

## SmartSoft-XPS Software Release Notes

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Release 3.9.1 – November, 2017 (Win7: 32-Bit)  
Release 4.0.1 – November, 2017 (Win10: 64-Bit)

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### OVERVIEW

Bug Fix Version, fixes EPC Profile Acquisition failures

### BUG FIXES

1. XPS: EPC: Fix Comm Device errors occurring when Ion Gun Neut is selected for Depth Profile Acquisitions. Setting Ion Gun Float State failures. Also fix similar issue with X-Ray Auto Beam Park enabled, failing to set X-Ray mode.
2. Intro: Add support for 42AUC03 model USB cameras for SPS.
3. XPS: Fix the right-click context menu in the Lab Book. Right-clicking the columns should bring up SmartSoft menu instead of OS menu. Previously had to right-click on column headers.
4. Hardware: Fix Photon Energy displayed in the Analyzer View. Changing value would change value used in acquisition, but not display properly in view.
5. XPS: Fix issue where Image Registration (IR) Active column was always displayed in Acquisition Setup Region Tables.
6. System: Change maximum bake time from 100 hours to 200 hours.
7. XPS: EPC: Fix LoadSetting on Map/Line Acq Setup tabs would cause Non-EPC parameters to appear.

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Release 3.9.0 – October, 2017 (Win7: 32-Bit)  
Release 4.0.0 – October, 2017 (Win10: 64-Bit)

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### OVERVIEW

Windows 10 support, SXI Image Registration, Varian(Agilent) Ion Pump support, Element database editor, Bug Fixes

### NEW FEATURES

#### UI

1. SmartSoft-XPS Icon: New Icon.
2. Configuration Manager: Exit dialog is now more intuitive with 'Save' options.
3. Configuration Manager: Support both 'DFx41BU02' and 'DFK41BU02' USB SPS Camera models.
4. Configuration Manager: Add Analyzer Control to UI.

#### AutoTool

#### Intro

5. Ion Pump: Support Varian(Agilent) Ion Pumps.
6. Tools: Bake: New Bake Control Views.
7. Improve Bake Application Log and Bake Report.
8. Tools: Chart Recorder: Revamped Chart Recorder tool for plotting short-term history of designated parameters.
9. Tools: System Log Setup: Add right-click context menu to "System Log..." button for selecting system log viewer to use.
10. GigE Intro Camera: Support two light controls for GigE Intro Camera configuration, SLI Lights and typical Intro Light Source.

11. Turbo Speed Interlock: Support turbo speed interlock for Non-EPC systems (close valves).
12. Removed 'None' option for platen overlay when creating platen.

#### Sample

#### SXI

#### XPS

13. Database: Element Database can now be edited through right-click context menu on periodic table elements.
14. Profile: Updating data displays after each region

#### Hardware

15. GCIB: Display dialog when GCIB interlock is tripped to notify users.
16. XRay: Properties: Scan Pattern: Add Cr Anode Skew and Rotation Corrections for multiple angles.
17. XRay: Add 'Clear Registers' button to FXS Registers Diagnostics View. Clear Registers on Reinitialize automatically.
18. Ion Gun: Add application logging to Ion Gun Application Log.

#### Misc.

19. 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.
20. 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

8. Sample: Platen Image: Fix display issues with Zalar Range circle and Stage Limits box.
9. Sample: Position List: Fix parent SXI remaining unchecked if child point was made on an unchecked SXI.
10. XPS: Profile Acq: Sputter Layer Table: Use lighter highlight color for read-only columns such as Sputter Depth to improve visibility.
11. XPS: Profile Region Table: Fix problem where starting More Profile Acquisition, PE always changes to 6.5 PE and acquisition runs with this PE.
12. Hardware: Analyzer: Narrow vs. Standard acceptance angle set in queue to manage switching properly between different acquisitions in queue.
13. XPS: Periodic Table: Fix right-clicking on K or Ca to choose alternative regions.
14. Intro: 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.
15. Intro: Vacuum Diagnostics: Fixed Turbo Speed in diagnostics being displayed as 'N/A'.
16. Hardware: HXPS GCIB: Fixed issue where changing GCIB mode fails with an interface marshalling error.
17. 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.
18. 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.
19. Intro: Aux Chamber: Fix problems with aborting Profile Acquisitions while transferring to/from Auxiliary Chamber.
20. Sample: SXI Data File: Fixed problem where Pass Energy saved to data file header was incorrect.
21. Intro: Intro Sample Transfer: Fixed problem when Intro Pressure > 2.7E-4 Pa and drag platen from Intro to Stage, transfer sequence fails by Turbo Pump read error.
22. Intro: Valves: Vacuum glyph was showing V9 on EPC systems, when Ar leak valve is V21.

