

## SmartSoft-VersaProbe Software Release Notes

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Release 2.10.4 – February, 2021 (Win7: 32-Bit)

Release 3.1.4 – February, 2021 (Win10: 64-Bit)

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### OVERVIEW

Bug Fix Release, Add anode water line protection, prevent UI flickering.

### NEW FEATURES

#### System

1. Main: GigE: Disable event handlers that cause UI flickering on OS Group Policy updates.

#### Sample

2. Sample>Stage: Initialize anode motor on startup.
3. Sample>Stage: When initializing stage, try to turn X-Ray to Off mode.

#### Hardware

4. Hardware>X-Ray: Initialize anode motor before Beam Power and Beam Size unless disabled in Properties -> Service tab.
  5. Hardware>X-Ray: Force anode drive to anode position on X-Ray On mode selected.
  6. Hardware>X-Ray: Prevent X-Ray On or Park when stage not initialized.
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Release 2.10.3 – July, 2019 (Win7: 32-Bit)

Release 3.1.3 – July, 2019 (Win10: 64-Bit)

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### OVERVIEW

Bug Fix Release, Fixes some REELS bugs, Pulsed timed I-neut before Z-Align state bug.

### BUG FIXES

1. Options>REELS: Fix REELS acquisition with Tungsten E-Gun errors out.
  2. XPS>Map: Fix Map acquisitions not working when Tungsten E-Gun is configured.
  3. XPS >Z-Align: Fix Pulsed Ion Neut before Z-Align causing lockup.
  4. AES>More Acq: Fixed bug where AES acquisition 'More' would load incorrect resolution values into the region table.
  5. Options>LEIPS: Fixed bug where failed LEIPS acquisitions did not clean up data plot area.
  6. AES>Energy Range: Min energy range updated to 10 eV to prevent issue of possible drop-off of collected data when starting at 0 eV.
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Release 2.10.2 – March, 2019 (Win7: 32-Bit)

Release 3.1.2 – March, 2019 (Win10: 64-Bit)

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### OVERVIEW

Additional support for LEIPS,UPS, 777B Pressure Control, Bug Fixes.

### NEW FEATURES

## SEE

1. The System Evaluation Environment (SEE) is a new service utility built into the SmartSoft software which periodically records all system parameters while SmartSoft is running. Notes: By default this utility is not activated; and Proprietary analytical data is never collected with SEE.
2. Menu Bar>Hardware>System Configuration>System...>SEE: SEE data collection can be fully activated or deactivated in the configuration menu.
3. Menu Bar>Hardware>System Log Setup>Data Sampling: SEE data collection can be partially activated or deactivated for individual hardware devices by selecting Data Sampling. Note that Data Sampling for individual devices is only valid when SEE data collection is activated in the System Configuration.

## UI

4. Menu Bar>Data>System Colors>Sample Viewer: Add ability to change platen thumbnail caption color.

## System

5. System>Create Sample: GigE: Add LEIPS platen default platen image.

## Sample

6. Sample>Stage: Rotation range updated to -258 to 100 degrees for H/C stages with limit switches.

## Options

7. Options>LEIPS Data File Header: Updated fields in data header to be more compatible with Multipak.

## XPS

8. XPS>Data File Header: For both XPS and AES data files, storing Ion Gun Neutralizer parameters separate from Ion Gun Presputter parameters.
9. XPS>Data File Header: For both XPS and AES data files, storing Ion Gun Neut On/Off.

## AES

10. AES>Spectrum: SEM Setting changed back to read only field.

## Hardware

11. Hardware>E-Neut: For LEIPS support, there is now a way to set E-Neut Extractor Blanking Voltage for Standby Mode.
12. Hardware>Source>UPS: Support 'Auto' Photon Source tuning for switching to second line (ie. He1 -> He2).
13. Hardware>Source>UPS: When V4 interlock is triggered, turn UPS UV state to Off so that Pressure Control is stopped and Rough Pump Valve is closed. 20-280 Control.
14. Hardware>GCIB>Diagnostics: Disable Heat Exchanger State and Heat Exchanger Interlock with 777B Control.

## BUG FIXES

1. System>Turbo Status: For Leybold Turbo Control, check turbo speed status to determine On/Off status.
2. System>Shutdown: Fix missing logic to shutdown SXI and SEM imaging on SmartSoft shutdown.
3. XPS/AES>Profile>Profile Properties: Fix bug where when running zalar sputter at alternate sputter position (Sputter Offset), zalar was occurring at incorrect X and Y position.
4. AES>More Acq: Fixed bug where AES acquisition 'More' would load incorrect resolution values into the region table.
5. Options>LEIPS: Fixed bug where failed LEIPS acquisitions did not clean up data plot area.

6. AES>Energy Range: Min energy range updated to 10 eV to prevent issue of possible drop-off of collected data when starting at 0 eV.
7. AES>IR Info: Fix imgs shift X/Y Offsets accumulating when setting up Registration Area.
8. Hardware>Ion Gun: Fix 'Auto' pressure control not getting set on startup of SmartSoft with 777B pressure control.
9. Hardware>Ion Gun: Fix 'Auto' pressure control checkbox status not being saved between restarts of SmartSoft with 777B pressure control.
10. Hardware>Ion Gun: Update sizing of Ion Gun view to help with scroll bars appearing when not needed.
11. Hardware>Ion Gun: Fix bug where when neutralizing or sputtering, previously loaded setting extractor pressure could get used.
12. Hardware>GCIB: GCIB Diagnostics: Fix "Power Status" being displayed backwards with 777B pressure control.
13. Hardware>GCIB: Fix when presputter or timed sputter completed, GCIB would not 'Auto' close the Ar leak valve.
14. Hardware>UPS: With 20-280 control, fix Rough Pump Valve Status not being updated on change.
15. Hardware>UPS: With 20-280 control, fix V4 Interlock message popping up about turning UPS 'Off' when UPS is already in 'Off' mode.
16. Hardware>Detector>Properties>MCD: Fixed X-Ray Settings being shown instead of SEM Settings, since AES MCD acquisition always uses SEM Settings.

