

Improvements

# WM | Quartis R2024-2

Update Information

# WM | Quartis



# Improvements WM | Quartis R2024-2

## At a Glance

WM | Quartis R2024-2 offers a wide range of improvements for special applications and areas of use.

WM | Quartis R2024-2 includes **extended collision detection** that takes into account the entire coordinate measuring machine, including the probe configuration, the articulating probe head, the accessories, the changers, the reference spheres and, of course, the workpiece.

WM | Quartis R2024-2 offers additional functions and improvements for **optical measurement and evaluation**.

WM | Quartis R2024-2 expands your ability to create meaningful graphical measurement reports by using **user-defined color spectra**.

WM | Quartis R2024-2 simplifies the handling of automatically generated **extract measurement programs** if there are no or too few points in the ROI.

WM | Quartis R2024-2 evaluates the **distance of offset curves** as a two-point measurement (LP).

WM | Quartis R2024-2 saves the **best-fit results** so that you can print them on the measurement report or use them as a termination criterion in an iterative alignment.

WM | Quartis R2024-2 allows you to display the **coordinate axes in the RGB color scheme**.

WM | Quartis R2024-2 improves measurement with the **Renishaw REVO 5-axis head** with lead-in and lead-out distances and enables faster scanning of threaded holes as circles.

WM | Quartis R2024-2 offers **updated CAD interfaces** as well as other useful improvements and enhancements. You can read more about this on the following pages.

### Note:

Some improvements are not included in the standard product WM | Quartis R2024-2 and require additional, chargeable modules. These are described in the document "Products and Modules WM | Quartis R2024-2".

## Detailed Collision Detection

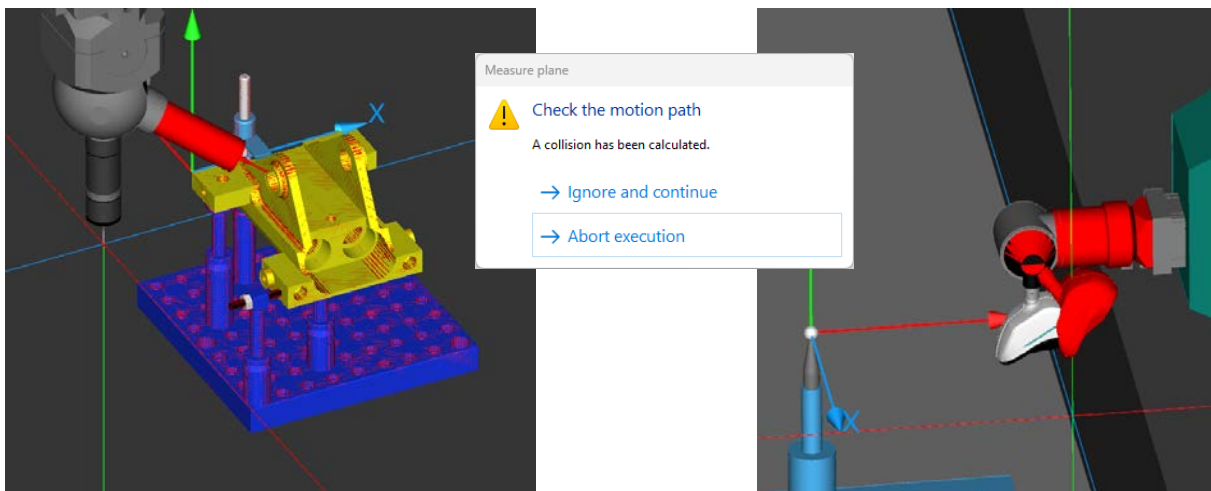
### Collision Detection with Consideration of the Complete Coordinate Measuring Machine

You value being warned of possible collisions by the software.

An extended, detailed collision detection function is now available, which takes the entire coordinate measuring machine into account.

The detailed collision detection takes into account the entire "scene", consisting of the probe configuration, the articulating probe head, the measuring machine, the accessories, the changers, the reference spheres and, of course, the workpiece.

In the event of a pre-calculated collision, the warning dialog appears and the detected collision is displayed in the graphic at the collision point.



