

MCA527 SERIES

LIST MODE OPTION

The list modes are alternative measurement methods that can be purchased in addition to the standard firmware of the MCA-527. The measured data are stored in lists. The lists can be read out, interpreted and evaluated with suitable software.

List Modes 1-3

The list modes 1- 3 store the time intervals between events and the respective previous event in a list. The user program [WinTimestamps](#) uses these three list modes for neutron coincidence counting. Every user is free to find new applications.

The three list modes differ in the way they are triggered:

Table 1, list modes 1 - 3, trigger properties

List Mode	Trigger Mode
1	Level controlled, adjustable threshold. This mode works for fast and slow input signals as well as for digital and analog signals. An event is accepted when the input signal exceeds the set threshold value.
2	Edge-controlled. Like level controlled. But the threshold is on the differentiated input signal. Requires fast rise signals (e.g. TTL) but allows dead times down to 200 ... 300ns.
3	High rate analog counting. The integral of the input signal over a pulse burst is analyzed for the number of pulses it contains. Requires pulses that are stable in width and amplitude during the measurement. The pulse width should be in the range of 20ns to 200ns. In principle, dead times down to 1ns are possible. The adjustment is done automatically.

List Mode 4

This list mode generates a list with spectroscopic and time-based information. If list mode 4 is enabled on the connected MCA-527, it can be started via the [WinSPEC](#) user program with the key combination Ctrl-4. The basic settings can be done within WinSPEC. The number of channels and the intended measurement duration can be set within the "MCA-527 List Mode 4" dialog. If the measurement duration is not set explicitly, the measurement runs until the available memory space (64MB, MCA527 intern) is used up. The software reconstructs the list data into a spectrum, which is only used to monitor the measurement progress. The actual data evaluation must be performed by the user according to his purpose using suitable software. The format of the file that is written by the software is described in this [Document](#).

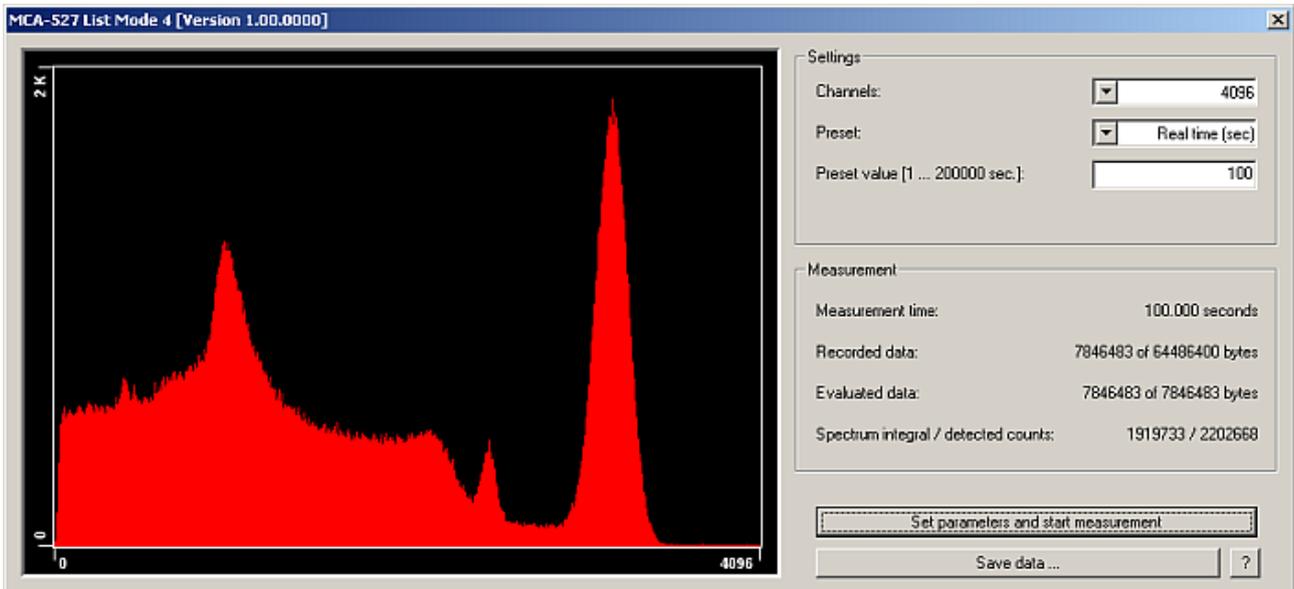


Figure 1: Dialog for list mode 4

List Mode 5:

The list mode 5 generates a list with **spectroscopic data pairs**, which are measured with two different evaluation filters. The two evaluation filters differ in the set 'Flat top time'. The purpose of the list mode 5 is to distinguish between differently shaped electrical signals. These could come from a detector that can detect gamma and neutron radiation at the same time.

If the list mode 5 is enabled on the connected MCA-527, it can be started via the user program [WinSPEC](#) with the key combination Ctrl-5. The basic settings can be done within WinSPEC.

The shaping time, the both flat top times, the number of channels and the intended measurement duration can be set within the "MCA-527 List Mode 5" dialog. If the measurement duration is not set explicitly, the measurement runs until the available memory space (64MB, MCA527 intern) is used up.

The following images show an example of a measurement with an LED-stabilized detector and cesium137. The events caused by the LED (within the orange circle) can be distinguished from those caused by the radioactive source.

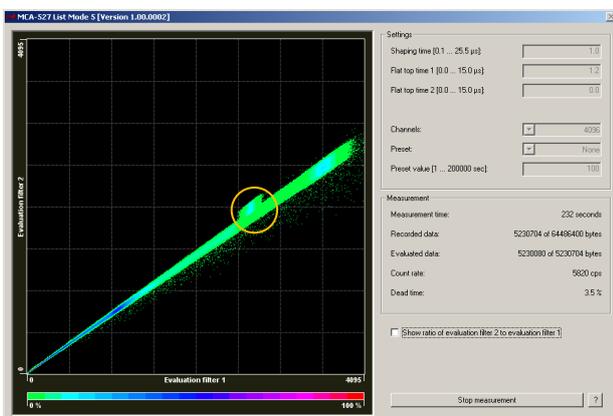


Figure 2: Histogram, X-axis: position according to evaluation filter 1, Y-axis: position according to evaluation filter 2

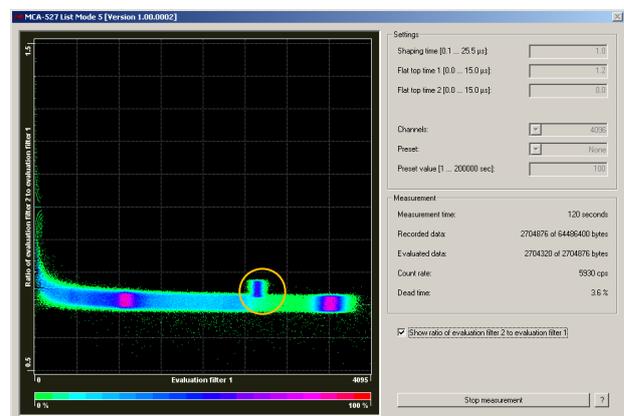


Figure 3: Histogram, X-axis: position according to evaluation filter 1, Y-axis: ratio of the position according to evaluation filter 2 to the position according to evaluation filter 1