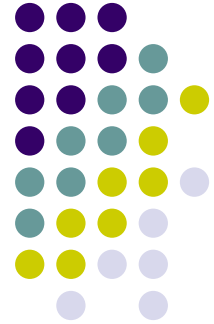


Hall Effect Measurement System Manual

彰化師大 機電系
薄膜材料與元件實驗室

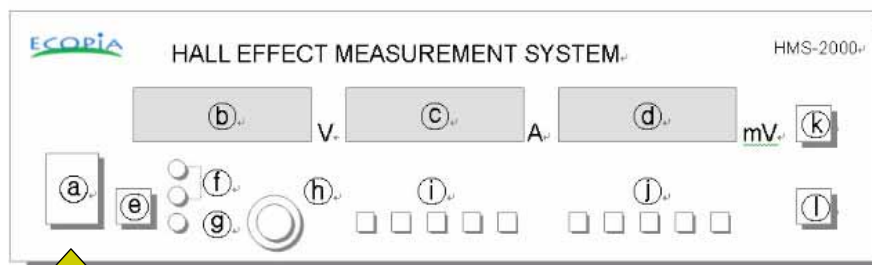


Hall 系統設備圖





首先開啟HEM-2000機台：

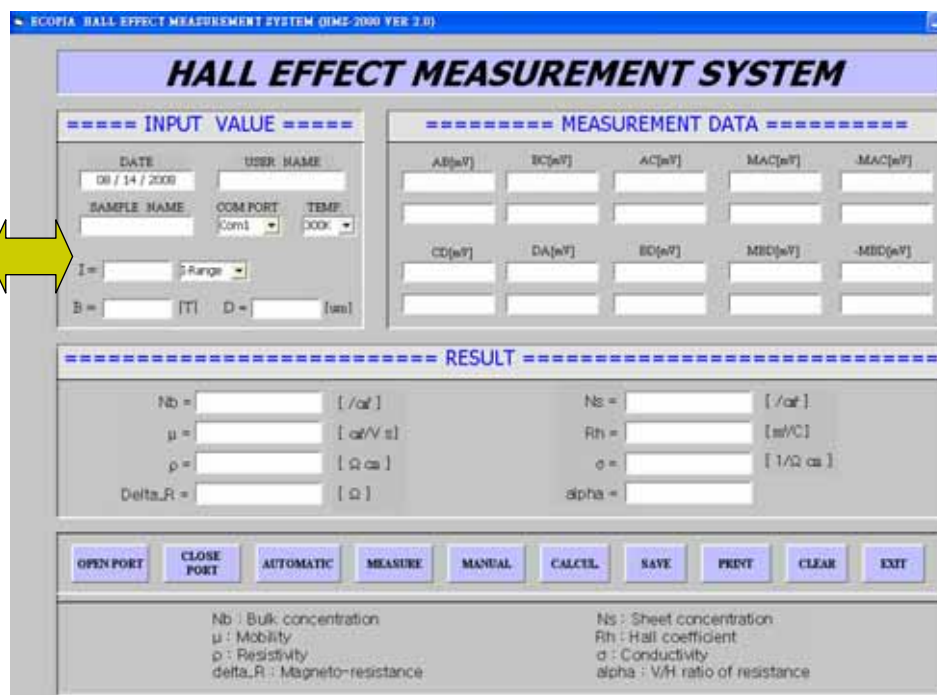


開啟電源

開啟控制軟體介面與設定：

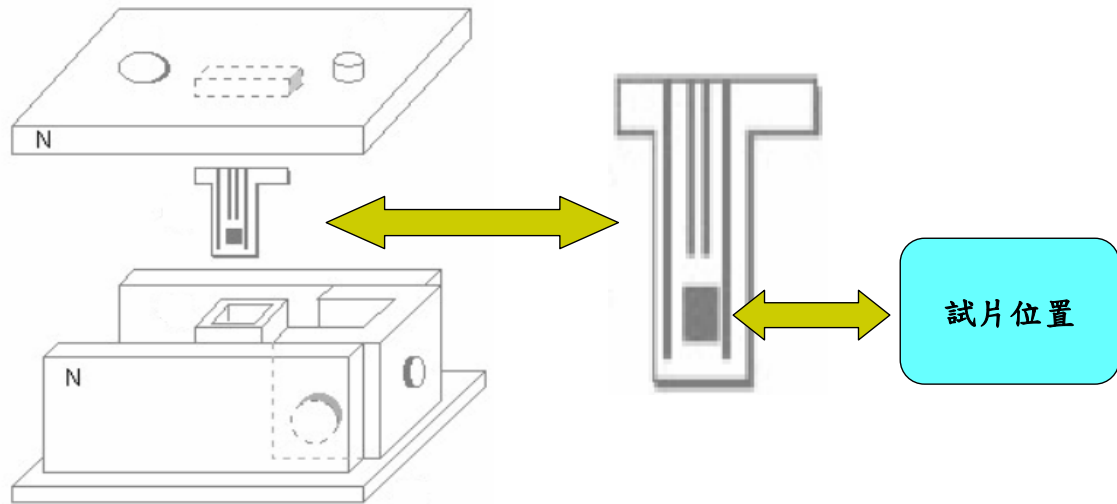


INPUT VALUE
主要在此設定
電流、磁場與
膜厚。

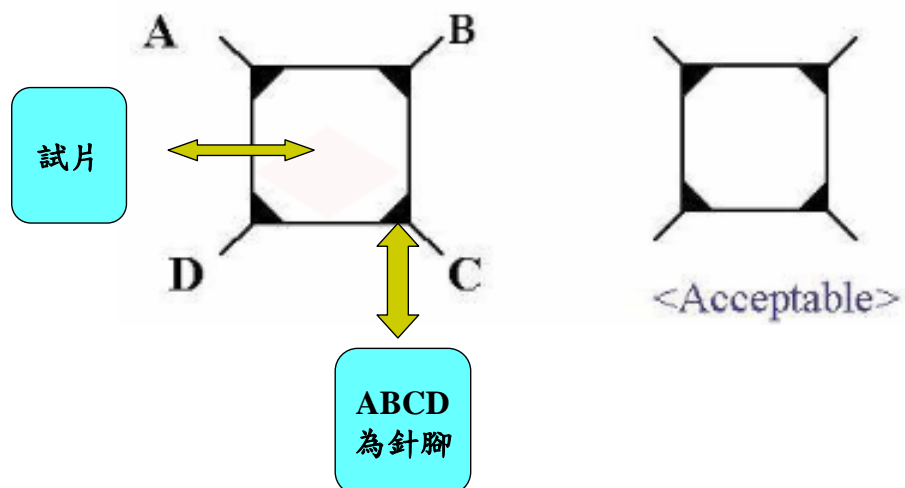




將待測試片放入載台：



建議以下的四個固定點位置：



量測步驟:



啟動
OPEN PORT、
AUTOMATIC
與 MEASURE

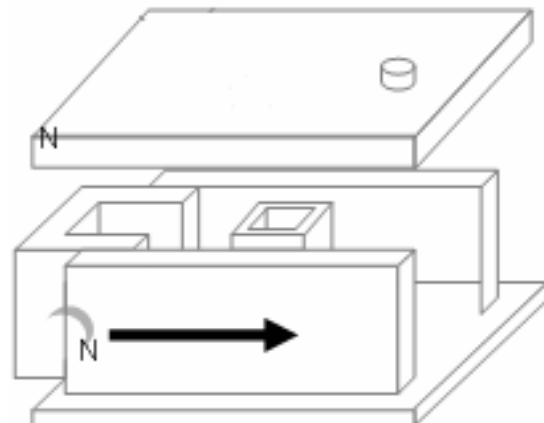
HALL EFFECT MEASUREMENT SYSTEM

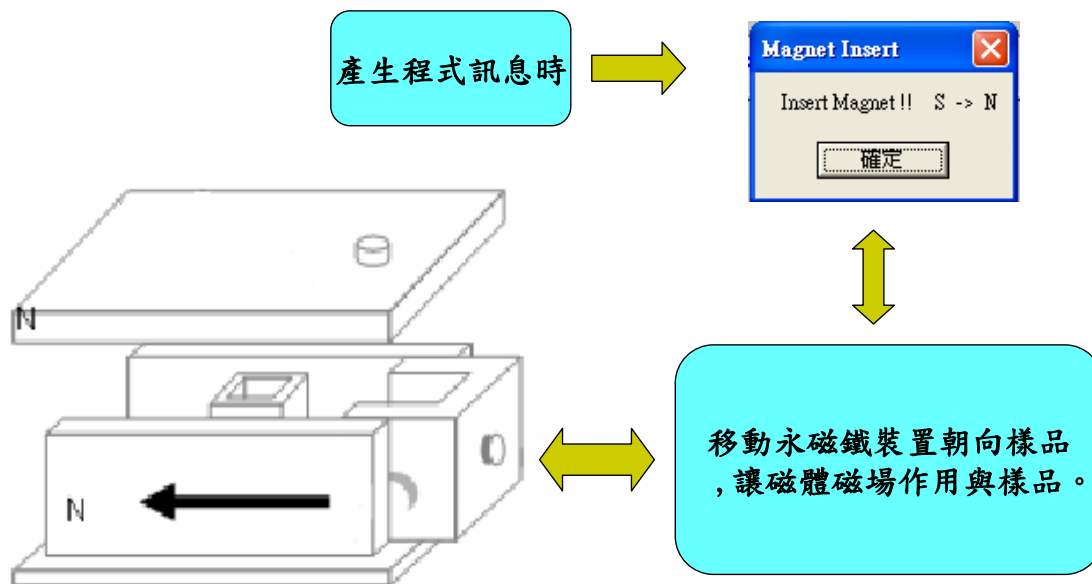
===== INPUT VALUE =====				===== MEASUREMENT DATA =====						
DATE	USER NAME				AB[mV]	BC[mV]	AC[mV]	MAC[mV]	-MAC[mV]	
08 / 14 / 2008	123									
SAMPLE NAME	COM PORT	TEMP.				CD[mV]	DA[mV]	BD[mV]	MBD[mV]	-MBD[mV]
123	Com1	300K								
I =										
1	x100uA									
B =	0.55 [T]	D =	2.0 [um]							
===== RESULT =====										
Nb =					Ns =					
[/cm ³]					[/cm ³]					
μ =					Rh =					
[cm ² /V s]					[m ² /C]					
ρ =					σ =					
[Ω cm]					[1/ Ω cm]					
Delta_R =					alpha =					
[Ω]										
<div style="display: flex; justify-content: space-around; margin-top: 10px;"> OPEN PORT CLOSE PORT AUTOMATIC MEASURE MANUAL CALCUL SAVE PRINT CLEAR EXIT </div>										
Nb : Bulk concentration μ : Mobility ρ : Resistivity delta_R : Magneto-resistance					Ns : Sheet concentration Rh : Hall coefficient σ : Conductivity alpha : V/H ratio of resistance					

產生程式訊息時



移動永磁鐵裝置朝向樣品，讓磁體磁場作用與樣品。





量測結果:



可得量測結果
載子濃度 (N_b)、
遷移率 (μ)、
電阻率 (ρ) 與
霍爾係數 (R_h)。

HALL EFFECT MEASUREMENT SYSTEM

==== INPUT VALUE =====

DATE: 08 / 14 / 2008 USER NAME: 123

SAMPLE NAME: 123 COM PORT: Com1 TEMP: 300K

I = 0.9982 [100uA] B = 0.55 [T] D = 1.5 [mm]

===== MEASUREMENT DATA =====

AE[mV]	BE[mV]	CE[mV]	ME[mV]	MAE[mV]
-9.033	-6.2708	-2.7622	-2.7640	-2.7674
9.095	6.2966	2.7874	2.791	2.7954

DE[mV]	FE[mV]	GE[mV]	ME[mV]	ME[mV]
-9.062	-6.257	-2.7888	-2.7922	-2.792
9.044	6.31	2.7594	2.7628	2.7628

===== RESULT =====

Nb = 2.3431E+20 [/cm³] Nb = 2.5149E+16 [/cm³]

μ = 8.51565 [cm²/V s] Rh = 2.6619E-02 [mV/C]

ρ = 5.1641E-02 [Ω cm] σ = 19.3634 [1/ Ω cm]

Delta_R = 4.8821E-02 [Ω] alpha = 0.6937

Good Measurement Ending !!

Buttons: OPEN PORT, CLOSE PORT, AUTO RANGING, HOLD, RELEASE, CALCUL, SAVE, PRINT, CLEAR, EXIT

Nb : Bulk concentration Ns : Sheet concentration
 μ : Mobility Rh : Hall coefficient
 ρ : Resistivity σ : Conductivity
delta_R : Magneto-resistance alpha : VH ratio of resistance