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Automatic handler of the dosimetry detector with use of the FHT 6020 display and communication unit, RS-485 bus and the LabVIEW™ language

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The topic of the exercise
"Automatic handler of the FHT 192-10 dosimetry detector with use of the FHT 6020 display and communication unit, RS-485 bus and the LabVIEW™ language"

Goal
The display and communication unit FHT 6020 is the most recent product belonging to the well-know, tried and tested family of measuring gauges developed by Thermo Fisher Scientific Messtechnik GmbH. It may be operated in a network, it offers a wide variety of probes to be connected, features a reduced response time in the „transparent mode"as well as a compact structural shape. When being used in a network, the FHT 6020 –together with the intelligent probes may be remote controlled and evaluated via a RS-485 bus. This configuration enables a central PC to access to the connected probes (e.g. gamma, neutron) right through the FHT 6020 unit itself. The purpose of the exercise is to write a handler program for the detector connected to the FHT 6020 in the LabVIEW™ language for setting up the device and the data collecting. The data should be displayed on the computer monitor and saved to the Comma Separated Value (CSV) file. If it will be possible it is planned at the end of the student's internships the visit to the laboratory in NCBJ, Świerk to observe the work of the written software with the real hardware setup. The students will learn three main stages of the measured data collecting process: data logging, data presenting and data archiving.

To Do: Make the design, write code in LabVIEW™ graphical programming language and test the program.

Description of the exercise
1. Learning about the RS-485 remote control and data acquisition of a probe connected to the FHT 6020 unit from the user manual.
2. Designing of the Graphical User Interface (GUI) of the program.
3. Defining the program modules (software modularity).
4. LabVIEW™ coding of the control and data acquisition with the use of the Finite State Machine architecture (one of the main architectures of the LabVIEW™ programming) and the modularity.
5. Planned the software tests with real hardware setup located in the laboratory of the National Centre for Nuclear Research (NCBJ), Świerk and the results will be observed online in the meeting room.
6. At the end of the student's internships the visit to the laboratory in NCBJ, Świerk to observe the work of the written software with the real hardware setup.
7. Writing project documentation.
8. Preparation the own speech at the end of the student practice and for the conference after that, and preparation the publication together with the practice supervisor based on the obtained results.

Requirements for the students
The subject is addressed to students interested in serial measurement systems, data acquisition, electronics, LabVIEW™ programming and dosimetry. Basic knowledge of the digital electronics, serial interfaces and basic skills in LabVIEW™ programming will be helpful.

Exercise for maximum up to 3 students

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