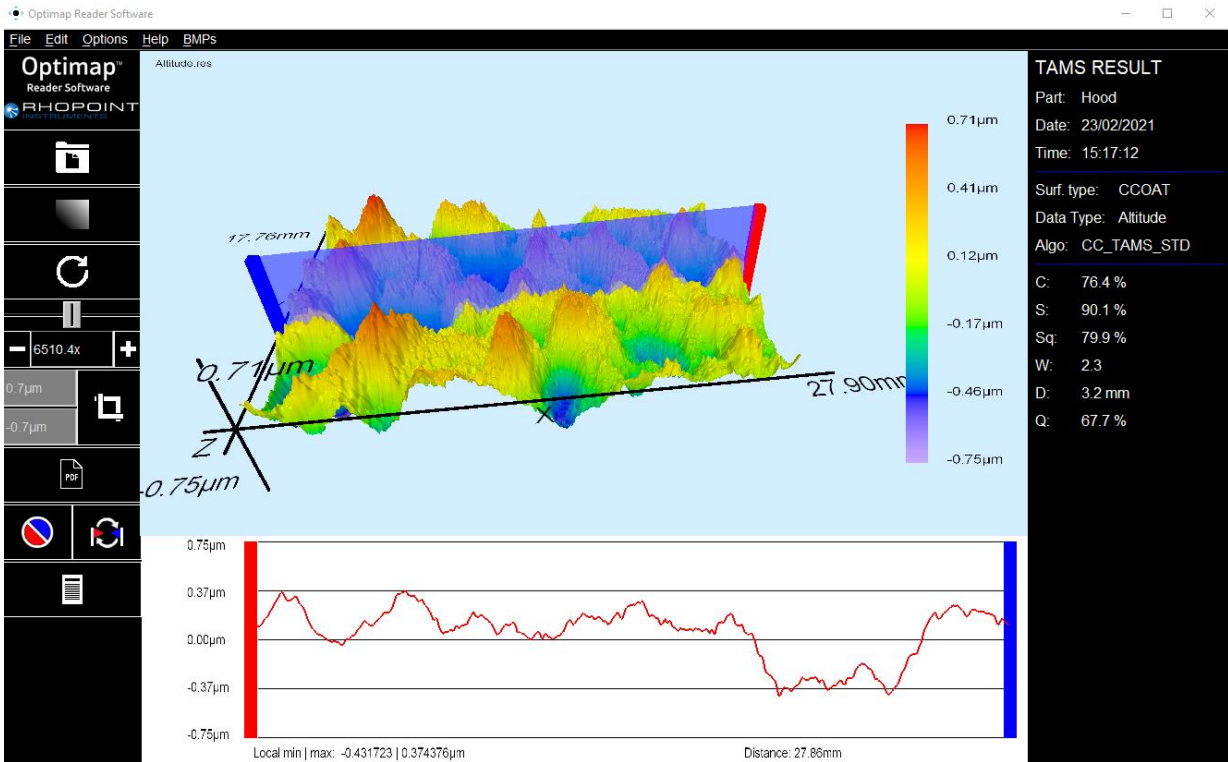# Optimap Reader Software

User Manual

Thank you for purchasing this Rhopoint product.
Please read these instructions carefully before operating this product and retain them for future reference.

English

RHOPOINT
INSTRUMENTS

This instruction manual contains information about the set-up and usage of the Optimap Reader Software. It should be used to guide and assist the reader in navigating and utilizing the full functionality of the software.

If this software is passed to other users you must ensure that this instruction manual is supplied with the software. If you have any questions or require additional information about the Optimap Reader Software please contact the Rhopoint Authorised Distributor for your region.

As part of Rhopoint Instruments commitment to continually improving the technologies used in their products, they reserve the right to change information included in this document without prior notice.

Contents

Minimum System requirements

Operating System - Windows 10

Processor - 1.2Ghz

RAM - 4GB

Graphics - Direct X 9 or later

Installation

Installation of the Optimap Reader software is provided as an executable file (.exe) which launches a setup wizard. This wizard allows the user to change the install location, provide an option to create a desktop icon and requires the user to accept the license agreement.

