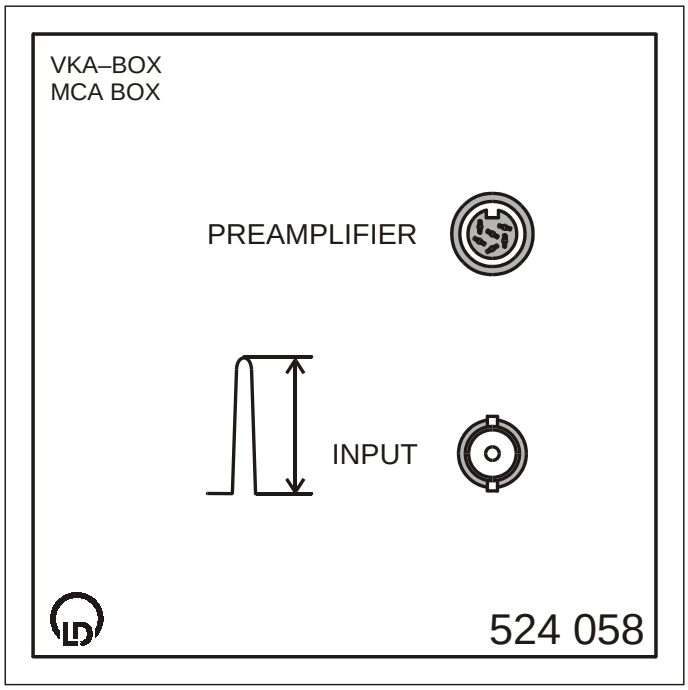
Physics | Chemistry · Biology | Technology

Leybold Didactic GmbH
Lehr– und Didaktiksysteme

05/02-W97-Wie



Instruction sheet 524 058

MCA box (524 058)

1 Description

The MCA (multichannel analyser) box is used in conjunction with the CASSY® computer-assisted measurement system. It may be used for pulse height spectroscopy in general, and particularly for energy resolving measurements of radioactive radiation with a scintillation counter or a semiconductor detector.

As a member of the CASSY family this box has the following features:

- Voltage supply, control lines and data transmission are all realized via a single 15-pin sub-D plug.
- The box can be connected to any 15-pin sensor box connection site on the CASSY interface device.
- The box can be plugged in at any time.
- The CASSY software recognizes the box automatically by means of its identification code.
- The measuring ranges are set using the menu-driven CASSY software.
- The CASSY software explains how to use the box.

Remark:

Operation of the MCA box in conjunction with a CASSY Display, CASSY-E or CASSY-P is not supported.

2 Usable sensors

Scintillation counter (559 901) with
detector output stage (559 912 or 559 911* or 559 91*)

Semiconductor detector (559 92 or from 559 56) with
discriminator-preamplifier (559 93)

* high-voltage measurement not possible

3 Technical data

Resolution:	256, 512, 1024 channels per spectrum
Energy linearity:	<3 % of final value
Memory depth:	>4 10^9 events per channel (32 bits)
Dead time:	approx. 60 µs
maximum input from external sensors:	0.5-5 V, depending on the attenuator setting, positive or negative. Internal attenuator and polarity can be set via software.
High-voltage measurement:	in conjunction with detector output stage (559 912)
Voltage supply:	for detector output stage / discriminator-preamplifier.

4 Required software and firmware

CASSY Lab (524 200) 1.20 or higher version (the current version of CASSY Lab is available in the internet under http://www.leybold-didactic.com).

If Sensor CASSY (524 010) does not recognize the MCA box, an update of the firmware may be necessary:

- Connect Sensor CASSY to the PC, and start the current version of the CASSY Lab software.

If CASSY Lab detects an outdated firmware:

- Bring the firmware up to date with "Update CASSY modules" so that it matches with CASSY Lab.

5 Connecting detectors of other manufacturers

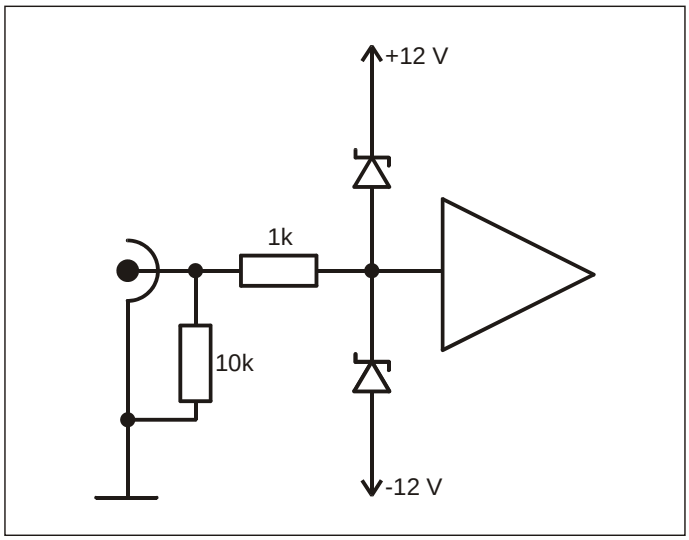
Detectors of other manufacturers can be connected. Voltage pulses at the input of the MCA box can be measured up to ±5 V and must not exceed ±12 V. If the voltage pulses are higher, the MCA box may be damaged.

If detectors of other manufacturers are connected:

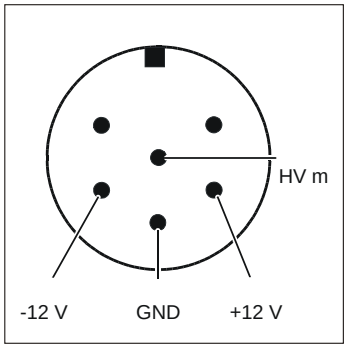
- Connect a detector only while the high-voltage supply is switched off.

The rise times of the pulses should be in the order of magnitude of 400 ns.

6 Input circuit of the MCA box



7 Pin assignment of the 6-pole socket



Top view of the MCA box

The MCA box provides a voltage of ±12 V at the 6-pole socket for supplying a preamplifier. Each of these voltage sources can be loaded with a maximum current of 50 mA. The connection HV m is intended for high-voltage measurements in conjunction with the detector output stage (559 912).

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