



Studio Software Update 8.3 – Release Notes

Previous Studio Release: 8.2.1

Supported Equipment PC: Z97, Z170

Offline Studio Operating System: Windows XP (Service Pack 3) or higher; extensive testing specifically performed on Win 7 32/64 bit and Win 10 64 bit

Summary:

All included Studio applications have been validated for compatibility with previously created Akrometrix Studio file formats. Files created prior to Studio 8.0 will not be readily usable with the Automated Report Generator feature. Akx_profile files have updated information and may not have compatibility with previous Studio versions. Important bug fixes and added features are listed below. This list does not include all resolved bugs and added features. Known issues are presented with workarounds where applicable.

Update Procedure:

PLC Update

Studio 8.3 requires an update to the PLC on any AXP 2.0 systems. Owners of any other Akrometrix models may skip this step. The PLC update includes improvements to the oven temperature control scheme and adds improved checks for unresponsive process thermocouples to protect against damaged thermocouples or improper setup. Further instructions for downloading PLC code and updating AXP 2.0 systems will be provided separately.

Install Studio 8.3

Download and Unzip the Studio Installer zip file. Install all applications for Studio 8.3 by launching the provided file "Akrometrix Studio 8.3 Installer x86[or x64].exe". Uninstalling older Studio applications is not required prior to launching this file, as this will be done automatically. Take note to only install the x86 version for 32 bit systems and x64 for 64 bit systems.

Key Feature Changes or Additions:

Studio 8.3 is releasing with fully updated User Manuals for this version.

