

**SPECIFICATION**

SIZE (W×D×H) : MAIN BODY	320×300×105 mm (Constant Current Source / Meter System)
WEIGHT :	7.7kg(without package)
MEASURABLE SAMPLE SIZE :	6mm×6mm, 20 mm×20 mm
MEASUREMENT TEMPERATURE :	300K, 77K(Liquid Nitrogen)–Keep temp for 15min.
MEASUREMENT MATERIALS :	All semiconductors including Si, ZnO, SiGe, SiC, GaAs, InGaAs, InP, GaN (N Type & P Type can be measured).
PERMANENT MAGNETIC SIZE	50mm Diameter
MAGNETIC FLUX DENSITY :	0.31, 0.37T, 0.51T, 1.0T
INPUT CURRENT RANGE	1nA-20mA ,Compliance : 13V
MOBILITY(cm <sup>2</sup> /Volt-sec)	1~10 <sup>7</sup> (including low temperature)
DENSITY(cm <sup>-3</sup> ) :	10 <sup>7</sup> ~10 <sup>21</sup>
VOLTAGE MEASUREMENTS:	Input impedance : 2×10 <sup>7</sup> Input voltage range: +/-12V
RESISTIVITY RANGE:	10 <sup>-4</sup> to 10 <sup>7</sup> (Ohms-cm)



• ADDRESS: RM1704, KEUMKANG VENTURETEL, 1108, BISAN-DONG, DONGAN-GU ANYANG-CITY, GYUNGGI-DO, SOUTH KOREA, 431-050  
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# Hall Effect Measurement System



## HMS-3000

Very Competitive Price, Compact Desktop Design, Easy-To-Use  
 The Ecopia HMS-3000 Hall Effect Measurement Systems are complete systems for measuring the resistivity, carrier concentration, and mobility of semiconductors.



# Hall Effect Measurement System

E · C · O · P · I · A

## HMS-3000

### ■ Main Body



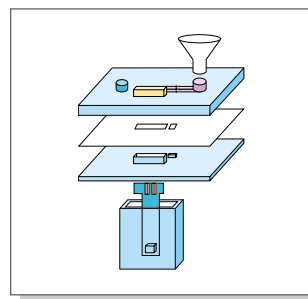
- Precise constant current source : 1nA ~20mA
- Confirm van der pauw law by this system.
- LED for checking Ohmic contact failure.
- Visualizing I-V, I-R curve.

### ■ Magnet Set



- Selectable magnetic set classified by Magnetic Flux Density.(1.0T, 0.51T, 0.37T, 0.31T)
- By ensuring magnet road, minimized outflow of Magnetic Flux Density.

### ■ Low temp test



- 77K condition using liquid nitrogen offers simple structure cryostat.
- Sample protection by flowing liquid nitrogen through funnel.
- Measurable dark/light condition : built-in special material to intercept light.
- Maintain 15min at 77K by special insulating material.

### ■ HMS-3000 Software



- Results :bulk/sheet concentration, mobility, resistivity, magnetoresistance, hall coefficient (RH, RH1, RH2), conductivity, V/H ratio of resistance.

### ■ I-V, I-R Curve



- As applying input current, user can get I-V, I-R curve ranging from initial to final value.

## HMS-2000

### ■ Main Body



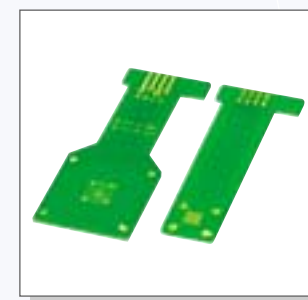
- Precise constant current source : 10nA ~20mA
- Confirm van der pauw law by this system.
- Manual and Automatic – User can select it in measuring.
- LED for checking Ohmic contact failure.

### ■ HMS-2000 SOFTWARE



- Results : bulk / sheet concentration, mobility, resistivity, magnetoresistance, hall coefficient, conductivity, V/H ratio of resistance.

