



Verisurf Romer Calibration_{REV A1}

VDI Rev 2.05.04 - 7/12/2007 and above

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Purpose of Verisurf Calibration

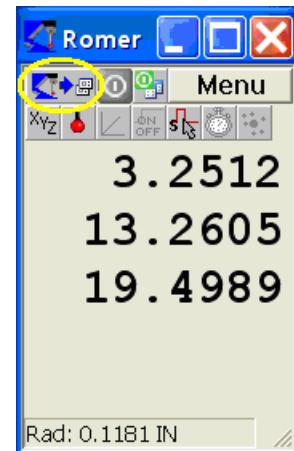
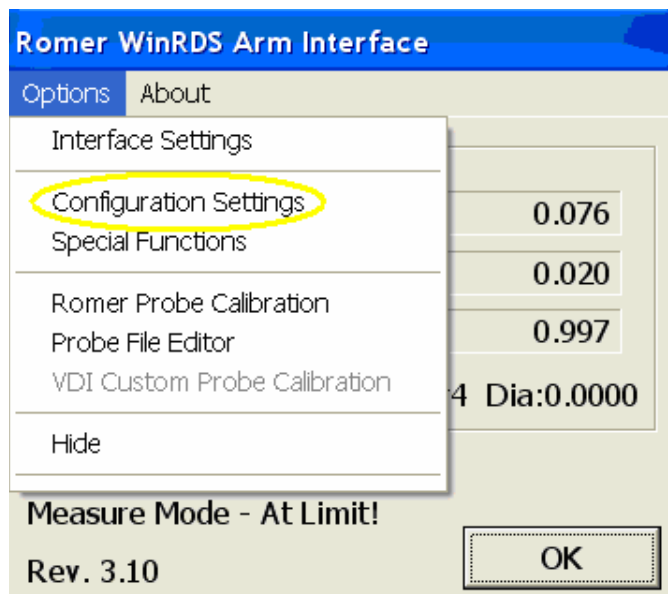
Verisurf is the known leader in model based inspection software that can interface with the most inspection devices. We interface with many articulating arms and each of these arms has their own calibration procedure that was created by the arm manufacturer. We, at Verisurf, wanted to be able to provide one interface to calibrate all the arms. We wanted to make the interface easy to use and accurate. To do this we had to be able to both deactivate the manufacturers calibration method and then activate our calibration method.

Before you begin

As with any Romer Arm the WinRDS armspecs must be loaded for the arm you want to calibrate.

Romer WinRDS Arm Interface

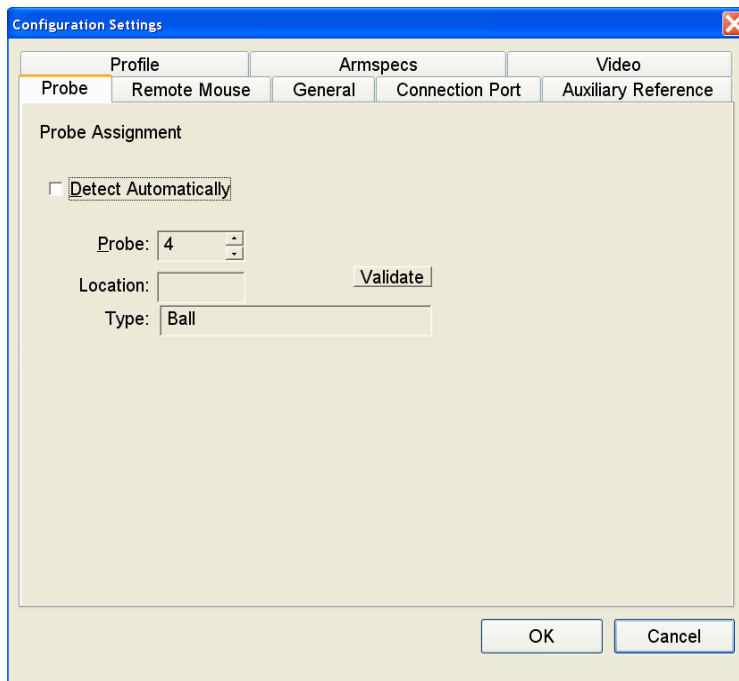
To utilize the Verisurf Romer calibration we need to deactivate the Romer calibration through the Romer configuration and the Verisurf VDI. The Romer WinRDS Arm Interface button shown circled in yellow to the right will point us to the configuration settings.



