

Introduction to XLPRO

Radcal's Radiation Monitors are joined with Excel, Microsoft Windows' spreadsheet program, to transform your Radiation Monitor and computer into an integrated data-capture and report-generation system. Radcal's add-in provides two-way communication through your computer's Universal Serial Bus (USB) to the 9010, 9015, 9095, 9096, 4083, 4085, 4086 or 2086 Radiation Monitors. The 9096 is called the "Accu-Pro"; the 4085 version 5.20 or greater (4086) is the "Accu-kV"; the 2086 is the "Accu-Dose". Functions are provided to control the basic operation of the Radiation Monitor in *Rate*, *Max-Rate*, *Dose*, *Last-Dose*, *Pulse*, *Pulsed-Radiation* and *kVp* measurement modes, with an additional capability to customize the output for your particular application. XLPRO is available while you are using Excel; it actually becomes a part of Excel with its own menu of commands. Once XLPRO is open, all of the power of Excel is available, including statistics, graphics and macros written in Visible Basic for Applications. Macros may be used to automate access to the Radiation Monitor and to facilitate data entry and processing.

Note: This program only operates properly when the specified locale is English (United States). In the Windows Start menu, select Settings, Control Panel and then choose English (United States) as your locale under Regional Settings (or Options). A valid Rainbow Technologies Sentinel SuperPro key must be plugged into one of your USB ports in order for the program to communicate with the Radiation Monitor.

Overview of XLPRO

*Note: This version of XLPRO has significant differences compared to versions of 9000XL prior to 2.00. THOSE FAMILIAR WITH SUCH OLDER VERSIONS ARE STRONGLY ADVISED TO READ THE SECTIONS OF THE INCLUDED MANUAL ENTITLED **The Settings Area AND Appendix B: Waveforms** BEFORE TRYING TO USE THIS VERSION. The old Get Reset Data, Initialize Worksheet and Reload Worksheet commands have been replaced with the Modify Settings Area, Update Settings Area and Copy or Move Settings Area commands. Some kVp modes now contain graphs and spectral information on the ripple. This version upgrades version 4.06 of XLPRO and also supports the 9096, 4086 and 2086 instruments.*

As is generally true for Microsoft Excel, data and the results of calculations are placed into "worksheets", one or more of which are grouped into a "workbook". Each workbook has a file name for access from the Windows operating system and must be stored in an appropriate "folder" (directory). Workbooks derived from 9000PXL.xlt, 9096PXL.xlt, 4085PXL.xls or the Sample Templates, which are delivered with XLPRO, contain a worksheet named "Settings", together with one or more operational worksheets with user-defined names. These operational worksheets will store the data that result from making measurements with the Radiation Monitor under the control of XLPRO. Each operational worksheet must contain a "Settings Area", which is a 30-row by 3-column area at a user-selected location, that specifies the details of the interface to the instrument. Executing one of the XLPRO commands generates the Settings Area as a copy of the Settings Area of the Settings sheet, and the Settings Area remains a permanent part of the operational worksheet even after Excel closes.

The operational worksheet can be as simple as a normal Excel worksheet with an added Settings Area or as complicated as a user-customized template containing multiple places for data entry and the results of numerous calculations involving these entries, including graphical outputs. (See the worksheets named Radiographic, Special or Mobile in 9095 Sample Template.xls for typical templates with multiple inputs and outputs.) One of the advantages of XLPRO is your ability to use the power of Microsoft Excel to organize and process the results of radiation measurements using the supported Radiation Monitors. However, for simple data-collection applications no involved templates are required, and the results of radiation measurements can be placed at user-selected positions in a normal Excel worksheet. Only your imagination limits this flexibility.

Once XLPRO has been installed on your computer with a valid key and the instrument has been connected to a USB port, operating your instrument from XLPRO is a simple menu-driven procedure. When you open a worksheet with a Settings Area (or open the Settings sheet), XLPRO loads automatically, and the menu item *XLPRO* appears between the *Window* and *Help* menu items on the standard Excel menu bar. Various commands in this menu permit you to generate, modify or move the Settings Area, as well as to perform the measurements that your instrument supports.