The account to install the software on must have administrator privileges. This is due to the registry association that is made with '.res' files, allowing the user to open files directly to the Optimap Reader.

Once installation is completed the software can be activated through use of a provided USB dongle or by entering an activation code. If you do not have an activation code, please visit https://www.rhopointinstruments.com/oractivate to obtain a code.

Overview
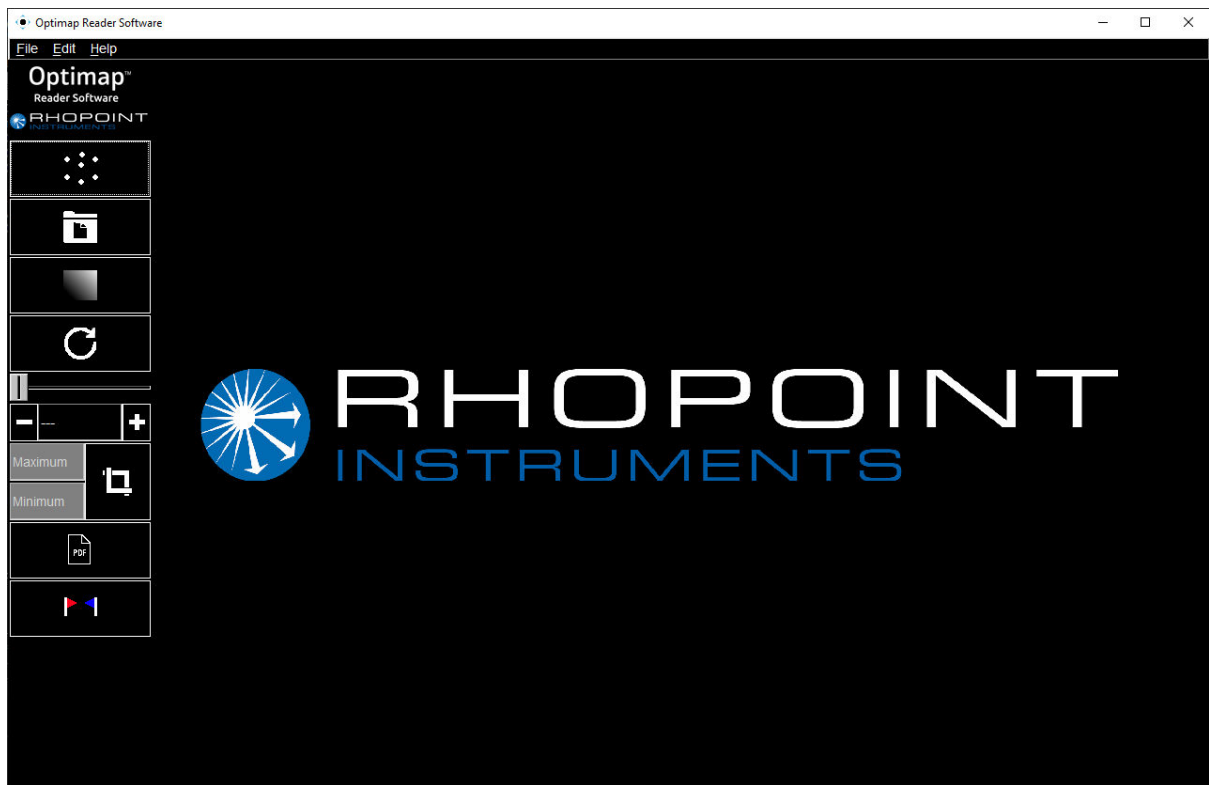
Upon launching Optimap Reader, the user is taken to the main display screen which includes the primary viewing window and the main toolbar. The window can be viewed in full-screen mode by navigating under "Edit->Fullscreen" or alternatively press the 'alt' and 'F' keys together.

Main Toolbar

The main toolbar is located at the left-hand side of the application and provides the user with tools to manipulate the rendered model. A graphical representation of the toolbar is displayed below.

