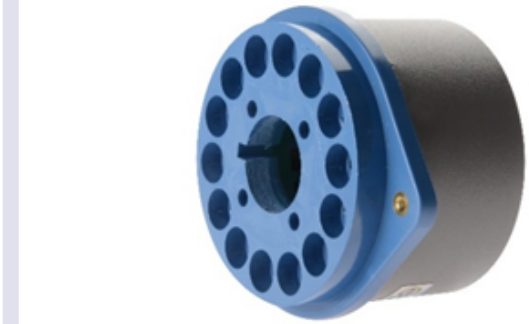
multi-channel analyser base
MCA130CP data sheet (provisional)

ET Enterprises electron tubes

1 description

The MCA130CP is a low cost high performance multi-channel analyser (MCA) base designed for gamma ray spectroscopy applications with NaI(Tl) scintillation detectors. The base consists of a high voltage power supply (HVPS) capable of supplying up to 2000V and a preamplifier. The unit is compatible with standard 14 pin detectors using 10 stage PMTs. MCA130CP is very easy to use and the unit is powered by USB 2.0 or above. The unit uses histogram mode acquisition and data channels are 16 bits.



2 features

- compact
- low power consumption
- low cost
- software can be customised by user

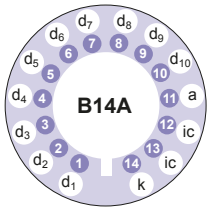
3 specifications

conversion gain	1024 channels
power consumption	
voltage	5V
current	56mA
dead time	9µs
pulse pair resolution	9µs
detector voltage	0 to 2000V
maximum frequency	70kHz
count rate linearity <5%	up to 60 kHz
Connections	
USB type	2.0 or higher
connector	micro USB type AB
warm up time	1s
temperature (operating)	5-55 °C
temperature (storage)	-40 to 60 °C
weight	100g

4 voltage distribution

The photomultiplier pin configuration for this HV Base is given below. The voltage distribution for an applied HV of V volts is shown in the table.

photomultiplier pin connections (viewed from below)