Note: The 4083/5/6 do not support ion-chamber measurements. The 2086 has no kV outputs.

When you execute one of these measurement commands, XLPRO first establishes communication with the instrument over the USB and then instructs it to perform the commanded measurement. At this time you should expose the appropriate sensor to the desired type of radiation. The instrument then transmits the results of this exposure to XLPRO, which places them on the worksheet at a location based on the cell selected just before issuing the measurement command. Some measurements will require multiple cells for data output, whereas sometimes only a single cell is needed. XLPRO can convert the units of the dose-related results to any of the usual radiation and time units based on parameters in the Settings Area.

When you execute the first measurement command after opening the workbook, a three-line title window appears. The third line gives the status of the protection key. If you purchased XLPRO and plugged the delivered key into one of your Universal Serial Bus (USB) ports or used the key for a valid demonstration copy of the software, the third line will contain *Serial No: nnnnn* or *DEMO S/N: nnnnn*, where nnnnn is the serial number of the key, and the command will execute. Otherwise the command will not execute and one of the following status lines appears:

KEY ERROR 3 – you forgot to plug in the key

INVALID KEY S/N: nnnnn – you used an invalid key

DEMO OVER S/N: nnnnn – your demonstration copy has expired

If later you remove the key or the demonstration copy expires, or if you are using the wrong key for your instrument type, you will get Excel Error 25: *Invalid key or expired demo*.

Note: The software is delivered with a detailed manual named XLPROManual.pdf. This manual can be viewed and printed using the Adobe Acrobat Reader.

Software Installation

System requirements

IBM-PC compatible laptop or desktop personal computer with a Universal Serial Bus
VGA graphics
Graphics-capable printer
Microsoft Windows 98 SE, 2000, XP Vista 32/64, or Windows7 32/64
Microsoft Excel 97 or later
Radcal Radiation Monitor 9010/15 (firmware 2.1 or later), 9095/6, 4083/5/6 or 2086

Installing the XLPRO software and associated USB drivers

Note: The software installation uses Microsoft's Windows Installer Service, which is standard in Windows 2000. If your operating system has not yet been upgraded to use Windows Installer Service, this upgrade will first run automatically at the time of installation.

Note: The following installation actually installs three programs - namely, XLPRO and the drivers for the instrument's USB interface and for the SuperPro protection key. Remove any USB connections associated with these drivers during installation.

1. Insert the CD-ROM with XLPRO-USB software. This version 4.10 will overwrite version 4.06. If you also want version 3.15, reload it after installing version 4.10.
2. If a dialog does not display "Welcome to the InstallShield Wizard for Radcal XLPRO-USB", find *setup.exe* on the CD-ROM root directory and launch it.
3. Click on *Next*. The installation then proceeds to the *Sentinel Protection Installer 7.3.2*. When this installation completes, click *OK* in the dialog entitled *Sentinel Protection Installer 7.3.2 Setup completed successfully*.
4. In the *Select Destination Folder* dialog in the case of new template files, use either C:\Program Files\Radcal\XLPRO-USB\ as given in the dialog or any name allowed by the Windows operating system. For old template files using Excel-4 macros, use C:\9000XL\ and see Appendix H of the detailed manual. Click on *Next*.
5. The next dialog permits you to avoid installing the shortcuts and files which are related to instrument types that you are not using. Choose amongst 9096, 9095, 2086, 4083, 4085 and 9000 for any undesired types, click on the associated button and select *This feature will not be available* to avoid installing this instrument type. The default selection is *This feature will be installed on local hard drive*. For the 4086 use the 4085 selection. Click on *Next*, and then click on *Install*.
6. Follow the on-screen prompts to complete the installation.

