

Studio Software Update 7.7 – Release Notes

Previous Studio Release: 2013.10.17/2015.01.07

Summary:

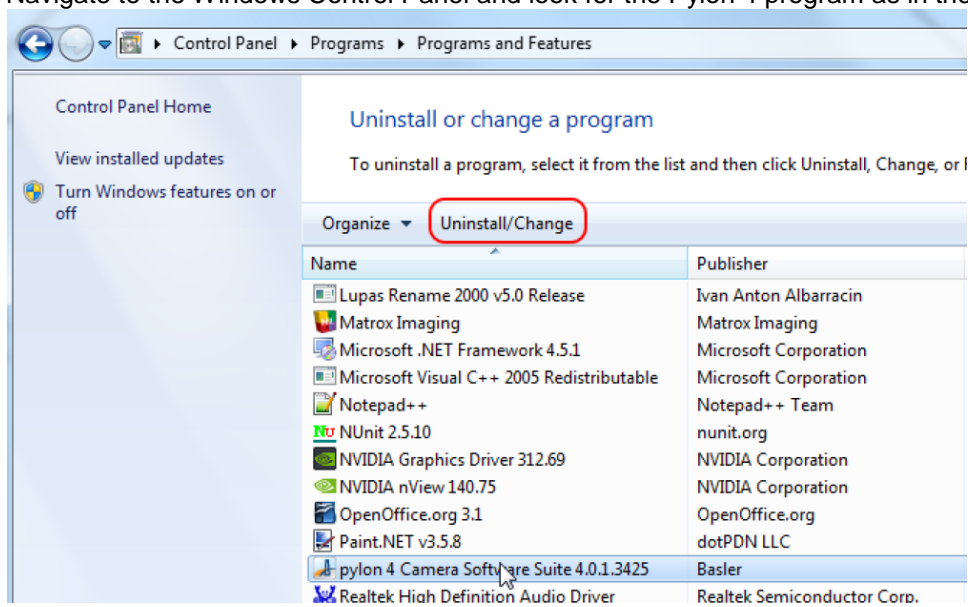
All included Studio applications have been validated for compatibility with previously created Akrometrix Studio file formats.

Important bug fixes and added features are listed below. This list does not include all resolved bugs. Additionally, some known open issues are listed, with work-arounds where applicable.

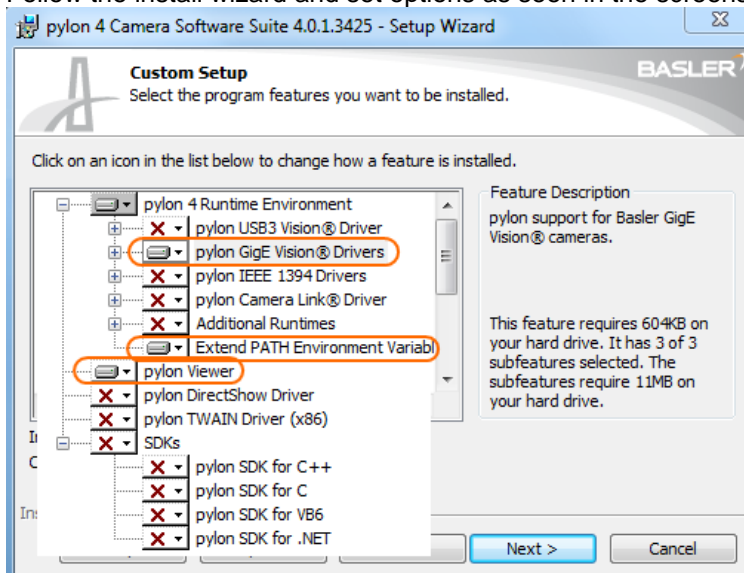
Update Procedure:

Update Basler Pylon Driver

- 1) Navigate to the Windows Control Panel and look for the Pylon 4 program as in the screenshot below.



