Radcal®

Model PDC
Patient Dose Calibrator
Software

Instruction Manual

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Important.

Throughout this manual the following words are given a specific meaning and the reader should be aware of their significance.

Attention; Used where there is a risk of damaging the PDC by incorrect software operation.

Note; Used where information is provided to aid better understanding of the PDC Software or its use.

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Overview

In its basic form the PDC Software acts as a remote display panel to the PDC unit allowing the user to monitor many of the PDC functions without being adjacent to the unit.

By purchasing a Key, additional functionality is supported that:

- Enables the capture of PDC readings into a spreadsheet that can then be saved for later processing using Excel
- Enables a comprehensive range of capture options providing maximum flexibility with minimal user intervention
- Enables configuration of the operating parameters of the software
- Enables the adjustment of some PDC operating parameters, either temporarily or permanently

Radcal Corporation Software Disclaimer

Description

"Radcal" Corporation provides "Software" for use with Radcal instruments. The Software may be copied at will, but the "User" must own an appropriate serialized Radcal instrument, and obtain a license key to use the software with the instrument.

Warranty

This Software is provided "as is" and any express or implied warranties, including, but not limited to, the implied warranties of merchantability and fitness other than its particular purpose are disclaimed. In no event shall Radcal Corporation or contributors be liable for any direct, indirect, incidental, special, exemplary, or consequential damages (including, but not limited to, procurement of substitute goods or services; loss of use, data, or profits; or business interruption) however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising in any way out of the use of this software, even if Radcal is advised of the possibility of such damage.

Restrictions

Authorized "users" shall not modify, make an equivalent of, or reverse engineer the Software.

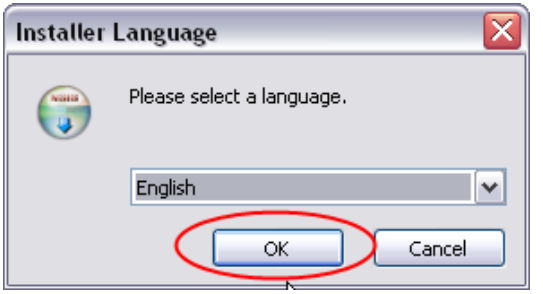
Support

Radcal Corporation will assist the "users" installing the Software included for their particular Radcal equipment. Radcal will not assist with installation of operating systems or other "non" Radcal applications required to run the Software. Should the user modify any templates that are included with the Software, and thus cause the software to cease to operate in a normal manner, Radcal will be held harmless from any failures resulting from such modifications.

Getting Started

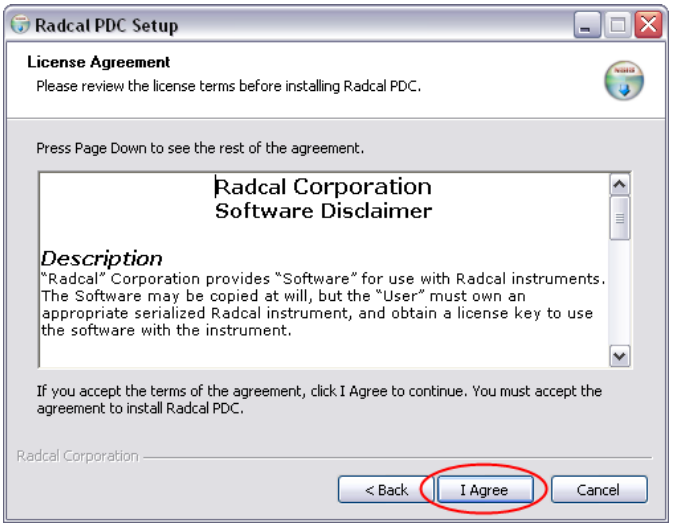
Installing the software

1. Make sure that the PDC is ***not*** connected to the PC.
2. Insert the installation CD into your PC. The software will begin to install automatically. If it does not then navigate to the installation CD with Windows Explorer and double click on ***RadcalPDCSetup1_0.exe.***
3. The following dialog will appear. Select the language you want the installer to use from the drop down list and then click on ***OK.***