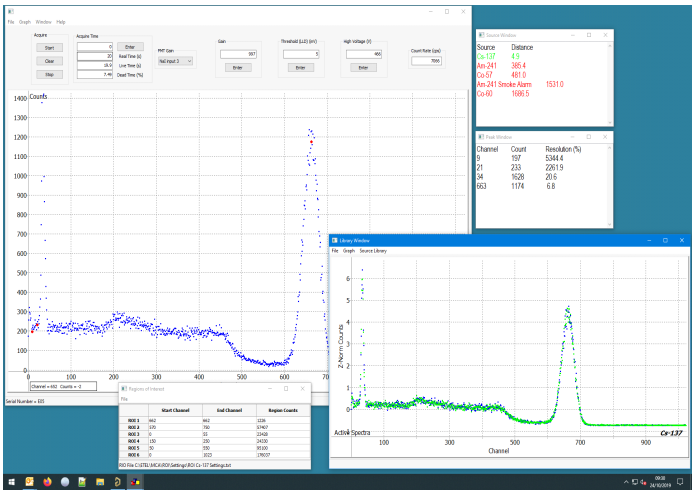
ic indicates an internal connection

k	d_1	d_2	.....	d_9	d_{10}	a
6/16V	1/16V	1/16V		1/16V	1/16V	

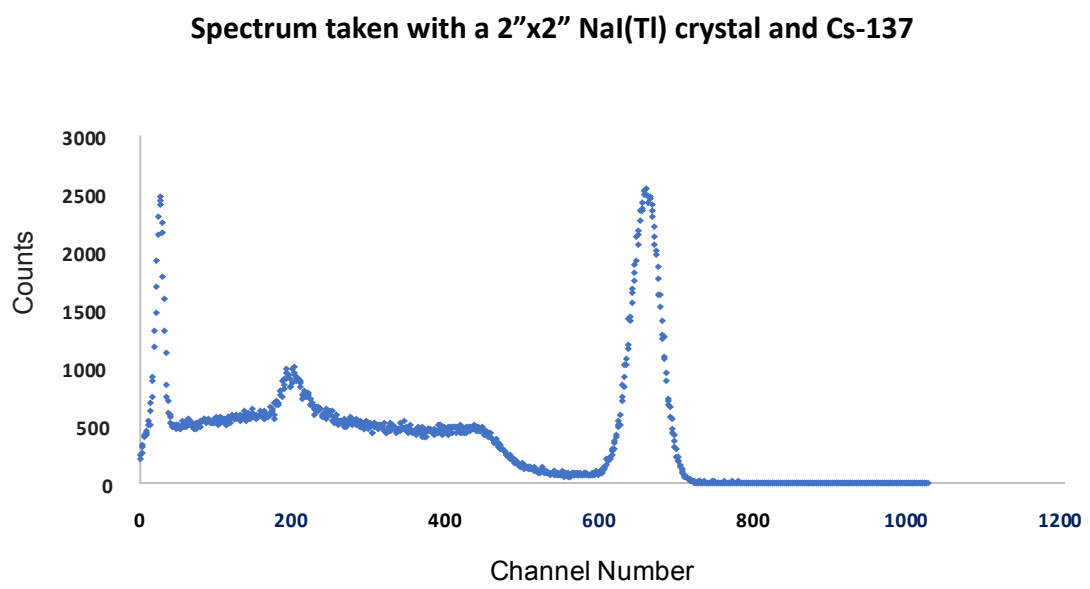
5 software

The MCA base is supplied with an open source 'MCA Application' software with the following features:

- ability to set high voltage on the photomultiplier (0-2000V)
- ability to set threshold on the internal ADC (equivalent of adjusting the Lower Level Discriminator, LLD)
- ability to set acquire time
- manual start and stop of measurement run
- automatic charting of counts vs channel
- automatic saving of data in text files for subsequent analysis/export
- supplied with source code for user customisation
- ability to select multiple regions of interest and real time peak resolution calculations
- ability to identify peaks using previously defined library spectra
- ability to save spectra in an ANSI N42.42 file format

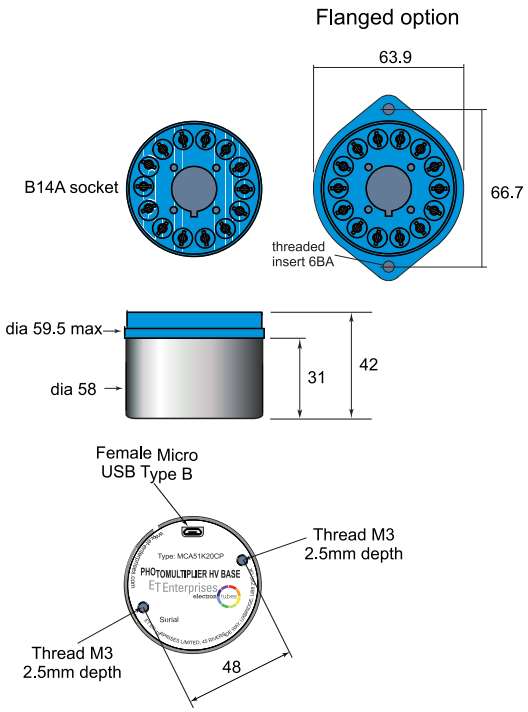


6 typical spectrum



7 dimensions

all dimensions in mm



8 ordering information

item	ordering code
without flange	MCA130CP
with flange	MCA130CPF

9 warning

High voltages generated by these products present an electrical shock hazard and appropriate precautions must be taken.

Installation must be by qualified personnel.

All units are despatched with the internal potentiometer set to zero.

Do not operate outside the quoted ratings of the MCA130CP or those of the photomultiplier. This may result in loss of performance, permanent damage, or both.

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