### Examples of Detected Collisions

- Probe configuration collides with workpiece
- Articulating probe head collides with workpiece
- Quill collides with probe change system
- Probe configuration collides with accessories (e.g. fixture or reference sphere)
- Probe configuration collides with workpiece or accessories when swiveling the probe head
- Optical sensor collides with probe head or accessories when swiveling

### Commands that are Checked for Possible Collisions before Execution

- Measure element (without "Use rotary table")
- Measure point cloud
- Position measuring device
- Approach intermediate point
- Rotate and swivel articulating probe head
- Swivel during "Load probe system" (without probe change)

### Supported Measuring Devices / Configurations

Detailed collision detection is available with WENZEL WPC 2030, 2040 or 2050 with motorized articulating probe heads, such as PH10 or PHS1. Support for I++ DME servers (Renishaw UCCserver, REVO, PH20, etc.) will follow in a later WM | Quartis release.

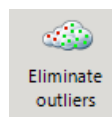
# Improvements WM | Quartis R2024-2

## Optical Measurement and Evaluation

You capture the part geometry optically with a line scanner. New useful functions are available for processing and evaluating the recorded point clouds.

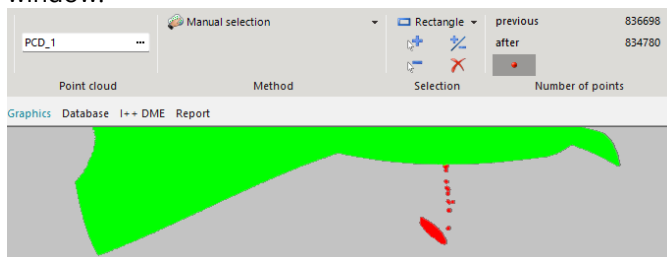
### Edit Point Clouds: Eliminate Outliers and Delete Disturbing Points

Use the "Eliminate outliers" function to delete outliers or points that do not belong to the workpiece out of a point cloud.



You can use the following methods to do this:

- **Local outliers**  
This method calculates outliers in the point cloud by local density calculation, influenced by the parameters "Number of neighboring points" and "Factor" for the threshold value.
- **Threshold (to CAD)**  
This method evaluates points in the point cloud based on their distance from the nominal CAD and eliminates those that are above the set "threshold value".
- **Manual selection**  
With this method, points can be removed from a point cloud by manual selection in the graphics window.

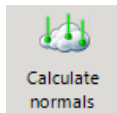


### Merge Point Clouds



Use the "Merge point clouds" function to combine individually scanned point clouds into a single point cloud. This allows you to record small point clouds from different sensor directions and then combine them for evaluation.

### Calculate Normal Vectors of the Point Cloud

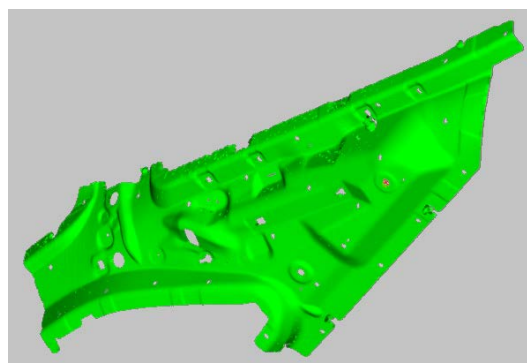


Use this function to calculate the normal vectors of a point cloud. This is helpful if the point vectors were not calculated during the measurement of the point clouds or if a point cloud was imported without vectors.

### Improved Display of Point Clouds in Graphics

The display of point clouds in the graphics has been improved. This now makes it easier to recognize the contours of a scanned point cloud and to distinguish between the front and back of a point cloud scan.