#### KNOWN BUGS

1. Before acquisitions with Ion Neutralization are queued, the Ion Gun mode should be set to 'Standby', so that it is returned to this mode after the acquisition. If the mode is 'Off', the Ion Gun will be restored to the 'Off' mode.
2. Ion gun pulsed neutralization before Z-Align feature is broken in this release. This will be fixed in future releases.

#### NOTES

1. None.

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Release 2.10.1 – November, 2018 (Win7: 32-Bit)  
Release 3.1.1 – November, 2018 (Win10: 64-Bit)

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#### OVERVIEW

Bug Fix Release

#### BUG FIXES

17. Sample>Position List>: Default Exception Error when editing position list when IR option not enabled.
18. XPS>Depth Profile: IR Setup is visible in Depth Profile Setup tab when IR option not enabled
19. Menu Bar>Hardware>System Configuration: Turbo Pump Type change is not saved.

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Release 2.10.0 – October, 2018 (Win7: 32-Bit)  
Release 3.1.0 – October, 2018 (Win10: 64-Bit)

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#### OVERVIEW

SEE Diagnostics, REELS, LEIPS, PHI-UPS Controller, SXI Image Registration Enhancements, Bug Fixes.

## NEW FEATURES

### SEE

1. The System Evaluation Environment (SEE) is a new service utility built into the SmartSoft software which periodically records all system parameters while SmartSoft is running. Notes: By default this utility is not activated; and Proprietary analytical data is never collected with SEE.
2. Menu Bar>Hardware>System Configuration>System...>SEE: SEE data collection can be fully activated or deactivated in the configuration menu.
3. Menu Bar>Hardware>System Log Setup>Data Sampling: SEE data collection can be partially activated or deactivated for individual hardware devices by selecting Data Sampling. Note that Data Sampling for individual devices is only valid when SEE data collection is activated in the System Configuration.

### UI

4. Menu Bar>Tools>System Configuration: Simplified UI: configuration options are organized by sessions; property dialogs are added for configuration details.
5. Menu Bar>Tools>System Configuration>Options: Add REELS option. Activation key required.
6. Menu Bar>Tools>System Configuration>Options: Add LEIPS option. Activation key required.
7. Menu Bar>Tools>System Configuration>Options: Add PHI-UPS option.
8. Menu Bar>Tools>System Configuration>Chamber Camera: Add support DFK 42AUC03 USB camera.
9. Menu Bar>Tools>System Configuration>Turbo Pump Type: Add Configuration Support for Leybold Turbos
10. Menu Bar>Tools>System Configuration>Electron Gun. Add support for Tungsten filament electron gun which is used for REELS.
11. Menu Bar>Tools>System Configuration>Ion Gun: Add support for the 777B Piezo Valve.
12. Menu Bar>Tools>Chart Recorder...: The Chart Recorder now includes an 'Auto Scale' feature which optimizes the data displays for all plots.
13. Menu Bar>Tools>Resource Monitor: Add monitoring of C: hard disk space. A warning message is displayed when the available disk space falls below an enterable threshold value.
14. Menu Bar>System>Task Scheduler: A 'Once' checkbox option is added to the task scheduler to run task only one time.
15. Menu Bar>System>Zip Log Files: Include timestamp in the default filename.
16. Status Bar: Add Acquisition Setup Properties indicators.

### System

17. Intro>Intro Camera: GigE: Log error description along with error code in system log.

### Sample

18. Sample>Z-Align: Check if Z-height is equal to or lower than initial Z-Align drop. If this is true start Z-Align at current Z-height.
19. Sample>Stage>Stage Properties: Add *Protection During Acquire* and *Protection During Drive*. Protection During Acquire: lowers the Z and R when the stage is moved to the next analysis point during an acquisition; Protection During Drive: lowers the Z and R when stage is moved using the stage Drive All feature.

### XPS

20. XPS>Data Manager>Lab Book: The lab book can now include an unlimited number for data file entries. Previous limit was 150.
21. XPS>Spectrum>Properties: Support selecting pre-sputter gun type.
22. XPS>Acquisition Setup>Refresh Acquisition Viewer: Add *Restart* button.
23. XPS>Acquisition Setup>Refresh Acquisition Viewer: Add FWHM reading to data display.
24. XPS > SXI Properties>Image: Add enhanced live image processing options: Bright Band Correction, Noise Reduction, and Contrast Enhancement.

25. XPS >SXI Viewer>Image Registration: The saved reference image is now displayed as part of the image registration setup dialog.
26. XPS > SXI Viewer>Image Registrations>Properties: One can now pre-select the acquisition behavior when an image registration fails (Prompt User, Continue, Stop). Prompt User - will display a dialog box and wait for operator intervention; Continue - will continue the data acquisition without image registration; Stop - will stop the acquisition at the current frame or cycle.
27. XPS > SXI Viewer>Image Registrations>Properties: One can now select the number of IR retries before reporting a failure.

### AES

28. AES>Spectrum: Add FAT analyzer mode (REELS Option).

### Hardware

29. Hardware>C60: C60 diagnostics menu meter range is red when the gun is off. Added support to show the range is unknown [- -] when the gun is off.
30. Hardware>Analyzer: Add unique Gauze Lens Spans and Offsets for HP.
31. Hardware>Analyzer: Calibration: *TFC coefficient A* range max increased to 1000.

### Service

32. CommChecker.exe: A new utility called CommChecker is included in the SmartSoft-VersaProbe\bin folder. CommChecker is used to check the communication channels as defined in the SmartSoft-VersaProbe configuration properties file for trouble shooting purpose.