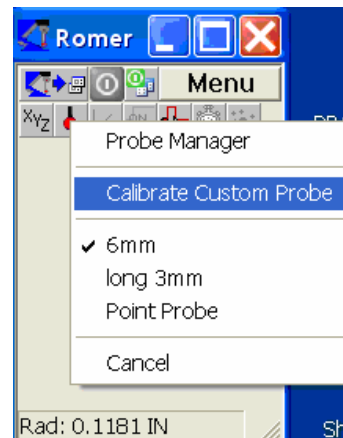
Configuration Settings

This is the Configuration Settings panel. It is the same as the one using the Romer WinRDS utilities software. Entering the Probe Tab there are 2 things that should be changed here to fully enable Verisurf calibration.

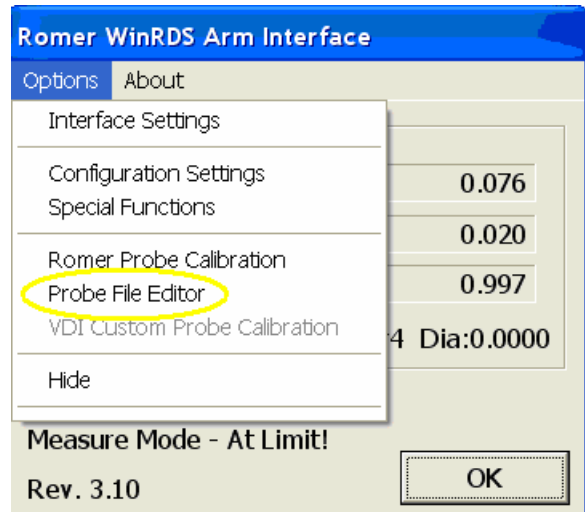
You will need to UNCHECK Detect Automatically and change Probe to 4. Verisurf calibration uses Romers Probe 4 for all probes and then enables you to select probes by name instead of by a number. These are known as Custom probes. Alternatively, if all your probes are a different resistor number (no custom probes), you can leave this checked and let Cimcore auto-detect the probe.



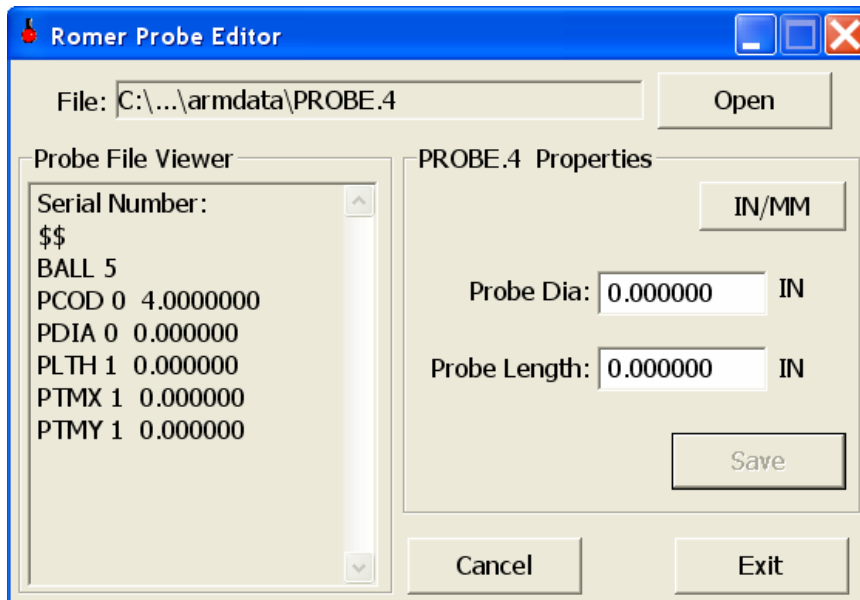
In the example to the right we have 3 available custom probes; 6mm (being used), long 3mm and Point Probe. After this is done hit OK and it will return you to the Romer WinRDS Arm Interface



The next thing we need to do is configure Probe 4 for any probe we might use. This is done in the Probe File Editor shown below.

