Tube Base Multi-Channel Analyzer

1. System Introduction

EGW3043 Tube Base Multi-Channel Analyzer is a tube base pulse height analyzer, including a 14-pin photomultiplier base, a built-in MCA with a resolution of 4096 channels and matching amplifiers, high-voltage power supplies, etc., which can work in a Single-Channel Analyzer (SCA) mode or Multi-Channel pulse height Analyzer (MCA) mode. The device is DC low-voltage power supply, and the control and data output interface is a network interface. It can output the original ADC data in the list mode and also can output the energy spectrum data directly. Select a suitable detector to connect a computer, and use the matching energy spectrum acquisition and analysis software to collect and display the energy spectrum, and automatically find peaks. When passing the energy calibration, artificial and natural isotopes can be identified.

Picture 1.Tube Base Multi-Channel Analyzer

1.1. Main Features and Technical Parameters

✧ MCA Resolution:4096

✧ Sample hold and ADC conversion time:2μs

✧ Input pulse analysis range:0~+5V

✧ Input count rate: 100kcps (20% count rate loss), suitable for high γ intensity application

✧ Data interface: TCP/IP (RJ45)

✧ Built-in voltage divider and Pre- amplifier and main amplifier, built-in high-voltage power

✧ Data output mode: List mode/Spectrum mode

✧ Matching software function: energy spectrum acquisition, display, ROI analysis, energy spectrum smoothing, automatically finding peak and identifying isotopes, etc.

✧ Provide data communication protocol, users can develop collection and processing programs by themselves based on the communication protocol

✧ It can be matched with NaI(Tl)、LaBr3(Ce) and other scintillation detector, and can be used via 14-pin E687-14W tube socket connecting with the photomultiplier tube (PMT) with 8-level or 10-level dynode structure

1.2. Use Environment

✧ Ambient temperature:0～40℃

✧ Relative humidity:≤90％(30℃)

✧ Power supply:DC5V~12V

1.3. Dimension and Weight

✧ Instrument size(host):φ64mm X 110mm

✧ Instrument weight(host):0.30kg

Notes: The corresponding tube base and matching voltage divider can be selected according to matching with different specifications of photomultiplier tubes, and the shape, size and weight will change accordingly.

1.4. Interface Introduction

DC 5-12V(Shell is ground)   RJ45 network interface   LED   E678-14W
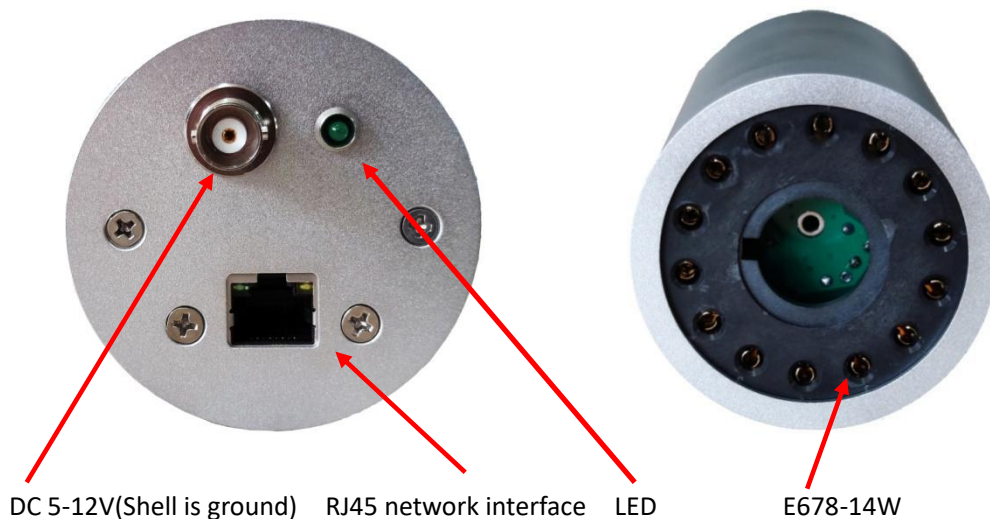
When the Tube Base Multi-Channel Analyzer was powered rightly, the LED will be ON.

When MCA is connected with PC and read data rightly, the LED will flashing.
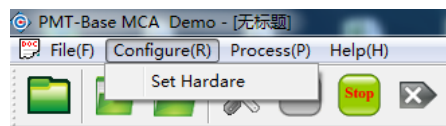
2. DEMO Program Introduction