### BUG FIXES

1. UI>Tab Stop: Tab stops are removed for all menus.
2. UI>Menu Bar>System>Task Scheduler...: Fixed problem where the Task Scheduler incorrectly reports "AutoTool is already running".
3. System>Intro Photo>Take Intro Photo: Corrected bug where intro photo is taking many minutes.
4. Sample>Position List>Z Position = 0.0: A default Z position of 0.0 indicates that the Z position is unknown at the time the position is created (e.g. platen not on the stage; import from defect file). *Drive to Position* ignores the Z move when the Z position is 0.0. SmartSoft now displays a prompt which clarifies that a default value of 0.0 maintains the current Z position; while a value of 0.001 drops the Z to a minimum Z position.
5. Sample>Position List: When driving to position stage sometimes moves even when already at position. Increase X/Y tolerance.
6. Sample>Platen Viewer: Photo appears washed out, too light. Changed default gamma from 0.6 to 1.0.
7. XPS>SXI: SXI files (.sxi) are missing the photo file name which causes a problem when displaying spatial areas. Fixed.
8. XPS>Spectrum>Element Database: Default transition energy window for Ru3p3 is 458-478 eV. It should be 453-473 eV. Note that element database must be manually updated to get this fix.
9. XPS>Spectrum>Element Database: Remove spaces from transition names and replace with '\_' character to prevent problems managing between SmartSoft and Multipak. Note that element database must be manually updated to get this fix.
10. XPS>Depth Profile: During GCIB depth profile with ion neutralization, the profile often fails by *Timed Sputter Failure*. (OLE Error).
11. Hardware>X-Ray>Diagnostics: Log application error when arc is detected.
12. Hardware>C60/GCIB: Persist lifetime value to file when values change to protect against crash or forced shutdown. Note that Ion Gun lifetime times are in saved in the firmware and do not need to be persisted in SmartSoft.
13. Hardware>GCIB: PHI USA GCIB: Loading setting file while in standby mode should not load the high voltage.

### KNOWN BUGS

3. Before acquisitions with Ion Neutralization are queued, the Ion Gun mode should be set to 'Standby', so that it is returned to this mode after the acquisition. If the mode is 'Off', the Ion Gun will be restored to the 'Off' mode.

## NOTES

2. None.
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Release 2.9.0 - October 2017 (Win7; 32-Bit)

Release 3.0.0 - October 2017 (Win10; 64-Bit)

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## OVERVIEW

Windows 10 support, SXI Image Registration, Element database editor, Bug Fixes

## NEW FEATURES

### UI

1. SmartSoft-VP Icon: New Icons.
2. Configuration Manager: Exit dialog is now more intuitive with 'Save' options.
3. Configuration Manager: '4-Contacts' Hot/Cold Stage selection renamed to 'PreVac 4-Contacts' to avoid further confusion.
4. Configuration Manager: Support both 'DFx41BU02' and 'DFK41BU02' Chamber Camera models.

### System

5. Tools: Chart Recorder: Revamped Chart Recorder tool for plotting short-term history of designated parameters.
6. Tools: System Log Setup: Add right-click context menu to "System Log..." button for selecting system log viewer to use.

### Sample

7. SXI: Add SXI Image Registration Support

### XPS

8. Element Database: Element Database can now be edited through right-click context menu on periodic table elements.

### AES

9. Element Database: Element Database can now be edited through right-click context menu on periodic table elements.
10. Acq Setup: Change min KE to 10 eV from 30 eV.

### Hardware

11. GCIB: Display dialog when GCIB interlock is tripped to notify users.
12. FXS: Add 'Clear Registers' button to FXS Registers Diagnostics View. Clear Registers on Reinitialize automatically.
13. Ion Gun: Added logging to Application Log for Ion Gun.

### Misc.

14. Vacuum Pressure Log: A simple version of a vacuum pressure log is written to a file in the Settings/Log directory. The interval of entries is in Vacuum Settings "Properties.phi" file.
15. Anode Position Delta: Open up "Anode Position Delta (mm)" min/max range so that Stage Settings "Properties.phi" file can be altered to reduce this value if needed.

## BUG FIXES

7. AES: Periodic Table: Fix right-click element popup menus for selecting transitions.

8. XPS: Periodic Table: Fix right-clicking on K or Ca to choose alternative regions.
9. Hardware: Analyzer: TFC parameters Narrow or Standard were written to data file header based on analyzer mode when queue started instead of how queued acquisition was designated.
10. Navigation: SXI Position: When adding a analysis position to a non-square SXI Image, acquisition was running at wrong position.
11. System: Intro Camera: Fix issue where single Intro Camera configured systems with GigE camera would require the camera to have "Device User ID" set to "Intro" to work. Now it behaves like the Canon camera which by default doesn't look for device name with single camera, only with multiple cameras such as SS-VP Prep.
12. Intro: Intro Camera: Fixed bug where GigE Intro Camera configuration would default to GigE camera simulation 'On'.
13. XPS: Data File Header: Fixed bug where wrong Presputter mode would get recorded in data file header.
14. XPS: Presputter, Peak to Noise, Narrow Acceptance Angle, Zalar Rotation Speed: These parameters are set in UI through autotool tasks instead of behind-the-scenes.
15. Hardware: Beam Parking: Maintain beam parking mode differently, which fixes bug of X-Ray mode changing from 'Park' to 'On' after and SXI file save, even though beam is still parked.
16. Hardware: Lab6 E-Gun with AES: When AES acquisitions are stopped, no longer turning the E-Gun off.
17. XPS: UPS acquisitions with FXS acquisitions: Fix bug where transitioning from a UPS acquisition to an FXS acquisition would incorrectly clip region ranges.
18. Sample: Stage Position Check: Increased Rotation tolerance when deciding if stage needs to be moved when starting acquisitions (problem was stage moving when already at acquisition position).
19. Sample: Save SXI E-Neut: Fixed a bug where E-Neut would get turned off when saving SXI Image.

