

ICS-10 Multichannel Analyzer Card

Installation on older DOS computers

Note: Before installing the ICS10 software, it is highly recommended that you first install a mouse on your computer. While it is possible to operate the multichannel analyzer without a mouse, the software was designed for point and click operation. See appendix for details.

Hardware Installation

Remove the cover from the computer and install the card in any unused ISA slot. The dipswitch and jumpers should not be changed from the factory settings. The ICS-10 does not use a computer interrupt and conflicts with other hardware is rarely a problem.

Replace the computer cover and connect the cables from the detector.

The signal and high voltage connectors appear similar and care should be exercised in making the correct connections.

Software Installation

Before running the ICS-10 software, it is best to first install it onto the computer hard drive. We recommend making a sub-directory to hold the ICS-10 software and data files. This directory may be any name of your choice not to exceed 8 characters. In the example we will use the name SPECTECH.

At the C prompt type

```
C:\>md spectech (enter)
```

```
C:\>cd spectech (enter)
```

This will change the prompt to

```
C:\SPECTECH>
```

Insert the ICS-10 DOS software disk and at the prompt type

```
C:\SPECTECH>copy A:*.*
```

The files on the floppy disk will be copied to the sub-directory SPECTECH on the hard drive.

Running the ICS-10 Multichannel Analyzer.

To Run the ICS-10 software, at the prompt type

C:\SPECTECH>**ics10** (enter)

The ICS-10 software will load and detect the MCA card. Click **OK** or hit enter. The main screen will load showing random data. Click **Erase** or hit the letter **e** to erase the spectrum memory.



Initial Setup and Calibration.

Place your Cs-137 calibration source in the well detector. The first step is to set the high voltage and amplifier gain to position the gamma peak at channel 662.

Click **Amp/HV** or type the letter **h**. This will bring up the setup screen.

Appendix

Troubleshooting

ICS10 software does not locate the MCA card.

Turn off the computer, remove the ICS-10 card and check the dip-switch setting. The correct factory setting is shown in the ICS-10 product manual. Reinstall the card and run the ics10.exe program. If the card is still not found, contact the factory (865) 482-9937, e-mail: spectech@esper.com.

Software finds the card but will not take data.

Try loading the demonstration spectrum from the disc. This can be found under **File, Load Data, ICSDEMO.SPE**. If the spectrum loads, the card is communicating correctly with the computer.

Make sure the **High Voltage** is set to the correct value and turned **ON**.

Check that the timer runs in the Acquire mode.

Check that the detector is connected correctly. The HV and signal connectors appear similar and can be forced on the wrong positions. If available, try using another detector.

Installing a Mouse

Although the ICS 10 system can be run from the keyboard, using a mouse is much more efficient and highly recommended. The ICS 10 software disc includes a subdirectory named Mouse containing drivers and installation for a serial or P/S-2 mouse.

Connect the mouse to the computer, turn on the power and run the INSTALL.EXE program from **a:\mouse\install**. Follow the on-screen instruction. The MOUSE subdirectory also includes a README.DOC file containing detailed information on the drivers and setup.

If all fails to correct the problem

Contact Spectrum Techniques at (865) 482-9937, spectech@esper.com

Tip: Displaying the complete ROI data is a good way to check that your ROI setting is correct and that only one ROI is set.

Collecting a Background Spectrum

Remove all calibration sources from the detector. Clear the data memory and take a 1-minute count.

Click Erase (letter **e**) to clear the memory.

Click Acquire (letter **u**) to start counting.

After 60 sec. the instrument will time-out. Position the marker in the ROI and display and record the **Gross Integral**. (Click **Region** or letter **i**).

Tip: Do not use the **Net Integral** as this can give incorrect data when using wide ROI's.

You may wish to save the background spectrum with a file name such as **backgrnd.spe**.

Running the Calibrations

Place the Cs-137 calibrator into the detector.
Clear the memory and take a 1 minute count.
Clear the ROI and reset it according to standard procedure for Cs-137.
Position the marker in the ROI and record the **Gross Integral**.
Remove the source and run a 1-minute background count.
Record the **Gross Integral** and subtract it from previously recorded Cs-137 count.
Repeat the process as required by your Quality Control Protocol.

Tip: Save the Cs-137 spectrum as a binary file such as Cs-137cal.spe. The next time you wish run the Cs-137 calibration, loading this file will quickly reestablish the correct ROI and other settings. Then, it is only necessary to clear the data and take a new count.

Repeat the process for the other calibrators such as Co-57, Ba-133 etc, setting the ROI's as required and saving each one as binary spectrum file for later recall.



Click **Set HV** or type the letter **v**. Set the high voltage to the recommended operating value for your detector. (Usually around 900v).

Click **OK** or hit **Enter**.

Before running the MCA you must always turn on the high voltage

Click the **OFF/ON** button in the setup menu or type the letter **n**.

Click **Set Gain** or type the letter **g**.

As a starting point, set the course gain to 8 and the fine gain to 1.504. (If you do not have a mouse, use the arrow keys.)

Click **OK** or hit **Enter**.

Start acquiring a spectrum using the Cs-137 calibration source.

Click **Acquire** or type the letter **u**.

Data points should begin accumulating on the screen. Change the vertical scale using the slider of the up/down arrow keys. We like to set the scale to the log mode so that it does not require continual changing.

Using the course and fine gain controls, adjust the spectrum until the 662keV peak from the Cs-137 source is positioned at channel 662.

Tip: You can adjust the gain setting while the unit is in acquire until the peak is positioned correctly.

When the peak is correctly aligned, Stop the acquisition and erase the spectrum.

Click **Stop**, **Erase** or use the keys **o**, **e**.

Setting the Preset Time.

Click the **Time** button or type **t**.

This will display the preset menu. Always use Livetime to compensate for deadtime losses due to high countrate.

Click **Set Live** or type **l**.

Backspace to remove any existing value including zero from the live-time box and enter a counting time of 60 sec.

Click **Acquire** or key **u** to start the acquisition.

The instrument will count for 1 minute and display the Cs-137 spectrum. Check to see if the 662 keV peak is positioned correctly at channel 662 and adjust accordingly using the gain control. When correct, take a 60 sec. spectrum.

Setting the ROI (region of interest.)

Position the marker at channel 80.

Click the **Set** button, key **s** and hit the space bar. This will define the start of the region. Move the marker to channel 730 and hit the space bar again to define the end of the region. Click the **Set** button or key **s**. A region of interest will appear as shown in the following screen.



At this point it's a good idea to save the spectrum for future use.

Click **File**, key **Alt+f**. Select **Save Data, Binary Data Format** and give it the file name **syscal**.

Tip: Recalling this spectrum is a quick way to load the ROI and preset time settings.

Viewing the Gross and Net Counts.

To view the gross and net counts in the region of interest, position the marker anywhere in the region.

Click the **Region** button or type **i**.

The data box will be displayed showing the gross and net counts. Alternatively, you can display the complete ROI data in tabular form.

Click **Display** on the upper menu field, key **Alt+d**. Select **Peak Summary**. (letter **p**). This shows all ROI data in tabular format. To switch back to the spectrum select **Display, Master Spectrum Buffer**.