Studio Software Update 10.0.5 – Release Notes

Previous Studio Release: 9.1.4
Supported Equipment PC: Z370, Q470, W680
Recommended PLC Versions (hardware dependent): See details in PLC/HMI Update
Offline Studio Operating System: Extensive testing specifically performed on Win 10 and Win 11 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 or Batch Interface Analysis feature. 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. Studio 10 is built referencing updated external software components, requiring all update procedure steps to be run in order to function correctly.

Update Procedure:

PLC/HMI Update

Studio 10 requires an update to the PLC for the AXP 2.0, AXP3, and PS600S systems including a PLC (PS600S system including an HMI screen seen on the front of the electrical cabinet instead of a Watlow CSL208 temperature controller). Owners of any other Akrometrix models may skip this step. Download and use PLC and HMI versions per the table below.

Model	Equipment Serial Number	PLC Version	HMI Version
AXP 2.0	<0413	1091	0084
	0413-0440 (except 0433 and 0437)	2091	
	0433, 0437 and >0440	2504	
AXP3	Any	3008	3007
PS600S	<0432	1014	0084
	>0438	2014	

Further instructions for downloading PLC/HMI code and updating AXP 2.0, AXP3 and PS600S systems will be provided separately.

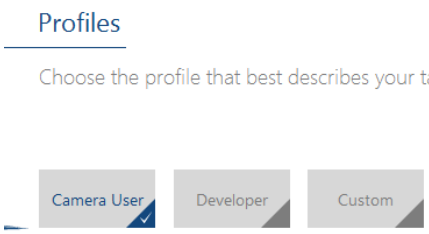
Install Visual C++ Redistributable (v14)

- Copy the provided file (VC_redist.x64.exe) to the equipment PC desktop
  - Double-click file to run
  - Follow installation wizard prompts

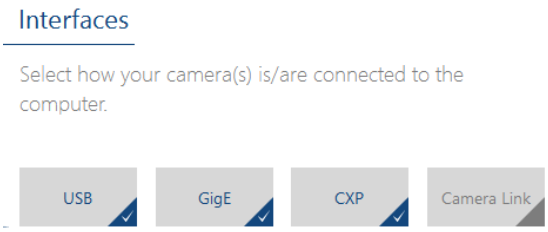
Upgrade Basler Pylon 7.4

- Install Pylon:
  - Copy the provided file (basler_pylon_7_4_0_14900.exe) to the equipment PC desktop
  - Double-click file to run

- Select Camera User under “Profiles”:



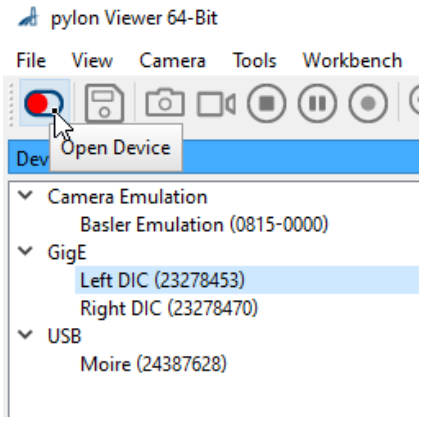
- Select USB, GigE and CXP under “Interfaces”:



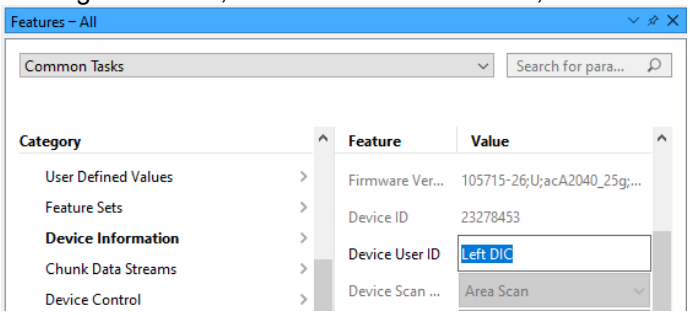
- Follow further prompts to complete installation