#### KNOWN BUGS

1.

#### NOTES

1. SCA Lens Table Updates: To pick up SCA Lens Table changes when updating existing software, move or rename SCA Lens Table files in SmartSoft 'Configuration' directory and rerun the Configuration Manager to get new files. Or manually copy and rename the files from the 'PredefinedSetting' directory to the 'Configuration' directory.

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Release 2.8.0 - January 2017

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#### OVERVIEW

SmartSoft-VersaProbe V2.8.0 adds: Support for 64-Bit OS; New TFC Correction; RBD Ammeter; GigE Intro Camera; Bug Fixes

#### NEW FEATURES

##### UI

1. SmartSoft-VP Icon: New Icon.

##### System

2. Turbo Speed Interlock: Put in check for if turbo speed drops below 80% V4 is closed.
3. Intro/Prep GigE Camera: Implemented support for GigE camera, redesign the intro process to improve clipping and calibration procedure.
4. Dual Anode Stage Init: Request warning when initializing stage to retract Dual Anode.
5. Sample Max Z-Height: If Sample Max Z-Height is set below stage transfer position, user will be notified to change Max Z-Height to allow transfer process to complete.
6. Transfer Vessel: Added "Transfer Vessel" task to SmartSoft so to not have to run only through Watcher.

### SEM

7. SEM Image Properties > Added expandable tabs.
8. Histogram Dialog > Ability to resize.
9. SEM: Reduced Image: Automatically take the SEM out of Auto Contrast mode when using reduced. image. Return the Auto Contrast to the previous state when completed.

### XPS

10. Acq Setup: XPS: Default Pass Energy is now saved as a Setting.
11. Support 'Use Auto Directory' through Queue.
12. TFC Correction: New TFC Correction function using variable number of data points from TFC curve.
13. Allow 2500V analyzer retard range for Al or Mg dual-anode.
14. Profile Sputter Offset: Added warning to users when 'Sputter Offset' is enabled when adding to Queue.

### Hardware

15. RBD Ammeter: RBD Ammeter is now supported.
16. GCIB: Auto Standby mode now supported.
17. Ion Gun/E-Neut: If gun setting is selected in Acquisition Properties and is deleted from Hardware tab, SmartSoft will block the action and show a warning dialog.

### Misc.

18. Zip Tool: Provide a tool for users or Service to easily save and zip up log files and settings files for bug diagnostics.

## BUG FIXES

1. Configuration Manager > Fixed issue where 20-376A Analyzer configuration was not copying over correct FRR SCA Lens Files into Configuration Folder
2. Configuration Manager > When selecting VP-III configuration (32-channels), the correct lens table files are not being copied into the configuration directory correctly?
3. Spectral data view > Finger Print mode clicking on spectral data causes 'Range check error'
4. Ion Gun > Ion Gun Properties: Unchecking Tracking checkbox does not work
5. Queue Pre-Check > Depth Profile Acquisitions would sometimes fail and state that a sputter gun is not in a ready state when that gun was not set up for that acquisition
6. SXI > Fixed issues with SXI persistence not working as desired
7. Stage with Platen Intro > Fixed a bug where sometimes after Platen to Stage, stage would drive Z-height to max
8. Platen Max Z-Height > Fixed bug where Platen Max Z-Height was not being reflected in Stage Z Motor range
9. Configuration - Analyzer Control product ID > Fixed 20-376A Product ID
10. SXI > Fixed problem where 'Clear Image' would not work
11. Ion Gun Diagnostics > +15V and -15V readbacks were backwards
12. More Map > More Map was not working
13. More Map > Restrict parameters that should not be altered
14. Knob Box Logging > When the knobbox is configured and not connected and not simulated; errors are continuously generated in the system log(s)
15. Turbo Speed Interlock > When Turbo Interlock is tripped in software, performs protection action once and displays alert dialog to avoid multiple interlocks with backfill
16. SXI Anode Imaging > Anode image has too much noise if anode motor is connected
17. Queue Restore Position List > Remove the AutoTool Restore Position List task since it causes loss of any updated Z heights in position list due to Auto Z
18. Motors setup on Startup > For the 4700/4800 where, there's no anode, the Motors dll needs to have information set. Consequence of not setting this up correctly was that Z-motor initialize would not initialize correctly and could continue to rise up towards the optics



19. SEM Date Display > "Date" displayed on SEM view is not reflected even if date is changed. We have to uncheck "Date" checkbox and check it to display correct date
20. AES Map/Line > In case of 2- or 3-point mode, BG1 and BG2 position should be limited
21. X-Ray Diagnostics Arc Count > Removed "Total Arc Count", no different than "Arc Count"
22. Canon Camera > Attempt to fix software freezing issues related to auto focus overdrive
23. Ion Gun > Fix Create Sessions error when reserved settings are deleted from Ion Gun Settings folder before starting SmartSoft
24. Sample > Zalar Range Circle: Fix center location to line up with stage 0,0
25. Sample > Stage Limits Box: Fix range limits and center location to line up with stage 0,0
26. Data Manager > Fix problem where 'Auto Directory' checkbox would automatically uncheck after starting an acquisition
27. Add missing -1600 to -2500 eV range values for 32-channel FAT SCA Lens Table
28. Fix map displayed titles mistakenly given same name when acquiring more map
29. Fix Parent SXI remains unchecked if child point created on unchecked SXI
30. Add new AR lens values for 16-channel FAT SCA Lens Table

#### KNOWN BUGS

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#### NOTES

1. SCA Lens Table Updates: To pick up SCA Lens Table changes when updating existing software, move or rename SCA Lens Table files in SmartSoft 'Configuration' directory and rerun the Configuration Manager to get new files. Or manually copy and rename the files from the 'PredefinedSetting' directory to the 'Configuration' directory.