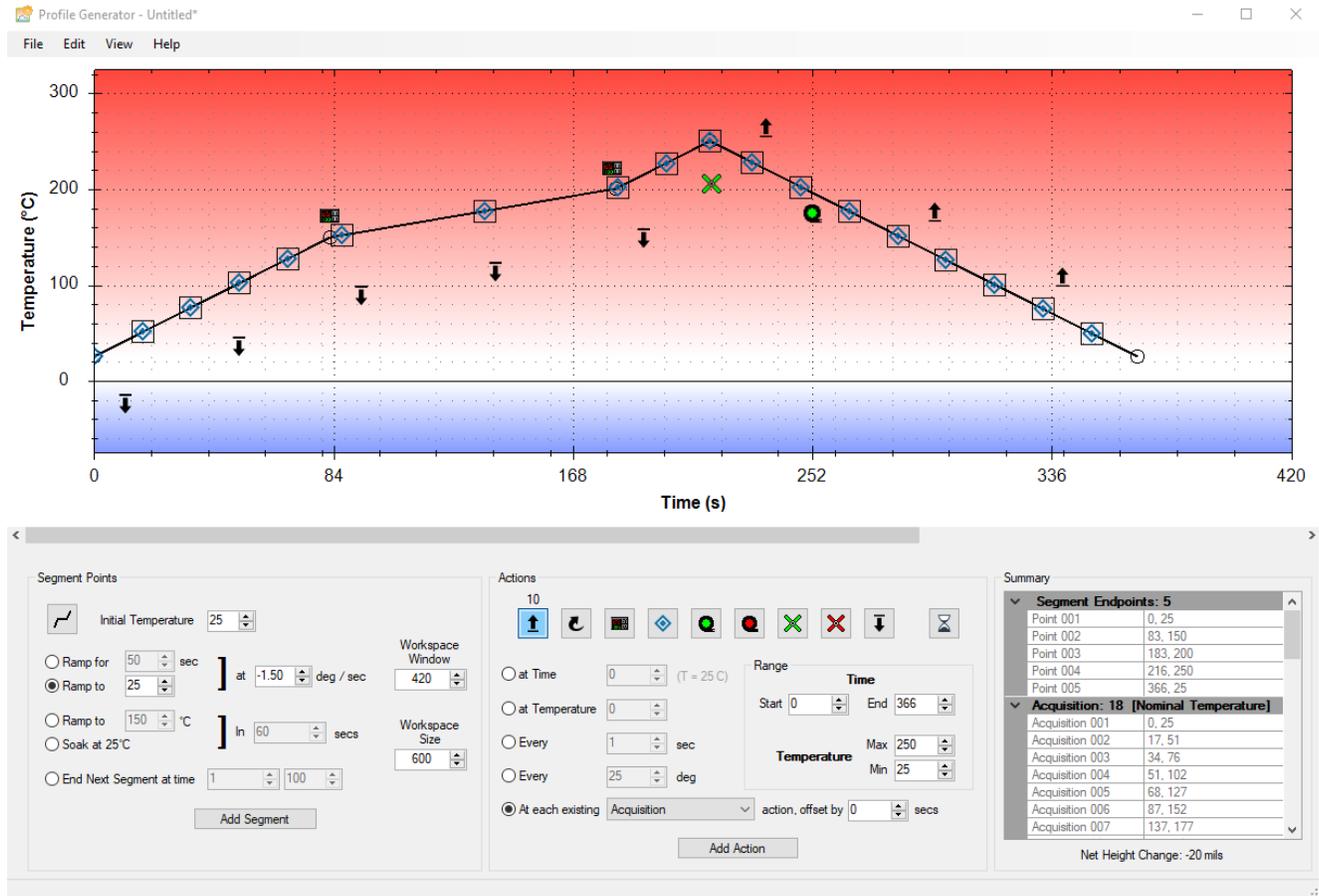
Profile Automation Overhaul

Creating a temperature profile has been largely changed in Studio 8.3. Users now can control numerous test parameters with the created input profile and no longer must rely on adjusting settings prior to profile start or during the profile. This functionality adds new capability to fine tune a temperature profile and will help users avoid mistakes in profile execution. All actions can occupy the same step in the profile. Through the input profile the user has added capability to adjust:

- Stage Height: Lower, Raise and Return functions can be called at any step. This function can be used to replace the lower while heating concept or be used to make fine adjustments of stage height during the profile to offset thermomechanical movement of the sample support structure. The stage height can never be raised above the sample starting height to avoid possible damage to the system and samples under test.
- Oven Control Parameters: Throughout the profile, oven heater power can be adjusted for AXP and PS600S systems. In the case of the AXP 2.0 inner and outer bottom heaters, top heaters, and top heater setpoint offset can be set and adjusted during the profile.
- Wait for Temperature and Error Band: Any second in the profile can hold a "wait for temperature" command. This allows the profile to behave in "temperature mode" where the system will wait for the process temperature to reach within the error band of the setpoint. Profiles can contain "wait for temperature" commands along with other actions or "wait for temperature" with no other action. Error band is also set per "wait for temperature" action and now allows for non-symmetric positive and negative values from the setpoint.

Choosing to define these new features in Profile Generator will disable options in Thermal Profiler, as they are being defined by the input profile instead.

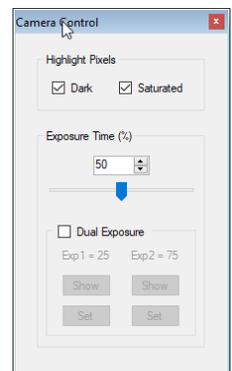
- Defining Stage Height disables Lower While Heating and Compensate for Frame Warpage functions
- Defining Oven Control Parameters disables all adjustable oven control functions
- Defining Wait for Temperature disables Control Criteria and Error Band



Dual Exposure Images

To handle surfaces with a range of reflectivity, shadow moiré images can now be taken with two different camera exposure settings. This further enables the measurement of unpainted samples, such as samples with bright metal traces and darker laminate material. To compliment this approach the overall exposure range has been increased by 4x. The settings for dual exposure can be saved as part of the recipe.

When measurements are taken the data is automatically assembled to take the optimal data from each exposure on a per pixel basis. The data is assembled primarily based on the highest phase amplitude threshold.