The DEMO program includes system parameter setting, energy spectrum acquisition, energy spectrum display, ROI calculation, energy resolution calculation (GAUSS fitting), spectrum smoothing, etc.
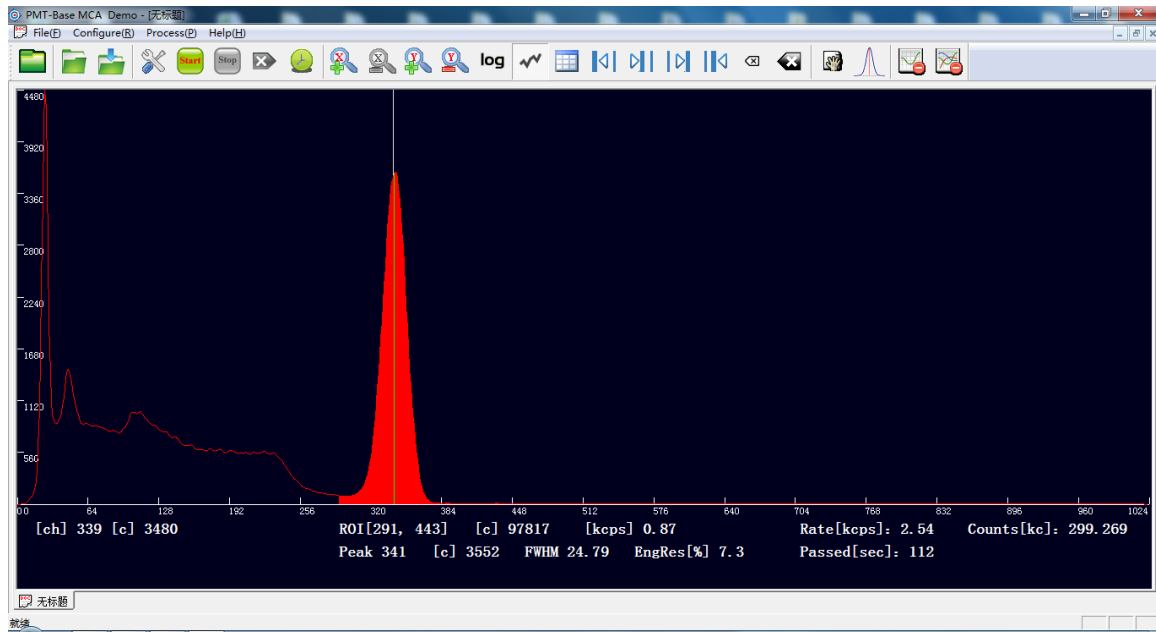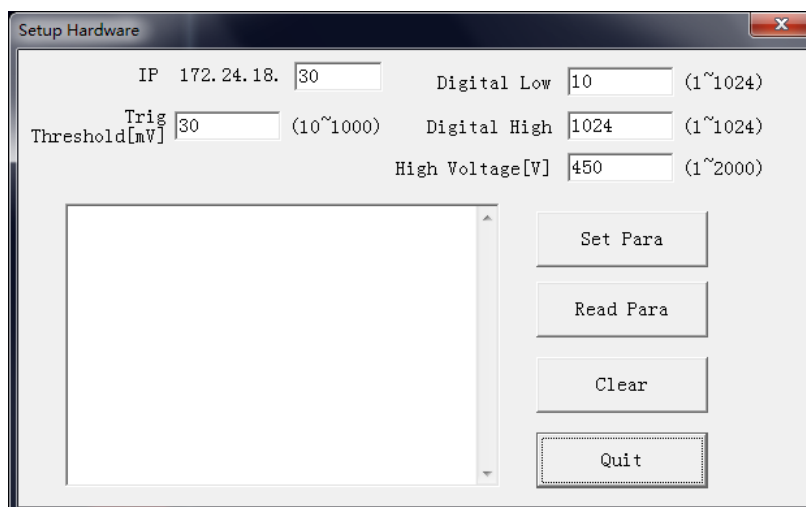
Software interface

System setting: Select "Configure" in the menu, then click "Set Hardare", pop up the setting dialog.

It can be set: IP address, analog signal discrimination voltage, digital up and down threshold (only the energy spectrum data within the digital threshold is transmitted), high voltage and other parameters.
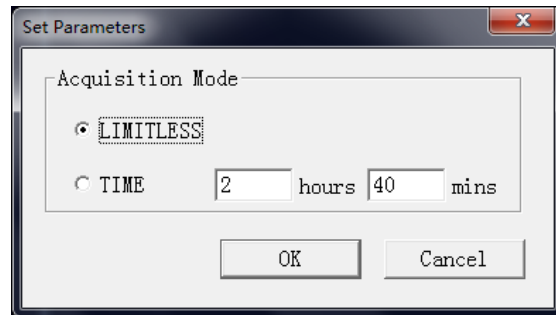

Energy spectrum acquisition: As the below picture, you can click "Start" on the menu to start collecting data. Click "Stop" to stop collecting data. Click "X" to delete current data. The other

icons are used to zoom in/out the ordinate, and the ordinate is displayed in logarithmic or linear mode.

Click to set the collection time or continuous collection without time limit.

Click "Process", you can smooth the collected energy spectrum data, or use "Gauss fitting" to fit the energy peak and calculate the energy resolution. (Need to be in interesting area, and press on the right mouse button then select the interesting area.)
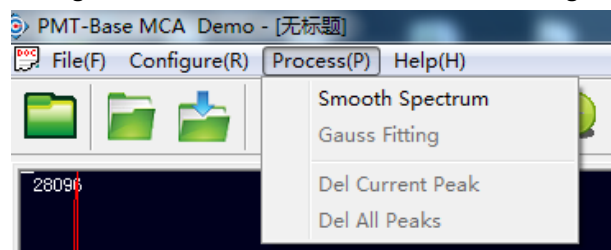
3. Introduction for Control and Communication Protocol

For details, please refer to "Tube base Multichannel Communication Protocol-Based on Network"

4. A Brief Introduction of the relevant Code of the DEMO program

Build network connection
Parameter setting
Data acquisition
IP address set (Acquisition PC)

5. Others

✧ IP address setting

The default IP address of the Tube Base Multi-Channel Analyzer is 172.24.18.30, the subnet mask is 255.255.255.0, and the gateway is172.24.18.1. The user can modify the last field of the IP address according to the needs as the command set, the value range is 2-254, after modifying the IP address, you need to re-power on the Tube Base MultiChannel Analyzer.

If you really don't know the current network address, you can consider short-circuiting the 2/3 pins of the J6 socket on the multichannel board of the Tube Base MultiChannel Analyzer, and then power on again, the system will automatically use the default parameters, namely 172.24.18.30

Then cut off the power and remove the short circuit.

Notes: It is not recommended to follow this method to connect the short circuit and get the default parameters. If you must operate, be careful not to damage the product.