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Release 2.7.2 - April 2016 (CQR Release Only)

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## OVERVIEW

SmartSoft-VersaProbe V2.7.2 adds: Save SXI Image During Acq

## NEW FEATURES

### SXI

1. SXI>Image Properties>Preview Image: Adds support to automatically collect and save n-number of SXI frames.

### XPS

2. Acquisition Setup>Properties>Save SXI: Add support to save an SXI image at each analysis position, before the XPS data collection.

## KNOWN BUGS

1. With VP-III systems, the configuration manager does not copy the 32-Channel lens tables from the Configuration\PredefinedSetting directory into the Configuration directory and rename them to "ScaLensFat.txt" and "ScaLensFRR.txt" as it should. This will need to be done manually on VP-III systems.

## NOTES

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Release 2.7.1 - March 2016

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## OVERVIEW

SmartSoft-VersaProbe V2.7.1 adds: Support for VersaProbe-III; Variable Dwell Time; Bug Fixing

## NEW FEATURES

### UI

1. Configuration: Support VersaProbe-III

### Sample

2. Stage: Add right-click context menu option to toggle stage cursor and FOV display On/Off.
3. Intro Camera: Add new Canon camera SDK support to support newer cameras.
4. Alignment: Remove shortcut icons for alignment pins.

### XPS

5. Acquisition: Show warning when starting XPS acquisition if SAM E-gun is On.
6. Acquisition Setup: Support variable scan area dwell time which is tied to time/step of acquisition.
7. Acquisition Setup: Support sputter offset for all sputtering, instead of just GCIB.

### AES

8. Acquisition Setup: Support sputter offset for all sputtering, instead of just GCIB.
9. Profile Data: Add View menu option for changing AES profile spectral data display from showing all cycles to just showing current cycle (like XPS).

### Hardware

10. C60: Read the user ranges from the controller instead of using hardcoded manufacturer numbers.

## BUG FIXES

31. Sample > Stage: Update proper tilt range when Y-axis is changed.

32. Sample > Position List: Fix problem where user could click on position list while acquisitions are running, causing multiple issues.
33. XPS/AES > Clicking 'Next Region' button continually displays "Stopping" message.
34. XPS/AES > Fixed issue where computer delays could cause data retrieval from acq hardware control to fail, causing acquisition failures (no data for 20 seconds error).
35. XPS/AES > Fix issue where if FXS source is in 'Park' and SEM or AES spectra is started, FXS source is turned on as well.
36. XPS > UPS selected as source, load FXS acquisition setting, does not load correct acquisition energy range.
37. AES > Wait 'Delay After Sputter Time' before running image registration.
38. Hardware > E-Neut: Extractor voltage range changed to 0-75V.
39. Hardware > Ion Gun: Fix problem where depth profiling with neut would sometimes corrupt emission current.
40. System > Startup: Fixed bug where firmware version checking could report current firmware version as older than expected when actually newer.
41. System > Photo file: Stage rotation saved as 45 degrees.

#### KNOWN BUGS

1. With VP-III systems, the configuration manager does not copy the 32-Channel lens tables from the Configuration\PredefinedSetting directory into the Configuration directory and rename them to "ScaLensFat.txt" and "ScaLensFRR.txt" as it should. This will need to be done manually on VP-III systems.

#### NOTES

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Release 2.7.0 – December 2015 (AES4800 Only)

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#### OVERVIEW

SmartSoft-VersaProbe V2.7.0 Adds: AES4800 CQR; Common UI Features; Bug Fixing

#### NEW FEATURES

##### UI

1. Menu Bar>Tools>System Log: Backup copies of the system log are now stored in the C:\SmartSoft-AES\Log directory
2. Status Bar: The size of the status line fields can now be customized by clicking and dragging the edge of the field. Fields can be returned to their default size by selecting the *Reset Default Size* option from the status line context menu.
3. Status Bar>Highlight: The highlighting tool indicates which menu items are *Settings* and which items are *Properties*. *Settings* are loaded as a group of values using the Settings>Load command; while *Properties* are common across the entire system.
4. Menu Bar>System>E-Mail Notification: One can now send custom email messages or text messages during the running of an AutoTool sequence. This is accomplished by using the AutoTool *Send E-Mail* task.
5. Menu Bar>System>Coffee Timer: This feature adds the capability to schedule the processing of an AutoTool task at a specified day and time.
6. Menu Bar>Tools>System Log: Backup copies of the system log are now stored in the C:\SmartSoft-VersaProbe\Log directory

##### AutoTool

7. Menu Bar>Automation>AutoTool: The *Active* list item adds the ability to deselect a task from the sequence without permanently deleting the task.

8. Menu Bar>Automation>AutoTool: An AutoTool task has been added to monitor the system pressure and pause AutoTool processing until a target system pressure is achieved.

#### System

9. System>Intro Camera: External image files (.bmp, .jpg) can now be imported and used to navigate on the sample.
10. Sample>Park Station: SS-VP/4800 now supports a parking station.

#### Sample

11. Sample>Stage: Stage: Backlash correction can now be enable or disabled. This option is available in the stage properties menu. Backlash correction is used to position the stage more accurately, but sometimes makes is more difficult to position a feature using point and click stage moves.
12. Sample>Stage: Support is added for H/C stage with Pneumatic or Static cold probe. Static cold probe is similar to older cold probe models with a fixed cold probe contact pad.
13. Sample>Stage: Add Z-height parameter for Eucentric Tilt calibration. This is to compensate for sample thickness with 15-680/5000 stages.
14. Sample>Sample Viewer: Valid stage limits are displayed graphically on the Sample Viewer overlay.
15. Sample>Sample Viewer: Valid Zalar limits are displayed graphically on the Sample Viewer overlay.