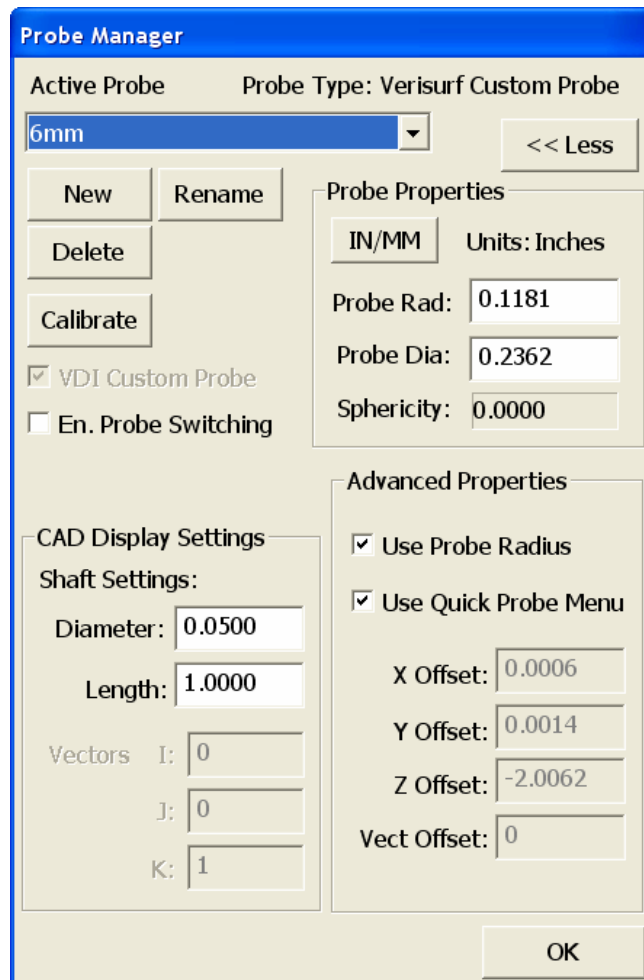
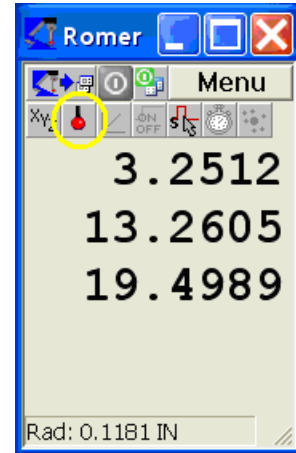


The path should be as shown below. If you don't have a PROBE.4 file in your Armdata folder you may have to create one from a copy of one of the other probe files there. Once you are in the right path change the Probe Dia and Probe Length to ZERO as shown below. This will finish the onetime configuring to use Verisurf Calibration.

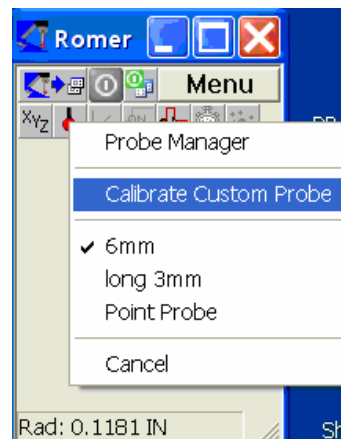


Verisurf Probe Manager

The Verisurf Probe Manager is accessed by pressing the button circled to the right or the identical button on your toolbar. Initially, when pressed, it will bring up the panel below which is the normal Probe Manager. From this we can access all the calibration functionality. From here you can enable the Use Quick Probe Menu (as shown) and then when you press the Probe Manager button you will get the menu shown at bottom right that only has the most needed items.



We can see that the Quick Probe menu also allows access to return to the Probe Manager if need be.