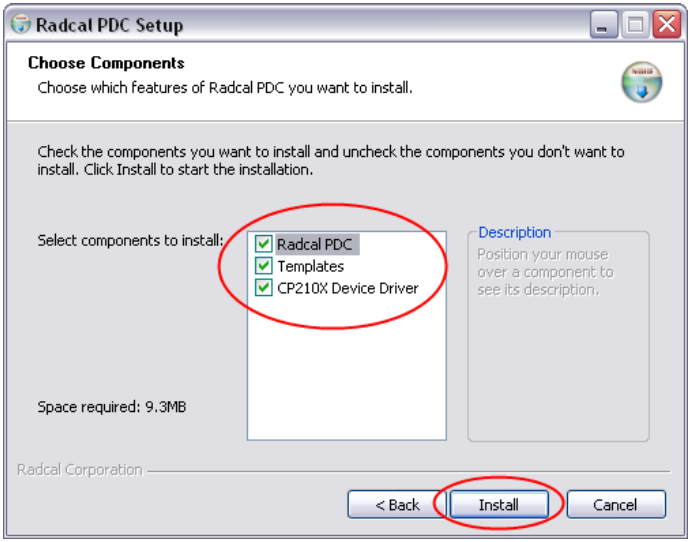


4. Click ***Next*** on this dialog.

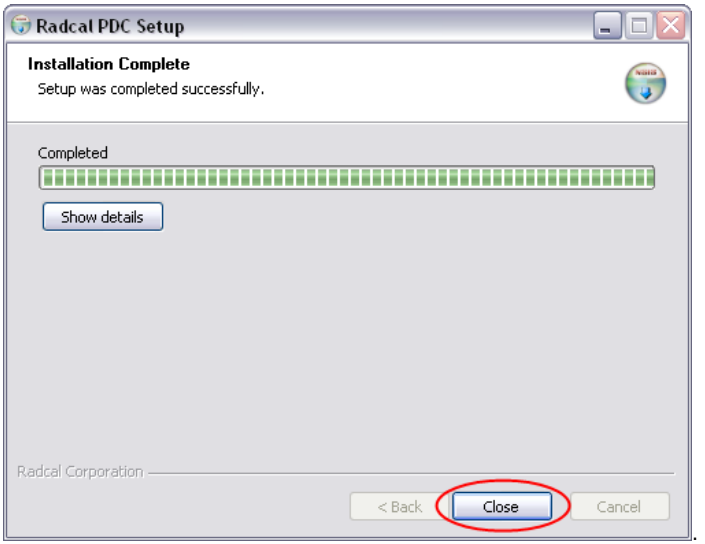
5. You will need to read and agree the Radcal Software Licence Agreement
.



6. Select the components that you want to install and then click ***Next***.
Note: If you opt to install the device drivers and they happen to be already installed you will be able to cancel their re-installation later.

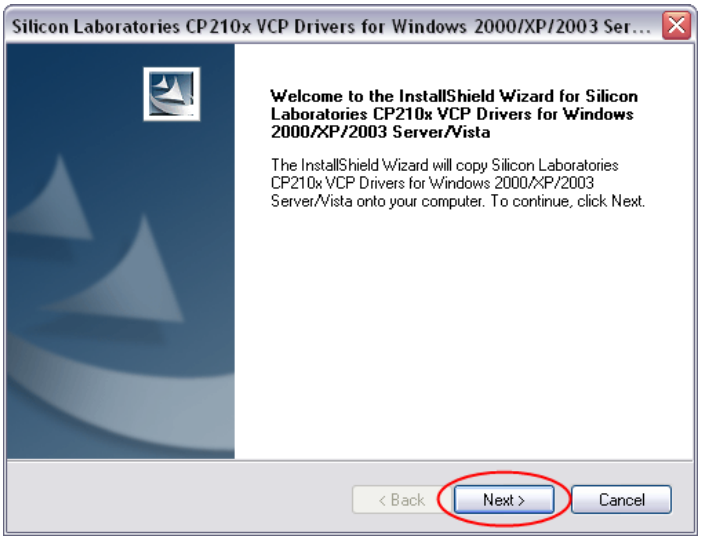


7. The PDC software will be installed. If the option to install the device drivers was checked then they will be installed as outlined below. If not then you will see the following dialog. Click ***Close***.

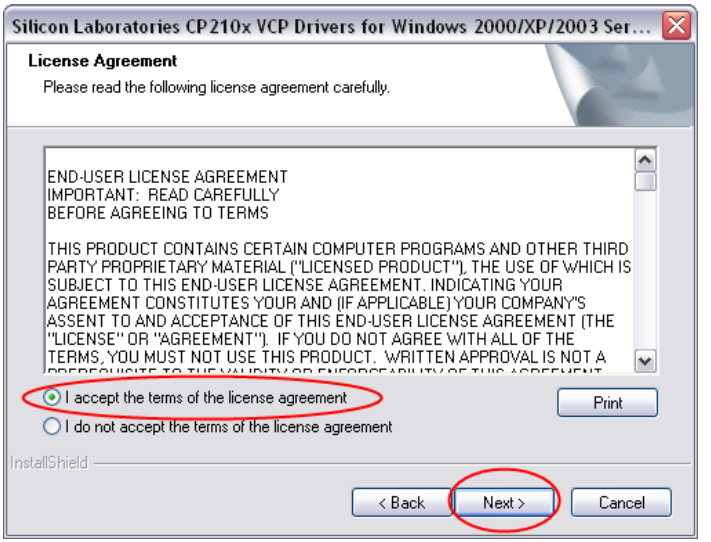


Installing the device drivers

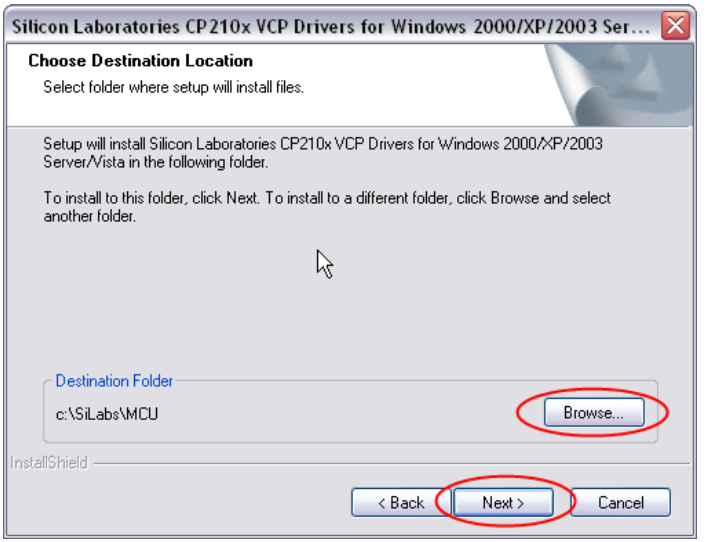
1. Double click on ***CP210x_VCP_Win2K_XP_S2K3*** on the installation media. The following dialog will appear. Click on ***Next***.