1. Open File
2. Toggle Images
3. Reset
4. Amplification Slider
5. Amplification Minus
6. Current Amplification
7. Amplification Plus
8. Crop Max
9. Crop On/Off
10. Crop Min
11. Save to PDF
12. Enable Profiler
13. Disable Profiler
14. Swap Profiler Pins
15. Details On/Off

1. Open File – Enables the user to open '.res' files generated from Rhopoint instruments related devices.

2. Toggle Images – Changes the view from the topographical map image to a selected BMP image. To change between selected images use the BMP's image from the ribbon menu.

3. Reset – Sets the position of the model to the centre of the screen, displays the model from above and sets the scaling to automatic.

4. Amplification slider – Applies a scaling factor to the readings, click and drag right to increase and left to decrease.

5/6/7. Amplification Buttons/Input – Provides a finer degree of control to the scaling factor, allowing the user to type a value in **(7)**. To input a manual scaling factor, type in the value and press the **Enter** key to apply. Clicking the amplification minus button **(6)** will decrease the amplification according to 1/20th of the maximum amplification value. The amplification plus button **(8)** will increase by the same amount.

8/9/10. Crop – Clicking the crop button **(10)** activates the crop maximum **(9)** and minimum **(11)** fields, allowing the user to specify the range to show points. This feature is useful for any files which may have noise and unwanted areas in. The upper field is the crop maximum and the lower field for the minimum.

11. Save to PDF – Creates a pdf report from the current open file.

12/13/14. Profiler – Activates the profiler on the model. Upon activation **(13)** divides the button into 2 smaller buttons, left for disabling the profiler **(14)** and right **(15)** for swapping the location of the profiling pins. (See profiler section for more information).

15. Details – Displays additional information about the opened file. Please note that this button is only available with new '.res' files generated from the Optimap 3.

Menu bar

The menu bar further extends the functionality of the Optimap Reader by providing an expandable interface. Some menu items feature a shortcut which is noted next to the corresponding function.

Submenu	Shortcut	
File:		
Open	Ctrl+O	Opens file explored to select a resfile
Save Copy as…	Ctrl+S	Saves a copy of current file
Edit:		
Fullscreen	ALT+F	Toggles fullscreen mode
Options:		
Axis Key		Toggle axis key on/off
Heatmap:		
Scale		Allows user defined heatmap bounds
Help:		
About		Version and licensing information
BMPs:		
*.BMP		Option becomes available upon selecting a res file with a locally stored Bitmap.

Heatmap Boundaries

Upon selecting the 'scale' option under the 'Heatmap' submenu, the user is presented with the following popup:
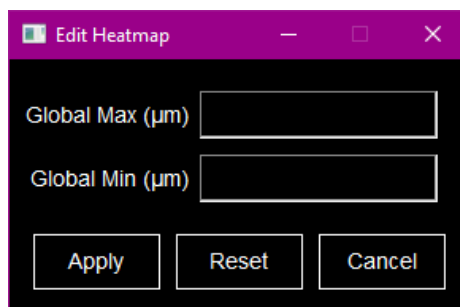
This allows for setting a global heatmap range adhering to the limits set in micrometres. After clicking apply the changes take effect and can be undone by clicking the reset button.

Bitmaps

If any Bitmap images are generated within the same directory as .res files, this option becomes available. When the heatmap is toggled off, the bitmap selected under this menu is rendered over the model. Reactivating the heatmap will return the model back to its normal state.

Primary Viewing Window

Once a valid res file has been opened, a model is rendered in the primary viewing window. This window has built in functionality that allows the user to interact with the rendered model.