23. Intro: Vacuum Diagnostics: Fix bug where MPC Voltage Readback was clamping negative values to zero.
24. Intro: Bake Zone Temperatures: Fix bug where Bake Zone Temperatures were not updating.
25. XPS: Acquisition Setup: Fix loading data file, not loading X-Ray Setting.
26. SPS: Fix bug where system configured with SPS and a non-analog Intro Camera would get an error when introducing a sample when the Intro Photo was taken.

## KNOWN BUGS

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## NOTES

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Release 3.8.2 – June, 2017

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## OVERVIEW

SmartSoft-XPS V3.8.2 Adds: EPC configuration support for 64-bit SmartSoft.

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Release 3.8.1 – January, 2017

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## BUG FIXES

1. Depth Profile > More acquisitions would change all region pass energies to default or in most cases 6.5 PE
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Release 3.8.0 – December, 2016

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## OVERVIEW

SmartSoft-XPS V3.8.0 Adds: USB SPS Camera Support, TFC Correction update, RBD Ammeter Support, Bug Fixes

## NEW FEATURES

### UI

1. AutoTool
2. System
3. SPS: Add support for USB SPS Camera.
4. Bird's Eye View: Add support for Aux Intro Chamber with EMSL Transfer Probe.
5. Allow resizing of large pressure display.
6. Modified default bake timeouts for Vacuum Properties.phi file, which will allow greater success rate when pumping down chamber for bake (note: does not overwrite pre-existing values).
7. Sample
8. SXI
8. Z-Align with SXI: Right-click context menu shows "Z-Align ..." option to access Z-Align Properties View.

9. Contrast Enhancement: Right-click context menu shows “SXI Image Properties...” option to access Image tab of the SXI Image Properties View.  
XPS
10. TFC Correction: New TFC Correction function using variable number of data points from TFC curve.  
Hardware
11. RBD Ammeter: RBD Ammeter is now supported.
12. Sample Current: Sample Current readings now default the Bias Box Mode to “Target”.
13. 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.
14. Add “Zip Log Files ...” utility under ‘System’ toolbar menu

#### BUG FIXES

1. Canon Camera > Attempt to fix software freezing issues related to auto focus overdrive
2. Sample > SXI FOV combo box was displaying FOV larger than set maximum
3. Sample > If ‘Auto Beam Parking’ is selected in Acquisition Properties, restore X-Ray to ‘Park’ mode after SXI Preview
4. Sample > Stage max enterable zalar speed should be capped at 4 RPM instead of 5 RPM
5. XPS > Fixed bug where AR acquisitions would fail when setting area dwell time

#### KNOWN BUGS

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#### NOTES

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Release 3.7.0 - Oct 2016

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#### OVERVIEW

SmartSoft-VersaProbe V3.7.0 adds: GigE Intro Camera, 11-426 X-Ray Diagnostics Support, Bug Fixes

#### NEW FEATURES

1. UI  
Icon: New SmartSoft-XPS icon.
2. AutoTool
3. System  
Intro/Prep GigE Camera: Implemented support for GigE camera, redesign the intro process to improve clipping and calibration procedure. Intro Camera and SPS support moved into System Session, no longer a Prep Session.
4. Sample  
Position List: Set All now works for R and Tilt.
5. SXI
6. XPS  
Acq Setup: Default Pass Energy: Made this a setting from a property
7. Acq Properties: Add option to validate stage position after stage position move, before acquisition starts  
Hardware
8. X-Ray: Support Diagnostics for 11-426 X-Ray Control.

#### Misc.

9. PhiLogFilesZipper: Utility in bin directory "PhiLogFilesZipper.exe" is available for combining system and application logs, optionally settings, into a .zip file for emailing. Future versions will have menu option to access in SmartSoft UI.

#### BUG FIXES

1. Hardware > Xray Diagnostics: 1 sec diagnostics continuous reads, if multiple reads are running or are left on for extended periods, seem to lock up UI.
2. Hardware > USB Comm: When the software starts up with the communication device not opened, all the calls error out and clog the sys log and make the software unstable. Changes were made to the CoAcqHdwrCtrl and CoAnalyzerHdwrCtrl DLLs to not make the early calls go down to the hardware
3. Hardware > Ion Gun: Ion gun Auto shutdown. Switching auto shutdown parameter is ignored.
4. Sample > SXI - Clear Image : When doing SXI live imaging with Slow scan, 'Clear Image' does not work.
5. Sameple > Stage Properties - Tilt Offset: Tilt Offset entry field was not working.
6. System > Platen Manager: Auto Directory: - Create Directory button: We check 'Use Auto Directory' and click 'Create Directory' button. But software does not create directory.
7. System > Bake: - Error of ValidZalarRotate: In System Baking Task, when turning Stage Control power off, software shows error message for failure of ValidZalarRotate, and system baking does not start until closing the error message.
8. System > Bake Stage Init: Staze initizlization after system bake always fails. When executing 'Sample: Inititalize Stage' in AutoTool menu, software cannot open the device of stage control.
9. XPS > More Map: More Map does not work. Starting More Map shows unexpected error. It seems to fail to display map image.
10. Sample > Queue Pre-Check: Auto-Z fails by 'GCIB is not Blank' error
11. XPS > Queue Pre-Check: Set up a profile with Ar Ion Gun. Add to Queue. Change sputter mode to sputtering w/ C60. Run queue. It will complain about C60 not in standby/blank mode.
12. XPS > 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.
13. XPS > Acq Setup Load File: Loading from acquisition file is not loading region information.
14. XPS > Region Sweeps Load From File: When loading acquisition parameters from File, the range of sweeps/ratio/Peak to Noise becomes wide open and values in scientific notation.
15. XPS > Map\Line Acq: Only at Map and Line region table, when right-clicking at first column of Sweep does not show Set All feature.