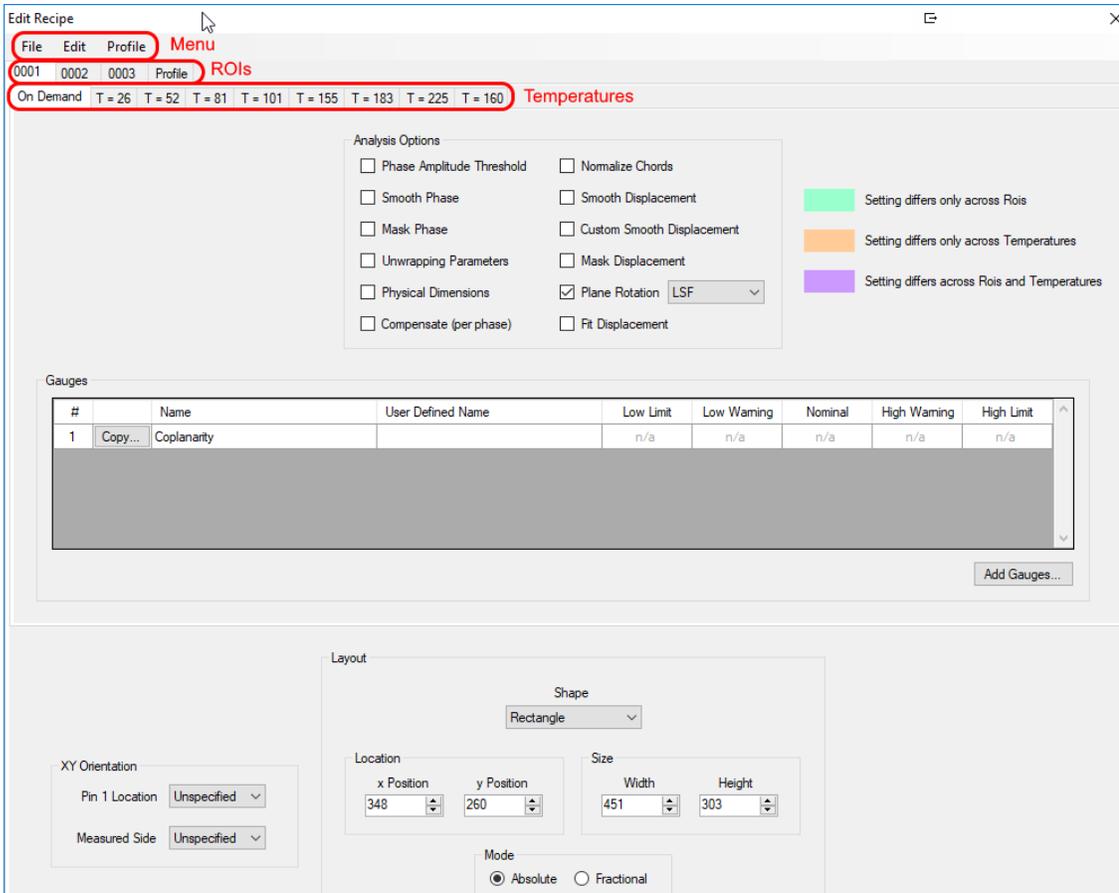


Recipe Driven Surface Measurement Changes

Analysis options within Surface Analysis have been migrated to function within Surface Measurement.

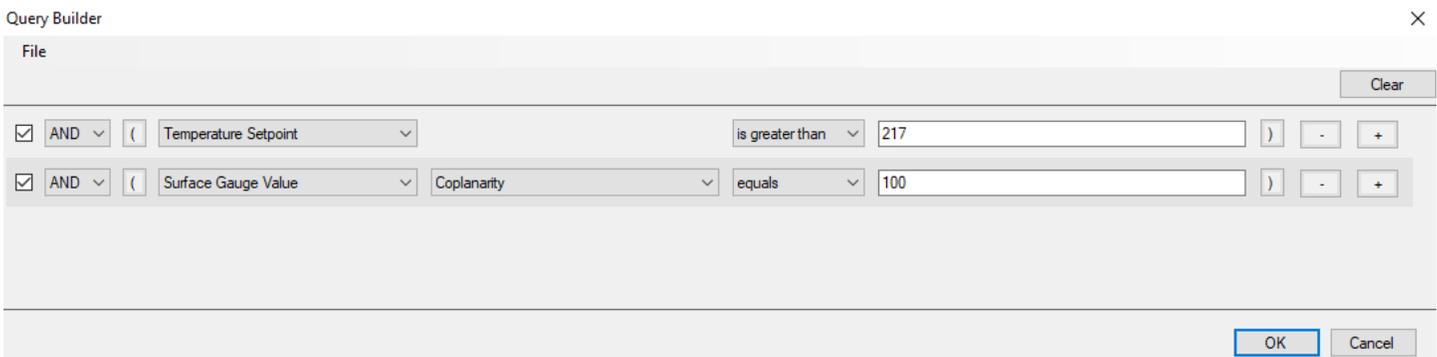
These settings are recipe driven and can be varied by region and temperature point. Features include surface smoothing, masking, Part Tracking parameters, and unwrapping parameters, among others.