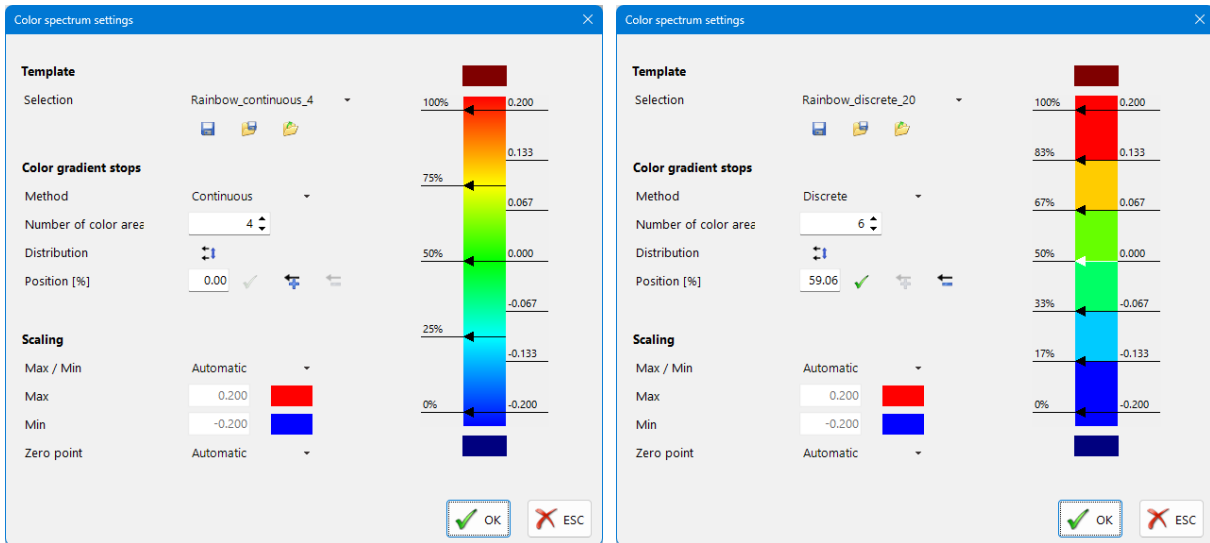
Point normals are required to display point clouds with contours and shading, which you can now calculate at the touch of a button.



## User-defined Color Spectrum for Nominal-Actual and Actual-Nominal Comparison

You display the component deviations in colored images. Your measurement reports become even more informative with user-defined color spectra.

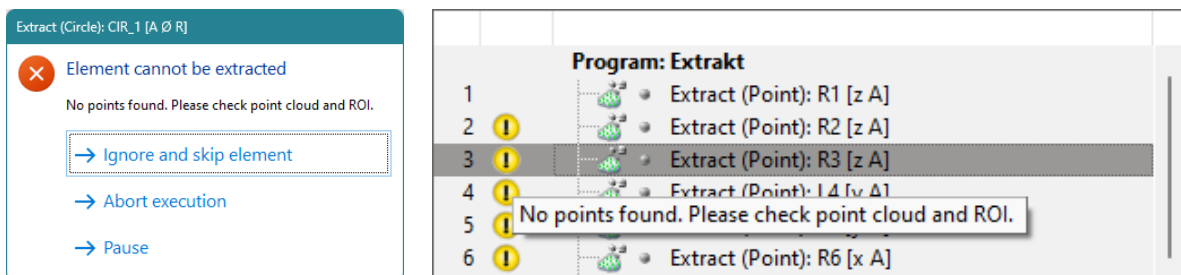
You define the user-defined color spectra according to your requirements, save them and apply them to other comparisons. You can define color spectra with a continuous color gradient or with discrete colors per value range. The number of color ranges and the position of the color gradient stops are freely selectable.



## Simplified Error Handling when Executing Extract Programs

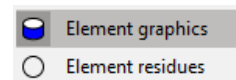
You run extract programs that are automatically generated from inspection plans. If no or not enough points are found in the ROI, e.g. due to incomplete point cloud scans, the simplified error handling makes your work easier and saves time.

You can skip elements that cannot be extracted individually or generally by means of a basic setting. The incorrect extract program sentences are marked in the program so that they can be adjusted later or re-executed with a new point cloud.



## Further Improvements

- **Rotate point cloud in graphics:** The "Rotate view" function now also automatically sets the pivot point on point clouds, which is particularly helpful when zooming in or if the point cloud is not yet aligned with the CAD model.
- **Measure point cloud:** The scan paths are only related to the marked components (CAD models of the assembly), which prevents unwanted dipping of the scan path onto non-selected models.
- **New standard graphic views:** Element graphics and Element residues

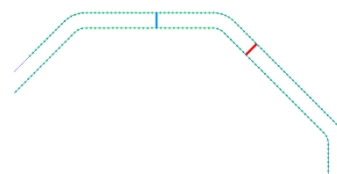


# Improvements WM | Quartis R2024-2

## Evaluate Characteristics and Output on the Measurement Report

### Evaluate the Distance of Offset Curves as a Two-point Measurement (LP)

You determine the smallest and largest distance between two parallel offset curves by applying the familiar distance function with curves. This can be used to evaluate material thicknesses or groove widths, for example.