Areas of interest:
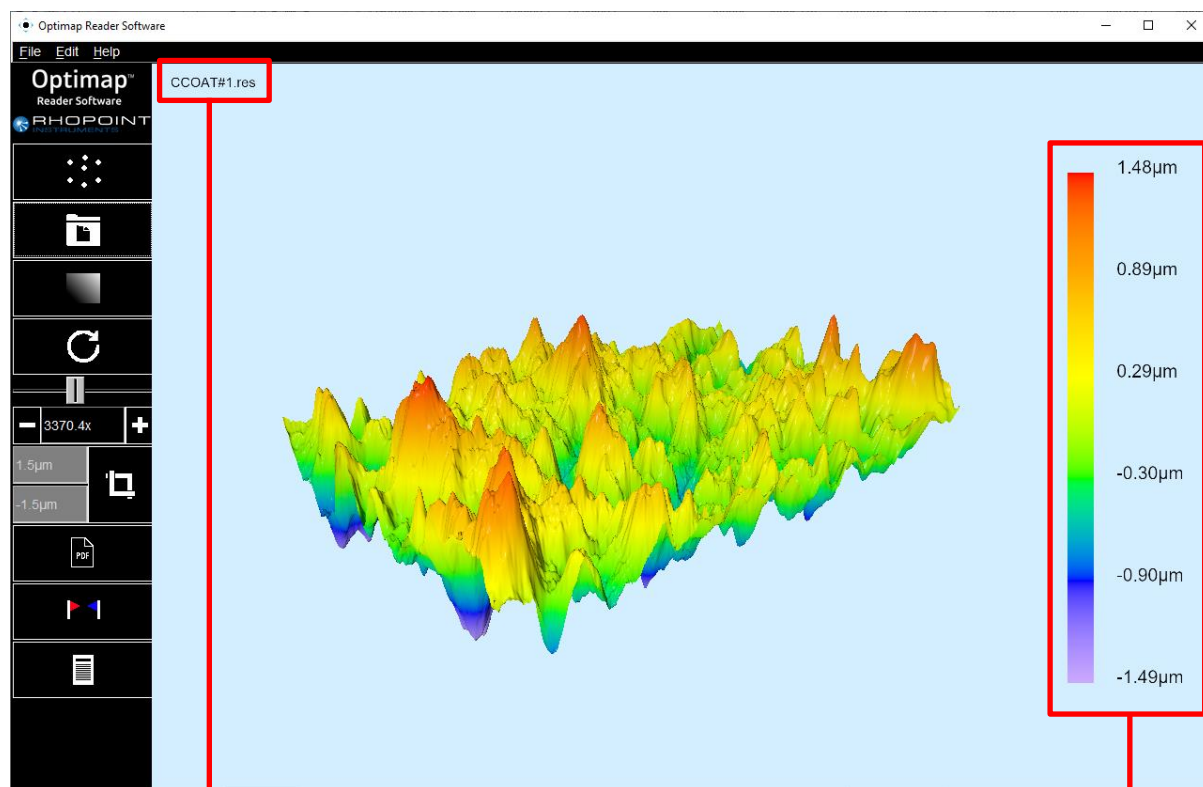
Filename – Name of the file currently in view.

Key – Displays the colour boundaries and their measurement values which are represented on the 3D model. This is only displayed when the heatmap is toggled on.

Functionality:

Exclusive Interaction	Functionality
Right Click & Drag	Moves the model in the direction the mouse is dragged.
Left Click & Drag	Rotates the model around the model's origin.
Scroll Wheel	Zooms in to the location where the mouse is hovering over.
Left + Right Click & Drag	Zooms in to the location where the mouse was hovering prior to clicking. Move mouse up to zoom in and down to zoom out.