#### SEM

16. SEM>Settings>Context Menu>Settings Editor: A new Settings Editor is available for viewing and editing the settings text files. The Settings Editor is accessed through a context menu from the Settings Box. This Settings Editor is available for most hardware applications.
17. SEM: KnobBox support has been added for the SEM application. The knob box buttons can now be customized to change the behavior of the *pressed* and *un-pressed* knob states. Many users find it easier to use the *pressed* state for coarse moves and *un-pressed* state for fine moves. (SmartSoft-VersaProbe\Settings\Properties\Properties.phi).
18. SEM>SEM>AutoContrast: Support is added for 38-101A Data Acq. This improves the image quality w/auto contrast.
19. SEM: SEM/LaB6: An option is added to keep the Lab6 gun running when software is shutdown. This option is included in the properties.phi file.
20. SEM>SEM/LaB6>Reduced Image. Added feature for 4700; already available in 4800.

#### XPS

21. XPS>Spectrum>XPS Setup...: A Preview feature is added to run n-number of SXI frames; and then save the image to a file. This feature can be configured to save an SXI image prior to each XPS acquisition.
22. XPS>Platen Manager>Lab Book: Lab Book filenames are limited to 200 entries. This is configurable in the Properties.phi file.

#### AES

23. AES>Survey: The acquisition range has been extended to 0-3200. This requires an analyzer control upgrade from the 20-378 to the 20-378A. The 20-378 has a range of 0-2500; compared to the 20-378A which has a range 0-3200. Note: the analyzer control model number is set in the hardware configuration menu.
24. AES>Profile>Test Acquire: Test Acquire now supports 'Area' and 'Line' analysis areas. The analysis area mode can be selected from the SEM context menu.
25. AES>Analysis Area: When spatial area lines are drawn snap to horizontal or vertical if endpts within 50 pixels in horizontal or vertical directions
26. AES>Line: Adds high resolution Line acquisitions (1pt, 2pt, 3pt - 512; Window - 512) – AES only configurations
27. AES>Map: Adds high resolution Map acquisitions (1pt, 2pt, 3pt - 1024; Window - 512) – AES only configurations

#### Hardware

28. Hardware>Ion Gun: Adds support for manual "Neutralization" mode like SmartSoft-AES
29. Hardware>Ion Gun: Adds support for imaging with ion gun using the internal/external raster pattern; requires a hardware jumper in place on the 20-066 control.
30. Hardware>Ion Gun>Diagnostics: Systems configured with the 20-066 ion gun control now take advantage of an extended set of diagnostics read backs. Note: this may require a firmware upgrade.

#### BUG FIXES

42. Sample>Intro Camera: Update Canon EDSDK toolkit to V3.2
43. Sample>Intro Camera: Improved communication reliability with Canon camera.
44. Sample>SVC/Watcher: Improved USB reliability with SVC/Watcher. Adds configurable delay (3 msec) to ensure that enough response time is available between WriteDevice() and ReadDevice().
45. XPS>Profile Data: Intensity display will sometimes show negative intensity data. - Fixed
46. SEM>Rotation: Image rotation does not rotate around the center of the image as expected. - Fixed

#### KNOWN BUGS

2.

#### NOTES

1. SmartSoft-VersaProbe can now be run on either a 32-Bit or 64-Bit OS. Contact your ULVAC-PHI service engineer for more information.

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Release 2.6.3 - December 2014

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#### OVERVIEW

SmartSoft-VersaProbe V2.6.3 adds: Improved Gas Gun Emission Current Ramping; Bug Fixing

#### NEW FEATURES

1. Changed Ar Ion Gun emission current ramping routine for increased stability.

#### BUG FIXES

1. Fix for XPS Depth Profile Acquisitions that fail with Saving Data busy error.
2. Fixed bug where stopped Angle Resolve Profile would lose last angle data.
3. Fixed bug where Z-Align timed Neut would use sputter setting.

#### KNOWN BUGS

1. Some USB thumb drives can cause a loss of communication with the Bertan.

#### NOTES

1.

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Release 2.6.2 - September 2014

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#### OVERVIEW

SmartSoft-VersaProbe V2.6.2 Adds: Bug Fixing

#### NEW FEATURES IN THIS VERSION

1. Support GCIB Standby mode.
2. Canon SDK V2.14

#### FIXED IN THIS VERSION

1. Removed grey box from bird's eye view.
  2. Fixed bug where Image Registration wasn't working when set to frequency > 2.
  3. Fixed but where region tables remained disabled after more acquisitions completed.
  4. Fixed bug with AES Line 2-pt/3-pt acqs displaying zero intensity data during acquisitions.
  5. Fixed bug with AES Depth Profiles not saving last cycle when stopped.
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Release 2.6.1 - August 2014

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#### OVERVIEW

SmartSoft-VersaProbe V2.6.1 Adds: Add support for UPS FAT lens table download

#### NEW FEATURES IN THIS VERSION

1. New UPS FAT Lens table used for UPS acquisitions.

#### FIXED IN THIS VERSION

1. Fixed problem where main turbo status was not read correctly
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Release 2.6.0 - June 2014

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#### OVERVIEW

SmartSoft-VersaProbe V2.6.0 Adds: FE Gun Support; Dual Sputter Gun Bug Fix; User Settings "Last 5"; Expanded Tabs; Bug Fixing

#### NEW FEATURES IN THIS VERSION

1. New settings combo boxes save history and categorize user settings.
2. 'Ion Gun Delay' now 'Delay After Sputter' with a 'Only w/ Neut' checkbox to enable old 'Ion Gun Delay' behavior with neutralization.
3. Setting auto filename parameters and platen directory through queue now done through 'Add Q' right-click menu.
4. Properties views now are expandable to view all tabs simultaneously.