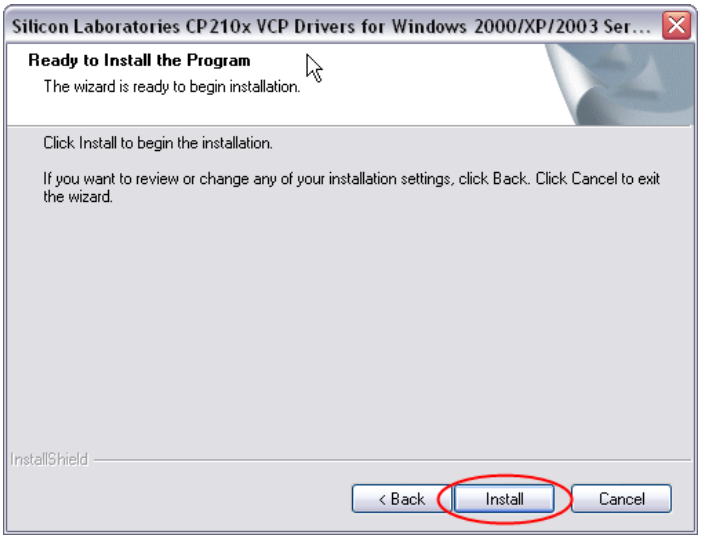
2. Read and accept the terms of the Silicon Laboratories Licence Agreement then click on ***Next***.



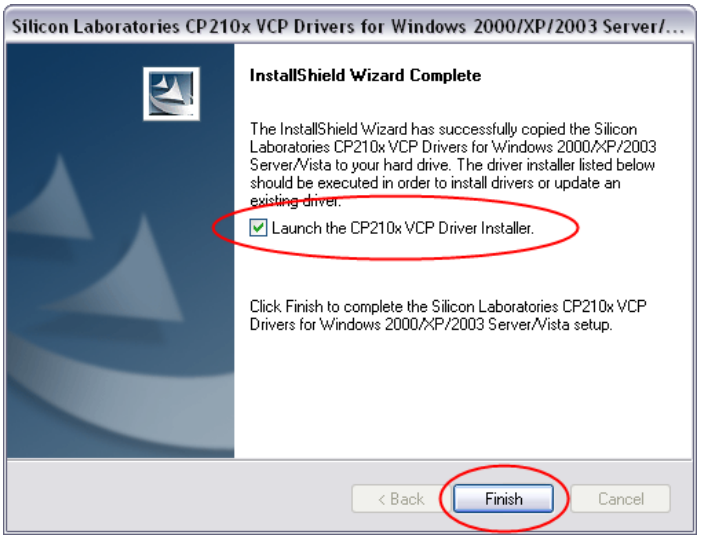
3. Accept or change the destination folder for the device drivers and click on ***Next***.



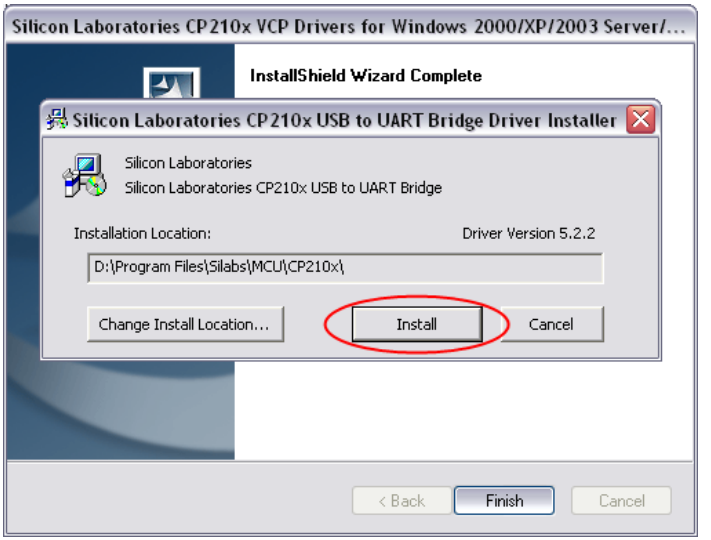
4. Click on ***Install***.



