

NPL – CRC Data Logging Utility: Beta Test Version 1.0.0
John Keightley, NPL, July 2008

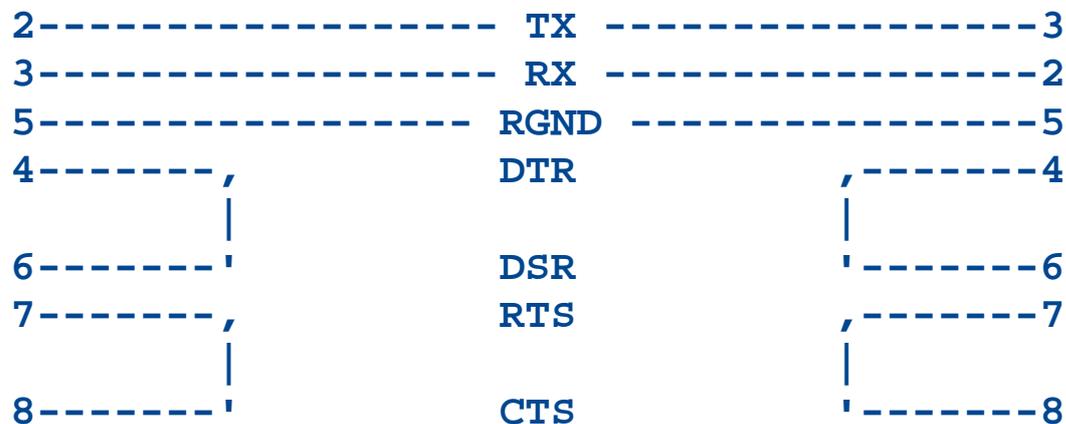
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1) Cabling Issues

The Capintec CRC-15R and NPL-CRC Radionuclide calibrators require a 9 pin female-female null modem (or crossover) cable. Note that pins 2 and 3 are crossed over.

NPL-CRC 9-Way Female PC 9-Way Female



One can readily make such a cable, but they are reasonably priced from electronics stores. Although I am not endorsing the high street shop “Maplin”, they have these cables for around £10 (product code L71BT).

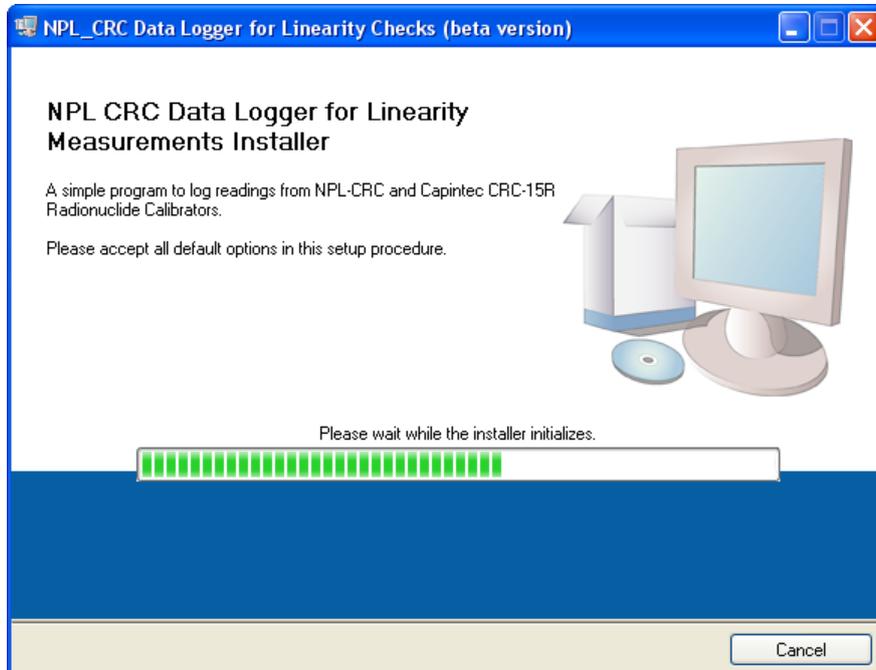
A long cable length is usually a good idea as this gives some freedom in the positioning of the laptop or PC with respect to the Radionuclide Calibrator. I used 3m cable lengths with no issues.

The cable must be connected to the “RS232” port on the rear of the Radionuclide Calibrator, and the other end to a free COM port on the PC (typically COM1 or COM2).

