

Industrial Electronics Lab



Introduction and Functional Overview

The Industrial Electronics laboratory setup is based on the NI Analog Discovery Studio Max platform. The course software is developed in NI LabVIEW Graphical Programming Environment. All hands-on experiments are conducted on a specially designed circuit board. Industrial Electronics schematic diagrams for studied circuits are displayed on the software Front Panel and in the User Manual. In parallel with hands-on work the students can have direct access to theoretical materials. The student may use the educational board to assemble electronic circuits, connect all the required power sources and meters, conduct experiments with the studied circuits, collect, display and save the required data in the form of tables, graphs and scope traces. The course software has a simple and intuitive user interface. The interactive schematic diagrams are displayed on the screen in each lab, which allows the student to control the power sources and to set up the meters. Besides, in parallel with hands-on work, the students can have direct access to theoretical materials and step-by-step instructions on how to conduct the lab. An instructor file with ready-made answers related to the calculations, and the Multisim files are also available.

Features

- 9 hands-on exercises
- Student registration
- Selecting a lab from the software menu
- Interactive schematic diagrams for each lab
- Step-By-Step instructions for each lab
- Specially designed test board for NI ADSM platform with installed electronic components
- Graphical display of measured parameters in real time and saving the results in the form of screenshots and tables

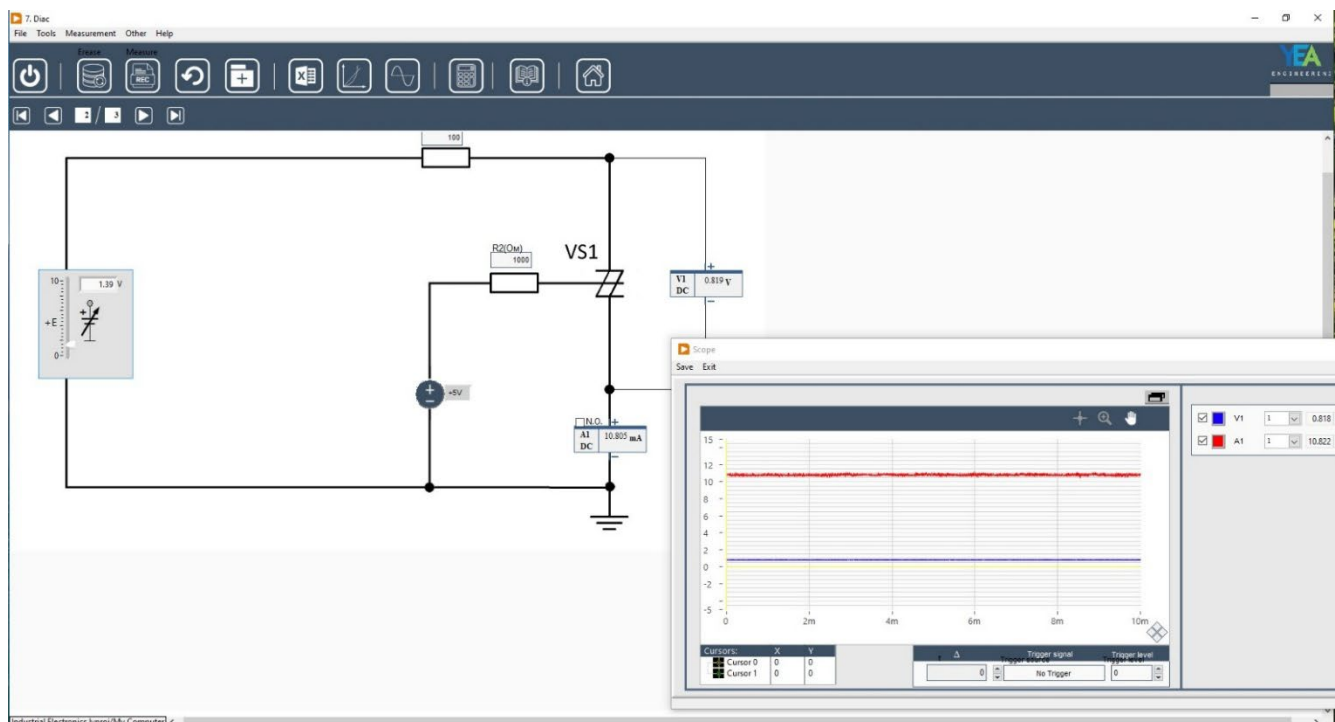
Hardware & Software

- NI ADSM workstation with a set of probes
- “Industrial Electronics” circuit board with a set of connector leads
- Personal computer with a monitor
- Lab software “Industrial Electronics”
- NI ADSM software

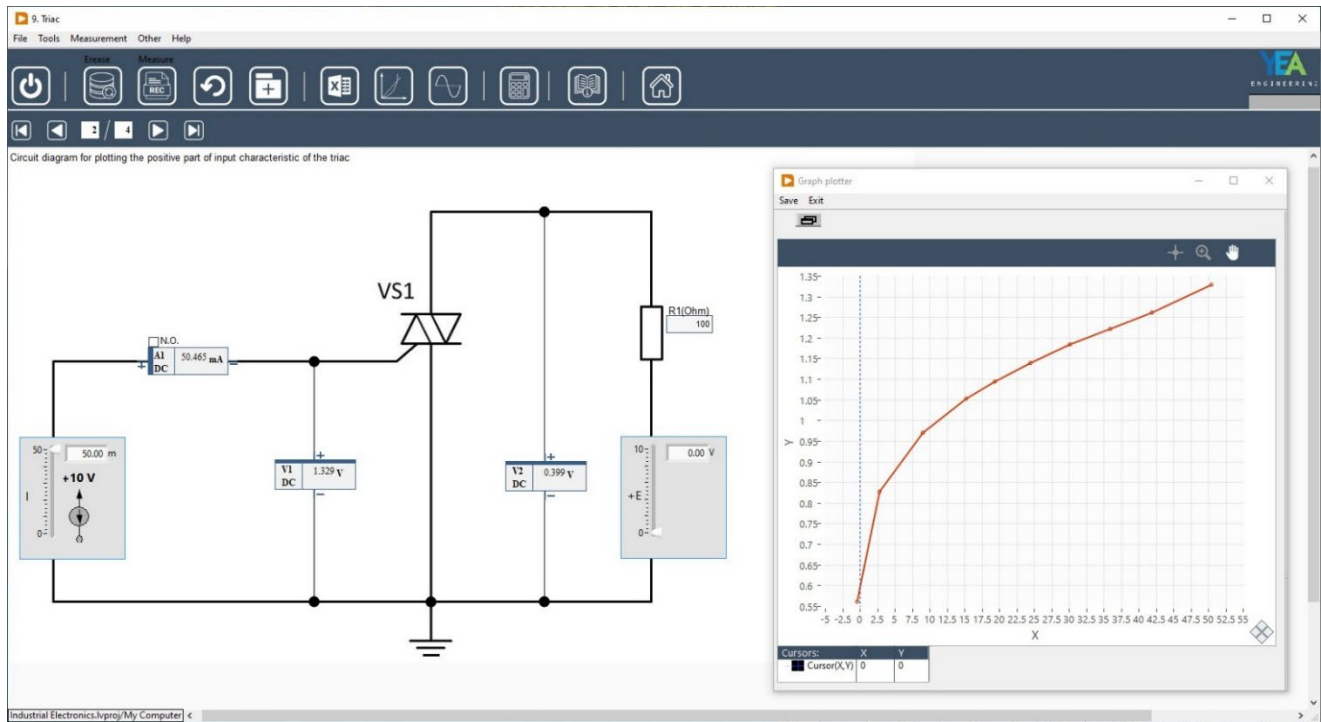
List of Exercises

1. Semiconductor diode
2. Zener diode
3. Variable-capacitance diode
4. Bipolar transistor
5. Field-effect transistor (FET)
6. IGBT-transistor
7. Shockley Diode
8. Thyristor
9. Bidirectional thyristor