#### KNOWN BUGS

1.

#### NOTES

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Release 3.6.3 - March 2017

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#### OVERVIEW

SmartSoft-VersaProbe V3.6.3 further supports systems utilizing Matrox framegrabbers such as SPS station systems. It also includes Bug Fixes for validating stage position during queue and removing the restore position list task in queue.

#### NEW FEATURES

##### XPS

1. Acq Properties: Add option to validate stage position after stage position move, before acquisition starts

#### BUG FIXES

1. XPS > 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.
2. Motors > Change axis error limits and resetting current faults for zalar.

#### KNOWN BUGS

1.

#### NOTES

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Release 3.6.2 - Aug 2016

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#### OVERVIEW

SmartSoft-VersaProbe V3.6.2 adds: Bug Fixing for SXI Preview feature

#### NEW FEATURES

##### XPS

1. SXI Preview: SXI Preview was not using queue to set SXI X-Ray Setting or to start E-Neut.

#### BUG FIXES

3. XPS > SXI Preview: E-Neut after SXI Preview in Queued Acq fails to reach emission.
4. XPS > SXI Preview: If Ion Gun Neut is set to Auto, Z-Align Ion Gun Neut is Continuous, Ion Gun is left On during SXI in queue.
5. XPS > SXI Preview: If Ion Gun Neut is set to Auto, Acq Ion Gun Neut is Continuous, Z-Align Ion Gun Neut is Pulsed, Ion Gun is pulsed (timed Neut) for first position only, then left on continuously.
6. XPS > SXI Preview: When SXI Preview with E-Neut is run, acquisition can sometimes freeze on last frame and never complete.
7. XPS > SXI Preview: Changing persistence for SXI was not affecting persistence for SXI Preview.
8. XPS > SXI Preview: SXI Preview would sometimes freeze when last SXI frame was missing data.

#### KNOWN BUGS

2.

#### NOTES

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Release 3.6.1 – January, 2016

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#### OVERVIEW

SmartSoft-XPS V3.6.1 Adds: Bug Fixing; In addition to V3.6.0 Bug Fixes

#### NEW FEATURES

##### UI

2.

##### AutoTool

3.

##### System

4.

##### Sample

5. Platen Image: Add right-click context menu option to toggle stage cursor and FOV display On/Off.
6. Intro Camera: Add new Canon camera SDK support to support newer cameras.

##### SXI

7.

#### XPS

8. Acquisition: Before starting acquisition, software checks the "WaterFlowOn" status in 11-425. If the status is Off, show warning message.

#### Hardware

9. C60: Read the user ranges from the controller instead of using hardcoded manufacturer numbers. The effect is we do better calculating in converting between DAC numbers and user values. Also updated the calibration offsets so the readbacks matched those from Ion Optica.
10. E-gun: Electron gun hysteresis causes large changes in beam diameter when switching between FXS settings, especially when transitioning from high-power to low-power. Automatically reset the objective lens current when loading any setting.

#### BUG FIXES

9. Sample > Bake: Help stage initialization failures after system bake by clearing stage controller first.
10. Sample > Platen Transfer: Fix issue of platen transfer timeout being too short.
11. XPS > Ion Neutralization: Fix issue with Ion Neut emission current automatically changing during depth profiling with Ion Neut enabled.
12. Hardware > E-Neut: Extractor voltage range changed to 0-75V.
13. System > Startup: Fixed bug where firmware version checking could report current firmware version as older than expected when actually newer.
14. System > Vacuum: Fix issue

#### KNOWN BUGS

3. XPS > Auto-Multiplex: Default Pass Energy is used for all found and imported element regions.
4. Hardware > Sample Current: Default bias box mode for sample current is 'Off', so ellipses button should be used to modify 'Bias Box Mode' through Ammeter view.

