Manual Communication Program between PC and HP4145

For more details on how to program the HP4145 see the HP4145 handout. This handout only deals with the computer interface with the Semiconductor Parameter Analyzer. Do not try to use the floppy in the HP4145 in a computer, as they are not compatible.

1. Switch on HP4145 Semiconductor Parameter Analyzer.
2. Switch on the computer "Kirk"
3. To start up windows you might need to give the computer a usercode (=student) and a password (=physics).
4. Select: START-METRICS-ICS
5. Select: INSTRUMENTS-GPIB SETUP
6. Push the OK button.
7. Select: INSTUMENT-SELECT INSTRUMENT
8. High-light: HP4145
9. Push: CONNECT
10. Push: CONFIG
11. Makes sure that the address is 16.
12. Push: POLL
13. Push: OK to close the config window
14. Push: OK to close the select-instrument window
15. Select: MEASURE-EDIT SETUP
16. Push: NEW
17. Provide a name and push OK
18. Push: DEVICE
19. Choose the graphics symbol of the device under test, for this example highlight DIODE and push OK.
20. Push SOURCE UNITS.
21. Highlight the SMU (=source monitor unit), the VM (voltage monitor), or the VS (voltage source) you would like to use. For this example highlight HP4145_SMU1 and click the A bonding pad of the diode. The program should place an SMU1-icon near the A bonding pad. If you would like to remove the SMU1, highlight HP4145_SMU1 and click the A bonding pad one more time. The program will ask for a confirmation whether or not to remove the SMU1.
22. Highlight HP4145_SMU2 and click the K bonding pad of the diode.
23. Click the SMU1-icon.
24. Within the "Measure" part of the SMU1 window check the voltage and current box. This tells the program to store this data in the table with measurement results.
25. Within the "Force Condition" part of the SMU1 window select for the mode SWEEP. Choose a start value, a stop value, and the number of points. For this example choose START=-0.5, STOP=0.5, number of points=10.
26. Push OK to close the SMU1 window.
27. Click the SMU2-icon.
28. Within the "Force Condition" part of the SMU2 window select for the mode CONSTANT, and for the value 0 volts.
29. Push OK to close the SMU2 window.
30. Push DONE to close the MEASURE-EDIT SETUP window.
31. Select: MEASURE-MEASURE
32. In the MEASURE-window push the SINGLE button. The Metrics software will now automatically program the Semiconductor Analyzer, start the measurement procedure, and transfer all the data to the computer. Some of the leds on the semiconductor parameter analyzer should start blinking. Furthermore things should happen on the screen of the semiconductor parameter analyzer. If that is not the case check the GPIB cable between the computer and the HP4145.
33. The gathered data is listed in a table. To view the data in a graph select WINDOW-NEW PLOT.
34. You can also copy and paste the data presented in the table into Excell.

After you are done with your measurements, make sure you switch off the semiconductor parameter analyzer and the Kirk computer.