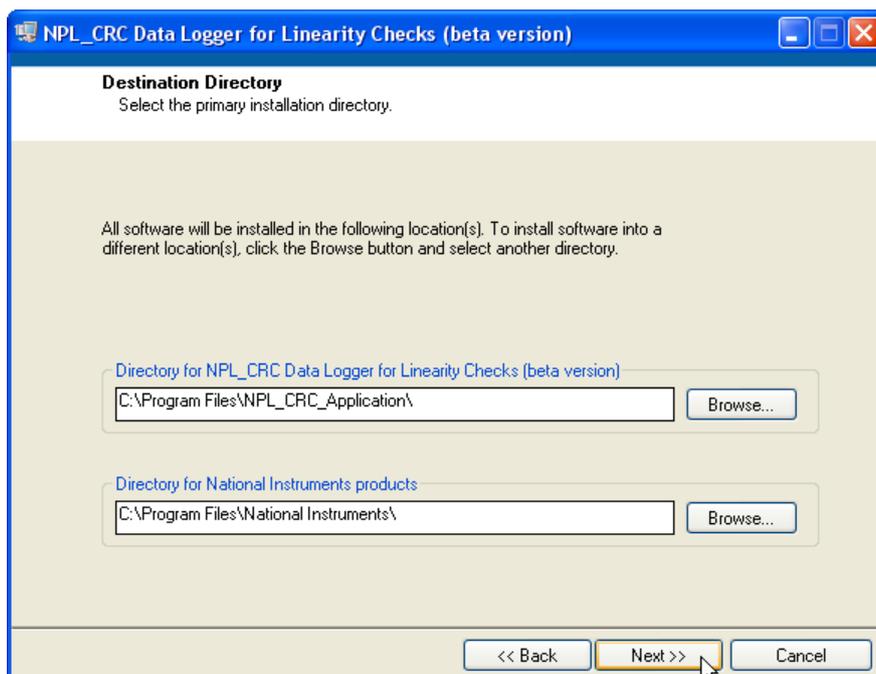
If using a modern laptop, there may be no COM ports, and you must purchase either a PCMCIA-Serial Adapter or a USB – Serial adapter.

2) Software Installation

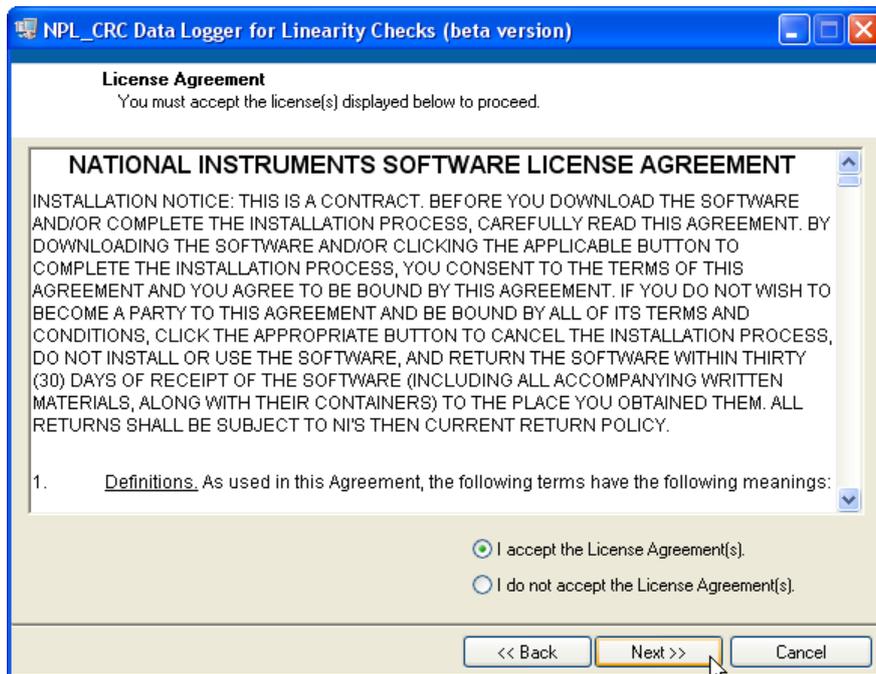
To install the software : unzip the file NPL_CRC_Logger.zip and save the files in a location of your choosing. Run setup.exe and you are presented with the following screen:



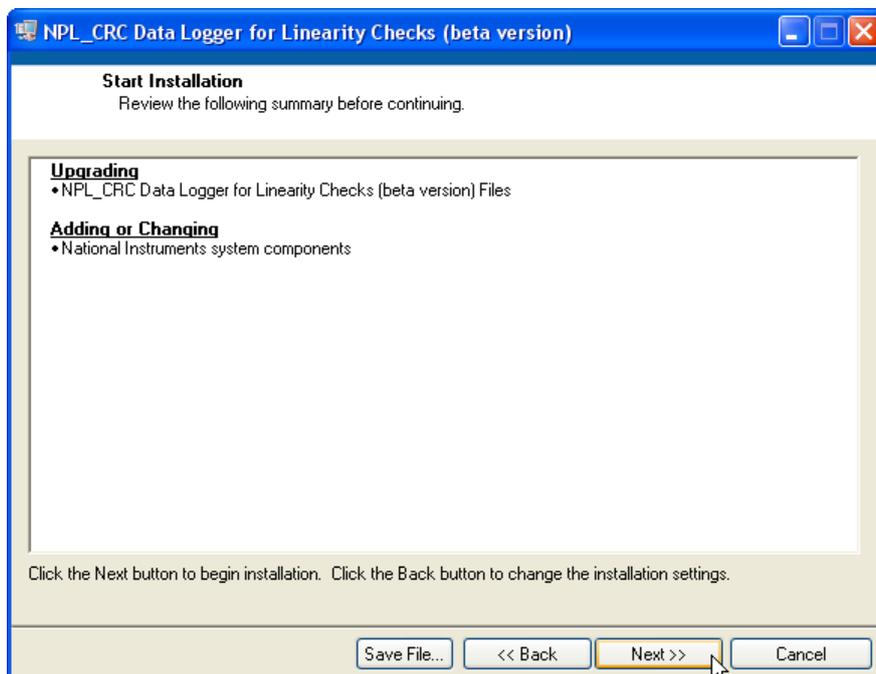
Accept the defaults for the installation locations as shown below. The directory for National Instruments products is required to install the NI LabVIEW Runtime Engine 8.5 along with the NI VISA Runtime 4.2. It is these components which create the large file size of the downloaded zip file. Click next to continue.



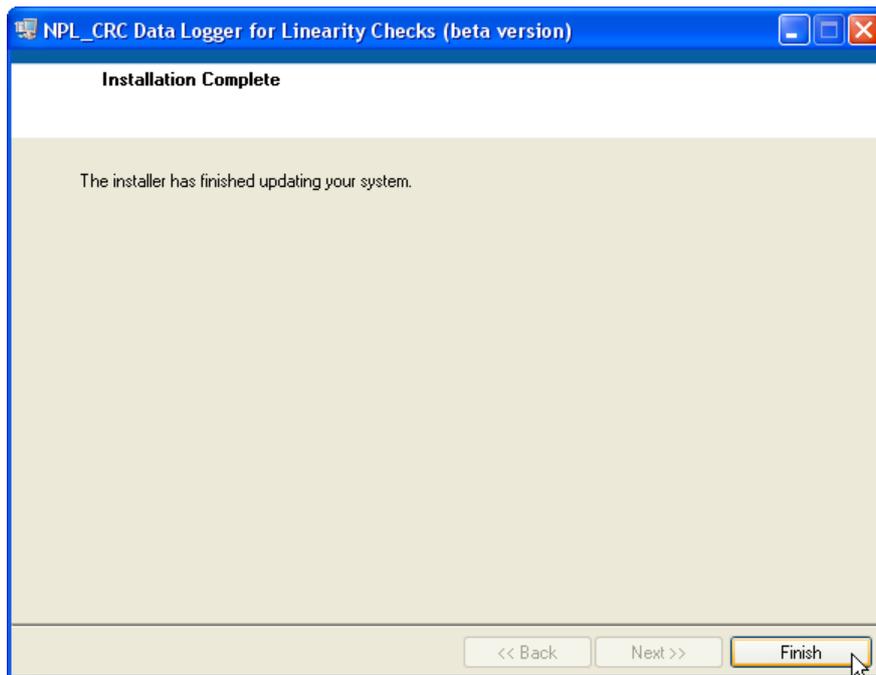
You are presented with a Licence Agreement from National Instruments. Select "I accept the Licence Agreement(s)" and click next.



Start the installation by clicking on Next.