7. Plug the instrument and the SuperPro key that was delivered with your CD-ROM into your USB ports. Different instrument types may require different keys. The plug-and-play feature will automatically associate these devices with their drivers.

Note: The setup file can also be downloaded into a temporary folder. Double left clicking on setup.exe launches the Wizard to install XLPRO; after the installation it can be deleted.

Note: If you have already installed XLPRO with a version number of 2.0 or above, the Wizard may require you to remove it before installing a new revision. In this case perform this uninstall and then install the new version. You do not need to uninstall RadcalRadiationMonitor Driver Set or Sentinel Protection Installer 7.3.2.

Installed-file descriptions

A single setup.exe file distributes the software. When this file is executed, it causes the following files to be added to the installation folder if all instrument types are installed:

Readme.txt	Installation notes and procedure
9000XLMacro.xls	Main macro file for XLPRO
9000XL.xlm	Macro-4 file as a bridge to versions of 9000XL before 2.00
9000XLold.xlm	Version 1.20a of 9000XL in Macro-4 language
9000PXL.xlt	Basic template for XLPRO with 9010 or 9015
9000 Sample Template.xls	Examples of 9010 custom templates and tutorial outputs
9096PXL.xlt	Basic template for XLPRO with 9096
9095PXL.xlt	Basic template for XLPRO with 9095
9095 Sample Template.xls	Examples of 9095 custom templates and typical outputs
9096 Sample Template.xls	Examples of 9096 custom templates
4085PXL.xlt	Basic template for XLPRO with 4085
4085 Sample Template.xls	Example of 4085 custom template and typical waveforms
4083PXL.xlt	Basic template for XLPRO with 4083
4083 Sample Template.xls	Example of 4085 custom template and typical waveforms
2086PXL.xlt	Basic template for XLPRO with 2086

The following files are placed in the Manuals sub- folder:

XLPROManual.pdf	This full XLPRO manual in Adobe Acrobat format
XLPROInstallation.pdf	Installation notes in Adobe Acrobat format
Enable Macros.doc	How to enable macros in Excel 2007 and Excel 2010

The following files are added to the Windows System folder:

9000XL4.dll	Interface functions to the instrument
DETKVP.dll	Routines to process kV waveforms

The installation of the USB drivers also adds files to the Windows System folder. Copies of their installation files are in the Sentinel SuperPro and USB Drivers sub-folders.

Connecting the instrument to a computer

For the 9095-version 4.15 and later and the 9096/4085/4086/2086 instruments, which support a direct USB interface, just connect the USB cable between the computer and the instrument. For other instruments, connect the USB-to-serial adapter to the computer's USB and connect the instrument's RS-232 connector directly to the adapter or use the supplied cable. The Model 8301 has a 9-pin female connector on the adapter end and a 9-pin male connector on the instrument end. Then turn on your Radiation Monitor, and wait for the instrument's self-test to complete.

Starting XLPRO

Double left clicking on either the *XLPRO9096* desktop icon or *XLPRO9096* listed in *Programs, Radcal Corporation* as part of the *Start* menu will open a copy of 9096PXL.xlt in Excel and launch the XLPRO program. (Use *XLPRO9000* to obtain 9000PXL.xlt for the 9000, or *XLPRO4085* to get 4085PXL.xlt for the 4085/4086, or *XLPRO2086* to get 2086PXL.xlt for the 2086, or *XLPRO4083* to get 4083PXL.xlt for the 4083.) Alternatively, you can navigate with Windows Explorer to the folder containing a workbook that has been set up to operate with XLPRO and double left click on its file name.

Uninstalling

The Windows *Add/Remove Programs* utility in the *Control Panel* can be used to uninstall XLPRO-USB and its USB drivers. These programs are listed separately as *Radcal XLPRO_USB*, *RadcalRadiationMonitor Driver Set* and *Sentinel Protection Installer 7.3.2*. They can be uninstalled independently of each other. You also can uninstall XLPRO from *Start, Programs, Radcal Corporation, Uninstall XLPRO-USB*.