#### NOTES

1. As V3.6.0 was intended to be released before this version, note that V3.6.0 features and bug fixes below are also included in this release.

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Release 3.6.0 – March, 2016

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#### OVERVIEW

SmartSoft-XPS V3.6.0 Adds: Quantex CQR; Bug Fixing

#### NEW FEATURES

##### UI

1. Overview: Added new visual glyphs and controls for Quantex system configuration

##### AutoTool

2.

##### System

3. Intro Camera: Improve Canon intro camera take picture reliability.

##### Sample

4. Platen Image: Beam Diameter display glyph is added to toolbar.

5. Platen Image: Zalar range circle glyph is added to toolbar.

##### SXI

6. SXI: Support "Preview" feature. Collect N number of frames for an SXI image.

##### XPS

7. PlatenManager: Display warning to users when lab book size is over 200 positions. Could slow down performance.

8. Acquisition Setup: Support variable scan area dwell time which is tied to time/step of acquisition.

##### Hardware

9. Cr Anode Motor: Support new motor control.
10. Analyzer: Support new analyzer control.

#### BUG FIXES

1. XPS > Profile Data: Area mode intensity calculations no longer showing negative intensities.
2. XPS > Acq Setup: min and max region energy ranges no longer display values that are not able to be entered by user at endpoints.
3. Sample > Position List: Fix error that could occur when switching platens from a platen with no positions to a platen with a position list large enough to display scroll bar ( >14 positions).
4. XPS > Acq Setup: When setting low BE energy to min allowed, acquisitions could fail with a invalid parameters error returned from the 20-390 Analyzer. Fixed.
5. XPS > SXI: Remove SXI histogram, which did not work well and was not currently valuable to users.
6. XPS > Acq Setup: When loading data file into Map or Line Acq setup, "Time Per Pixel" or TimePerStep would not load from file. Fixed.
7. XPS > Acq Setup: When loading data file, region sweeps would load in scientific notation. Fixed.
8. XPS > Depth Profile: When setting up a More acquisition, we load region parameters from a data file. PE and Step Size would not get set correctly from the data file. Fixed.
9. XPS > Depth Profile: Sputter Layer table read-only columns are difficult to read when highlighted due to color scheme. Fixed.
10. System > Startup: Expected firmware version mismatch dialogs changed to warnings instead of errors.

#### KNOWN BUGS

- 1.

#### NOTES

- 1.

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Release 3.5.4 - May, 2015

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IMPORTANT: IF INSTALLING THIS VERSION OVER V2.1 OR OLDER - AFTER UNINSTALLING THE OLD VERSION, DELETE THE IDLE.PHI AND WARM.PHI SETTINGS FOR THE C60 ION GUN IN THE SETTING DIRECTORY AND RERUN THE CONFIGURATION MANAGER.

#### NEW FEATURES IN THIS VERSION

1. Updated FTDI drivers

#### FIXED IN THIS VERSION

1. Fixed some issues leading to Z-Align failures.
2. Fixed bug where application logs would fail to write and cause acquisitions to fail.
3. Fixed issue where computer delays could cause data retrieval from acq hardware control to fail, causing acquisition failures.
4. Fixed XPS Element Database having bad energy range bounds for N KLL region

#### MINIMUM FIRMWARE VERSIONS

Acq Hardware Control 38-101: V1.3.0

Ion Gun Hardware Control 20-066: V1.15.1

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Release 3.5.1 - June, 2014



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#### NEW FEATURES IN THIS VERSION

1. Changed Ar Ion Gun emission current ramping routine for increased stability. viewer in different colors.

#### FIXED IN THIS VERSION

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.

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Release 3.5 - June, 2014

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#### KNOWN ISSUES

1. With Embedded PC systems: First SXI run after starting up SmartSoft may not work. subsequent SXIs will work normally.
2. SXIs are failing on Embedded PC systems due to firewall protection being enabled. firewalls need to be disabled so that EPC can establish connection with SmartSoft PC for sending SXI data.

#### NEW FEATURES IN THIS VERSION

1. Additional 15 seconds delay added to backfilling Intro after turning off Ion Gauge.
2. Add ability to delete several positions by active or inactive status, or by viewable positions in platen viewer.
3. Add support for 777A GCIB pressure control.
4. Setting Auto-Filename parameters and platen directory at a queued acq level is now done by context menu in acquisition setup "Add Q" buttons.
5. Settings combo boxes now store history of settings used and groups settings.
6. Alignment pins for different alignment types are now displayed on platen image viewer in different colors.

#### FIXED IN THIS VERSION

1. Fix issue where Platen Preview wasn't display platen image correctly (white box).
2. Change some remaining micrometer symbols to "u" to fix display issues.
3. Due to amount of 'Out of Tolerance' errors happening with E-Neut, E-Neut will wait a little over 2 minutes before erroring out for tolerance to be reached.
4. GCIB focus and objective percentages now limited to 75% to avoid problems.
5. Retries added for reading valve status to avoid Depth Profile acq failures with checking sputter shutter status with Quantums.

