Time Spectrometer APV85G4

5GHz 4CH 10bit ADC Digital waveform processing

MADE IN JAPAN

VME / UNIT

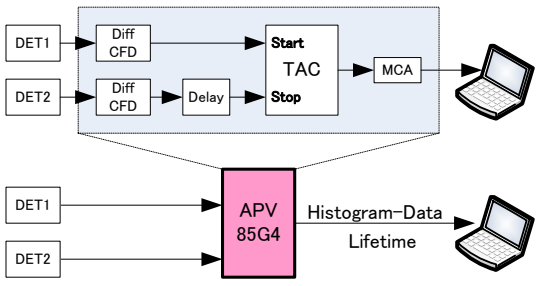
This is a spectrometer for time analysis that carried high-speed 5GHz ADC every CH. Unified functions of several radiation measurement modules which is necessary for time analysis such as Differential CFD, Delay TAC, MCA etc. The pre-amp signal from detector is sampled to wave form in high-speed ADC and time analyzed it in FPGA and transfer the operation result to a PC by Ethernet.

High time resolution
High throughput

Features

- **ADC** 4CH, 5GHz Sampling, 10bit resolution
- **Time Resolution** Course: 200ps | Fine: 0.78ps , LSB
- **Throughput** 1Mcps or more /CH
- **Interface** TCP/IP(Gigabit-Ether) Data transfer 20MByte/sec or more
- **Analyze Mode** Differential-TDC, List(TDC+QDC etc.), Waveform, Histogram etc.
- **Function** Digital CFD（WALK, THRESHOLD, LLD, ULD）, PSA, coincidence
- **Usage Example** Positron lifetime measurement,
  Discrimination of γ and neutron by liquid scintillator.
  High-speed and high resolution for scintillator such as $LaBr_3$(Ce) or $CeBr_3$

Example ①
[Positron lifetime measurement]

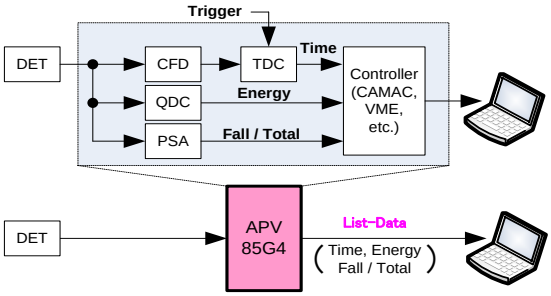


Example: Time resolution: Under 160ps
(BaF_2 scintillator vs BaF_2 scintillator), Sample: Silicon

Combination measurement of different modules

Unified functions of each modules

Example ②
[Discrimination of γ and neutron by scintillator]

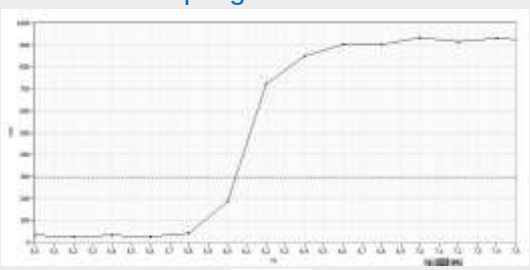


Specifications

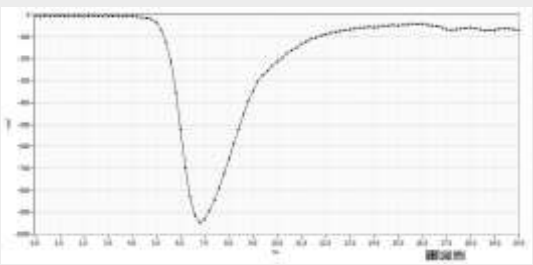
Analog signal input type	PMT anode signal, Fast-NIM signal etc.
Analog signal input range	±0.5V (Input impedance : 50Ω) (SMA connector x 4) *Customizable maximum ±4V capable
Analog Offset adjustment	±0.5V (Customizable 20mV to ±4V capable)
Analog signal rise time	Under 0.5ns
Analog gain switch	x 1 / x 3 *Customizable ATT capable
Time differential range	12.8ps to 3.3μ sec *0.78ps/ch to 200ps/ch x 16384 ch
Outside In/output signal terminal	LEMO connector x 6 (TTL Level)
Electricity consumption	+5V (9A), +12V (1A), -12V(1A)
Environmental conditions	Temperature 5 to 25℃
Dimension and Weight	VME1width 20mm(W) x 262mm(H) x 187mm(D), 520g
Accessory	Application and Manual

List Data Example (1 event: 80bit)

Waveform sampling



Pulser



BaF_2 @ 511 keV (^{22}Na)

*Images is for illustration purpose.
*Please note that contents may change without prior notice.

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Updated on 2017/03/29