- Unplug all GigE camera cables from the switchbox:

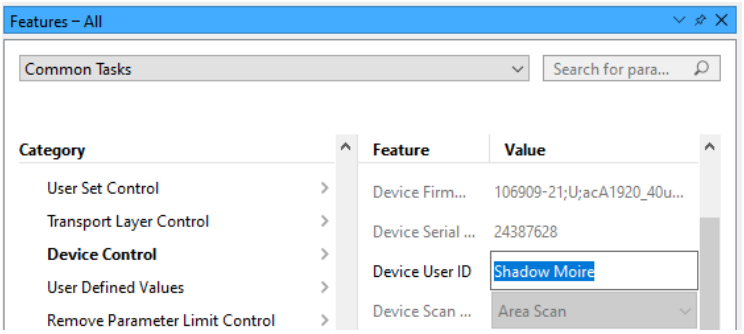
- Unplug all GigE patch cables (cables that go from the switchbox to the back of the computer) from the back of the computer.
- Plug all GigE camera cables from Shadow Moire, DFP, and DIC cameras (where applicable, as some will be USB3) directly into any available ethernet port on the back of the computer. Set the switchbox and patch cables aside as they will not be used with Studio 10.
- Run Pylon Viewer application
    - On First Start-Up “Welcome to Pylon” pop-up is shown
        - Select “No” (thumbs down) in response to question “Would you like to participate in our product improvement program?”
        - Select “Apply” on bottom right
        - Uncheck “Show this window on launch” on bottom right
        - Select “Close” on bottom right
    - From Pylon Viewer all cameras in use need to be named as follows:
        - Shadow Moire camera – “Shadow Moire”
        - DFP camera – “DFP”
        - DIC cameras – “LeftDIC” and “RightDIC”
            - The RightDIC camera should already have a similar name to tell them apart, otherwise a live view can be seen from the interface via “Camera->Continuous Shot” to tell left and right DIC camera apart
        - To change camera name
            - Click on the camera under the Devices window in the top left
            - Click the On/Off slider button to connect to the camera



- For GigE cameras, in the bottom left window, click on the “Device Information” Category



- For USB cameras, in the bottom left window, click on the “Device Control” Category



    - To the right of Device Information/Device Control double click the text next to “Device User ID” and type in the appropriate camera name

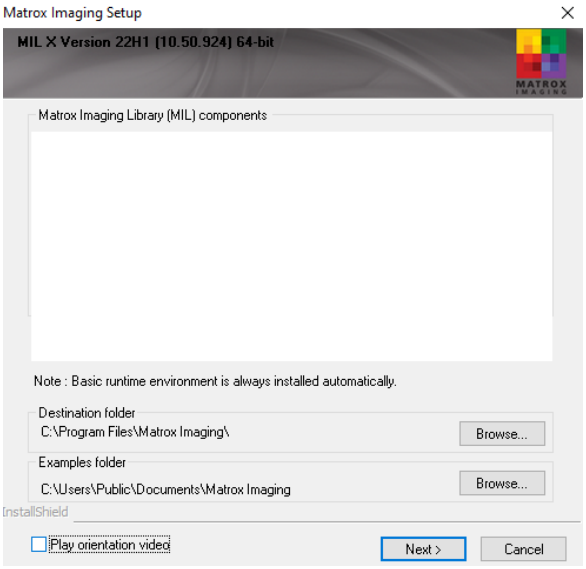
  - Repeat this process for all cameras in use
    - Note that USB camera names will not be updated in the Devices list until the camera is power cycled

- Pylon IP Configurator
  - Open Pylon IP Configurator and change Right DIC camera to Auto IP from Static
- Network Connections
  - Open Network Connections settings: Control Panel\Network and Sharing Center\Change adapter settings
    - Right click on the lower_adapter and go to Properties
      - Highlight Internet Protocol Version 4 and click the Properties button
        - Change the IP address setting to Obtain an IP address automatically

