

# ADC/MCA Module With PC Interface (RS232/USB)

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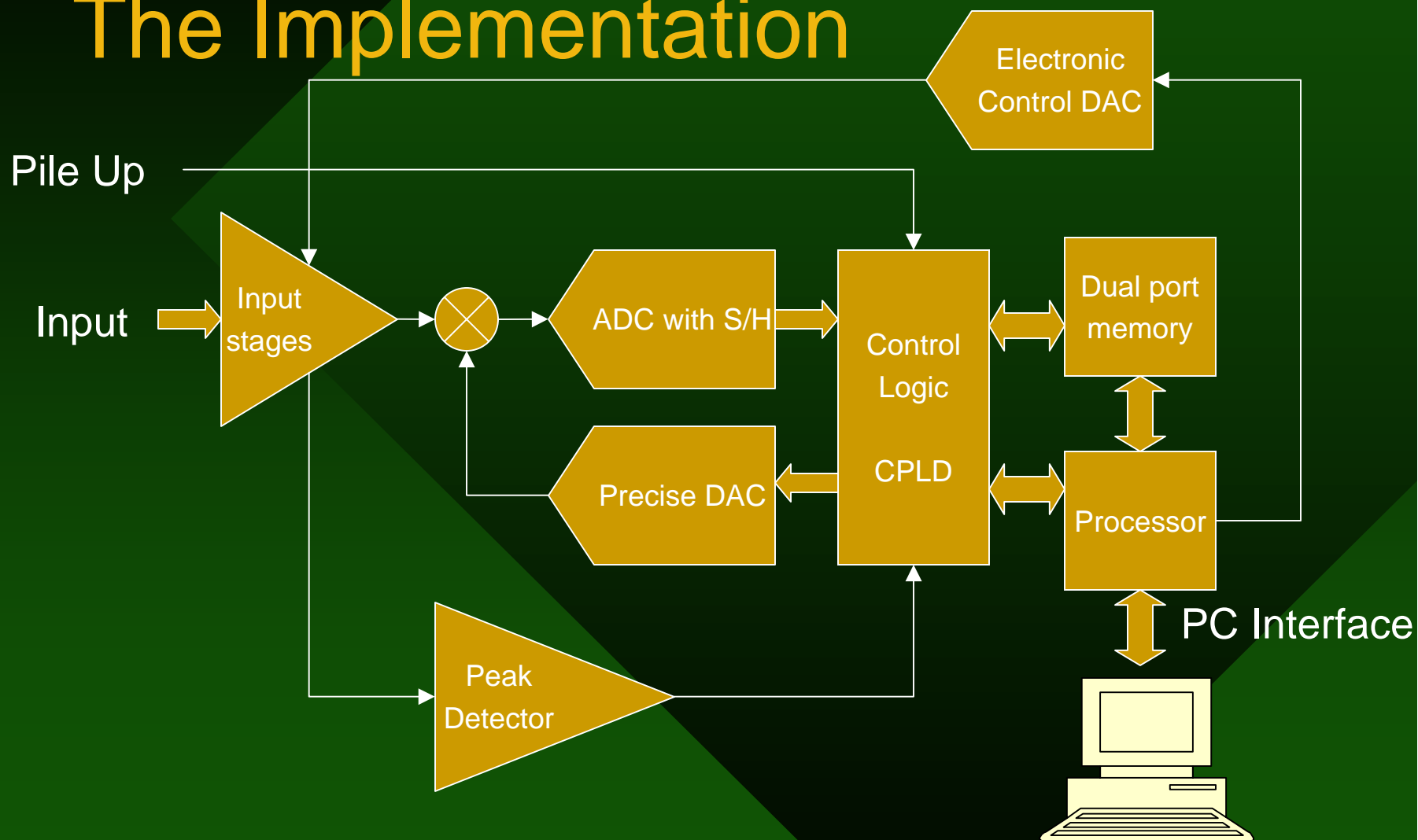
# The Goal

- Building a fast multi-channel analyzer with low differential non-linearity (DNL).

# The Solution

- Using Gatti correction proposed by C. Cottini, E.Gatti and V.Svelto in 1963.
- Involving modern technology.
  - Fast A/D and D/A converters.
  - Programmable logic devices.
  - “Smart” approach.