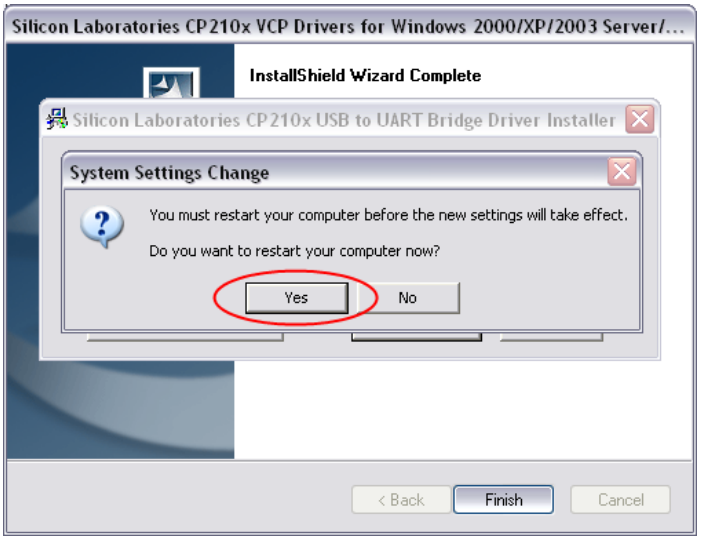
5. Ensure that ***Launch the CP210X VCP Driver Installer*** option is checked then click on ***Finish***



6. Install the Bridge Driver.
Note: Make certain that the PDC is ***not*** connected to the PDC at this time.



7. Finally, click on ***Yes*** to restart your computer



8. When your PC has restarted you can plug the PDC in.

Connecting a PDC

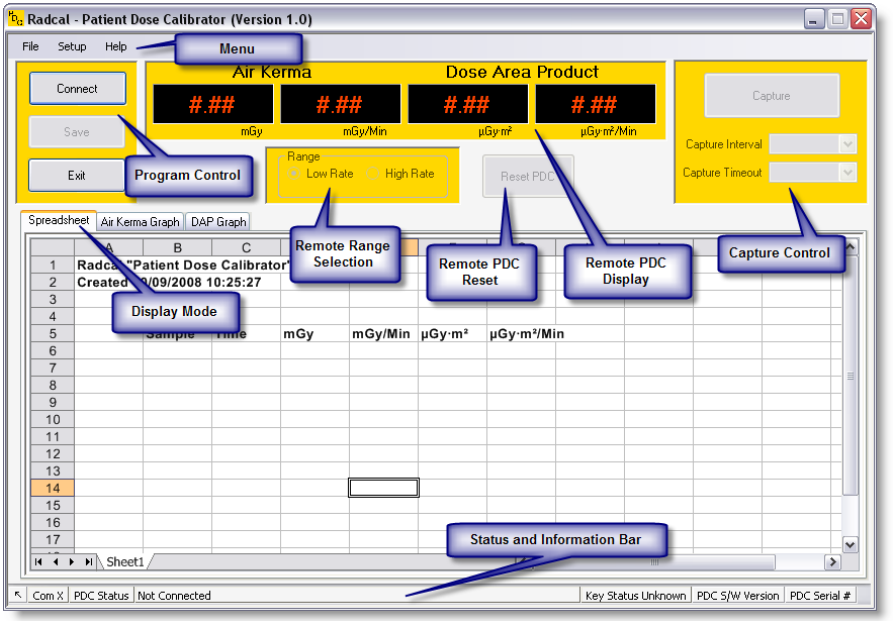
Plug the provided USB cable into a free USB port on the PC and into the USB connector on the PDC. This connector is situated on the left side of the PDC when viewed from the front, and is protected by a dust cap.

Running the program

To start the PDC software you can either double-click on the ***Radcal PDC*** icon on your desktop or select ***Radcal*** and ***PDC*** from the ***Start Menu***.

Parts of the main display

With the default parameters the PDC software screen will look like this:



The Status and Information Bar shows the Com port in use and an indication of system activity, the PDC status, Connection status, Key status, the reported PDC Software Version and the reported PDC Serial Number if they are available.

Depending on the status of the PDC connection and the availability of a suitable Registration Key, some elements of the display may be either disabled or highlighted.

Advanced Concepts

Device Driver Installation Problems

If the Silicon Laboratories CP210X device drivers are already installed on your PC the standard installation process outlined above can get a little more complex.

It may be that you have previously installed these device drivers for another product, in which case it is important that the drivers are updated to the very latest version in order for the Radcal PDC Software to function smoothly and correctly. The very latest version can always be downloaded from Silicon Labs directly by going to the following URL

https://www.silabs.com/Support%20Documents/Software/CP210x_VCP_Win2K_XP_S2K3.zip

You can then use the installer to remove the existing drivers and re-install the very latest version available.

Running for the first time

Double click the PDC icon on your desktop. The first time the software connects with a PDC, default values will be created for all the Capture and Setup parameters.

These values can be changed by the user and are automatically saved so that the next time the software is run the changed values will be restored rather than the default ones.

Each distinct Login on the PC will have their own unique set of saved Capture and Setup parameters.

The default parameters will be set as follows:

AutoConnect	No
CaptureInterval	Manual
InactivityTimeout	20
TemplateName	*blank*
TemplatePath	*blank*
UseTemplate	False
RegistreredSerialNumbers	*none*

The parameters are stored in the System Registry of the PC in the location *HKEY_CURRENT_USER/Software/Radcal/PDC*. This allows every user to have their own personal preferences.

***Note*.** Great care should be taken when modifying the registry directly. Always take a backup copy before doing so.

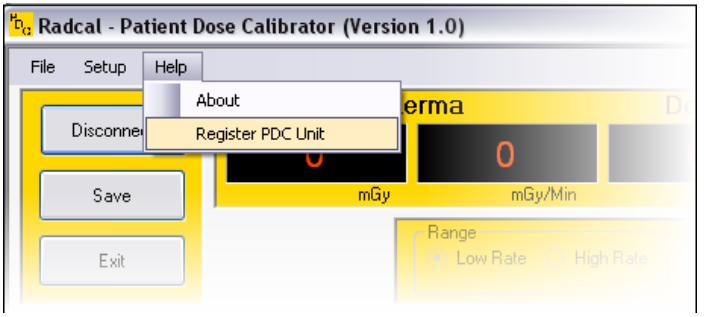
Registering a Key

In order to use more than basic remote front panel functionality a Key will be required. Keys are available for purchase from the Radcal Corporation or their representative.