### ■ Sample Measurement Board



- PCB sample board
- 6mm x 6mm
- 20mm x 20mm

### ■ GENERAL FACTORS

Input Current	Resistivity ( $\Omega \cdot \text{cm}$ )	Density( $\text{cm}^3$ )	Mobility( $\text{cm}^2 / \text{Volt} \cdot \text{sec}$ )	Magnetic Flux Density	Temperature	Sample Measurement Board
1nA~20mA (HMS-3000)	$10^{-4} \sim 10^7$ including Low temp.	$10^7 \sim 10^{21}$	1~ $10^7$ including Low temp.	0.31T	77K 300K	PCB Sample Board (6mm X 6mm) (20mm X 20mm)
10nA~20MA (HMS-2000)				0.37T 0.51T 1T		

SPECIFICATION (EPS - 1000)

1. Application Size	Size	6" Size
	X×Y Stage	Travel 35×35mm
		Resolution 10 $\mu$ m
		Repeatability 1 $\mu$ m
2. X,Y,Z Theta	Z Stage	Travel 20mm
Wafer Stage		Resolution 10 $\mu$ m
		Repeatability 1 $\mu$ m
	Theta Stage Travel	360°
3. Chuck	Size	6"
	Sample fixing type	Vacuum
	Material	Al 60
	Planarity	3 $\mu$ m

4. Platen Drive.	Plate Lever Travel	40mm
(Plate Ring)	Manipulator fixing type	Magnetic
5. Microscope		OLYMPUS 120x
6. Dimension	W×D×H	575×485×430mm
	Weight	27kg
7. Manipulator	Traver	10×10×10mm
(EMP-7)	Screw Resolution	10 $\mu$ m / pitch
	Repeatability	1 $\mu$ m
	Footprint dimension	70×28mm
8. The others	Vacuum Pump	Basic Equipment