#### FIXED IN THIS VERSION

1. Dual sputter support reworked and improved.
  2. E-Neut out of tolerance error will now take longer to fail.
  3. Fixed chamber camera bug where SmartSoft was looking for a registry key which is no longer needed.
  4. Fixed position list save feature.
  5. Fixed bug where Z-Align wasn't working in stage 'relative' mode.
  6. Fix issue where Egun Neut emission saved to data file was always 0.0.
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Release 2.5.1 - April, 2014

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## OVERVIEW

SmartSoft-VersaProbe V2.5.1 Adds: Bug Fixing

## FIXED IN THIS VERSION

1. 800 degree Hot/Cold stage configuration has -260 to 80 rotation limits.
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Release 2.5.0 - January, 2014

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## OVERVIEW

SmartSoft-VersaProbe V2.5.0 Adds: Support H/C Stage; Deconvolution V2; 777A GCIB Pressure Control;

## NEW FEATURES IN THIS VERSION

1. Support 800 degree Hot/Cold stage configuration.
2. Set save directory, auto filename, and file number for each acq in queue.
3. Allow option to keep Ion Gun Neut on in-between positions in queue.
4. More diagnostics support for 20-066
5. Ability to delete multiple positions from position list.

## FIXED IN THIS VERSION

1. Changed default lens settings for Auto Z to avoid finding false peaks.
  2. Load X-Ray setting into acquisition setup when load file.
  3. Improved blank mode support for Fig-5.
  4. Fix persistence/histogram/contrast enhancement. Now On/Off running average.
  5. Fix bug where XPS line acqs wouldn't run due to AES spatial line validation check.
  6. Fix bug where AES Z-Align wouldn't run if AES acquisition wasn't run first.
  7. Egun deflection daisy chain address now set by model in configuration manager.
  8. Fix bug where UPS acq would sometimes not run due to setting file containing a reference to high power X-Ray setting that wasn't being used.
  9. Fix bug where XPS only configuration would display error if right-click on SXI Image area.
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Release 2.4.1 - November, 2013

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## OVERVIEW

SmartSoft-VersaProbe V2.4.1 Adds: Bug Fixing

## FIXED IN THIS VERSION

1. AES Z-Align does not work until another AES acquisition is run.
  2. 60mm sample tilt limit 0-10 instead of 0-5.
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Release 2.4.0 - September, 2013

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#### OVERVIEW

SmartSoft-VersaProbe V2.4.0 Adds: AES/4700 Support from 710; Auto-Multiplex

#### NEW FEATURES IN THIS VERSION

1. Preview photo mode for SEM.
2. SEM image can now be taken during queue.
3. Color control for Stage Marker and FOV box on Platen Image.
4. Low/High Image Registration.
5. Basic Auto-Multiplex (Survey->PeakID->Import->AcquireMultiplex).
6. Properties and Settings parameter highlighting.

#### FIXED IN THIS VERSION

1. Intro Pumpdown will not timeout anymore.
  2. Chamber Camera active X file and dlls installed with SmartSoft.
  3. Fixed issues with Test Acquire annotation on graph and previous/next element buttons.
  4. Make right-click menus and annotation handling more consistent between SXI/SEM/Saved Image views.
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Release 2.3.0 - February, 2013

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#### OVERVIEW

SmartSoft-VersaProbe V2.3.0 Adds: Hot/Cold Stage Support; Bug Fixing

#### NEW FEATURES IN THIS VERSION

1. Prevac Yes/No configuration option changed to Rotation Limit Switch Yes/No to support new Hot/Cold stage which has same limits as Prevac Hot/Cold.
2. Alternate Sputter position is supported for GCIB depth profiling.
3. 32 channel SCA FRR mode supported (New SCA Lens table configuration).

#### FIXED IN THIS VERSION

1. Multiple step hysteresis correction for large changes to X-Ray Objective.
  2. Fix GCIB lifetime timer, which wasn't working.
  3. Fix problem where Ion Gun argon On/Off would sometimes say that the process timed out right away before the normal 30 second timeout.
  4. Data files now show source/analyzer angles for different source types.
  5. Fixed problems with image registration Shift X/Y parameters editing/updating.
  6. Removed restriction to disallow E-Neut during UPS acquisitions.
  7. Default Z-Align 375.5 PE is now added to selections for Z-Align.
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Release 2.2.1 - November, 2012

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## OVERVIEW

SmartSoft-VersaProbe V2.2.1 Adds: Dual Intro Cameras Fix, Energy Cursor, SXI/SEM/Saved Copy to Clipboard

## NEW FEATURES IN THIS VERSION

1. Add copy to clipboard button for SXI, SEM, and Saved Image viewers.
2. Add intensity value to energy cursor display.

## FIXED IN THIS VERSION

1. Fix problem with V2.2.0 where dual intro cameras would only use one set of calibration values.

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Release 2.2.0 - November, 2012

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## OVERVIEW

SmartSoft-VersaProbe V2.2.0 Adds: New FRR Lens Table; Dual Intro Cameras (Intro and Prep); Gauze Lens Retry

IMPORTANT: V2.2.0 introduces a new ScaLensFRR.txt file which adds support for the 0.6% FRR mode. The old file: C:\SmartSoft-VersaProbe\Configuration\ScaLensFRR.txt should be removed or renamed before the installation, as the old file is not automatically overwritten. The ScaLensFRR.txt file can also be manually copied from the installation CD.

## NEW FEATURES IN THIS VERSION

1. Use current platen image FOV to generate points (new point generation method).
2. Add 0.6% FRR mode (See important note above).
3. Add X-Ray parking mode during sputtering cycles of depth profile.
4. SmartSoft-XPS now sets the names of the gauges on the Varian control.

## FIXED IN THIS VERSION

1. Add support for systems with two intro cameras.
2. Fixed zalar rotation error wording to state that platen must be 'close to flat' instead of '45 degrees'.
3. Fix drag stage move failing with 4-contact prevac stage locked when just U/V move.
4. Fixed energy step size for AES (1.0eV etc).
5. Make FOV of image registration independent of FOV for SEM.
6. Added retry mechanism for data acquisition to help with gauze lens errors.
7. Fix problem of hitting 'Stop' followed by 'Abort' in acq status window not working.
8. Fix problem where target emission for sputter setting would get overwritten with queued acquisitions with pulsed neut Z-Aligns as part of queue.
9. Fix memory management issue that was causing various memory leaks.