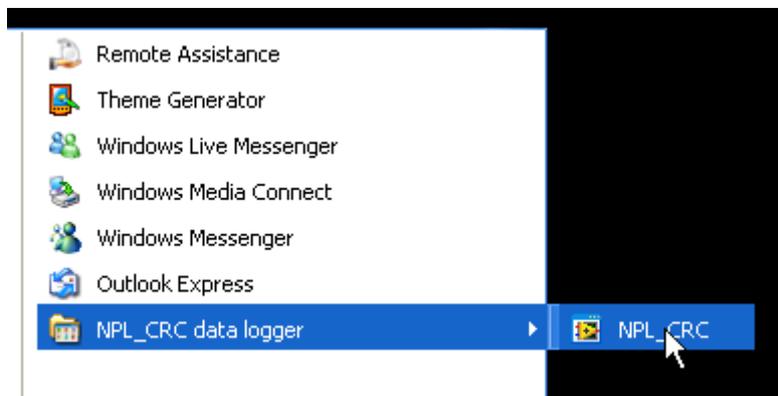
When the installer has finished updating your system, click Finish ...



3) Starting the Software

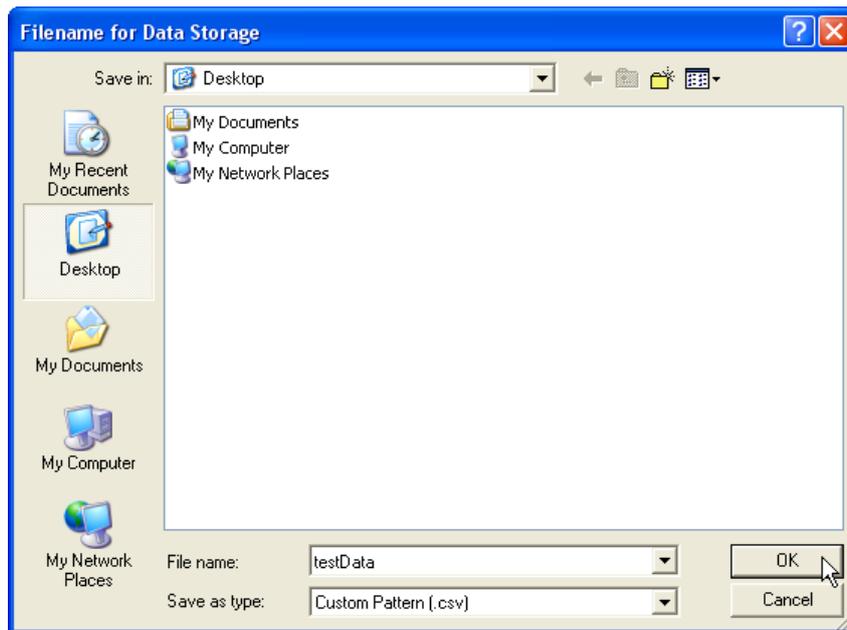
To run the software: Go to “Start – All Programs” and select :

“NPL-CRC Data Logger – NPL-CRC” as shown below:

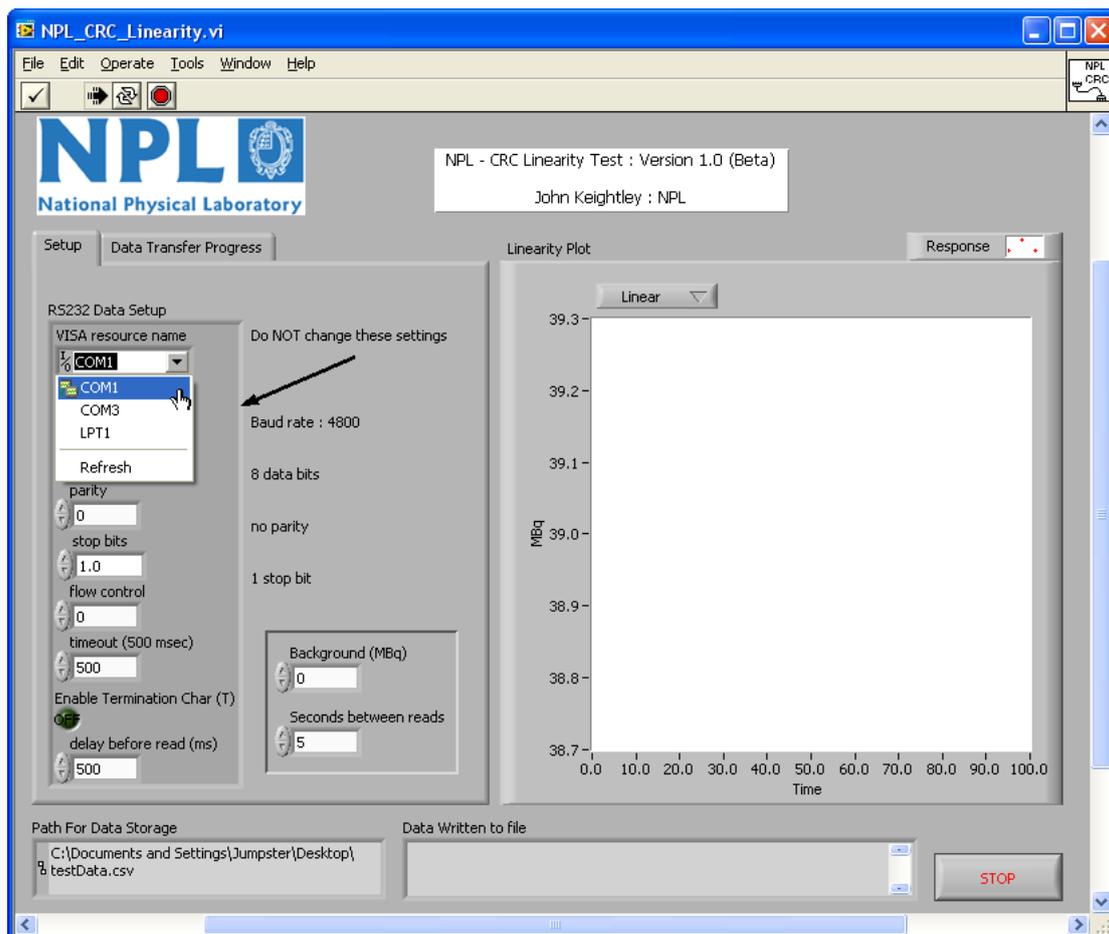


As the program starts, you are prompted to create a file for data storage. Below I have supplied a file name of “testData” which will create the file “testData.csv” on my desktop. Choose any suitable location and click “OK”.

(Note : “csv” stands for “comma separated variable” and is a commonly used data file structure saved in ASCII text format, which is readily opened in spreadsheet software such as Excel).



You are then presented with the main screen.



Select the appropriate Serial Port under the “Setup – RS232 Data Setup” tab. The actual “com ports” on your PC or laptop may vary from those shown above. Be sure

not to alter the items “Baud Rate”, “Parity”, “Stop Bits”, “Flow Control”, “Enable Termination” or “delay before read (ms)”.

The software defaults to the correct options, as shown above.

Similarly, the “Data Transfer Progress” tab was useful for me in debugging the code, but serves real purpose the user. I have left these options visible as this software is only in a Beta – test phase, and if the users have difficulties, I may be able to remotely assist.

The option to supply a background in MBq should be left as zero. Even if a value is supplied, it does not affect the values stored in the data file (it is not subtracted). However, it is subtracted from the values displayed in the “Linearity Plot” on the main screen. I have made the decision to only supply the users with the raw readings in the saved data file, as I believe this gives greater freedom to analyse the data in any way you see fit.

The “seconds between reads” may be set to any integer value you like. However, data transfer problems may arise if this is set too short (say 1 second), although I have never had any problems with this. Thought must also be given to the size of the data file that will be created if one collects data over several days. This may be altered while the program is running.

To stop the program, either click the “Stop” button, or the red “stop sign” above the NPL logo on the top left.

4) Decoding the stored data

As stated above, the data-file contains ASCII text in the commonly used “Comma Separated Variable : “csv” format.

The each line of the data file contains the following fields:

nuclide, range, reading, $t - t_0$ (seconds), date, time

Where :

t is the time of the reading

t_0 is the time of the first reading

All times are read from the PC clock immediately after receipt of the data string from the instrument.

the “range” parameter is one of the following :

- 1 μCi
- 2 mCi
- 3 Ci
- 4 MBq
- 5 GBq

This data format is readily opened by Excel :

	A	B	C	D	E	F
1	Tc99m	5	3.989077	0	07/07/2008	18:28:33
2	Tc99m	5	3.983211	100	07/07/2008	18:30:13
3	Tc99m	5	3.969522	200.015	07/07/2008	18:31:53
4	Tc99m	5	3.949968	300.015	07/07/2008	18:33:33
5	Tc99m	5	3.949968	400.031	07/07/2008	18:35:13
6	Tc99m	5	3.930414	500.031	07/07/2008	18:36:53
7	Tc99m	5	3.910859	600.047	07/07/2008	18:38:33
8	Tc99m	5	3.908904	700.062	07/07/2008	18:40:13
9	Tc99m	5	3.891304	800.109	07/07/2008	18:41:54

If you have any issues, please do not hesitate to contact me: my details are given at the start of this document.

John Keightley