- 2) If “pylon 4 Camera Software Suite 4.0.1.3425” is listed in this list, take no further steps.
- 3) If a different Pylon Camera Driver version is shown, click Uninstall/Change to uninstall this software.
- 4) Next, run the provided file “Basler pylon x86 4.0.1.3425.exe”
- 5) Follow the install wizard and set options as seen in the screenshot below for the Custom Setup screen



Install Studio 7.7

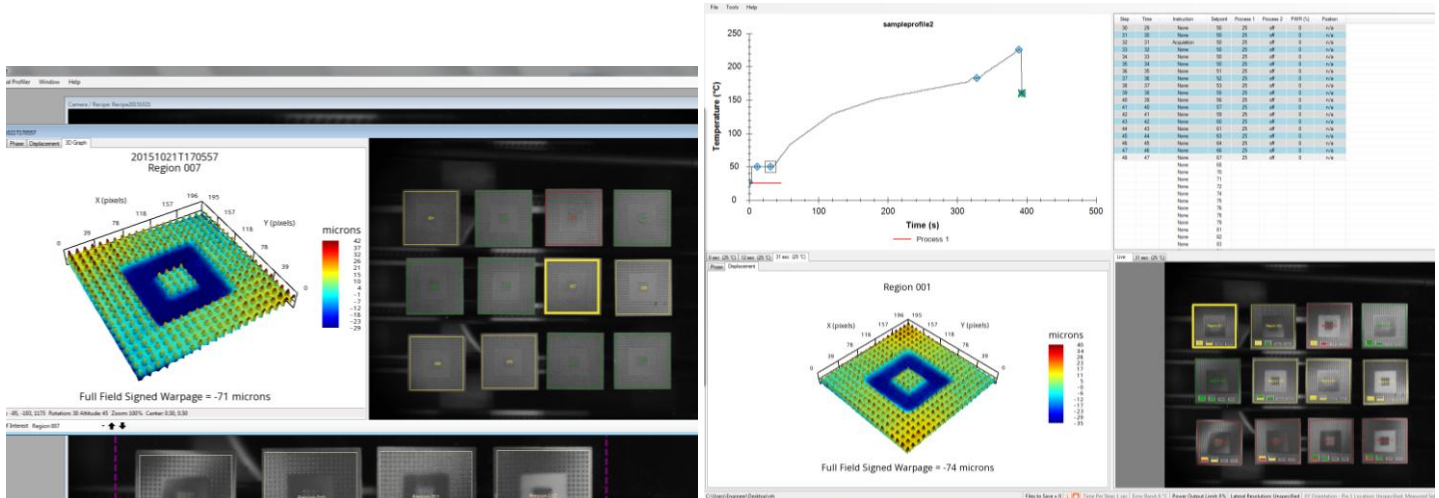
Install all applications for Studio 7.7 by launching the provided file “Akrometrix Studio 7.7 Installer.exe”. Uninstalling older Studio applications is not required prior to launching this file, as this will be done automatically. A computer restart should not be required.

Key Feature Changes or Additions:

Real Time Analysis (RTA): New License Locked Feature

RTA is an optional feature integrated into Surface Measurement and Thermal Profiler. Real Time Analysis:

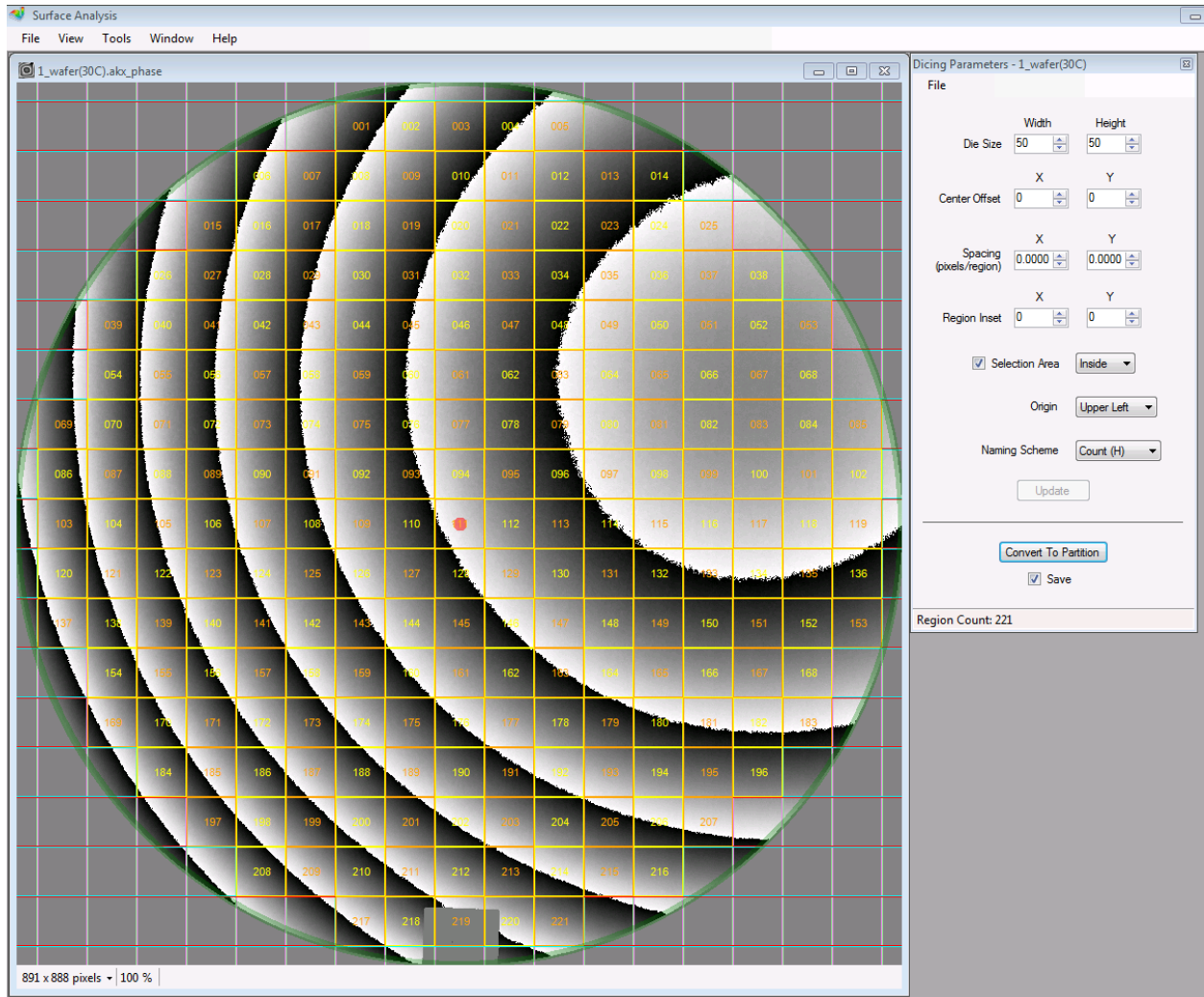
- Enables user-defined ‘Pass/Warn/Fail’ limits applied to warpage measurement results
- Visual Pass/Fail indicators immediately after measurement
- Apply measurement filters during acquisition instead of in post processing
- Recipe approach for engineer setup and technician use in high volume
- ‘Pass/Warn/Fail’ feedback and tracking during thermal profile



Array Generator (AG): New License Locked Feature

AG is an optional feature integrated into the Surface Analysis software. Array Generator:

- Patterned creation of regions based on physical spacing and overall part or die dimensions
- Reduces recipe setup time and improves repeatability of measurements when dealing with large quantities of local area measurements
- Commonly used for wafer and strip applications



Studio 7.7 Base Features:

Reduced time to generate 3D results for larger data sets

- **Surface Measurement:**

- Users can now set a Lateral Resolution associated with a measurement. This information is retained in the file Metadata so that physical size of a measured area (even after partitioning) can be determined with further user input.
- Part Tracking “inset” can now be set uniquely for all four rectangle sides.
- Part Tracking can now alternately find “black” regions inside of white surrounding areas, instead of only white inside of black.
- To aid in test setup, the user can now zoom in on the camera window through the mouse wheel or context menu.
- Users can now change the ROI shape from rectangle to ellipse, optionally.
- The stage motors can now be homed from inside Surface Measurement and not only at Surface Measurement start up. (See known issues for additional note)