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Release 2.1.1 - August, 2012

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## OVERVIEW

SmartSoft-VersaProbe V2.1.1 Adds: PHI USA GCIB Control; Bug Fixing

### NEW FEATURES IN THIS VERSION

1. Show center mark option on center of chamber camera.
2. Support new PHI USA GCIB controller.

### FIXED IN THIS VERSION

1. Don't allow 'User' password to be changed through Change Password Dialog.
2. Add 0.33 zoom factor so that there is an option that displays full FOV of camera without resizing the window.
3. Remove excessive flashing when 'Close All' performed on multiple open data files.
4. Set ScanX and ScanY increment when clipping error occurs on SXI restart.
5. Add maximum count value back into display of Test Acquire.
6. Fix bug where changing position of Refresh Acquisition while it was starting up would cause hardware parameters to skip getting setup.
7. Open up TFC coefficient max values.
8. Fix bug where stopping an acquisition, then selecting 'More', SmartSoft wouldn't remember how many cycles were completed.
9. Remove 'Low Count Error' from Auto Z.
10. Add support for Chamber Camera communication recovery when computer is rebooted.
11. Increase C60 X & Y steering by one significant digit.
12. Fix bug where AES E-gun Stig 2 wobble gets stuck ON.

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Release 2.1.0 - April, 2012

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## OVERVIEW

SmartSoft-VersaProbe V2.1.0 Adds: CoSputtering; Improved Peak ID; AES updates from 700xi; Bug Fixing

### NEW FEATURES IN THIS VERSION

1. Add "Administrator" user level to access 'Service' features.
2. Save system parameters at selectable intervals or 'Never Save' option.
3. Add option for users to disable prompt when Settings change, but haven't been saved.
4. Auxiliary Prep chamber configuration support.
5. Dual Sputtering with C60 or GCIB and Argon secondary sputtering.
6. Grab cursor in SEM view for interactive image shift.
7. SEM histogram display.

### FIXED IN THIS VERSION

1. Do not require stage initialization after motor power cycle, unless SmartSoft was not shut down cleanly.
2. Stage Center position moved to properties page.
3. Pan buttons in Sample google toolbar now control stage similar to SXI and SEM.
4. Improved XPS Peak ID.

5. Improved Deconvolution.
  6. Improved Test Acquire.
  7. AES analysis points can now be defined on previously acquired map.
  8. Current Directory now split into Acquisition Directory and Browse Directory.
  9. Fix setting of Peak and Background cursor positions.
  10. Fix Image Registration for 2nd or later regions not working properly.
  11. Fix SEM magnification value being display correctly when changed.
  12. Image Registration FOV is independent of SEM FOV.
  13. Improvement with C60 Auto Startup to allow temperature ramping to overshoot and move on instead of waiting for temperature to settle back.
  14. 10kVC60: Fix X/Y Calibration values and resend size and offsets upon change.
  15. 10kVC60: After turning on High Voltage, wait a second before loading setting this is the same fix that was done for 20kVC60 w/ V1.2.0.
  16. Fix memory leak with Bias Box mode changes and Heat Exchanger On/Off calls.
  17. Channel Maxing option is defaulted to 'Enabled'.
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Release 2.0.0 - November, 2011

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#### OVERVIEW

SmartSoft-VersaProbe V2.0.0 Adds: Channel Maxing; PreVac Stage Support; Canon X4;

#### NEW FEATURES IN THIS VERSION

1. Channel Maxing and Deconvolution.

#### FIXED IN THIS VERSION

1. Fixed AES Beam Size acquisitions with scintillator configured.
  2. Fix bug where changing SEM Magnification from combo box wasn't updating the AES Beam Size acquisition X-axis
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Release 1.2.0 - September, 2011

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#### OVERVIEW

SmartSoft-VersaProbe V1.2.0 Initial Release of SmartSoft-VP for VersaProbe II Instruments

#### NEW FEATURES IN THIS VERSION

1. Added logging of SmartSoft-VersaProbe's version number in System Logs.
2. Add Support for PreVac stage with 4-Contacts heating module (Lock stage, rotation protection)

#### FIXED IN THIS VERSION

1. 20kVC60 command to set 'Sputter' vs. 'Blanking' was backwards.
2. Fix GCIB tracking beam voltage when raster is changed.

3. Issues reading cold cathode pressure and state, so Sample Transfer procedure will perform Intro Pumpdown when cold cathode pressure readback is questionable.
4. Add delay when switching 20kVC60 mode from Off -> Standby to avoid issue of target temperature not being set correctly while controller is turning on high voltage.
5. Fix C60 pressure display on vacuum glyph. It was not updating the C60 fields with the correct pressure readback.
6. Fix blanking status in 20kV C60 diagnostics menu, change of logic.
7. Fix 20kVC60 Raster Calibration values in Properties view not being set correctly.
8. Change default Max Stage Z height to 20 mm.
9. When running acquisition with UPS allow Neutralization to be On.
10. Disable meters 2&3 in diagnostics. Hardware supports 3 meters, but is only using 1 currently.
11. Fix issue where bend voltage is clipped to -350 when profile setting is loaded.
12. Fix bug where Read Beam Power would fail to move anode and Beam Power button is then stuck.
13. Fix bug where positions could be lost on SmartSoft crash or force quit.
14. Fix issue with SXI gamma value having incorrect default value and not reading/writing from/to property file correctly.

#### HELPFUL HINTS

1. Entry fields must be 'terminated' either by selecting the <Enter> key or by moving to another parameter field. If the application is exited before the value is terminated the change will not be saved.