Additionally, all gauges can now be defined within Surface Measurement and multiple gauges can be chosen. If RTA is available on the system, multiple gauges can be used to establish pass/warning/fail criteria. All recipe settings defined within Surface Measurement are utilized in Thermal Profiler.



Metadata Driven Filtering in Batch Analysis and ARG

Users can now filter data from the batch analysis results or from Automated Report Generator (ARG) files using any metadata field. This includes filtering by any available gauge. The interface allows the user to build a logic statement for the data filtering. This logic statement can be saved and reused.



Studio 8.3 Features:

- New gauge, 3S Warpage Deadbug: Inversion of 3S Warpage - Uses coplanarity as the absolute value, but combines JFFS Warpage and Signal Strength (SS) gauges to define direction of warpage. Instead of only positive and negative a third category T (for Transition) is used when SS is $\leq 25\%$. If $SS > 25\%$ the result of + or - is used from the JFFS Warpage equation.
- Angle (per chord): Z Angle value (height vs. length) can be shown for any chord when physical dimensions are known
- Surface unit defaults have been changed to microns in numerous locations

- **Profile Generator:**
 - o A check for initial absolute grating height can be added to the input profile
 - This will not adjust the stage height automatically, but rather warn the user on profile start if sample height is not within +/-5 mils of specified
 - This function requires the stage to have been homed in Surface Measurement
 - o All actions can be added every X degrees or steps, or added in relation to other actions
- **Surface Measurement:**
 - o Numerous variables have been changed to be per ROI
 - Indicator labels on the bottom of camera screen changed to reflect per ROI status
 - o Accuracy Check is now available with DFP Surface Measurement
 - o Grating compensation parameters can now be specified in any available units
- **Thermal Profiler:**
 - o Status indicators at the bottom of the camera have been updated or removed to reflect new heating control capabilities
 - o Temperature differential and all heater power values are now shown in Thermal Profiler temperature/time table
- **Surface Analysis**
 - o Array Generator and Z-Range Mask now included with Surface Analysis at no additional charge
 - o Metadata can now be edited on an individual phase or displacement image
 - o Saving of report settings has been improved to capture more settings
 - o Loading report settings can now optionally only affect a single tab of the ARG interface
 - o Report layout options and handling of large data sets has been improved
 - o Second Order Fit Coefficients (SOFC) can now be defined with respect to any available units
 - o Array Generator can now be used multiple times in a row to create different clusters of mask or partition regions
 - o Video files from ARG now include the Z height legend
 - o Batch results files can optionally be saved in .xml format matching styles of an Excel document
 - o Batch results files can optionally be saved with either full folder path or only file name listed in the BatchResults file. If only file name is chosen, the BatchResults file may contain rows with the same exact name, when processing files in subfolders.
 - o When adding phase bridges in the unwrapping parameters interface, phase is shown rotated relative to the first region of phase data to allow the user to more easily connect data on the same plane. This doesn't affect the final result.
 - o Include All, Include None, and Invert Inclusion commands have been added to the ROI Selector tab in ARG

Key Bug Fixes:

- **Surface Measurement**
 - o Switching to fractional mode in the Edit ROI dialog no longer causes an unhandled exception error
- **Surface Analysis:**
 - o Plots in ARG now maintain image aspect ratios when known
 - o The ARG window no longer reverts to the Group tab when loading report settings
 - o Extending custom chord lines beyond the image boundaries is now handled appropriately in the software

Known Issues:

- A small indicator sphere for the location of Pin 1 can be added to individual surface images. This function is not available in batch, and the solution is not fully realized in the software.
- An error is seen in Surface Measurement by loading a recipe file followed by loading an axk_track (Part Tracking) file. This is caused by the new recipe functionality where Part Tracking settings are saved within the recipe. No functionality is lost with this error and loading recipe files or loading axk_track files individually are not known to have issues.

Versions (listed for reference):

Studio Manager	7.6.12500
SurfaceMeasurement	8.3.12500
SurfaceAnalysis	8.3.12500
ProfileGenerator	7.8.12500
Report Generator	7.4.8202
FileConverter	7.5.12500
LicenseUtility	7.5.12500
User Manuals Studio	Studio 8.3