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# PROBE STATION



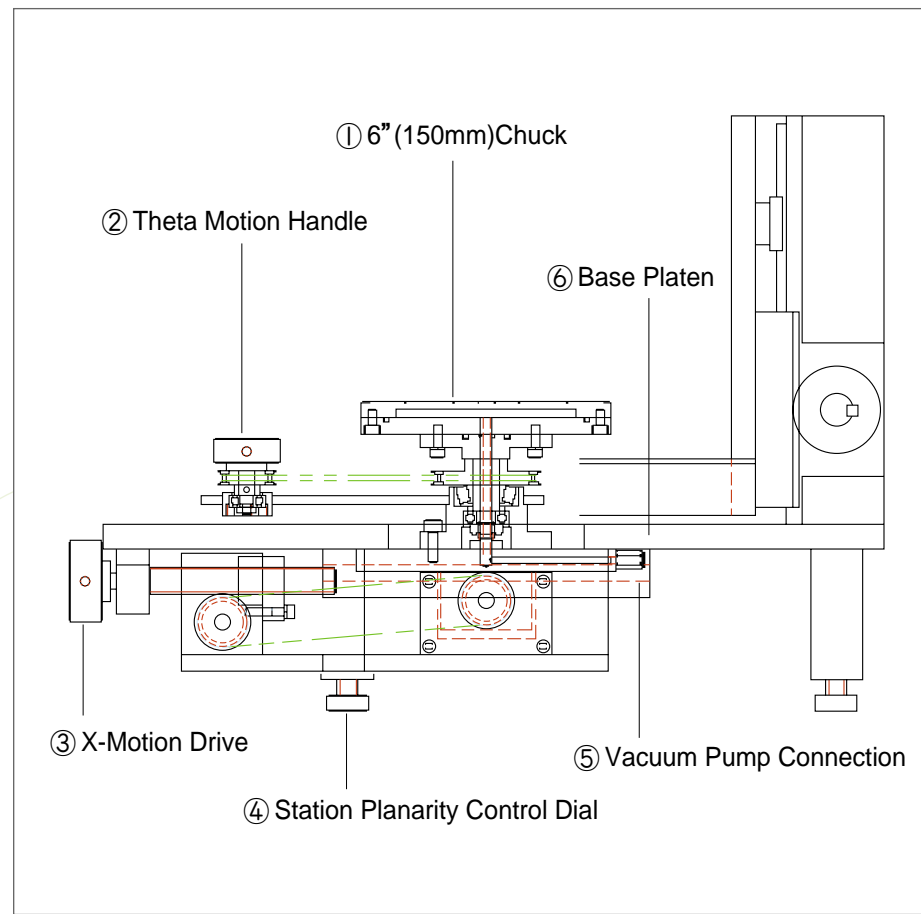
## EPS-1000

Ecopia Probe Station was designed to confirm the electrical characteristics of devices and to measure the surface resistance through the voltage-current characteristics by contacting four probes to the surface of wafer.



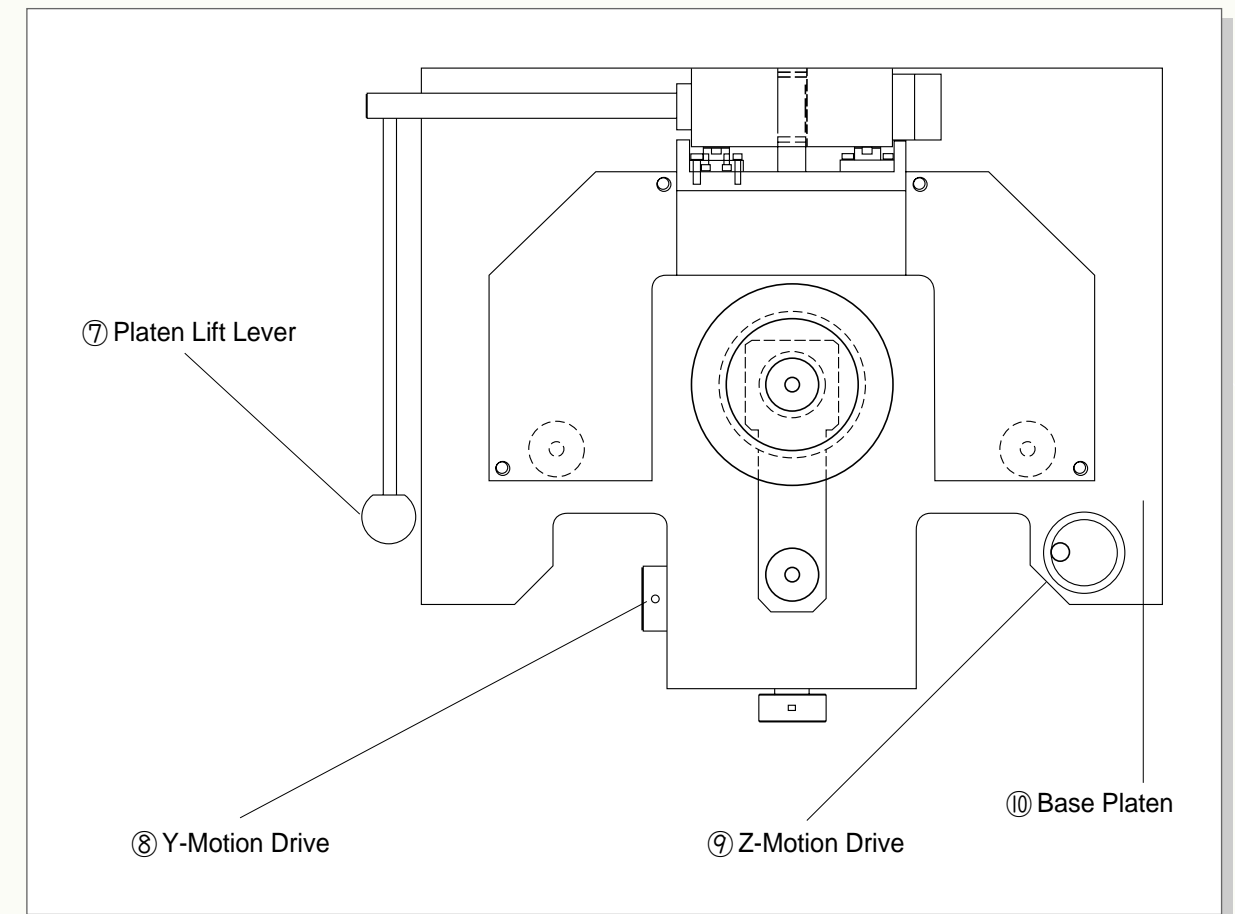
PRODUCT COMPOSITION(1)

■ MOUNT FOR CHUCK SUMMIT STATIONS.