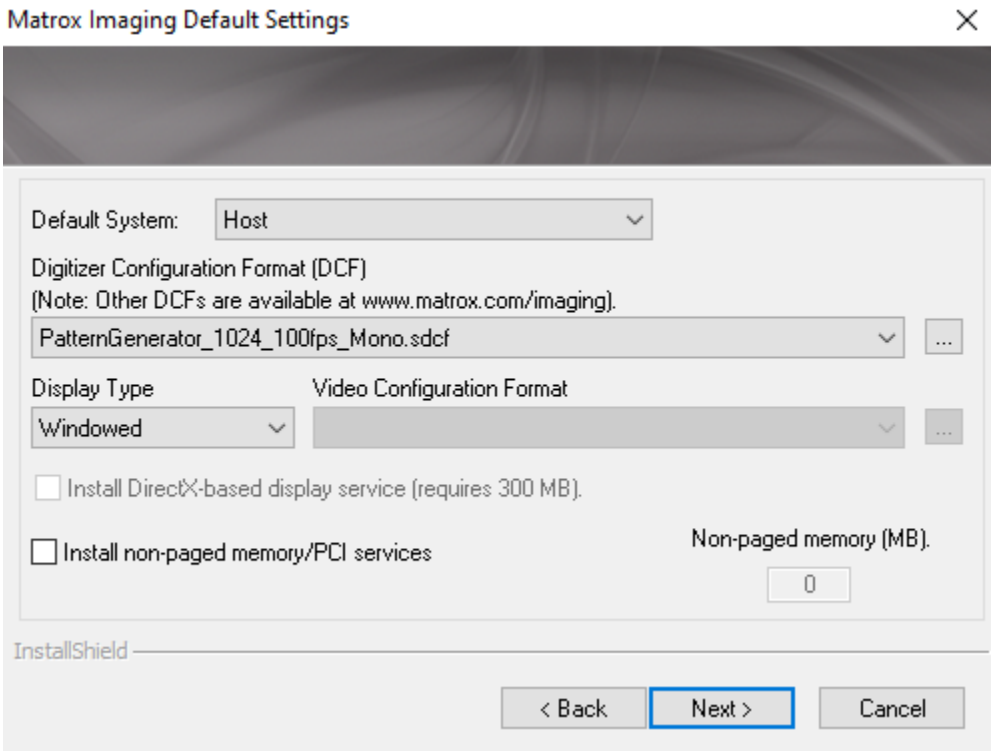
Install Matrox MIL X

Note that the same physical key as Matrox 10 is used here, this is a software change only. Install steps follow:

- In Windows start menu type “Apps” to find and open Apps & Features window. Locate and click on Matrox Imaging (64-bit) program and click Uninstall.
- Copy the provided file zip folder (MIL_X_Runtime_Redistribution.zip) to the PC desktop and right click on the zip to “Extract” the files
- In the extracted “MIL_X_Runtime_Redistribution” folder double click to run the MIL64Setup.exe file



- Uncheck “Play orientation video” in Matrox Imaging Setup screen
- Click next until “Matrox Image Default Settings” screen is reached
- Make sure “Host” is selected for “Default System” from the drop down and uncheck all further options



- Hit next and finish wizard
- Once installation is complete, restart the system PC

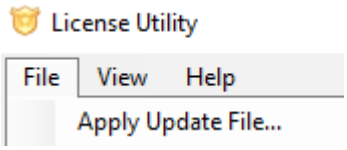
Install Studio 10 and Software Dongle Exchange

THIS INSTALLATION INVOLVES REPLACING THE PHYSICAL USB DONGLE THAT PROVIDES THE LICENSE INFORMATION FOR THE STUDIO SOFTWARE. See below image of legacy key being replaced and new HL Sentinel Max key used for Studio 10. Note that some customers may already have the green colored HL Sentinel Max key, in which case this full section can be ignored.

