University of Minnesota Nano Fabrication Center
Standard Operating Procedure

Equipment Name: Four Point Probe

Coral Name:	four-point-probe	**Revision Number:**	2
Model:	Veeco FPP5000	**Revisionist**:	Kevin Roberts
Location:	Bay 1	**Date:**	9/17/2013

1   Description

The four point probe measures thin film or doped silicon surface resistance values. This can measure small samples to whole 4 " (100 mm) wafers.

2   Safety

The safety item beyond the normal electrical hazards as this system does use electrical power.

3   Restrictions/Requirements

All Trained users can use the system.

4   Required Facilities

The systems us electrical power.

5   Definitions

Four point probe equation: p= RT
Where: p= slice resistivity (ohm-cm)
R= sheet resistivity (ohm/sq.)
T= thickness (mils, m, A)

6   Setup

Power up:
1.   Turn on power switch on the rear of the machine.
2.   Press CLEAR after the display lights up

7 Operating Instructions

<u>**To make a measurement:**</u>

1. Place sample in holder face down
2. Place the holder on the stage with the portion to be measured over the probes (small hole).
3. Close the lid and gently press down until the measurement is complete.

Processing Results:

-If you want to find resistance (V/I), depress the V/I switch and just close the lid to get the readout.

-If you want to find the sheet resistivity (R= p/T), depress the SHEET switch and close the lid to get the readout.

-If you want to find the slice resistivity (p= RT), programming IS NECESSARY and you must input the thickness as a constant. Start off by finding the sheet resistivity and then follow below.
a)   Depress SLICE switch
b)   Depress PROG switch
c)   Enter the thickness and the units
d)   Depress STORE switch
e)   Depress PROG switch and that is your answer

-If you want to find the thickness (T= p/H), programming IS NECESSARY and you must input the slice value as a constant. Start off by finding sheet resistivity and then follow below.
a)   Depress THICK switch
b)   Depress PROG switch
c)   Enter the slice resistivity and the units
d) Depress STORE switch
e)   Depress PROG switch

Programming of constants (Standard Procedure):
1. Press option to be used
2. Press PROG
3. Enter constant (don't forget exponent or units).
4. Press STORE
5. Press PROG

System. Power Down
1. Return the sample holder to the case and put the case away.
2. Turn off the power switch.

7   Problems/Troubleshooting