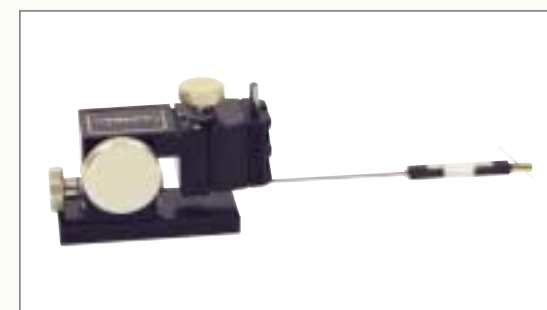
- ① Chuck (stage) mount diced device or wafer by vacuum(Max. 6" wafer)
- ② Theta Motion Handle-360°, moving handle position available.
- ③ 'X' motion drive(travel 35mm)
- ④ Station planarity control dial
- ⑤ Vacuum pump Connection - Connect to pump Inlet.
- ⑥ Base Platen

PRODUCT COMPOSITION(2)



- ⑦ Platen Lift Lever - Travel 40mm
- ⑧ 'Y' - Motion Drive
- ⑨ 'Z' - Motion Drive
- ⑩ Base Platen

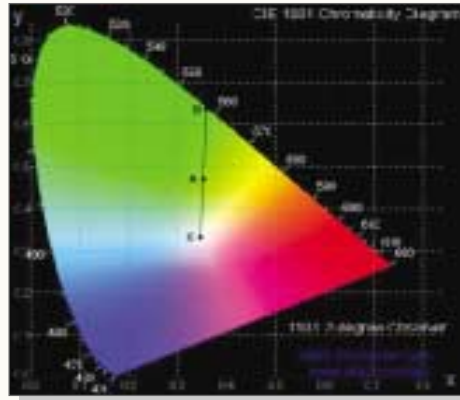
■ MANIPULATOR



- OPTIONS
- DARK BOX
- ANTI-VIBRATION TABLE
- HIGH RESOLUTION-
- MICROSCOPE
- CCD
- MANIPULATOR(EMP-7)

## SPECIFICATION

### ■ CIE Chart & Dominant Wavelength



CIE 1931 (CIE 1976  $u'$ ,  $v'$  coordinates)

- C : White Point ( $x=1/3$ ,  $y=1/3$ )
- B : Dominant Wavelength
- A : Mixture of B and white
- AC/BC : Excitation Purity of A

#### 1. OPTICAL ANALYZER

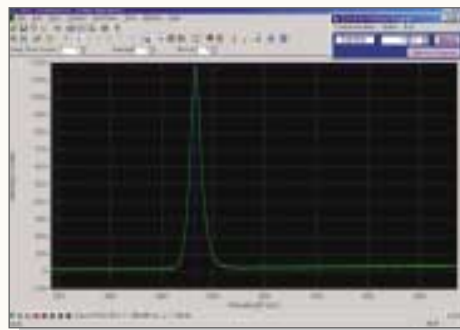
- Spectrometer
  - Range : 185 ~ 1100nm
  - Resolution : 1.0nm
- Light Intensity Meter
  - Range : 0.01 ~ 30 cd

#### 2. I-V ANALYZER

- Forward Current( $I_f$ ) :  $\pm(500\text{nA} \sim 1\text{A})$
- Reverse Current( $I_r$ ) :  $\pm(500\text{nA} \sim 1\text{A})$
- Forward Voltage( $V_f$ ) :  $\pm(20\text{V})$
- Reverse Voltage( $V_r$ ) :  $\pm(20\text{V})$