1. *Disable Current USB License:* The current USB Sentinel key that allows Studio to run will no longer be used with Studio 10. To ensure the correct number of software licenses owned by each customer, this key needs to be disabled and license report sent to Akrometrix.

   a. Customers will be provided with an "*.akx_update" file. Download the file to the system or offline PC.

   b. This update should be applied to the current key:



   c. Once applied, the License Report should look something similar to the below image with all text in red and "Enabled" as "No" for each row. Some keys may have more/different entries, depending on system configuration.

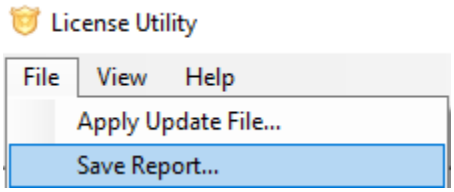
Studio Application Licenses

License	Enabled	Version	Key S/N	Expiration
Studio	No	2009.01 to 2024.06	1106	Never
SurfaceMeasurement	No	Unlimited	1106	Never
SurfaceAnalysis	No	Unlimited	1106	Never
StudioManager	No	Unlimited	1106	Never
ProfileGenerator	No	Unlimited	1106	Never
ReportGenerator	No	Unlimited	1106	Never
FileConverter	No	Unlimited	1106	Never

Standalone Application Licenses

InterfaceAnalysis	No	5.0 to 0.0	1106	Never

   d. Save this report and send to local Akrometrix sales contact.

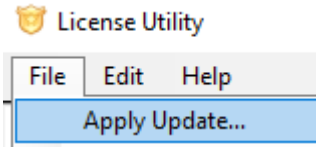


2. *Install Studio Software:* Download and Unzip the Studio 10 Installer zip file onto the system PC. Manually uninstall all Akrometrix Studio applications via Windows "Apps and Features", then restart the computer. Install all applications for Studio 10 by launching the provided file "Akrometrix Studio 10.0.5 Installer x64.exe". A full system power cycle is required after completing all system and software updates, via the main hardware disconnect on the electrical panel.

3. *Plug in the newly provided Sentinel key to any available USB port on the PC*.

4. *Update New Sentinel Key*: The newly provided Sentinel key will only function for 2-3 months without being updated. Once the report from step 1 has been provided to Akrometrix a key update file will be provided. To install:

    a. Download the provided "*.akx_keyconfig2" file to the system or offline PC.

    b. This update should be applied to the new Studio key: 

5. *Repeat Steps 1-4 for any offline Studio Software keys.*

Key Feature Changes or Additions:

Studio 10 is releasing without fully updated User Manuals for this version, to be provided at a later date.

Next Generation Code

Studio 10 is built on a next generation code framework, setting the table for many new features. These include:

- Windows 11 support
- AXP3 support
- Updated Part Tracking library (further detailed later)
- Streamlined module switching without unplugging cameras or turning switchbox dials
- Updated PLC communications increasing speed and reliability
- DFP2/DIC2 support on PS600S

DFP2 Improvements

- DFP can now be run in high bit depth mode on startup, increasing resolution, particularly for unpainted samples
- DFP phase stepping upgrades have been made to improve resolution and reduce measurement noise

Part Tracking Improvements

- Image based Part Tracking can now support image model sizes up to 4096x4096 pixels.
- Part Tracking inset now allows negative values, allowing creation of larger ROI based on a smaller subset image or rectangle model.

Studio 10 Features:

- ***Surface Measurement:***
    - Camera window size is now optimized for QHD monitors. Also, users are warned that GUI layout may be compromised on screens/resolutions less than 2560x1440
    - Cameras do not need to be unplugged when switching between modules
    - Live View when running DIC can now be suspended when Surface Measurement loses focus, improving overall software and PC performance
    - Further GUI improvements to Automated Lens Controller, including establishing presets

- Further PC and equipment information written to log to aid in support
- Part Tracking
  - Noise Reduction and Edge Detail functions can now be used for rectangle models
- DIC Surface Measurement
  - Cameras no longer need to be plugged into specific network ports. Instead, names must include the words “left” and “right” respectively.