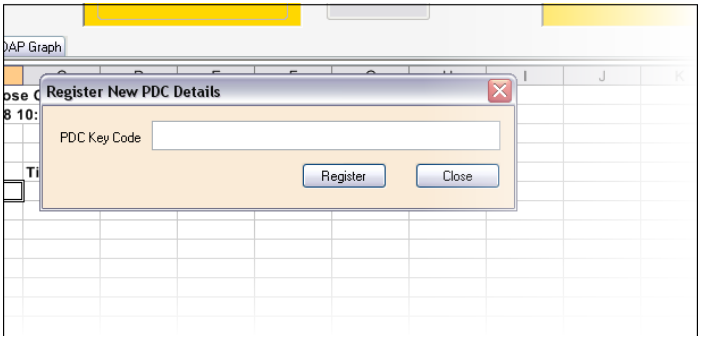
Keys are unique to the connected PDC's serial number. Running without a Key allows full access to all the capture functionality of the software but will not allow any captured data to be saved for later use.

To register a Key:

1. Connect the PDC unit that the Key applies to.
2. From the menu bar select 'Help' then 'Register PDC Unit'.



3. In the 'Register New PDC Details' dialog box enter the Key provided to you and click on Register.



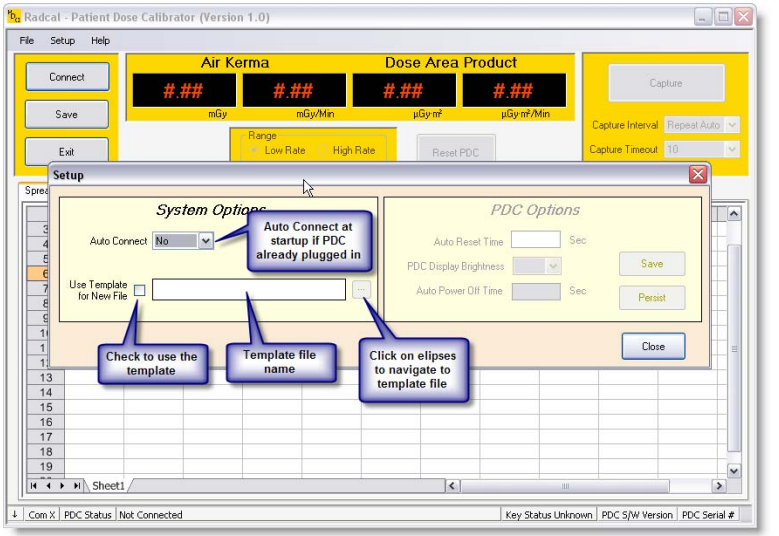
The Key will be validated against the serial number of the attached PDC unit and if it matches the Key will be stored on the PC and the level of functionality provided by the software for the connected PDC unit will be adjusted accordingly.

PC's can store multiple registration Keys. Keys can be registered on as many PC's as you require but are only applicable to a single PDC unit.

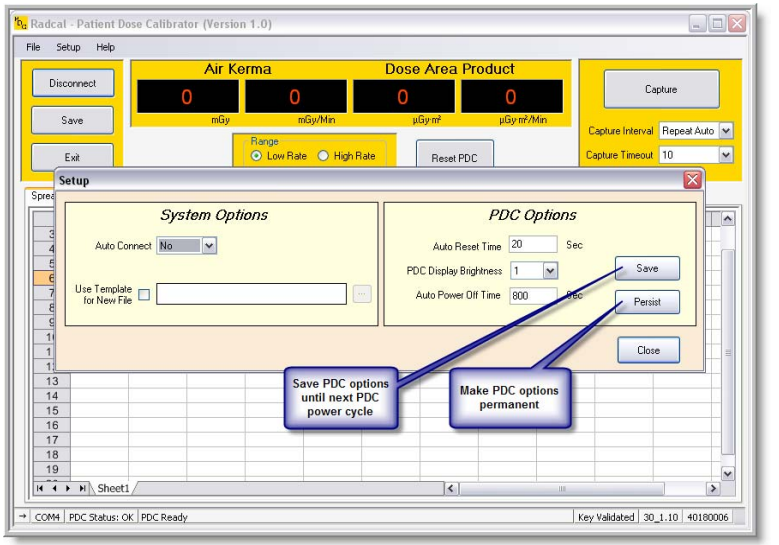
Note. Keys will never contain the digit zero (0) in order to remove confusion with the letter 'O'.

Setup options

Selecting ***Setup*** from the menu bar pops up a dialog box that allows software options to be changed.



