

## Release notes for XYZTEC Condor Sigma Software, version 5.8, build 6248

*The XYZTEC equipment should be connected and switched on. Make sure to login as a user with administrator privileges prior to starting this installation.*

### READ THIS CAREFULLY BEFORE INSTALLING THIS NEW SOFTWARE VERSION

- Installation is supported on any desktop edition of Windows 7, Windows 8/8.1 as well as Windows 10 (not the mobile, IoT or embedded editions).
- There are issues with Windows 8/8.1, some USB 3.0 chipsets and the built-in driver for composite USB devices. These may be solved with the latest firmware for the USB 3 chipsets and running Windows updates until completion.  
For this reason it is not advised to update a working Windows 7 system to Windows 8/8.1.  
On systems with both USB 3 and USB 2 ports, connect the Sigma to one of the USB 2 ports.
- Backup the SPCDatabase before performing an upgrade.
- This software minimally requires the .NET 4.5 framework. If not installed the installer will prompt you to install the .NET 4.5 framework either automatically or manually.
- Systems with SQL server 2008 should be updated to SQL server 2012 SP1 or SQL server 2014.
- For XYZTEC USB device support, our USB device driver kit is required to install.
- When updating from version 5.5 or before, the device driver for the Visiosens camera needs to be updated as well. Please de-install the current driver first. Then install either 'VFUDriverx64\_v2\_1\_0.msi' or 'VFUDriverx86\_v2\_1\_0.msi'. After installation of this package these will be in the 'Resources\Install\Microsoft' subdirectory of the installation directory (usually in 'C:\Program Files (x86)\XYZTEC\Condor Sigma').

### NEW FEATURES AND CHANGES

#### Version 5.8 – build 6248

1. Use de-bounce logic for wafer pin up/down detection

#### Version 5.8 – build 6234

1. When no cameras or mappings are available the grading screen was locked. This has been solved
2. Auto hook across the wire problem has been solved
3. Wire detect did not close the frame grabber correctly. This causes problems after x number of detects
4. The measurement result for the previous calibration measurements was not correct when exporting to Excel. The calibration report has been improved
5. Lower speeds are made possible again. Firmware will now give a warning

#### Version 5.8 - build 6197

1. Improvements in automation (nested fiducials inside a matrix)

#### Version 5.8 - build 6192

1. Virtual joysticks: Step size configurable
2. Multiple wire detects in a matrix
3. Improvements in automation (grading run settings)
4. Improvements in wire detect
5. Software would not initialize correctly when an IDS camera was configured but no drivers were installed

#### Version 5.8 - build 6190

1. Improved xy table map recording
2. If the current position is higher as the RMU rotation position, but lower than the target position, a move from tool to camera would occur at the lower current position

#### Version 5.8 - build 6169

1. More complete German translation
2. Go online remote is now more responsive

#### **Version 5.8 - build 6157**

1. More complete Japanese translation
2. 'Picture run' now also possible for cameras without fixed field of view
3. More reliable feedback of the state of air valves on status bar

#### **Version 5.8 - build 6152**

1. When making a backup of the configuration from the service page, also a backup of the SPC database is made. Automation methods will no longer be backed up as a methods (since they are included in the automation)
2. When making a backup of the system's configuration, the database will be backed up as well (but only when the application has been started with administrator privileges)
3. Supports a vacuum detect sensor on wafer tables.  
Optionally the vacuum detect sensor (when connected to the inputs for safety switch 3) may abort all movements when vacuum is lost (wafer handling).
4. DSP firmware 5.8.6144 contains the following improvements
  - Support for concentricity correction for rotating tools (not yet available in PC software)
  - Optionally aborts all movements when any of the safety switch inputs are enabled and activated
5. RMU firmware 5.8.6136
  - Improvements in locking the head rotation
6. Auto-brightness for IDS camera
7. Parameters for the cleaning process for a tweezer tip's cavity can be changed by the end-user
8. Optional Secs/gem support (upload/download of recipes + start testing under control of a secs/gem host)
9. Optionally improved fiducial recognition using a 3<sup>rd</sup> part image recognition module (Halcon)
10. Possibility to provide multiple fiducials to find a location (for alignment)
11. Has built-in editor for defining data exports
12. To prevent damage to wafers, moving wafer lifting pins up is only allowed when the stage is in load/unload position (unless operated manually)
13. Reshuffled the items on the status bar slightly
14. Moves to load/unload position and CCC position now occur at the height of the park position (as opposed to RMU rotation position)
15. Move to/from camera now occur one axis at the time