- ***Thermal Profiler:***
  - Added support and interface for software controlled variable exhaust speed in the software on AXP3 and some later AXP 2.0 systems
    - Exhaust speed can be controlled via input profile and recorded in output profile table
    - New option to allow exhaust to remain on at 10-30% while in heating mode, in order to reduce optical distortion effects of heat waves on DFP and DIC measurements
  - Thermal Profile column headers updated and newly added to provide further info on profile settings: (shown below in two rows, but will be seen in a single row in the software)

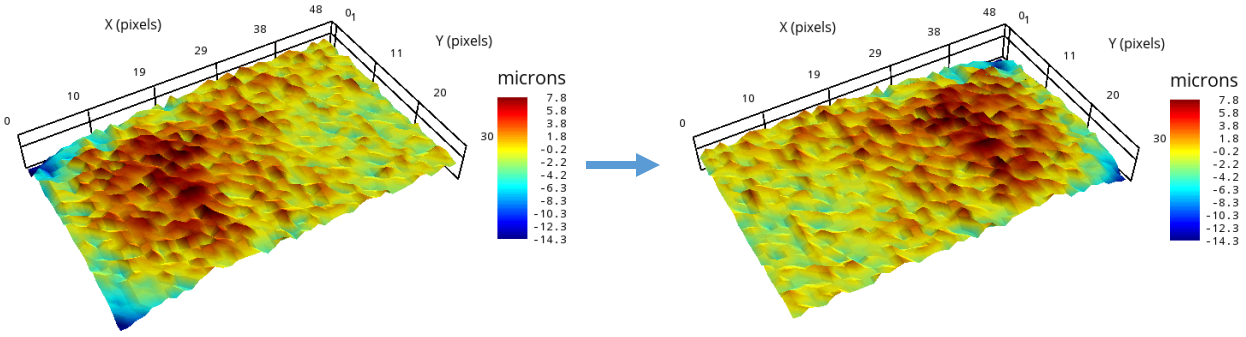
Index	Time	Actions			Setpoint	Process 1	Process 2	Process 3	Process 4	Process 5	Process 6	Process 7	Process 8	Delta T
BHIP	BHOP	THP	CM	ESL	ES	BS	EGS	Position	THE	THFT	THSO	BHPOL	BHIMP	BHOMP

    - Not all columns are new, but a summary of acronyms is shown here. All names can be seen by mousing over column headers

BHIP – Bottom Heater Inner Power %	Position – Stage Height
BHOP – Bottom Heater Outer Power %	THE – Top Heater Enabled (True/False)
THP – Top Heater Power %	THFT – Top Heater Feedback Thermocouple (1/2)
CM – Control Mode	THSO – Top Heater Setpoint Offset (°C)
ESL – Exhaust Speed Limit %	BHPOL – Bottom Heater Power Output Limit %
ES – Exhaust Speed %	BHIMP – Bottom Heater Inner Max Power %
BS – Blower Status	BHOMP – Bottom Heater Outer Max Power %
EGS – Exhaust Gate Status	

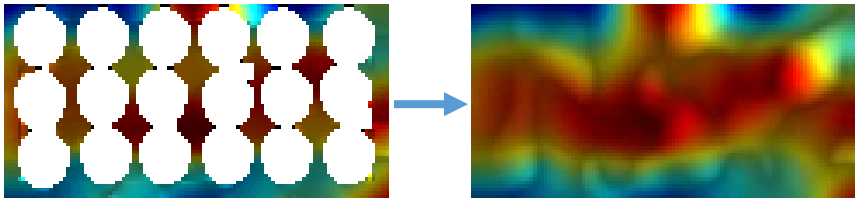
  - Profiles can no longer be started while in Accuracy Check Mode
  - Start Menu Option - Users now have the option to not “Show Warning Dialogs” before ending a profile due to an unresponsive thermocouple
  - Sub-Room Module Only
    - Added further checks and user information in swapping between Sub-Room and Radiant heating modes

- ***Surface Analysis***
  - Mirror Feature – Users can create a mirrored data set in 1-off, via context menu, or as an option in Batch Processing. This mirror can be across the horizontal or vertical axis.