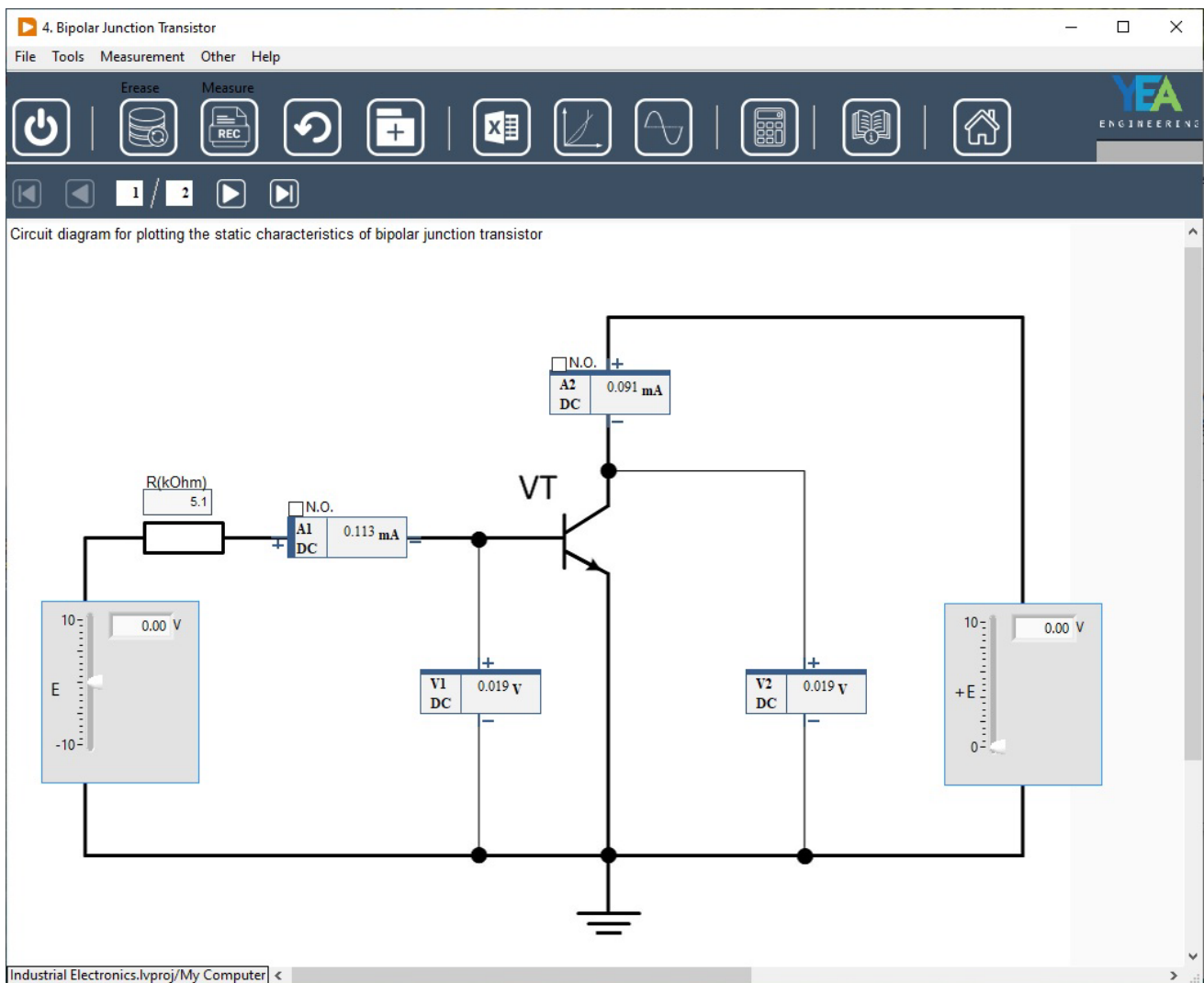
Examples of Exercise Demo



Diac



Triac_2



Bipolar Junction Transistor