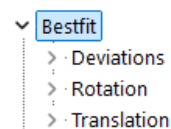
The calculated distances are displayed in the graphic as a live preview and output on the measurement report.

1 Distance curve - curve (LP), outside							
SX	2.000	0.100	-0.100	2.030	0.030	30%	<div style="width: 30%;"></div>
SN	2.000	0.100	-0.100	1.966	-0.034	-34%	<div style="width: -34%;"></div>

### Save Best-fit Results and Output them on the Report

You log the best-fit results on the measurement report or use them as a termination criterion in an iterative alignment.

In the Expression editor, the corresponding fields are now available under the "Deviations", "Rotation" and "Translation" nodes.



### Use (LP) and (E) Characteristics in Material Condition

You can now also use the characteristics "Dimension" and "Distance" for the material condition in the position characteristics if these were evaluated with the calculation types "Two-point dimension (LP)" or "Envelope condition (E)".

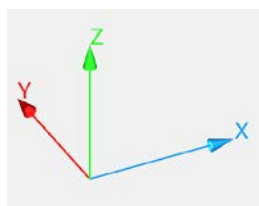


Depending on whether it is an external or internal element and the maximum material condition (M) or minimum material condition (L), the corresponding component is selected and used to calculate the bonus. This applies to the material condition on the tolerated element as well as on the references.

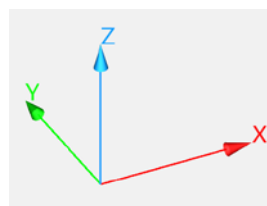
## Further Innovations for More Efficient Work

### Colors of the Coordinate Axes with RGB Color Scheme

You can change the colors of the coordinate axes to the "RGB color scheme" if, for example, you work with CAD systems and want to use uniform coordinate axis colors.



Quartis Color Scheme (Standard)



RGB Color Scheme (nee)

## Measure Better and Faster with the Renishaw REVO 5-axis Measuring Head

You can now also use the lead-in and lead-out distances when scanning if you are working with a UCCserver. The lead-in and lead-out sections improve the measurement quality by eliminating “unclean” points when touching down and accelerating as well as when braking and lifting the probe.

Circles can now also be scanned spirally with a measuring probe system. This means that the positions of threaded holes, for example, can be measured much faster with a REVO RSP2 than in touch-trigger probe mode using individual points.



## New and Actualized CAD Interfaces

WM | Quartis R2024-2 supports the following CAD interface formats:

- CATIA V4 (4.1.9 to 4.2.4)
- CATIA V5 (R8 to R2024)
- CATIA V6 (to R2024)
- DXF (2000/2002 and R12)
- IGES (to 5.3)
- Inventor (V11 to 2024)
- Parasolid (9 to 36)
- Creo, ProEngineer (16 to Creo 10.0)
- Siemens NX (NX1 to **NX2312**)
- Solid Edge (18 to SE 2023)
- SolidWorks (2003 to 2024)
- STEP (AP203, AP214, AP242)
- VDA (1.0 and 2.0)

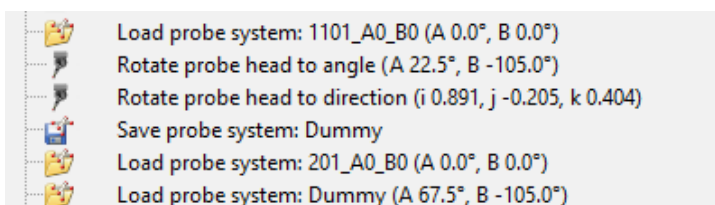


The changed formats compared to WM | Quartis R2024-1 are shown in **bold** in the above list.

You also benefit from general improvements, optimizations and error corrections in the CAD interfaces.

## Further Improvements

- Automatic focusing of the graphic on the element in the left element window
- Reference sphere definition with selectable mounting location “base plate” or “rotary table” (for WENZEL GT gear measuring machines)
- Graphic display and consideration of the reference sphere in the detailed collision monitoring can be switched on/off via checkbox
- “Measure on polygon mesh” also possible via the remote control interface
- Remote control interface with user role “Program executor” available
- Measuring device representation: Double column model WENZEL RS 1521 (6500) available
- Articulating head angles and directions are displayed in the program lines





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