- **Thermal Profiler:**

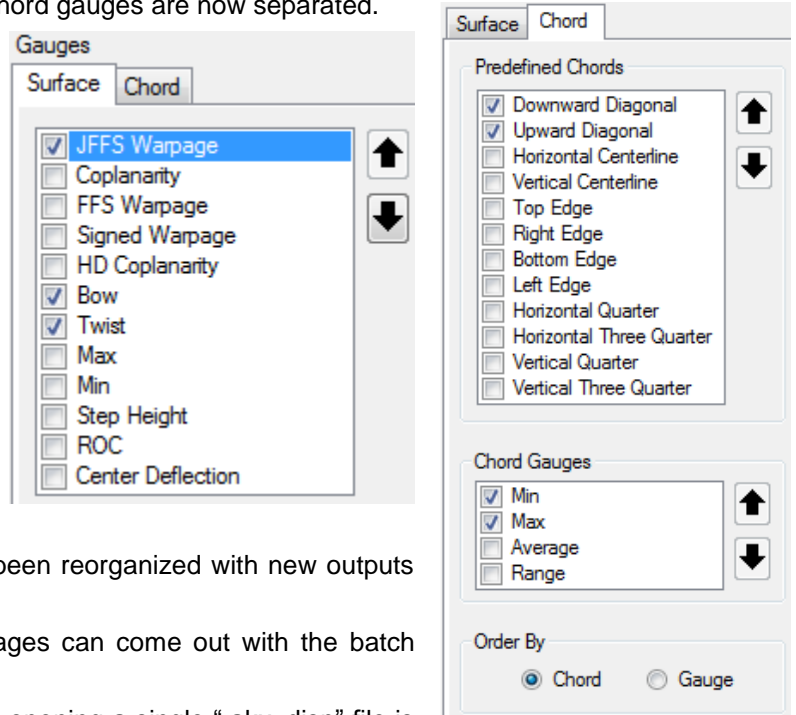
- New Feature - Lower while heating: The user has the option to lower a chosen height of the sample stage during the thermal profile when the sample is not being measured. When an acquisition is reached the stage

will raise, perform the acquisition, and lower again for heating. (This feature also exists on the Studio 2015.01.07 version).

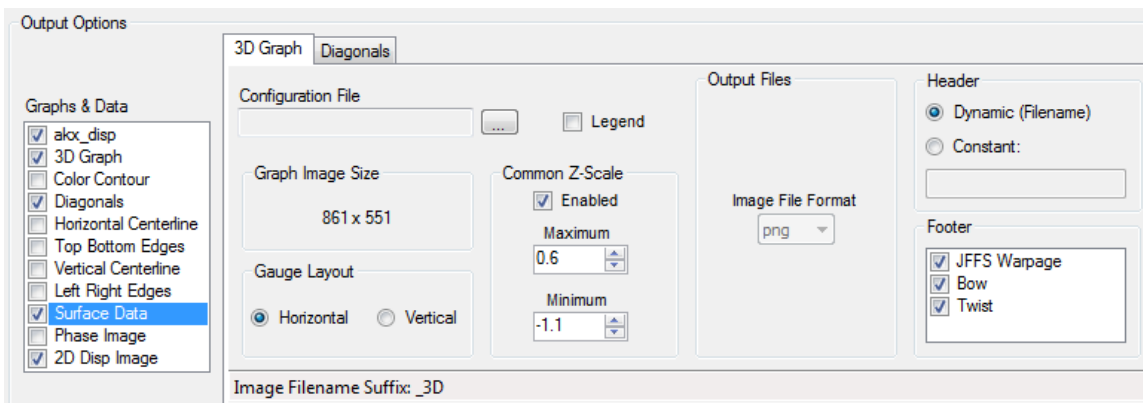
- Improves top/bottom temperature uniformity
- Reduced potential for outgassing to cause data loss at high temperature
- Stage Position is now reported in the Thermal Profiler table.
- Maximum Power Output Limit for the heater bank can now be specified as a percentage in the profile Start Window. (This feature also exists on the Studio 2015.01.07 version).

- **Surface Analysis**

- Added new predefined chord sets:
 - Five Vertical – Shows Left Edge, Vertical Quarter Line, Vertical Centerline, Vertical Three Quarter Line, and Right Edge
 - Five Horizontal – Shows Top Edge, Horizontal Quarter Line, Horizontal Centerline, Horizontal Three Quarter Line, and Bottom Edge
- Batch Processing: Gauges have been reorganized in the Analysis Options section to make the list more manageable and intuitive. Surface and Chord gauges are now separated.



- Batch Processing: Output Options have been reorganized with new outputs added.
 - Pictures of processed phase images can come out with the batch results.
 - A “2D Disp Image” as seen when opening a single “.akx_disp” file is now an output option.



- Added the ability to sort by Full Path Filename in Batch Processing, instead of only the Filename itself. This feature is accessed by clicking directly on “Filename” in the results table. This setting is remembered when opening and closing the Batch Processing window.

