

Lab nr 35

IEC-625 INTERFACE (GPIB, IEEE 488)

Goals

The goal of this lab is to become familiar with the concept of the GPIB interface and its potential for measuring systems. In this lab, current-voltage (I-V) characteristics of chosen nonlinear elements will be investigated by PC based measurement system with GPIB.

1 Experiment

1.1 Built the measuring system shown in Fig. 1.

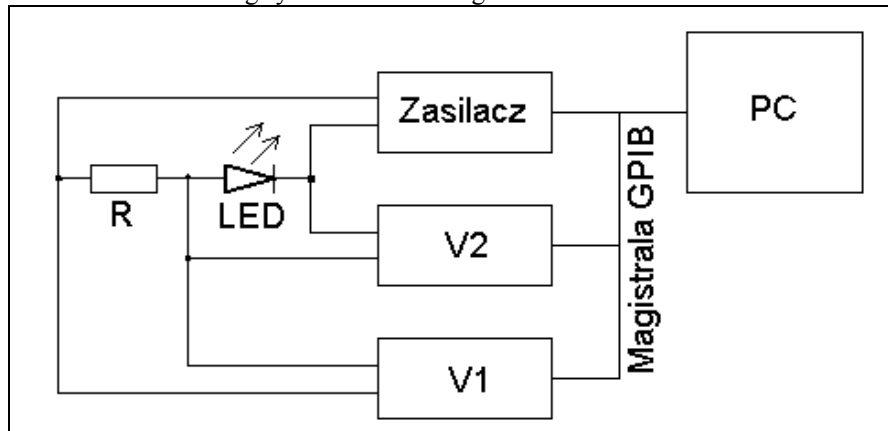


Fig. 1. Scheme of the measuring system.

1.2 Switch on the measuring system and start the „Pomiary_IU” programme.

1.3 Find the addresses of the GPIB instruments.

1.4 On the tab named: „Konfiguracja systemu” (and the internal tab: „wybór”) configure the system by writing (clicking on) the proper addresses of the instruments into the computer memory.

1.5 Fix the „timeout” values (1s for each instrument).

1.6 Click the tab named „Pomiar charakterystyki” and fix:

- current limitation,
- Initial and final voltages of the voltage source.
- the voltage step.
- the resistance of the resistor R.

1.7 Start the measurements by pressing the „Wykonaj” button.

1.8 Save the result.

1.9 Repeat the above measurements for:

- chosen rectifier diode,
- chosen Zener diode.

1.11 Copy the obtained results (Pen Drive or external disk) or send it by electronic mail.

1.12 Description and discussion of the obtained results should involve:

- I-V characteristics,
- the dependences of the dynamic resistance $r = dV/dI$ on voltage V (for all measured diodes).
- discussion about diodes as voltage stabilizers,
- advantages and disadvantages of IEC-625 interface and its applications.

2 Background

2.1 IEC-625 (GPIB) - technical parameters and applications.

2.2 Addressing of the instruments.

2.3 IEC-625 bus signals (handshake and control signals).

2.4 Current-voltage (I-V) characteristic and differential resistance.

Literature

- [1] Praca zbiorowa, *Systemy interfejsu w miernictwie*. Pod kier. W. Nowakowskiego.
- [2] W. Link, *Jak mierzyć, sterować i regulować za pomocą Basicu?*
- [3] www.kmeif.pwr.wroc.pl/elektron/interfejsy/interface.html
- [4] J.M. Pieper, *The high speed 488 extensions to GPIB*; ACEA.
- [5] A. Caristi, *IEEE-488 General Purpose Instrumentation Bus; Manual*, Academic Press, Inc. 1989.