



High-performance Tube Base Digital Multichannel Analyzer

Introduction:

The UltraBase-E digital multichannel analyzer is an integrated solution for scintillation spectrum measurement based on high-performance digital signal processing technology, which can be connected to the commonly used 14-pin base photomultiplier tube (PMT) to match most types of scintillation detectors, including those for NaI (Tl), LaBr₃ (Ce) CeBr₃ and SrI₂. UltraBase-E integrates preamplifier, high voltage and digital multichannel, and high voltage module to supply PMT. After digital signal processing, the collected nuclear pulse signal is analyzed by the special software of the upper computer through the Ethernet port for nuclear pulse waveform analysis, γ spectrum analysis and activity calculation.

The integrated Ethernet RJ45 connector has Power over Ethernet (PoE) function, so as to only need a simple single cable connection. UltraBase-E provides a flexible and convenient software API port to support user integration or secondary development, and a flexible gated logic system to integrate multiple units into the system through measurement time synchronization. UltraBase-E is therefore ideal for remote monitoring, detector networks and array applications.

Equipment photo



Features:

- Integrated tube base digital multichannel based on Ethernet port, built-in high voltage device, preamplifier and multichannel pulse amplitude analyzer;
- Wide adaptability: Match 14-pin E687-14W tube base, which can be connected to NaI (Tl), LaBr₃ (Ce), CeBr₃, SrI₂ and other scintillation probes, and the parameters can be adjusted to match different detector features;
- FPGA is used to implement digital signal processing such as trapezoidal filter forming, pile rejection, fast forming and automatic baseline recovery;
- Built-in digital oscilloscope, for viewing the digital signal processing effect and auxiliary fault diagnosis;
- The integrated Ethernet RJ45 connector has Power over Ethernet (PoE) function, so as to only need a simple single cable connection;





- Easy and flexible operation, the special software on the PC side can be used for nuclear pulse waveform analysis, γ spectrum analysis and activity calculation;
- Provide software API port, which can support system integration or secondary development;
- The corresponding γ spectrum measurement and analysis software has a friendly interface, powerful function and easy operation.

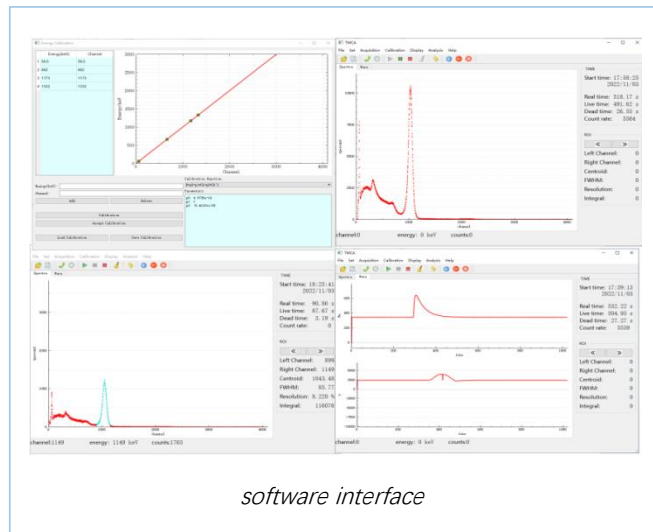
Software Introduction:

The multi-channel is connected to the PC through the Ethernet port; after GMAS V1.0 software is loaded and activated to establish the communication, the measurement can be carried out.

The built-in digital multichannel pulse amplitude analyzer embedded software v1.0, with automatic spectrum stabilization function, can implement the energy spectrum measurement and analysis. The GMAS V1.0 energy spectrum measurement and analysis system

software can set the parameters for multiple channels, obtain the spectra, perform the energy scale, efficiency

scale, nuclide analysis, automatic spectrum stabilization, automatic measurement and other analysis functions, which can be customized according to users' needs. The software API port is provided to support system integration or secondary development.



Technical Parameters:

- Communication mode: Ethernet (PoE);
- Applicability: E687-14W 14-pin tube base photomultiplier;
- Power consumption: Power consumption;
- HV range: 0 ~ ± 1250 V;
- Conversion gain: 1024/2048/4096 channels can be set;
- ADC resolution: 12Bit;
- ADC sampling frequency: 20/40/65/80MHz;
- Signal processing mode: Digital trapezoidal forming;
- Forming time: 150ns~15us;
- Trapezium parameter adjustment range: Rising edge: 50ns~5us; Flat top: 50ns~5us;





- Gain control: 0.25~10;
- Integral nonlinearity: $<\pm 0.05\%$;
- Differential nonlinearity: $<\pm 0.1\%$;
- Maximum input pulse frequency: 200kcps;
- Maximum channel capacity: $N_{\max} = 2^{32} - 1$;
- Operating ambient temperature: $-40^{\circ}\text{C} \sim 60^{\circ}\text{C}$;
- Storage ambient temperature: $-40^{\circ}\text{C} \sim 70^{\circ}\text{C}$;
- Overall dimensions: $\Phi 67 \text{ mm} \times 110 \text{ mm}$;
- Mass: 250kg.