Key Bug Fixes:

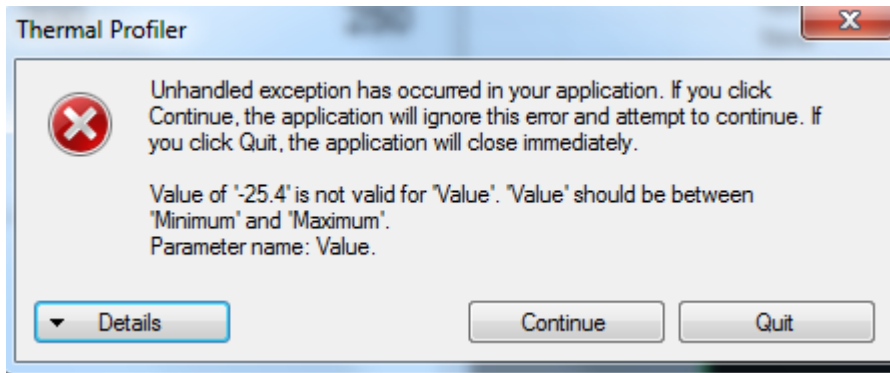
Fundamental changes to file saving and recalling measurements have been made in Surface Measurement and Surface Analysis. These changes were implemented to allow for processing of larger quantities of data by saving more information to disk and keeping less in RAM. The trade-off for these changes is an increase in processing and rendering time for some processes. The below matrix defines data saving stress tests passed in Surface Measurement 7.7. Tests exceeding these limitations have the potential for memory related issues.

Region of Interest Qty	Region Size (pixels)	Measurement Timing	Measurement Qty.	Sample Surface in FOV
1	1392x1040 (SM Full Field)	Every 4 Seconds (minimum allowed)	250	Yes
1	1392x1040 (SM Full Field)	Every 10 Seconds	500	Yes
1	1392x1040 (SM Full Field)	Every 4 Seconds (minimum allowed)	100	No
25	100x100	Every 10 Seconds	50	Yes
255	50x50	Every 40 Seconds	30	Yes

- In reference to the above table:
 - For large images taken in quick succession, results will not be seen in the bottom left pane of Thermal Profiler, but are still being saved to disk.
 - Listed tests can be run in succession without closing Surface Measurement. Limitations on quantity of runs in succession without closing the software in between runs have not been found for this version.
 - In the more extreme cases as illustrated above, the software will require additional time for file saving at the end of a Thermal Profiler run.
 - The above examples are for shadow moiré measurements. Different results can potentially be found during DIC or DFP measurements.
- **Surface Analysis:**
 - The Gauge JEDEC Full Field Signed Warpage is now abbreviated to JFFS Warpage to better fit the interface and image footers. Similarly, Full Field Signed Warpage is now FFS Warpage.
 - Batch processing quantities are no longer limited to available memory, allowing larger quantities of files to be processed together.

Known Issues:

- **License Utility**
 - Customers updating license keys to add new optional features will receive an error from License Utility when applying the update. The license utility update should still work normally and this error should be ignored.
- **Thermal Profiler**
 - The below error message can sometimes occur on the “Start” command from the Thermal Profiler context menu. This is most often seen when changing the “Position Units” setting for the Stage Height or generated from an improper closing of the software. In most cases the issue can be resolved by changing the “Position Units” or restarting the software. In extreme cases it may be necessary to close Surface Measurement and delete the UserConfiguration.xml file, located at “C:\Users\Engineer\AppData\Roaming\Akrometrix\Surface Measurement”. The software will recreate this file upon startup.



- **DFP Surface Measurement**
 - o Accuracy check mode in DFP Surface Measurement has been removed. In order to verify step height measurements a single phase image of two planes can be taken and analyzed in Surface Analysis using the “Step Height” feature.
- **Surface Analysis**
 - o A new tab called “Convert” is shown in the Batch Processing window. This tab is not functional in this release and should be ignored. This tab serves as a placeholder for future development concepts.

Versions (listed for reference):

SurfaceMeasurement	7.7.8258
SurfaceAnalysis	7.5.8258
ProfileGenerator	7.5.8258
FileConverter	7.4.8258
StudioManager	7.5.8258
LicenseUtility	7.5.8258