Details Page

The details page contains the recorded information about the currently selected file. This feature is only available with '.res' version 3 from the TAMs and Optimap 3 files.
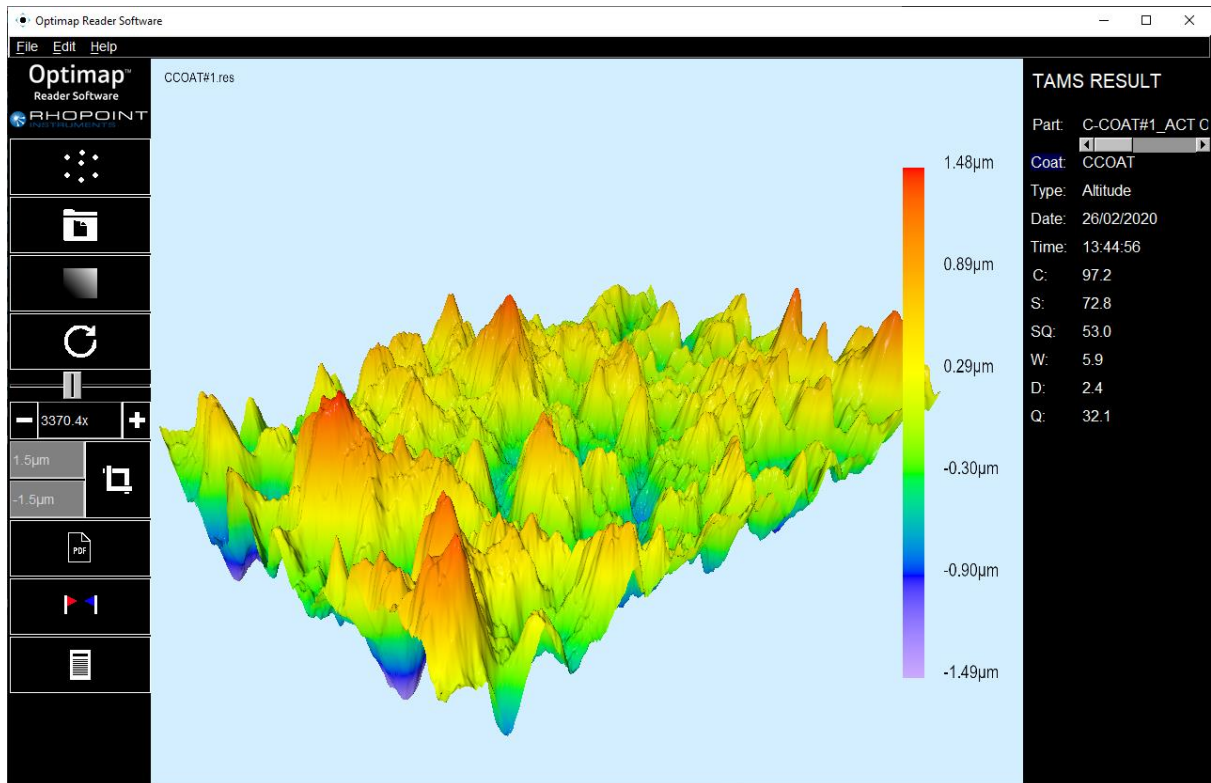
Field	Applicable Surfaces
C – Contrast	C-Coat
S – Sharpness	C-Coat
SQ – Sharpness Q	C-Coat
W – Waviness	All
D – Dimension	C-Coat
Q – Quality	All
O-Ra	E-Coat/R-mat
O-Rq	E-Coat/R-mat

Profiler

Optimap Reader comes with a 3D profiler tool that places a red and blue interactable pin on the rendered 3D model. The profile section at the bottom of the screen reflects the point altitudes between these pins. Boundaries are colour coded as to the orientation from which the profiler is sampling.
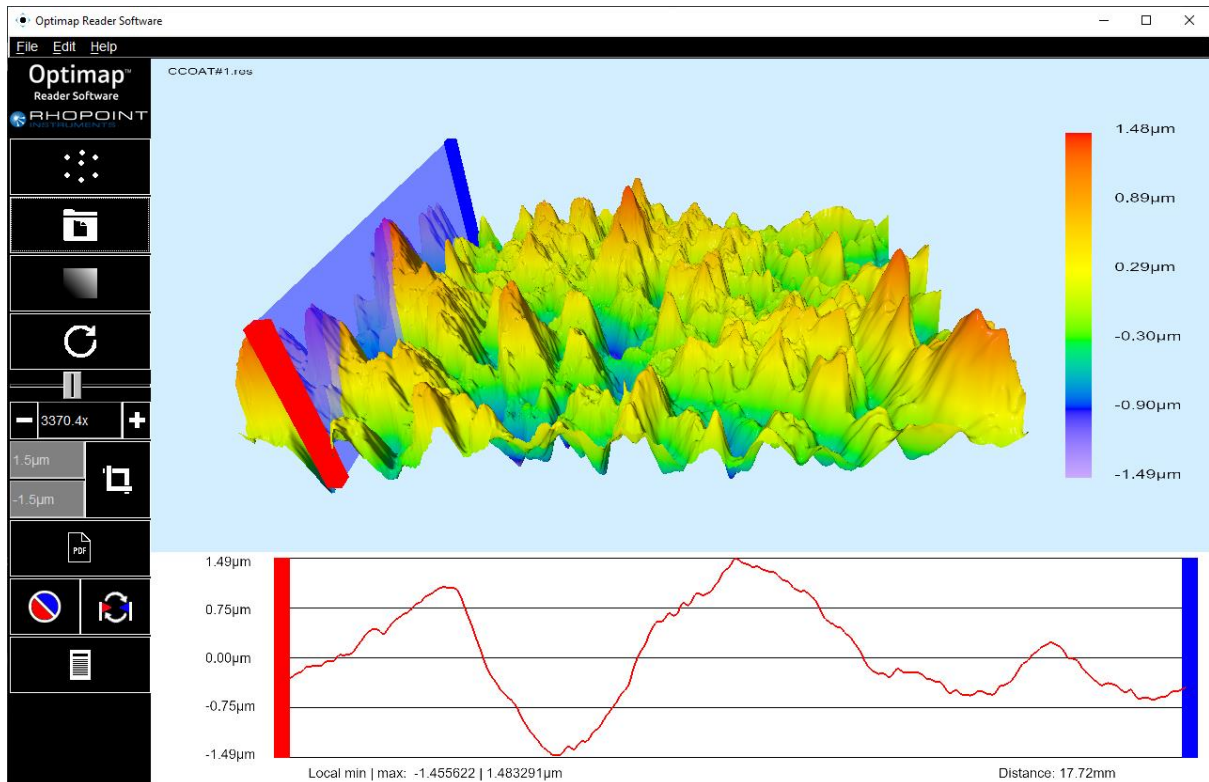
Currently the reader sets the red pin as the starting boundary and the blue pin as the end boundary from which to plot. These pins can quickly switch locations by clicking the swap button which then updates the profile at the bottom of the screen.