Observe that the PDC Options panel is disabled since the PDC is neither connected nor ready. When the PDC unit is connected and ready the Setup dialog looks as follows:



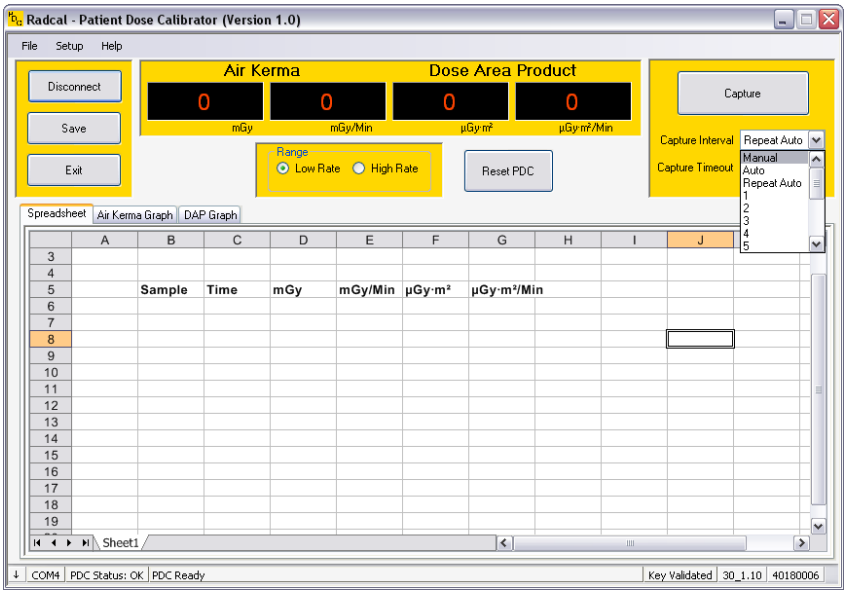
Data capture

Data can be captured from the PDC in one of 4 modes. The mode to be used is selected from the Capture Interval drop-down list as shown below.

For capture modes other than Manual there must also be an associated Capture Timeout value that governs the way the capture is terminated.

The capture timer value can never be set higher than the current value of the PDC's own internal Auto Reset Time value.

If the PDC's Auto Reset Time value is modified to a value lower than the current capture timeout then the capture timeout is reduced to the nearest value below or equal to the PDC's Auto Reset Time.



Captured data is always inserted into the spreadsheet at the current spreadsheet cursor location. After capture, the cursor will be advanced by one row. At the end of each timed capture the PDC unit will be Reset.

Capture modes

Manual

In manual mode, data will be captured from the PDC each and every time the Capture button is clicked. Capture Timeout will be hidden when this option is selected.

Auto

In auto mode a Capture Timeout value is required. This timeout value is used to trigger a single capture following the selected number of seconds of unchanging, non-zero data on the PDC display, effectively capturing the final measurement of a radiation.

Following the capture the PDC will be Reset.

Repeat Auto

This is identical to the auto mode above but has additional functionality such that following the Reset another Auto Capture is initiated without user intervention.

Timed

In timed mode, the user selects the time interval between successive captures and also sets the optional Capture Timeout. The software captures successive lines of data, at the sample interval, and, if enabled, will automatically terminate the Capture process following the selected number of seconds of unchanging, non-zero data on the PDC display.

Setting the capture timeout to ***Off*** will leave the software capturing data at the specified interval until the user manually terminates the capture.

Spreadsheets

Saving captured data

Captured data can be saved as an Excel 97 format (.xls) spreadsheet file by selecting ***File/Save*** from the menu.

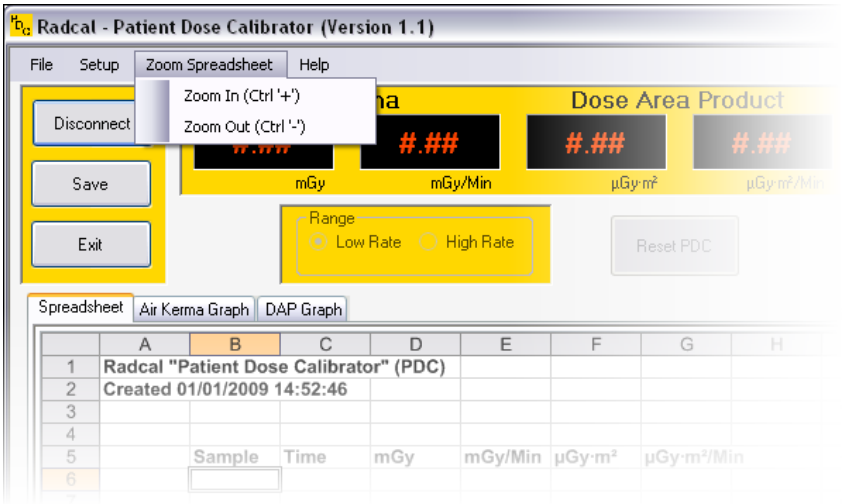
Reloading saved data

Excel 97 format (.xls) spreadsheets can be opened to allow additional data to be inserted (at the position of the currently selected cell) by selecting ***File/Open*** from the menu.