The Enable Probe switching checkbox (circled below) will allow you to use the Verisurf Calibration just like the Romer Auto Detect Probe function. The Romer uses different resistors imbedded in the probe to determine which probe is being used. Verisurf uses the distance between probe tip nest center and probe connection point to know which probe is being used.

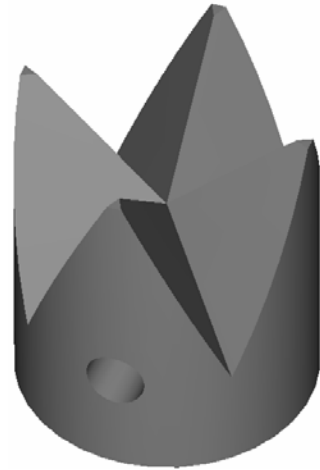
The screenshot shows the 'Probe Manager' dialog box. At the top, it says 'Active Probe' and 'Probe Type: Verisurf Custom Probe'. Below this is a dropdown menu showing '6mm' and a '<< Less' button. On the left, there are buttons for 'New', 'Rename', 'Delete', and 'Calibrate'. Below these are two checkboxes: 'VDI Custom Probe' (checked) and 'En. Probe Switching' (checked and circled in yellow). To the right of these buttons is the 'Probe Properties' section, which includes 'IN/MM' and 'Units: Inches' buttons, and input fields for 'Probe Rad: 0.1181', 'Probe Dia: 0.2362', and 'Sphericity: 0.0000'. Below the 'Probe Properties' section is the 'Advanced Properties' section, which includes 'Use Probe Radius' and 'Use Quick Probe Menu' (both checked), and input fields for 'X Offset: 0.0006', 'Y Offset: 0.0014', 'Z Offset: -2.0062', and 'Vect Offset: 0'. At the bottom left, there is a 'CAD Display Settings' section with 'Shaft Settings' (Diameter: 0.0500, Length: 1.0000) and 'Vectors' (I: 0, J: 0, K: 1). An 'OK' button is at the bottom right.

It requires that you calibrate all probes with the box checked and that all probes are calibrated in the same stationary nest. Once enabled Verisurf will sense when the probe is within a zone of the nest and auto switch to the probe that corresponds with the distance found. This zone is designed to be a radius from the nest equal to the longest probe plus 2 inches. For this reason, if using auto switching take care to have your nest a distance from your work piece to assure that auto switching does not interfere with measurement.

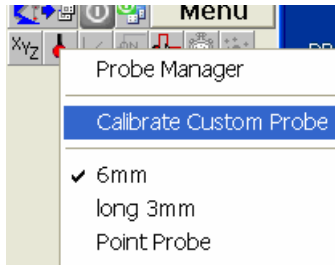
Calibrate Custom Probe

Verisurf now proudly supplies custom probes and nests for your measurement needs. Shown below are a few of our custom probes and to the right a model of our calibration nest. Our probes are made of titanium for reduction of probe deflection and are equipped with probe tips made of silicon-nitride that don't scratch or mar the surface as many other probes on the market do.

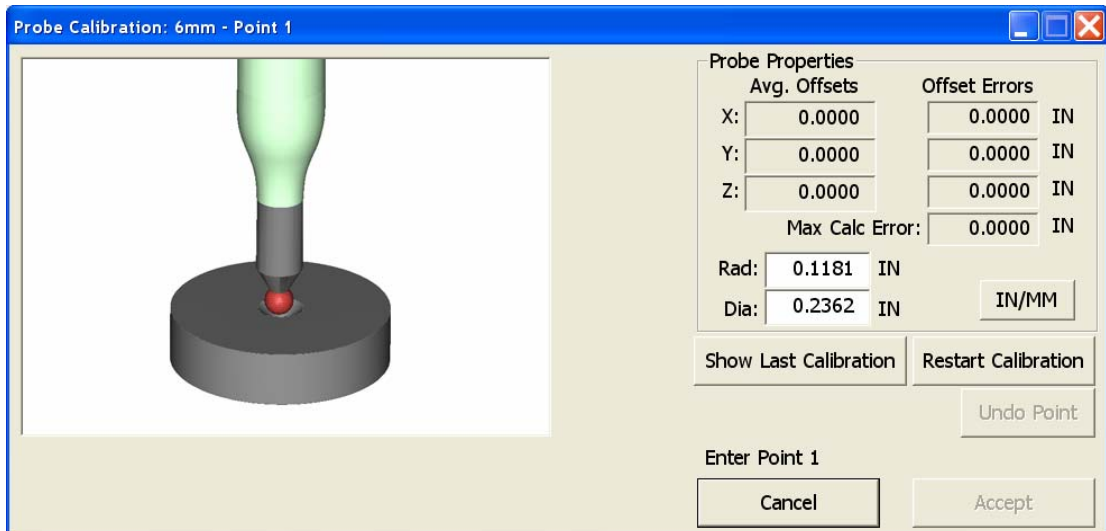
To calibrate a custom probe you will need a probe nest as shown. This will allow you to sample points with the arm in the exact same spot at a variety of angles.