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Release 3.4.1 - April, 2014

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#### KNOWN ISSUES

1. With Embedded PC systems: First SXI run after starting up SmartSoft may not work. subsequent SXIs will work normally.
2. SXIs are failing on Embedded PC systems due to firewall protection being enabled. firewalls need to be disabled so that EPC can establish connection with SmartSoft PC for sending SXI data.

#### FIXED IN THIS VERSION

1. Fix issue where EPC Ion Gun hardware control would not handle source tolerance errors correctly.

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Release 3.4 - Feb, 2014

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#### KNOWN ISSUES

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#### NEW FEATURES IN THIS VERSION

1. New deconvolution support. Fewer parameters to set up.
3. Add acq hardware control firmware version check.
4. Add ability to keep Ion Neut on between positions during acquisitions.
5. Added more 20-066 diagnostics.
6. Add ability to set file numbering per acquisition basis.

#### FIXED IN THIS VERSION

1. Fix issue where Egun Neut emission saved to data file was always 0.0.
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Release 3.3 - Apr, 2013

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#### KNOWN ISSUES

1. With Embedded PC systems: First SXI run after starting up SmartSoft may not work. subsequent SXIs will work normally.
2. SXIs are failing on Embedded PC systems due to firewall protection being enabled. firewalls need to be disabled so that EPC can establish connection with SmartSoft PC for sending SXI data.

#### NEW FEATURES IN THIS VERSION

1. Auto Multiplex option through right-click on "Start" through Spectrum Acq tab.
3. Displaying both intensity and eV at cursor position, using Energy Cursor.
4. Added ability to delete completed queue jobs.
5. Can now change color of Stage Marker and Field Of View box on platen view.
6. Can change platen filename prefix and comment prefix on a per acq basis.
7. Sputter tables can now be edited by number of cycles.
8. Increased maximum bake time in hours to 500 hrs.

#### FIXED IN THIS VERSION

1. Fix issue where currently displayed X-Ray setting being written to acquisition file instead of X-Ray setting being used while running queue.
2. If Z-Align fails before acquisition, no longer continue with acquisition as user may be sputtering at incorrect height.
3. With Quantum systems only: After closing sputter shutter, sometimes EPC is still busy when attempting to do a following Argon leak or Diff Pump operation.
4. GCIB Filament timer: Fix lifetime timer to read filament current and compare this instead of setpoint value so lifetime is monitored correctly.
5. Fixed some coloring issues where some tables had black lettering when blue highlight present which was hard to read.
6. Remove yello box around current platen name in status bar when current platen isn't on the stage.
7. Fix problem where position list scroll bar wasn't handled correctly when tiling and untiling the view.
8. X-Ray and Delay Before Sputter times are now added to estimated acq times.

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Release 3.2 - Nov, 2012

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#### KNOWN ISSUES

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2. SXIs are failing on Embedded PC systems due to firewall protection being enabled. firewalls need to be disabled so that EPC can establish connection with SmartSoft PC for sending SXI data.

#### NEW FEATURES IN THIS VERSION

1. Use current platen image FOV to generate points (new point generation method).
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. Remove Z-Align 'Low Count Error'.
2. Acq Region: 224 PE/ 0.100 eV step size added for V3.0 channel maxing/deconvolution would cause EPC systems to crash. Removed this step size from EPC configurations.
3. Increase C60 X & Y Steering by one significant figure (ie 0.00).
4. Added retry mechanism for data acquisition to help with gauge lens errors.
5. Fix problem of hitting 'Stop' followed by 'Abort' in acq status window not working.
6. Fix problem where target emission for sputter setting would get overwritten with queued acquisitions with pulsed neut Z-Aligns as part of queue.
7. Fix memory management issue that was causing various memory leaks.

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Release 3.1 - Jul, 2012

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#### KNOWN ISSUES

1. With Embedded PC systems: First SXI run after starting up SmartSoft may not work. subsequent SXIs will work normally.
2. SXIs are failing on Embedded PC systems due to firewall protection being enabled. firewalls need to be disabled so that EPC can establish connection with SmartSoft PC for sending SXI data.

#### FIXED IN THIS VERSION

1. Add support for 38-101 data acquisition.
2. Fix error that appears if no serial port exists (COM1) on PC, even when no SPS is configured.
3. Swap Bake Intro and Bake Chamber interlock status readback displays (were reversed)
4. Improve starting bake process to be more friendly to motor power being off.
5. Make sure that Scan X and Y increment is set when restarting SXI clipping warning occurs.