#### **Version 5.8 - build 6081**

1. The SPC database should be updated to version 38
2. Database version 35: Structural change in the patterns and automations tables.
3. Database version 36: Sample numbers are now 'auto-numbering', so that multiple bond-testers may store their data on one, centralized, database
4. Database version 37: The sample table now has a link to tester settings (to allow query on tester serial number, also required when multiple bond-testers store their data in a centralized database)
5. Database version 38: Solves a bug that crept in version 37 (it should be possible to filter on samples without serial number)
6. Database stability improvements
7. IO status will be sent to the Rorze wafer loader asynchronously
8. Support for additional commands from a Rorze wafer loader
9. Customer specific export
10. Prepared for more advanced fiducial recognition

11. Move to sensor specific position no longer occurs in UI thread
12. Move to load/unload position and move to CCC position now takes place at z-height of park position (as opposed to z-height of RMU rotation position). This because some fabs optimized the RMU rotation position that much that a move to the CCC position could cause the tool to collide.

#### **Version 5.8 - build 6054**

1. More robust connection with a SigmaTek PLC
2. In conjunction with a WafTech wafer loader: Optionally move pins up earlier in the process
3. Main menu will be disabled when under control of a wafer loader
4. Improved scaling for IDS cameras
5. Auto resolve function for pairing a tweezer to a sensor repaired
6. In manual mode vacuum for 12" work holder no longer relies on 12" wafer detect switch
7. Re-calculate per-grading standard deviation after re-grading
8. Possibility to reject a measurement

#### **Version 5.8 - build 6033**

1. Clean tool or clean tweezer tip cavity may be executed as a result of pressing a button on a joystick

#### **Version 5.8 - build 6030**

1. The ability to save tool to camera offset may be denied for some user levels (for example operator level)
2. More reliable feedback of the state of a vacuum switch on the status bar
3. Preliminary support for a rotating stage (0 °, 90 °, 180 °, 270 °), using a SigmaTek PLC
4. Wafer Map files are now read culture invariant

#### **Version 5.8 - build 6024**

1. Better support of a 8" wafer detection switch
2. When exporting measurement results to a Rorze wafer loader, the unit used is appended
3. Fixed a problem with data export of an automation run in combination with a Rorze wafer loader
4. More data export possibilities. All the data export possibilities are now grouped together in the tree view
5. 1<sup>st</sup> version of hook concentricity correction
6. DSP firmware 5.8.6016 contains the following improvements
  - Close to lower limit, speed axis of z-axis will no longer be limited in upward direction
7. The display of cameras on the status bar is more scalable

#### **Version 5.8 - build 6012**

1. Solved a problem by which in some circumstances calibration or GR&R would be applied on peak force instead of average force
2. Problems with fiducial alignment that occur during automation, may be reported to a wafer loader

#### **Version 5.8 - build 6011**

1. Backs-up config.xml before overwriting
2. Repaired a problem with saving camera-tool offset
3. Solved a problem by which in some circumstances calibration or GR&R would be applied on peak force instead of average force

#### **Version 5.8 - build 6010**

1. Re-introduced window to 'move to positions relative to reference point'

2. Fixed camera light issue introduced with build 6009
3. Automations may be run multiple times without closing the window

#### **Version 5.8 - build 6009**

1. Method specific rotation is applied at the start of a test, no longer directly after homing
2. Support for (Housed) Visiosens cameras with different style of serial number
3. Fixed a problem introduced in build 6005 that would cause the calibration window not to function

#### **Version 5.8 - build 6005**

1. Solved memory leak that occurred when monitoring fiducials during automation
2. The application may be configured to start listening to a Rorze wafer loader immediately after start-up
3. Optionally export measurement results to a Rorze wafer loader
4. Solved a bug causing the RMU rotation height to be overwritten by automation
5. Fixed a problem that could cause the user interface to slow down after working quite some time with the automation editor
6. Better error message to Rorze wafer loader when requesting a recipe list before the system is ready initializing