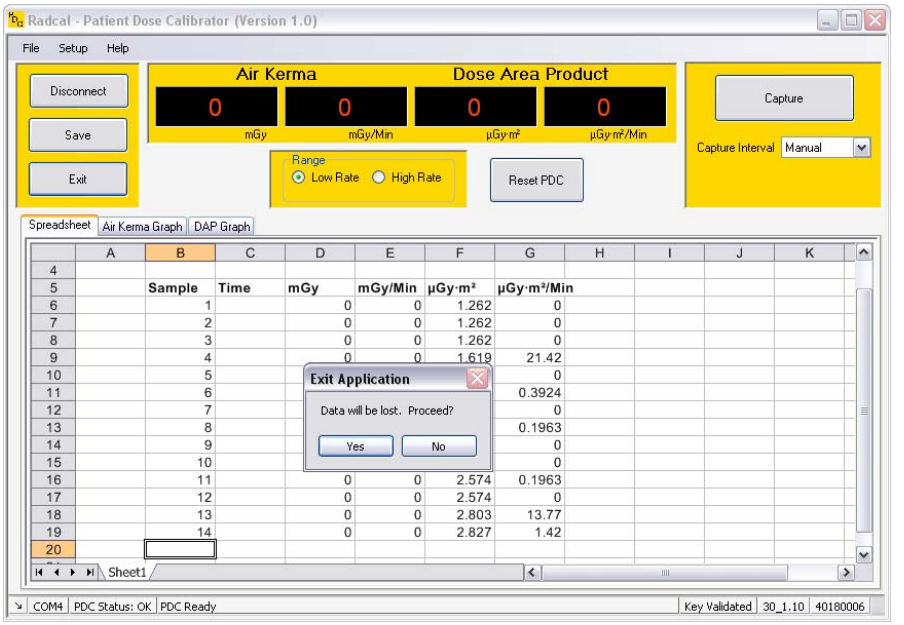
Zooming the spreadsheet view

The spreadsheet can be zoomed to show more or less data. Zooming can be achieved by any of the following methods:

1. Using the menu item ***Zoom Spreadsheet***
2. Using ***Ctrl '+'*** and ***Ctrl '-'***.
3. Clicking on a spreadsheet cell then rotating the mouse wheel whilst holding the ***Ctrl*** button down.



Exiting the software or loading an old or new spreadsheet without first saving currently captured data will produce the following warning message.



Using templates

The software can be configured to use either the supplied Radcal templates or the customers own Excel 97 template (.xls or .xlt) whenever a new spreadsheet is loaded either at program start-up or by using the ***File / New*** menu operation.

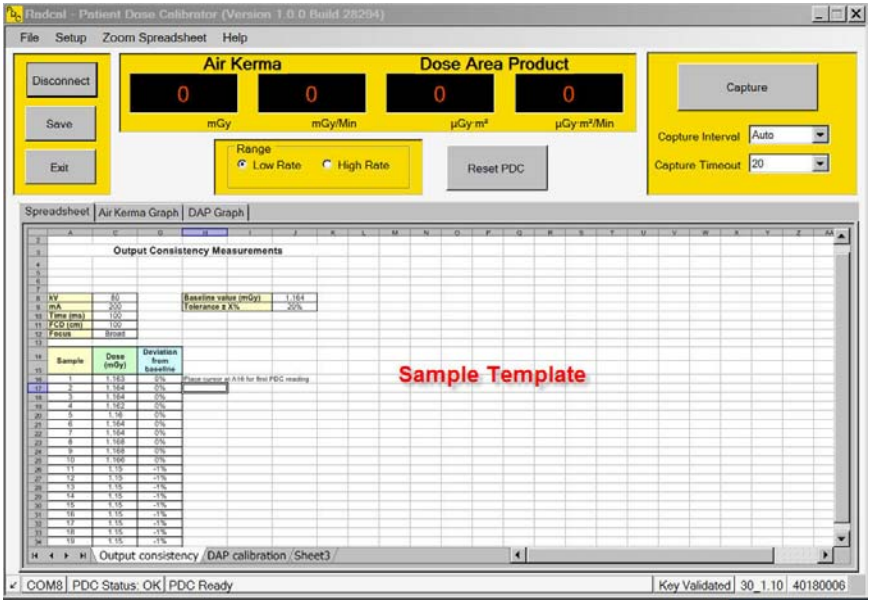
If at any time this template spreadsheet should become unavailable then the system will warn the user accordingly, un-check the template option in Setup, and revert to the default blank spreadsheet.

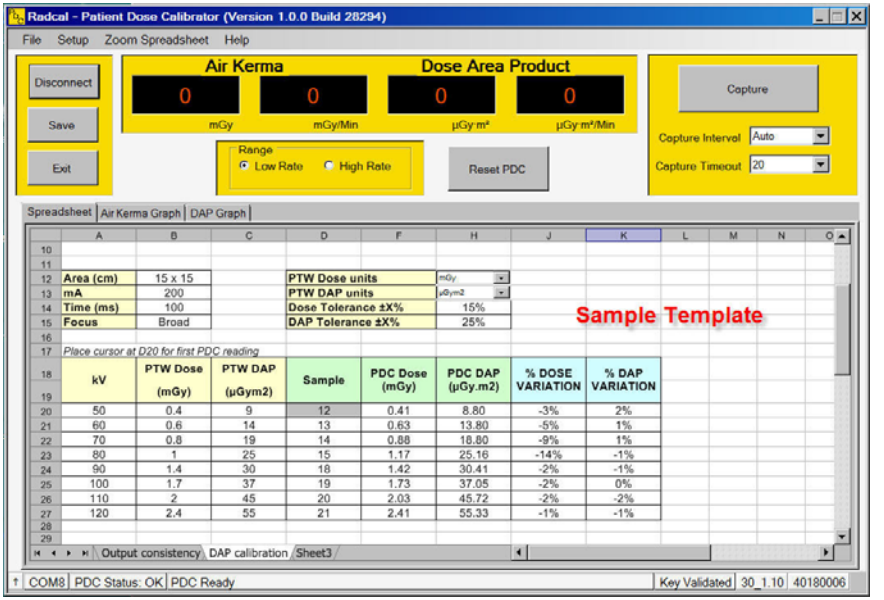
Template files offer the experienced user the ability to include spreadsheet macros to perform additional tasks particular to their situation.