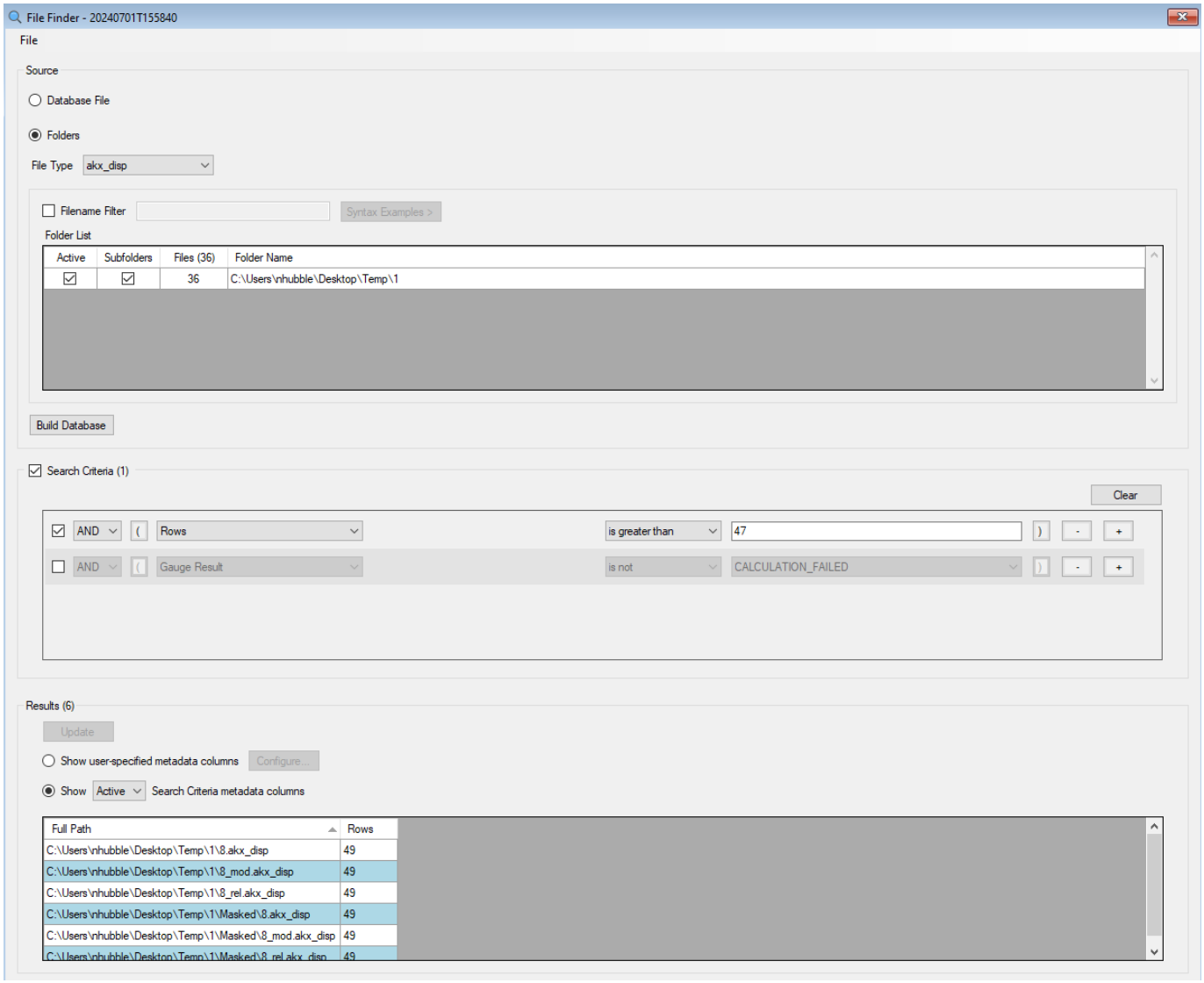


Coplanarity = 22.1 JFFS Warpage = 22.1 Coplanarity = 22.1 JFFS Warpage = 22.1

- Fill Holes Feature – Users can mathematically fill in holes where mask data exists in 1-off, via context menu, or as an option in Batch Processing.