#### **Version 5.8 - build 6001**

1. Solved memory leak that occurred when automations were started from a wafer loader

#### **Version 5.8 - build 5997**

1. Customer specific data export only renames export files if they are about to be overwritten
2. By default data export files will be deleted when older than 5 years. This value is configurable.
3. More robust database handling, to prevent errors on creating a new sample under heavy load (wafer loader controlled)
4. When memory usage exceeds certain limits, warning messages will be sent to the wafer loader. The limits are configurable.
5. DSP firmware 5.8.5996 contains the following improvements
  - Automatic retry when move does not start
  - Extended logging via the PC
  - The axis-timeout error that occasionally occurred with previous versions have never been spotted with this version
6. Fixed a problem that could cause a window with camera parameters to be hidden behind the window displaying the camera image

#### **Version 5.8 - build 5990**

1. Added automated retry in an attempt to work around the problem of 'the underlying provider failed on open' that we sometimes face when starting to test a new wafer under control of a wafer loader

#### **Version 5.8 - build 5989**

1. Sigma returns to start position after use of contactless cavity cleaner and opens tweezer with the method's open parameters
2. Repaired scaling error after manual correction of a fiducial in automation

#### **Version 5.8 - build 5988**

1. One can no longer enter multiple automation recipes with the same name
2. Automatic retry of axis timeout in some scenarios in automation
3. Possibility to stop updating graphs and stop showing fiducial monitor during automation
4. Optional display of memory usage. When the memory indicator 'Private Bytes' approaches 1 GB

- one should restart the application to avoid a crash due to 'out-of-memory exception'
5. Integrated customer specific data export in the application. No need to run xyz\_sigmaexport.exe for data export. This should solve the issue of missing measurements that may occur in some situations
  6. Software should be less vulnerable for database problems like 'the underlying provider failed to open'
  7. Retry function in automation no longer stops because of a pending abort flag
  8. The Sigma would abort the first movement after the Rorze wafer loader sends a @Abort message (which is part of its manual recovery sequence)

#### **Version 5.8 - build 5981**

1. Fixed a bug that made password of the Sigma users unreadable after change of Windows users. For backward compatibility passwords need to be changed one though.
2. Minimum tweezer force is now 300 [gf] instead of 1100 [gf]
3. The arrow keys on a keyboard may be used to control the stage and z-axis
4. The associated function of IO pins may now be modified (this possibility had not yet been implemented with the introduction of extended IO)
5. Wafer map import function now has its own location instead of being tight to tabs in the SPC screen
6. Selection of a different camera is now performed via controls in the status bar, which is always available (previously the camera function would only be available from the SPC screen)
7. Repaired a problem with the use of a rotational fiducial

#### **Version 5.8 - build 5942**

1. Faster display of large wafer map files
2. When working with wafer map files of type 'Inf' use of the 'reverse y' option is no longer required
3. Prepared for integration with IDS camera's
4. Prepared for integrated SPC export
5. Improved wire recognition
6. Improved xy table mapping (improves accuracy of stage position under camera)
7. DSP firmware 5.8.5935 contains the following improvements
  - More robust homing procedure around mechanical limits
  - Improved xy table mapping (inverse stage mapping)
  - Digital IO maybe configured to use IO as available on the Sigma as well as on a SigmaTek PLC
8. Support for wafer table mark II
9. Support for IO controlled 'wafer cleaner' and 'wafer pusher'
10. Note that if digital IO has been used before (wafer table, external trigger, blowing debris after a test, contactless cavity cleaner) these need to be re-enabled in the 'Modules' section under 'IO Configuration' in the 'Configuration tester' tab.
11. Improved contactless cavity cleaning process

#### **Version 5.7 - build 6010**

1. Support for (Housed) Visiosens cameras with different style of serial number

#### **Version 5.7 - build 5956**

1. Better wafer detection at start-up

#### **Version 5.7 - build 5914**

1. CondorSigmaExport optionally deletes previous file
2. Solved 3 potentially area's for crashes (automation and grading upon camera error; wafer loader after stopping communication with a wafer loader)

