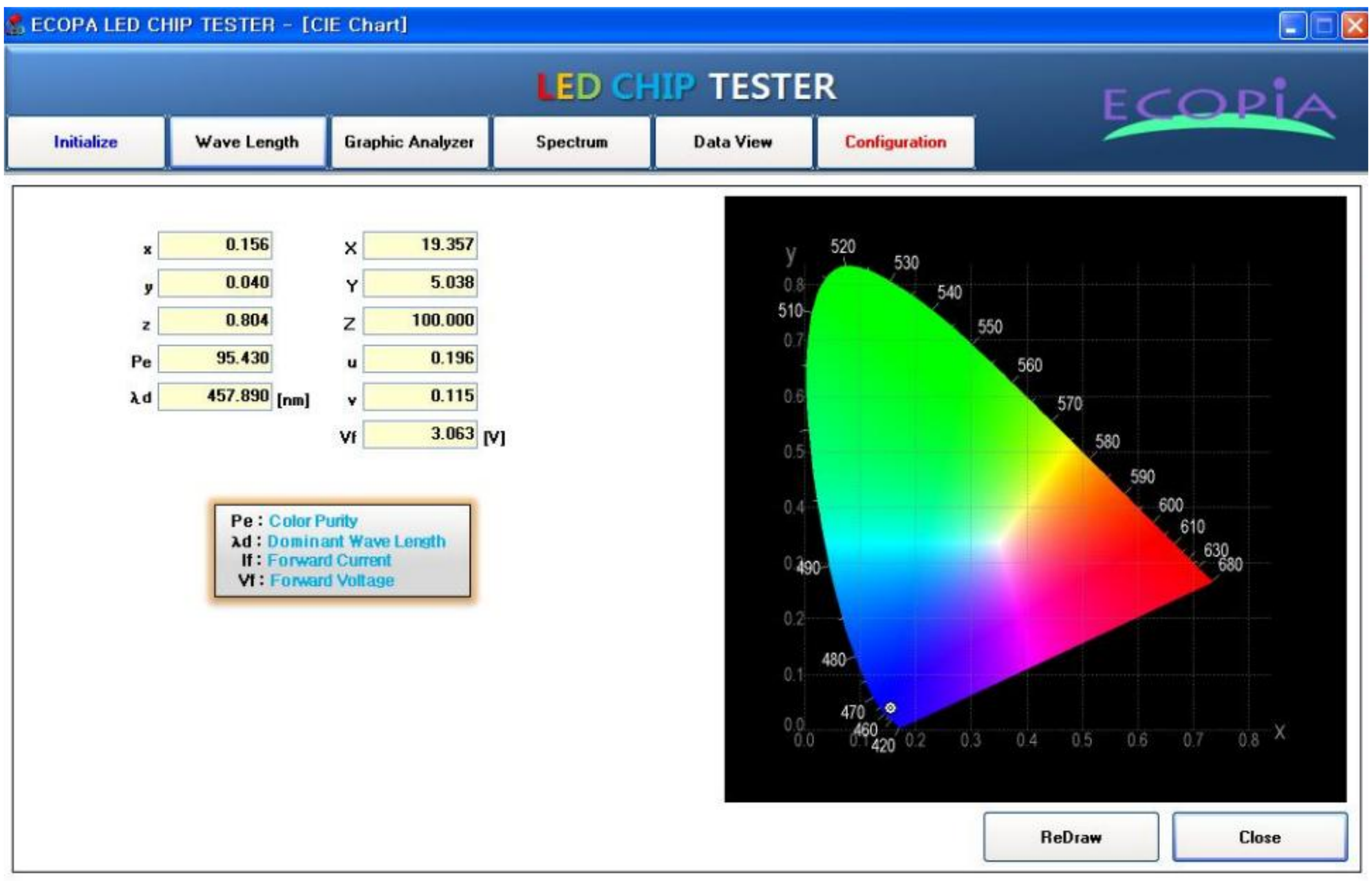
- MFC gas control.
- Temperature : Alternatively low temp & high temperature.

LED Tester

Model no. ELT-1000

*** LED tester** can be integrated with our probe station. And, by our LED tester, customer can get electrical as well as optical parameters of LED chip, lamp and etc.





RTP (Rapid Thermal processor)

Model no. RTP-1300

< RTP-1300 mainbody image >

- ***We provide programmable recipe that is optimized to perform very well.***
- ***Sample size upto 4inch or 6inch wafer.***
- Good service for maintenance.
- Software control is possible.
- Reasonable price , compared to other competitors.