- A new “plane” shape has been added to the options for creating a displacement via File->New Displacement or File->New Profile Displacement. A tilt may be optionally added to the plane.
- Improvements made to loading akx_3dconfig files for those using these files from older versions
  - The akx_3dconfig file type is no longer created in Surface Analysis, as key visual settings are now part of Tools-Options and Automated Report Generator
- Detect Features is now disabled when Step Heights, Chords, Mask and/or Partition regions are defined, in order to avoid associated errors
- Multiple improvements made to Phase Bridging context menu options and interface
- Custom smooth context window now remembers the last used settings
- Multiple improvements and fixes made to the File Finder feature at Tools->File Finder



- Surface annotations can now be seen when using the Save Image function in Surface and Displacement views
- 1-Off Interface Analysis, chordset and chordmode view are now maintained after analysis instead of being reset to Diagonal
- 1-Off Interface Analysis now sets Gap surface display setting to Solid/Wireframe Off when PWF Map is visible to improve readability
- **Batch Processing**
  - Pin 1 indicator now visible in color contour graphs
  - Batch Mask tab – Phase Amplitude can now be filtered by 10-bit greyscale
- **Automated Report Generator**
  - Required fields are now indicated on test info tab
  - Test info tab is now shown as part of the gauge preview

Key Bug Fixes:

- Resolved issue with inaccurate lateral resolution and errors when using ChordAngle and ChordROC gauges.
- ***Surface Measurement:***
  - Saved 3D graph footers now correctly contain PWF info when using RTA

- Resolved issue with selected exposure% sometimes affecting dual exposure acquisition results
- DFP Only
  - Calibrating at 100% exposure on longer causes an error if Measurement Frame Rate was recently changed
- TTSM Only
  - TTSM-J and TTSM-JS specific Machine Controls no longer vanish when starting a New Recipe
  - Load/Unload Position controls are no longer incorrectly shown when assigning grating measurement position in recipe editor

- ***Thermal Profiler:***
  - Extraneous power out% columns are no longer found in saved thermal profile text file
  - Resolved an error generated when TC2 is selected as control thermocouple but also disabled or unplugged
  - Further stability fixes added in generating phase images
  - Resolved a rare case where previously defined temperature profile error bands could replace profile defined wait for temperature error bands
- ***Surface Analysis:***
  - Contour Plots now correctly follow common Z-Scale selection
  - Chord Plots remain correctly normalized after alteration to displacement data
  - Multiple file metadata fields can now be deleted without causing unwanted errors in loading files
  - Save Image function now correctly remembers last accessed directory
  - Resolved issue with labels on inline chord in 1-off Interface Analysis plots
  - Resolved issues with assigning physical dimensions in 1-off Interface Analysis plots
  - **Automated Report Generator**
    - Change Max Number of Roi Locations grouping filter no longer incorrectly resets grouped results
    - Clicking on Row/Column Headers while in Room Temp mode no long generates error
  - **Batch Interface Analysis**
    - Files are now correctly shown in Non-Profile mode if they lack Temp Nominal metadata
    - PWF Map is now correctly shown on Gap Plots
    - Changing a limit no longer resets Gap Mode to Top-Bottom Mode

Known Issues

- The File Finder feature under Tools in Surface Analysis has seen limited testing relative to the many different use iterations and is expected to still have open issues, particularly with older files.
- No further known issues are reported at this time.

Versions (listed for reference):

Studio Manager	10.0.20293
SurfaceMeasurement	10.0.20293
SurfaceAnalysis	10.0.20293
ProfileGenerator	10.0.20293
LicenseUtility	10.0.20293
User Manuals Studio	Studio 9.0