6. Add delays in power loss recovery routine to give units ample time to shutdown before being enabled again.
7. Minimize excessive UI flashing when 'Close All' is performed on multiple data files.
8. Make sure that profile acquisition stops when motor failure occurs.
9. New enhanced Peak ID.
10. Energy range in region table is now unique for each row depending on PE.
11. Add 'Point' or 'Area' type to Multipak header information.
12. Fix eV step values list not being populated on import in region tables.
13. Fix File Load causing Egun Neut to turn On and max out filament current.
14. Fix 10kVC60 Calibration Y in Properties being set to X value.
15. Duplicate delay fix from 20kV to 10kV to wait a second after turning on high Voltage so that it settles before loading setting occurs. Else temperature (first value loaded) fails to load.
16. C60: When set X, Y Calibration values in Properties, restroke Scan Size in dll to make changes take effect
17. Fix method for clearing errors with Varian Gauge controller (reading revision).
18. Fix problem with initializing 32-355 deflection for C60 on startup.

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Release 3.0 - Oct, 2011

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#### FIXED IN THIS VERSION

1. Add support for C60 Auto Startup routine.
2. Support single and multiple plot displays.
3. Fix 'Set All' for area type so that area sizes are set correctly.
4. Low/High Mag photo support changed to Standard and Angle Platen photo support.
5. Queue summary now displays SXI or Map child position IDs instead of SXI or Map IDs.
6. Platen directory now set for each queued acquisition to allow this to be changed for each acquisition.
7. Add new load from file feature that allows multiple hardware and acquisition parameters to be loaded from a single load file action.
8. Add Ability to save and download C60 calibration values.
9. Use HP scan pattern when running HP EMS or MCD acquisitions.
10. Stage status now displays auto Z-Align status and has right-click menu control.
11. Add Max FOV in SXI properties that can be set to cut down on clipping error msgs.
12. Sync up live and saved SXI image gamma.
13. Add Tools -> System Colors menu option for adjusting system colors that may be difficult to see.
14. Add option for adding acquisition parameters to generated data file comments.
15. Add logging of SmartSoft-XPS version number to system log.
16. 20kVC60: Sputter vs. Blank mode command was backwards. Raster Calibration values in properties window fixed.
17. Fix Beam Power button getting stuck when anode move fails.

18. Fix Color display issues with Win 7 and OS color scheme.

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Release 2.3.1 - Apr, 2011

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IMPORTANT: IF INSTALLING THIS VERSION OR NEWER OVER V2.1 OR OLDER - AFTER UNINSTALLING THE OLD VERSION, DELETE THE IDLE.PHI AND WARM.PHI SETTINGS FOR THE C60IONGUN IN THE SETTING DIRECTORY AND RERUN THE CONFIGURATION MANAGER.

FIXED IN THIS VERSION

1. Add Support for Main Chamber Turbo.
2. On Startup, do not turn on Heat Exchanger if Up-to-Air.
3. Requires MIL 9.0, supports new Morphis framegrabber and Win 7

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Release 2.3.0 - Feb, 2011

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IMPORTANT: IF INSTALLING THIS VERSION OR NEWER OVER V2.1 OR OLDER - AFTER UNINSTALLING THE OLD VERSION, DELETE THE IDLE.PHI AND WARM.PHI SETTINGS FOR THE C60IONGUN IN THE SETTING DIRECTORY AND RERUN THE CONFIGURATION MANAGER.

FIXED IN THIS VERSION

1. Add Support for GCIB.
2. Add Support for 20kVC60.
3. Power Loss Recovery now will always disable, then enable card rack power.
4. 'Open' Queue through Acq Setup views will now display last user queue being built, mimics 'Add' Queue for clarity.
5. Default user queue renamed from 'Queue' to 'User-1' for clarity
6. Fix bug where Timed Sputter would start while Zalar was moving to initial Zalar position.

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Release 2.2.0 - Oct, 2010

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IMPORTANT: IF INSTALLING THIS VERSION OR NEWER OVER V2.1 OR OLDER - AFTER UNINSTALLING THE OLD VERSION, DELETE THE IDLE.PHI AND WARM.PHI SETTINGS FOR THE C60IONGUN IN THE SETTING DIRECTORY AND RERUN THE CONFIGURATION MANAGER.

FIXED IN THIS VERSION

1. Fixed C60 default IDLE and WARM settings so that they are read correctly.
2. Platens can be created/loaded and moved between the Intro and Prep stations while acquisitions are running (if second diff pump configured).
3. Platen Preview added to allow editing of platen information and positions on platens that are not the 'Current' platen (while acquisitions are running).