< Technical spec for RTP-1300 >

*** Measurement purpose (application)**

- Annealing of ceramic oxide thin films.
- Ohmic contact formation by .i.e Ag.Au electrical conductivity material.
- Oxidize thin film on the sample.
- Heat treatment after ion implantation and activating ion implantation.

*** Technical specs (including ramp up and ram down rate).**

1. Temp. : Max 1200 ℃
2. Raising temp speed : 50~80 ℃/sec.
3. Cooling Rates: 100 ℃/sec N2 atmosphere.
   In the range of 1200dc~ 900dc.
4. temperature accuracy:+/-1℃
5. Steady-State Temperature Stability: ±1ºC
6. Temperature uniformity: ±0.5% at 1000 ºC across the 4” diameter wafer.
7. Temp reproducibility: +/-1% at 1000ºC
8. Temp calibration : Exchange thermocouple and fill "temp correction factor" on temperature controller. (one time a every two year)

9. Measurable sample size: We have two different model (4 inch wafer, 6inch wafer)

10. weight: Apprx 57kg
11. size: Apprx 50 x 70 x 58cm
12. Electricity: 220V, three phase
13. Power supply: Max 83A, common status 60A.
14. Heating lamp: hallogen lamp.
: 4inch wafer RTP: 12 lamps. 1.2kw each.
: 6inch wafer RTP: 18 lamps. 1.2kw each.
15. Cooling system by Water
16. Gas flow port for Gas purge (N2/Ar/O2 and etc) in and out.
17. Vacuum status : Max 3.8x10e-2 torr
18. K type thermocouple.
19. susceptor: transparent quartz.
20. tube size : water-12mm OD / gas - 1/4inch OD.

* Camber size(inside): W x D x H = 128mm x 180mm x 28mm

* MFC (N2, Ar, O2) as an option.
* Vacuum facility as an option.

Optional items for RTP-1300

< valve>

< cross shape connector>

< T shape connector>

< center ring @ NW25>

< clamp lock @ NW25>

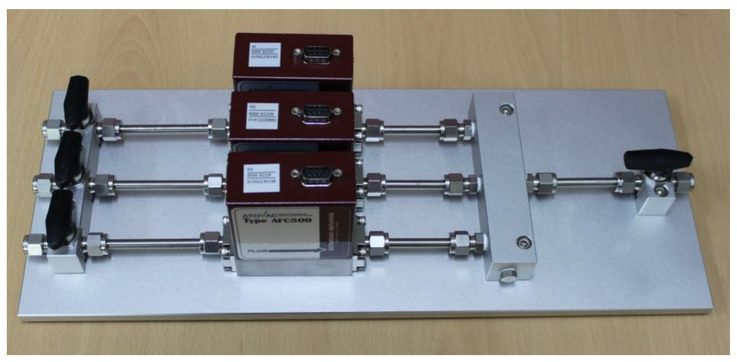
< vacuum guage >

< oil mist trap>

< blank flange>

< oil rotary vacuum pump>

< MFC controller and MFC >



< gas valve, fitting modulle for MFC gas flow>

RTP (Rapid Thermal processor)

Model no. RTP-1200

< RTP-1200 mainbody image >

- *We provide programmable recipe that is optimized to perform very well.*
- Good service for maintenance.
- Software control is possible.
- Reasonable price , compared to other competitors.
- ***Water cooling is no required.***

< Technical spec for RTP-1200 >

*** Measurement purpose (application)**

- Thin film deposition
- Oxidize thin film on the sample.
- Construction analysis of thin film at high temperature
- Paste material analysis
- Ohmic contact formation by .i.e Ag.Au electrical conductivity material.
- Heat treatment after ion implantation and activating ion implantation.
- Melting point analysis of alloy.

*** Technical specs (including ramp up and ram down rate).**

1. Temp. : Max 1200 ℃
2. Raising temp speed : 100 ℃/sec.
3. Measurable sample size: 15mm x 20mm
4. Maximum cooling speed: 1000 °c -> 400 °c : 50sec.
5. temperature accuracy:+/-0.3dc
6. weight: 30kg
7. size: 40 x 30 x 45cm
8. Cooling system: No need.
9. Max power: 800W
10. Voltage rate: 110V/220V, single phase.
11. Current rate: 3.6A
12. Heating lamp: hallogen lamp. 4 Nos. 150w each.

* Remark: For the vacuum accessories as an option, please kindly see the previous page in RTP-1300.