# The Implementation



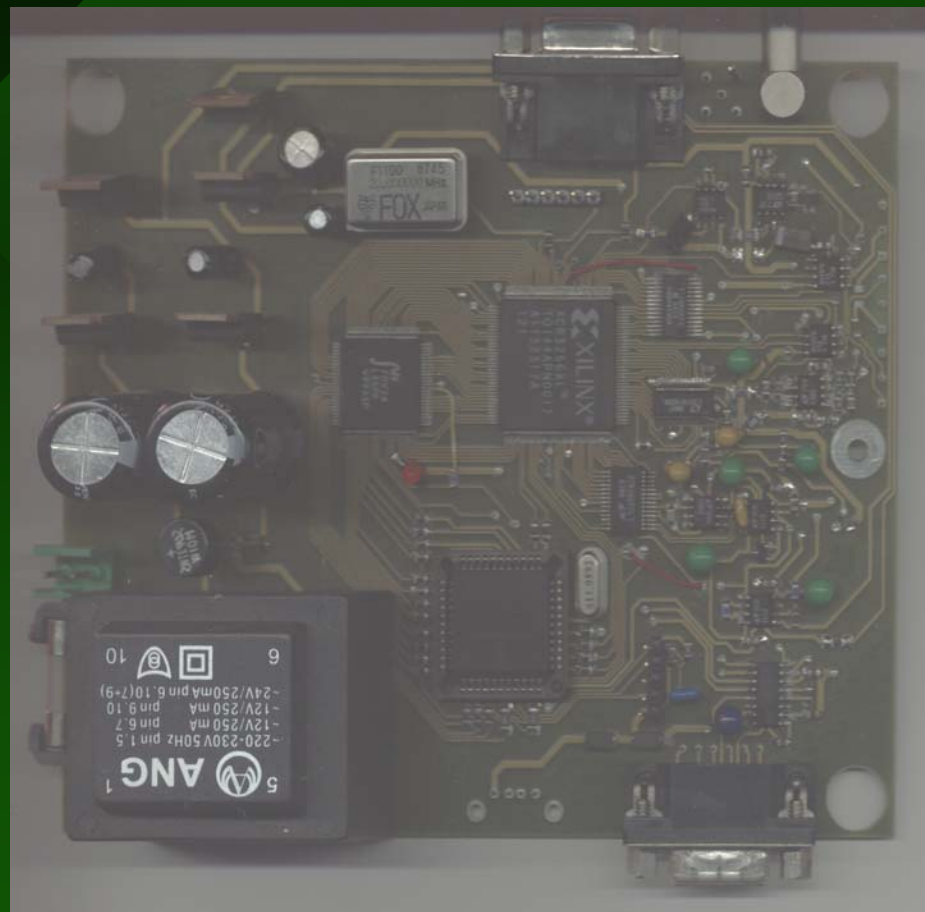
# Main Points

- Peak detector used to start measurement process.
- Differential input ADC with S/H
- Only one precise voltage reference source is used in order to minimize possible errors.

# Main Points

- High precision DAC used to shift the measurement point (Gatti sliding) on each event.
- Dual-port memory to capture spectra.
- Micro-controller manages the communication to a PC.
- 4-channel DAC used to control LLD, ULD and other parameters.

# The device



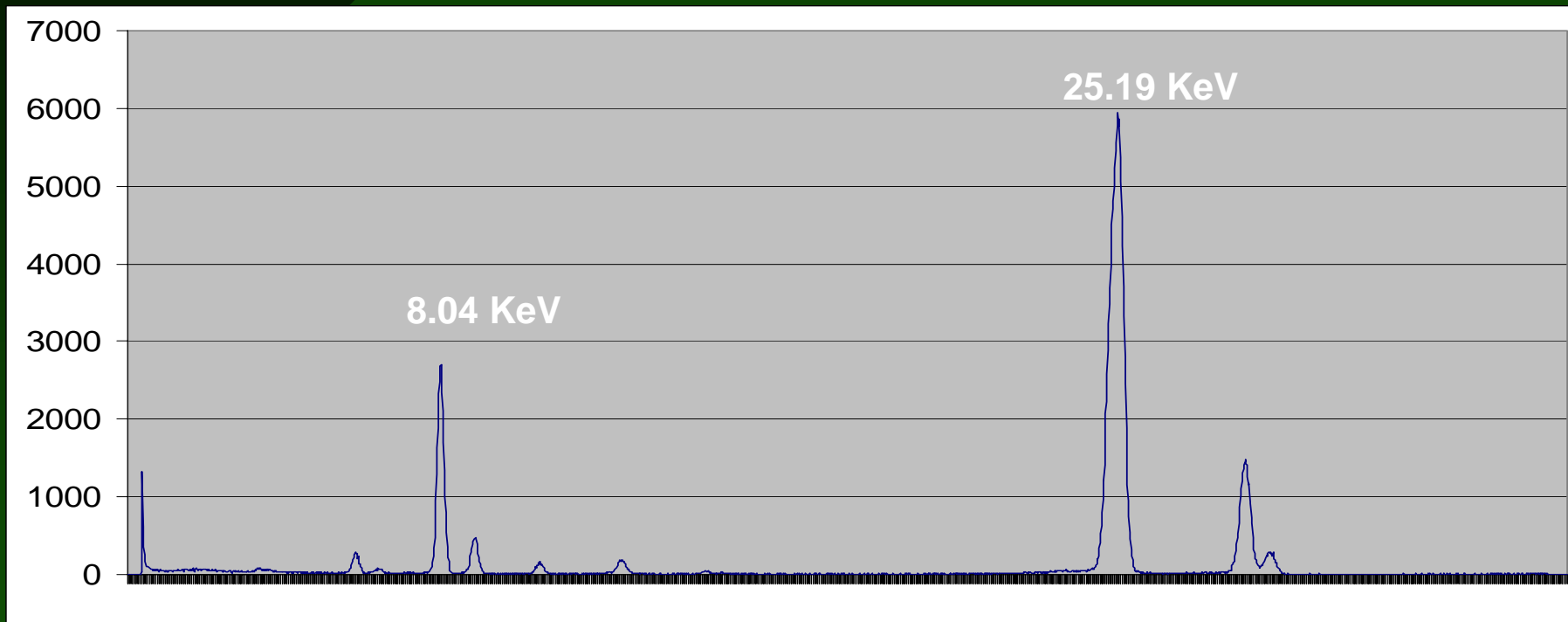
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# Features and performance

- Total processing time of 720ns.
- No added dead time for pulses with 125ns shaping time.
- 1k, 2k and 4k channel spectra captured.
- Digital control of LLD and ULD.



# Sample results



# Possible signal sources

- SDD detectors.
- Fast photo multipliers.
- Conventional detectors.

# Applications

- Fast on-line analysis.
- Analysis using high intensity sources.