Programmable high voltage power supply unit

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Glossary

- NI – National Instruments
- PSU – Power Supply Unit
- HVPSU – High Voltage Power Supply Unit
- DAC – Digital to Analog Converter
- ADC – Analog to Digital Converter
Goal

Ph. D. Paweł Horodek requested SCS group to provide him way to control and monitor high voltage power supply unit with computer program instead of manual knob.

Because of it's portability and ease of making legible GUI NI LabVIEW was chosen for software.

NI myDAQ was chosen for hardware because of it's 16bit DAC and 16bit ADC both being compatible with provided SPELLMAN PCM SERIES HVPSU interfaces' operational voltages.
Block diagram

IBM PC compatible computer

DAC & ADC (NI myDAQ)

Power Supply Unit

Positron Polarization System

USB

Analog 0-10V

Analog 0-10V

0-70kV
Application Structure

Application consists of two panels:

- Engineering Panel – for specialist to prepare experiment procedure

- Runtime Panel – for operator to run and supervise experiment execution
Engineering Panel
Runtime Panel
Conclusion

Application let’s user control polarization voltage in whole 0-70kV range with ca 1.07V precision (16bit DAC) and monitor it’s status.

Application may be in future enhanced with ability to interact with Spectrum Analyzer Unit in order to let it adjust measuring time to it’s needs instead of fixed delays.

Application may be modified to be controlled remotely from main control application.
Thank you for your attention