We suggest you visit the Radcal website http://www.radcal.com from time to time. We plan to post free shareware .XLS templates for downloading and importing into the PDC software.

Radcal installed templates are stored in the directory ***%ProgramFiles% \ Radcal \ PDC \ Templates***. A shortcut to this directory is available in the Start Menu under ***Radcal / PDC / Templates*** and from the desktop.

User created templates can be stored in any convenient directory.


Radcal - Patient Dose Calibrator (Version 1.0.0 Build 28294)
File Setup Zoom Spreadsheet Help
Disconnect
Save
Exit
Air Kerma
Dose Area Product
0
mGy
mGy/Min
µGy·m²
µGy·m²/Min
Range
Low Rate
High Rate
Reset PDC
Capture
Capture Interval
Auto
Capture Timeout
20
Spreadsheet
Air Kerma Graph
DAP Graph
Output Consistency Measurements
Sample Template
Output consistency
DAP calibration
Sheet3
COM8
PDC Status: OK
PDC Ready
Key Validated
30_1.10
40180006


Radcal - Patient Dose Calibrator (Version 1.0.0 Build 28294)
File Setup Zoom Spreadsheet Help
Disconnect
Save
Exit
Air Kerma
Dose Area Product
0
mGy
mGy/Min
µGy·m²
µGy·m²/Min
Range
Low Rate
High Rate
Reset PDC
Capture
Capture Interval
Auto
Capture Timeout
20
Spreadsheet
Air Kerma Graph
DAP Graph
Area (cm) 15 x 15
mA 200
Time (ms) 100
Focus Broad
PTW Dose units mGy
PTW DAP units µGym2
Dose Tolerance ±X% 15%
DAP Tolerance ±X% 25%
Sample Template
Place cursor at D20 for first PDC reading
kV | PTW Dose (mGy) | PTW DAP (µGym2) | Sample | PDC Dose (mGy) | PDC DAP (µGy.m2) | % DOSE VARIATION | % DAP VARIATION
50 | 0.4 | 9 | 12 | 0.41 | 8.80 | -3% | 2%
60 | 0.6 | 14 | 13 | 0.63 | 13.80 | -5% | 1%
70 | 0.8 | 19 | 14 | 0.88 | 18.80 | -9% | 1%
80 | 1 | 25 | 15 | 1.17 | 25.16 | -14% | -1%
90 | 1.4 | 30 | 18 | 1.42 | 30.41 | -2% | -1%
100 | 1.7 | 37 | 19 | 1.73 | 37.05 | -2% | 0%
110 | 2 | 45 | 20 | 2.03 | 45.72 | -2% | -2%
120 | 2.4 | 55 | 21 | 2.41 | 55.33 | -1% | -1%
Output consistency
DAP calibration
Sheet3
COM8
PDC Status: OK
PDC Ready
Key Validated
30_1.10
40180006

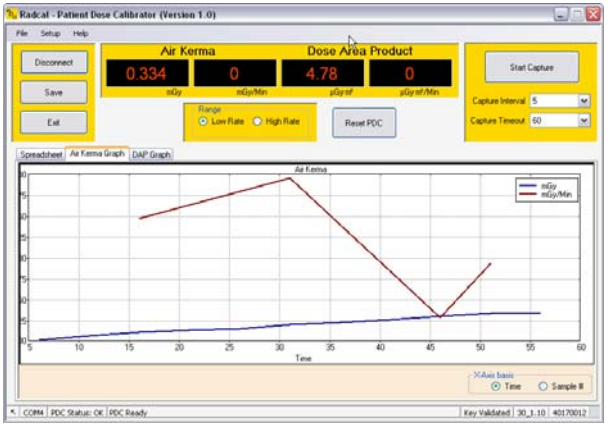
Graphs

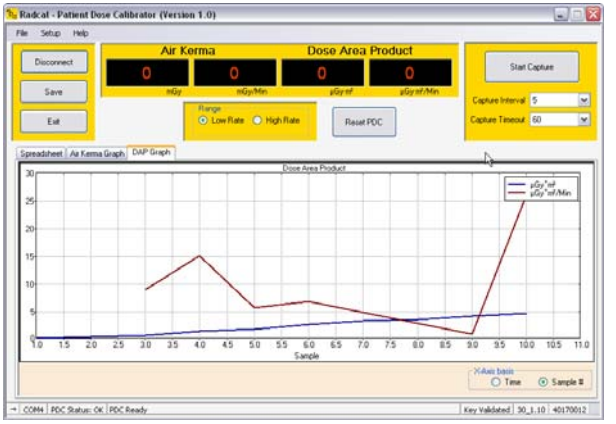
Data captured during this session can optionally be displayed in a graphical form with the X-Axis being either the Sample Time or the Sample Number.

The X-Axis setting last used for each graph is remembered and restored when the graph is next displayed.

Air Kerma

A typical Air Kerma graph showing Time on the X-Axis



Dose Area Product (DAP)

A typical DAP graph showing Sample Number as the X-Axis