### **Version 5.7 - build 5893**

1. When pressing the button to focus the camera image from the grading screen, focussing now always starts
2. Possibility to detect vacuum when using a wafer table
3. Change to the hysteresis graph. The display of the axis in the distance graph is now displayed correctly
4. Updated the Japanese translation
5. DSP firmware 5.8.5893 contains the following improvements
  - Fixes a problem that could occur when using xy-table map

### **Version 5.7 - build 5879**

1. Positional correction factor can now be set as a pre-set in the method. Currently this is only available for the pull test
2. Fixed sample size switch. If enabled the number of measurements for each sample (sample size) can be set in the method
3. When form selects the method and also possibly the sensor and multiple sensors can be used for this method (e.g. when there are 2 pull 100 gf sensors, but one sensor is disabled for the method) the correct sensor is automatically selected. The 'select sensor' dialog is not shown
4. Threshold setting for force graphs to optimize overlaying multiple graphs, force graph size can be changed
5. Improved force graphs
6. Do not preselect result code setting in the software settings. When enabled the software will not remember the latest grading and preselect this. Also it is not possible to leave the grading screen until a grading is selected
7. Grading screen with options to go to the camera and show test pictures. Also improved grading run that can also show the pictures made during the test
8. Live update of histogram for groups or samples
9. Automatic wire detection: Advanced vision options with optional Image Processing Editor using the Halcon imaging libraries. When available, wire detection can be used in the automation
10. Tool protection checkbox in calibration screen shows if tool protection is active (lifting a larger weight will trigger a tool protection error) or not (calibration mode). To manually lift a weight the tool protection can be disabled
11. Auto focus support for fiducials, making pictures and also for wire detection
12. Automation run is now stored correctly. Also number of measurements and number of fails is stored and shown after running the automation
13. Improved GR&R report
14. Automation now offers edit under camera option
15. Improved automation screen now can show camera image below the automation commands. The camera area is shown partially, but can be enlarged
16. Allows highlighting of dies on a wafer map that have one or more configurable defects. Colour coding.
17. Supports moving to the next/previous defect with one button
18. DSP firmware 5.7.5872 contains the following improvements
  - Close to the z-axis' lower limit the speed in XY-direction is now also limited when moving upwards
19. DSP firmware 5.7.5855 contains the following improvements
  - Tackled the fact that sensor overload errors would be reported when no sensor was being selected
  - Support for a XY-table map
20. More sorting possibilities for automation recipes
21. Improved auto focus
22. Improved grading run

## 23. Integration with Rorze wafer robot

### **Version 5.6 - build 5819**

1. Measurements with Pull 25µm gold wire and Shear 25µm gold wire methods would no longer show the peak force as a measurement result
2. Installer now installs Microsoft redistributables
3. Fixed occasional delays for small distances at low speeds (< 10 µm/s)
4. Automatically take picture after failed measurement

### **Version 5.6 - build 5792**

1. Calibration + GR&R: The default lift detection parameters for sensors <= 1kgf have changed. Lift detection parameters for the calibration methods are now persistent
2. The default collision detect values for 1 kgf rotating shear and 100 kgf pull have been lowered
3. Grading run now also works for left and right camera

### **Version 5.6 - build 5773**

1. Solved a problem with the probe test

### **Version 5.6 - build 5772**

1. This release solves an issue with the digital filters
2. Form selection in test screen may get out of sync

### **Version 5.6 - build 5767**

1. The hook shift operation, optionally used with a pull test and enabled auto hooking, would sometimes use the wrong angle. That has been solved

### **Version 5.6 - build 5764**

1. Solved issue of empty SPC screen that appeared each first time the first user selected would have non-English language set
2. Better Japanese
3. Error message window is no longer 'top most', i.e. on top of all other windows

### **Version 5.6 - build 5759**

1. Support for contactless cavity cleaner
2. Support more types of Klarf wafer map formats
3. Possibility to take picture automatically after each measurement
4. All options to take a picture after a measurement with a shear method has finished now try to focus on the shear height
5. Automation with randomized matrix
6. DSP firmware 5.6.5752 contains the following improvements
  - Homing more robust
  - Faster positioning of very small movements
  - Support calibration of the position encoders
7. RMU firmware 5.6.5750 contains the following improvements
  - More reliable head rotation
  - Better over-current protection in shear height clamp motor

