

PXI-compatible preamplifier, amplifier and single channel analyzer module for proportional gas counters

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PXI-compatible module combining amplifier, preamplifier, and single channel analyzer (SCA) for proportional gas counters will be presented. This module is developed for purpose of usage with proportional gas counter sensitive to 14.4 keV and PXI-based Mössbauer spectrometers developed on Palacký University in Olomouc. The module is based on Amptek A225 and Amptek A206 integrated circuits. This allows miniaturization of the spectrometric system, as the amplifier, preamplifier and SCA together are in form of one PXI card and thus built in the compact PXI-chassis. Built-in SCA allows simplification and cost reduction of spectrometric system because much cheaper digital inputs can be used instead of expensive digitizers. There is also no need for the additional power supply, as the developed card is powered by PXI connector from the backplane of PXI chassis. This study will deal with comparison of developed custom SCA board with internal low-level discriminator built-in in A206 integrated circuit, setup with commercially available SCA and setup without SCA using digitizer and multichannel analysis software. The comparison focuses on the signal-to-noise ratio, MCA spectrum and quality and effect of Mössbauer spectrum.

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