#### 3. PROBE STATION (EPS - 1000)

### ■ Spectrum analysis



- Synchronous Spectrum Analysis
- Time series acquisition function



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# LED TESTER



## ELT-1000

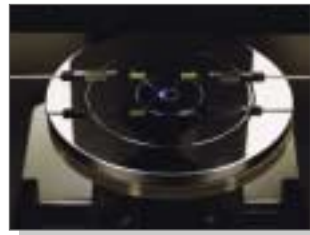
LED TESTER is a useful system for testing the electrical (I-V Curve) and optical characteristics (Spectra, Light Intensity) of the LED of chip, lamp, SMD



# LED TESTER

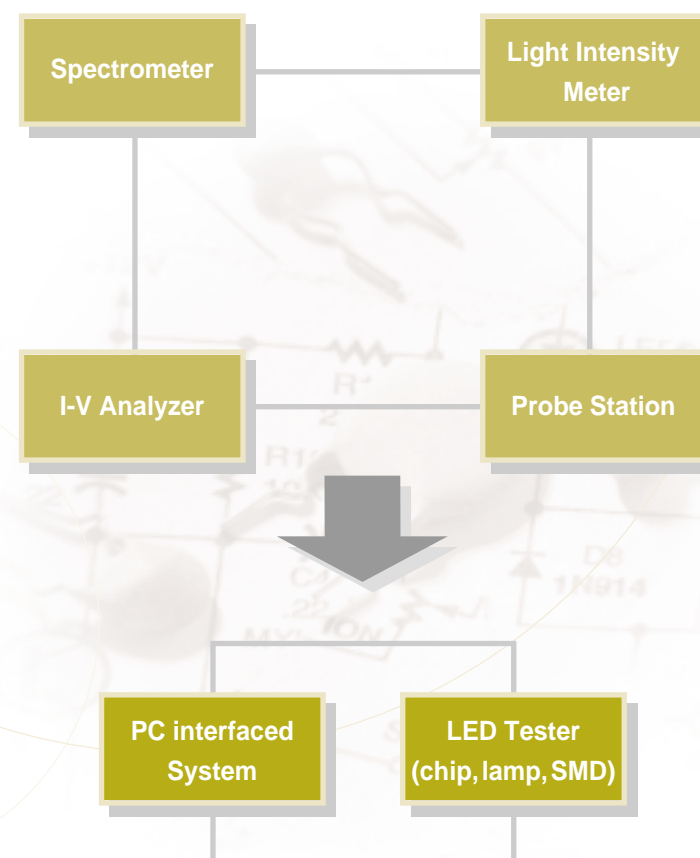
E · C · O · P · I · A

## FEATURES



- Constitution  
Spectrometer (Included S/W )  
Light Intensity Meter  
I-V Analyzer  
Probe Station
- Precise current source (Max. 1A)
- Accurate measurement of light intensity through microscope  
-Light intensity (mcd), Optical Power (mW)
- Easy operation by PC Interface & S/W program
- Drastically reduced size (compact design)
- Customizable to another probe station.

## STRUCTURE



## SOFTWARE

### ■ Elec. & optical characteristics.



- $I_{fin}$ : Forward cut in current
- $V_{fin}$ : Forward cut in voltage
- $I_f$ : Forward current
- $I_r$ : Reverse current
- $V_f$ : Forward voltage
- $V_r$ : Reverse voltage
- $\lambda_p$ : Peak emission wavelength
- $\Delta\lambda$ : Spectra line half-width
- $\lambda_d$ : Dominant wavelength
- $I_v$ : Luminous intensity
- Spectral curve: Spectral wavelength at  $I_f$
- x, y Coordinates for white LED

### ■ Elec. & optical curve.



- Current - Voltage Graph
- Current - Light Intensity Graph
- 0 - 1A Current Range Control
- Step to 0 - 200 Times

### ■ Test data



- Easy to save and read for output data and graph.
- Save file convert to excel file