4. Added support for Dry Scroll Pumps.

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Release 2.1.1 - Aug, 2010

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FIXED IN THIS VERSION

1. Improve timed sputtering handling in AutoTool.
2. Fix Angle Resolved Acq duplicate filename handling.
3. Fix bug where Analysis regions could get clipped when loading region tables of same size.
4. Fix saving of stage position when coming back from sputtering in Auxillary chamber.
5. Support XGS-600 Gauge Controller and TC 400 and TC 110 Turbo Pumps.
6. Allow closing acquisition results not being acquired.
7. Add pixel size calculator for Map and Line acquisitions.
8. Zalar rotation controlled by minutes per rotation instead of rotations per minute.
9. Fully supporting EPC, Non-EPC, and Quantum systems.
10. Supporting Dual Turbo option with controls and readbacks.
11. Fix bug where resting SCA Multiplier between positions could cause extra background (EPC).

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Release 2.0.6 - June, 2010

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FIXED IN THIS VERSION

1. Fixed bug where Argon Flow rate may not get set to Diff Pump On value when Argon and Diff Pump are both in 'Auto' mode.

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Release 2.0.5 - May, 2010

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FIXED IN THIS VERSION

1. Fixed bug where anode position was not being logged correctly in Z-Align Log.
2. Fixed bug where extra background counts could be picked up while E-Gun Neut was on during consecutive acquisitions.
3. Fixed bug where system could lose track of an Angle Resolve Platen being on the stage after the stage was initialized.

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Release 2.0.3 - March, 2010

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FIXED IN THIS VERSION

1. Fixed bug where software hangs up when executin Queue task.
2. Fixed bug where software losts anode position after stage initialization.
3. Fixed bug where software does not recognize a stage error during stage initialization.
4. Fixed bug where software executes acqusition with wrong numbers of Cycle.

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Release 2.0.1 - Nov, 2009

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FIXED IN THIS VERSION

1. Fixed bug where reading Beam Power was not using proper delay time after turning the X-Ray gun on and switching Bias Box mode.
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Release 2.0.0 - Sept, 2009

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FIXED IN THIS VERSION

1. Fixed bug where stage was not initializing on startup of SmartSoft-XPS when system user level of 'User' or 'SuperUser'.
2. Fixed bug where Sample/SXI Image Size X and Y entry fields were not capped to maximum SXI resolution size of 1400 um.
3. Fixed bug where digital intro camera and SPS photos in Prep session were sometimes sized incorrectly and scroll bars would appear when shouldn't have been needed.
4. Fixed bug where 'Last Acq' Multipak button could open a currently running acquisition file and then prevent this file from being updated by the running acquisition.
5. Fixed bug where Ion Gauge Units could not be changed in Configuration Manager when 'EPC' was selected in 'Embedded PC' combo box field.
6. Fix errors occurring when Beam Power was run or X-Ray beam was parked after startup of SS-XPS before running any other acquisition type that downloads a scan pattern.
7. Fixed bug where 'More' acquisitions for No Sputter and Continuous profiles would complain that 'More' was not allowed after 'More' button was hit, acquisition was set up, then 'Profile' was selected. Fix dithers the 'More' button for No Sputter and Continuous profile Sputter Modes.
8. Fixed errors occurring when other file types are loaded into XPS/Profile tab.
9. Fixed bug where Pass Energies in Acquisition Properties/Region View was not displaying the Pass Energies from SCALens.txt file that is used in Pass Energy selection fields.
10. Improved Queue performance when adding many queue items to the list. Improved performance for all list (position list, data manager, ...).
11. Limit Ion Gun grid voltage minimum to 120 when emission is > 8mA.
12. Fixed bug where spaces in region names would cause problems opening data files in Multipak. Replaces spaces with underscores when acquisition is started.
13. Fixed calculation rounding error that would sometimes result in incorrect number of steps being calculated, causing final data point to get zero data counts.
14. Fixed bug where some repeated parameters in the main Ion Gun View and the Ion Gun properties View were not updating each other when one set was changed.
15. Fixed bug where C60 Depth Profile acquisitions were not displaying initial remaining acquisition time estimates.
16. Fixed bug where undepressing the 'Start' button from the Queue -> Auto Tool View would make the currently running task unable to abort.
17. Acquisition 'Delay (sec)' is used during every cycle of a Profile Acquisition if the 'X Ray Off During Sputter' option is selected.



18. 'X Ray Off During Sputter' no longer turns off the X Ray during preacquire cycles.
19. 'Delay After Sputter' is now called 'Delay Ion Gun (sec)' and is only applied before the acquisition cycle if Ion Neutralization is selected.
20. Fix bug where C60 Profile acquisitions could lose communication with the C60 Ion Gun control.
21. Fix bug where attempting to save an SXI image when no SXI acquisition had been run since startup would result in default exception. Now gives user friendly message.
22. Fix bug where potential loss of eucentric tilt positions used for eucentric tilt calibration due to min and max limits of these fields being updated as current stage positions were changed. Removed ability to drive to eucentric tilt positions so that this updating of min/max values isn't needed.
23. Open up bake pressure upper limit from  $5.0e-5$  to  $5.0e-4$ .
24. Give 'Unknown' platens a max Z-height of 10mm so that they can be moved around easier if needed.
25. Save current platen setting when saving 'Previous' platen setting so that new positions and files added to platen are saved in case of hard quit or crash of SmartSoft-XPS.
26. Fix bug where 'Load File' from an acquisition setup view would incorrectly mark the acquisition type as the type of file loaded (ie. loading a Line file in a Spectrum setup view would try to run the Spectrum as a Line acquisition).