Moving the profile is as simple as clicking and dragging each pin to the desired position. Left clicking on a pin will only move that pin while right clicking will move both pins at a locked distance from each other.

Glossary

Contrast represents the difference between the reflection intensity of highlights (bright light sources) and lowlights (dark areas) of a reflected image on a surface.
A value close to 100% (black reflective surfaces and mirrors) indicates that the reflected image is showing both very high and very dark light, in other words, the range from dark light to high light is large. On the contrary, low contrast values (<30%) indicate that the range is small, so dark and high light are in a short intensity range.

Sharpness represents the level of detail in the reflected image for a close look (<30cm) and the haze effect for a larger viewing distance (>1.5m). The value goes from 0% (low sharpness) to 100% (high sharpness).

Sharpness Q is a rescaled value of the classic sharpness, which takes into consideration the contrast value. This sharpness Q value is used for the computation of the Quality index.

Waviness (C-Coat) represents the overall wavy or non-flat aspect of the surface, also seen as a deformation level of the reflected image. The value goes from 0 (surface perfectly flat, reflection without local distortion) up to 30 (very wavy surface, high distortion level).

Waviness (E-Coat/R-Mat) represents movement of the surface texture (non-flat characteristic of the surface) using the slope map and Standard deviation calculation. This effect is often influenced by the rolling process of the steel/aluminium sheet during manufacture. The present waviness value cannot be compared directly to the one obtained for C-Coat (different scaling). The scale goes from 0 unit (very low texture) to 30 units (very high texture).

Dimension represents the main structure size perceived at 1.5m. The value is given in millimetres ranging from 0.5 to 8mm.

Quality represents the overall appearance of a surface finish. It is calculated using a specific algorithm combining three sub-characteristics: Contrast, Sharpness and Waviness. The Quality value goes from 0% (Poor quality) to 100% (Mirror finish quality).

Optical-Ra (O-Ra) is calculated using the altitude map of the measured area. O-Ra is similar than Ra but due to difference in the measurement process it is then called O-Ra to make the distinction. It represents the arithmetical mean deviation of the altitude profile, defined as follow:

$$ORa = \frac{1}{n}\sum_{i=1}^{n}|z_i|$$

Optical-Rq (O-Rq) is calculated using the altitude map of the measured area. O-Rq is similar than Rq but due to difference in the measurement process it is then called O-Rq to make the distinction. It represents the root mean square of the deviation of the altitude profile, defined as follow:

$$ORq = \sqrt{\frac{1}{n}\sum_{i=1}^{n} z_i^2}$$