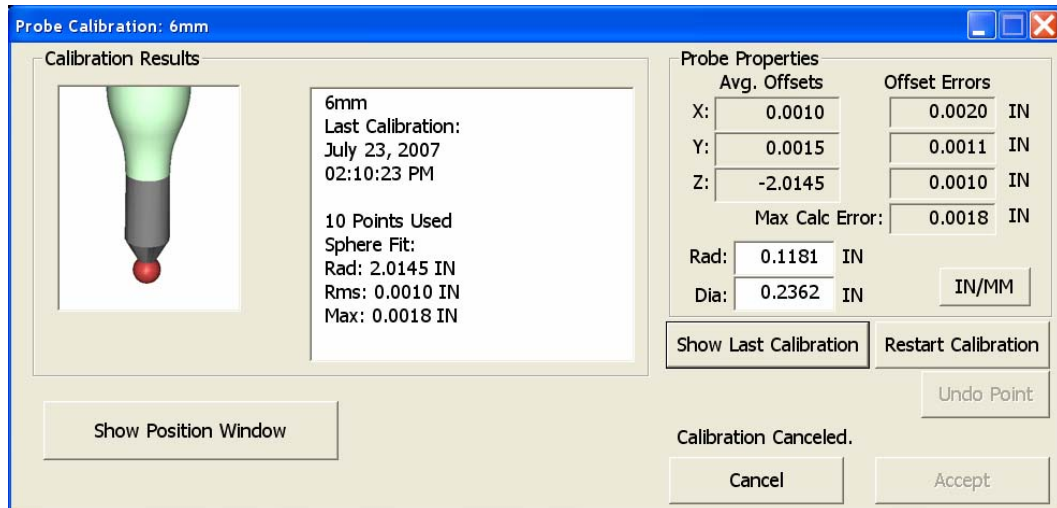
To enable the calibration choose Calibrate Custom Probe from the Probe Icon pull down.



You will then be taken to the Probe Calibration panel shown below. There are a few things to watch in this panel when calibrating. At the top-left of the tool bar you can verify which probe is being calibrated. In this case, 6mm. The probe Rad or Dia is shown in the center. The Offset Errors can be monitored while taking points to know AHEAD of time if you have taken a bad point. This way you can use the Undo Point button to remove the suspect point before using it in the calibration calculation. To perform the calibration take points in the “nest” at different arm positions while maintaining the same position with the probe.



After the 1st five points are taken the Offset Errors box will start showing the amount of calibration error. If this error is out of, what you feel is acceptable range, press the Undo Point to delete the prior point and then continue to take points at different angles. Once you have completed taking points at different angles press Accept and save the calibration.



One of the enhanced features of the Verisurf Calibration is the ability to quickly see if you are in a stable quality calibration. To check calibration place the probe in the nest and preset X Y Z to zero. Move the arm around and verify that it remains stable at zero. The VDI has 3 settings; Absolute, Relative and Verisurf Alignment. Absolute is the coordinates from the Device CS. Relative is where ever you preset X Y Z. Verisurf Alignment is from your part CS after a device alignment.