#### NEW FEATURES IN THIS VERSION

1. Added logging of current Stage X, Y, Tilt at beginning of Z-Align acquisitions in Z-Align Log.
2. Added Emission Current, Target Current, and Filament Current reading values to X-Ray Application log when these readings are updated. This replicates functionality that was present in Compass software through the 'CurrLog'.
3. Added ability to draw on SXI for use in system checkout.
4. Added 0.2 eV Step Size option added for 26 Pass Energy.
5. Added Z-Align Plot to Tools menu to complement Z-Align Log.
6. Added ability to right click element in element table view to select specific region transitions instead of always getting default transition from element database.
7. Added Beam Size specific Anode Position control in X-Ray/Properties. Controls which position is used when Beam Size Acquisitions are run. Does not have live control over current anode position.
8. Analyzer Settings have been removed in favor of having a table in Analyzer/Properties/Lens, which holds specific Lens and Binding Energy values for SXI, Z-Align, and MCD acquisitions.
9. Added new <read> and <read continuous> button to diagnostics menus. Supports continuous reading of hardware.
10. Max Target Emission of Ion Gun is now 25mA instead of 50mA.
11. Added 15M Canon Intro Camera support.
12. When Depth Profile Acquisitions are stopped in the middle of sputter layers, these layers are now split and completed layers are read-only when doing 'More'.
13. On Angle Profile Acquisition setup, the Angle Table now displays the sine of the angle in addition to the angle in degrees and number of cycles.
14. "Cleaning Up ..." message dialog after stopping a Beam Size acquisition changed to a more informative "Restoring Hardware Parameters ..." message dialog.
15. Peak ID now displays all transitions with the 'Label' flag from the element

database instead of just the primary transition with 'Select' flag.  
16. Can now change 'Service' and 'Superuser' level passwords from within SmartSoft-XPS in the 'User Level' menu.

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Release 1.1.2 - July, 2009

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#### FIXED IN THIS VERSION

1. Changed the minimum limit of 'Atmospheric SetPoint' to support purging with another gas.
  2. Fixed the bug of IonGun floating in depthprofile sputtering.
  3. Fixed the bug that the Xray filament value is reached to filament limit when loading after HP mode.
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Release 1.1.1 - March, 2009

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#### OVERVIEW

SmartSoft-XPS V1.1.1 completely replaces COMPASS (and the UNIX emulator) as the system control software for the Quanterta SXM instrument.

#### NEW FEATURES IN THIS VERSION

1. SmartSoft Look and Feel
  - a) Single window with predefined data views
  - b) Session tabs guide user through analysis
  - c) MS Windows based package
2. New 12 MegaPixel Intro Camera Support
  - a) Enhanced intro photo quality
  - b) Supports digital zoom over whole platen
3. Integrated Platen File Management
  - a) No restriction on number of platen files
  - b) All data files recorded and available using an on-line lab book
4. Fast and Easy Platen Alignment
  - a) Uses proven SmartSoft-AES wafer navigation technology
5. Interactive SXI Imaging
  - a) Point and click sample positioning
  - b) Point and click analysis area definition and repositioning
6. Integrated Peak Identification
  - a) Real time peak identification during analysis
  - b) Peak identification results available for analysis region setup
7. Real-Time System Status During Acquisitions
  - a) Descriptive status messages are displayed during each step of data collection
8. Data Recovery for Profile Acquisitions
  - a) Data stored after each cycle to facilitate file recovery if needed
9. Enhanced Service Tools

- a) Real time photo calibration
  - b) Interactive center-of-rotation and eucentric tilt calibration
10. Password Protection for Critical System Parameters (Password needs to entered just once)

#### 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.

#### KNOWN ISSUES AND LIMITATIONS

1. SmartSoft-XPS is designed to be run on the Windows/XP operation system only. SmartSoft-XPS has not been tested on Windows/Vista or Windows/NT computers.
2. SmartSoft-XPS does NOT support the following hardware: 200mm Stage, 11-085 Ion Gun (non-float), 72-030(W) E-Gun Neutralizer
3. For additional information on known issues, please see the following document:  
C:\SMARTSoft-XPS\Bin\SmartSoft-XPS.ServiceBulletins.htm