### **Version 5.6 - build 5666**

1. When exporting a measurement to CSV, time will be exported as well. Metadata will be displayed in other columns instead of the first rows
2. Recorded videos are now marked with a frame rate equal to the actual frame rate at the start of the recording
3. Text in rightmost vertical banner is displayed top-to-bottom for Chinese, Japanese and Korean

4. Deflection and rotational offset are editable by end user too
5. Import of Wafer map file (Klarf and Inf formats). Double click the die to move to. Move to defect positions within a die.
6. Possibility to apply reverse camera-to-tool offset: Find position with the camera and move the tool to that position
7. Sensor overload errors can be cleared automatically if the overload condition disappears
8. Added support of Vietnamese. More complete German translation
9. Loop height measurement remembers touchdown
10. Non-destructive testing methods now use PID control by default
11. Solved a memory leak issue that could cause problems after several hours of automation
12. Fixed a timeout issue that could occur when starting a touchdown
13. Stricter enforcement of work area
14. Removed support of older Visiosens camera drivers (so install the newer version!)
15. Pluggable components (cameras, barcode scanners, wafer loaders, pattern recognition engines etc.) have been moved to the Component subdirectory
16. Integration with Halcon pattern recognition / Machine vision software. The first application is a wire detect algorithm.
17. Possibility to project the rotation angle of the hook on a pull sensor on the camera image
18. Fail limits are shown correctly in the grading screen
19. Rotational offset may be edited (by supervisor) from quick sensor/tool menu (accessible from SPC screen)
20. Possibility to find multiple peak values in a measurement

#### **Version 5.5 - build 5626**

1. Save button for camera parameters back in
2. Better wafer present detection (when configured for use with a Waftech wafer loader)
3. When using PID for non-destructive test, allow more time to move the stages before giving a timeout error
4. DSP firmware 5.5.5591 contains the following improvements
  - Homing more robust
  - Better monitoring of the stage temperatures

#### **Version 5.5 - build 5576**

1. Compensation factor jig
2. Support RMU with Angular binding
3. Efficiency improvement when controlled by wafer loader
4. No longer show 'field of view' for a camera with zoom lens (microscope camera: field of view does not make sense)
5. A sensor's deflection is editable by a supervisor
6. Support for automated test of electronics (in production factory)

#### **Version 5.5 - build 5554**

1. Pressing null-button clears sensor overload
2. Support for modified measurement units
3. When calibrating, z-position can be now moved below work area by joystick

#### **Version 5.5 - build 5547**

1. Build 5542 would unnecessarily complain about camera white balance not being set
2. Improvement of auto-hook during automation
3. Improvement in loop-height measurement

#### **Version 5.5 - build 5542**

1. Jig shear calibration: Tool should not be clamped after an abort during touchdown detection

2. Tool will no longer be clamped when resolving a sensor overload
3. When a sensor overload has occurred temporarily (for example after changing the tool) it may be cleared by the operator (by clicking the sensor overload button).
4. Japanese translation

#### **Version 5.5 - build 5539**

1. Supervisor may change camera parameters
2. Auto-print improvement

#### **Version 5.5 - build 5536**

1. DSP firmware 5.5.5536 contains the following improvements
  - More accurate positioning when moving multiple axes simultaneously
  - Separate work area for joystick controlled movements
2. Automation program selectable by barcode reader
3. Selection of sensors/methods by form
4. Measuring height difference between objects (probe test)
5. Positional correction factor (force triangle)
6. Full hook control in automation
7. Improved camera screens
8. Multiple camera support for automation
9. Pull auto hook functionality with hook shift (fine pitch applications)
10. New fail and warning system (SPC warnings)
11. Overlay graphs of multiple measurements
12. Possibility to recalculate measurement results based on a 'Region of Interest'
13. Auto print feature
14. Support for foiled shear sensors
15. Motor drivers generate less heat (more economic motor driver configuration files)

**END OF RELEASE NOTES**