



# Real Monitor and Real Monitor Viewer

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This chapter describes Real Monitor and Real Monitor Viewer, two related applications which allow you to collect and review data about your system. These applications replace the Remote Diagnostic application, handling all of its functions and providing additional ones.

With Real Monitor, you can choose when to log system data, and see live graphs and comparisons of system parameters while your SLS system operates. After a build, use Real Monitor Viewer to examine and analyze the data logged by Real Monitor. This chapter includes the following topics:

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## Licenses for the Applications

Real Monitor and Real Monitor Viewer are licensed applications. You need a license to make full use of either application, however, you can log diagnostic data about your system with Real Monitor before you install a license. You cannot view the data without a license, but a 3D Systems technician can analyze it, and you can send the logged data to 3D Systems for help in resolving a problem.

Only one license is required for these paired applications; installing a license for either application provides the same level of license for the other application.

### Installing a License

If you launch Real Monitor Viewer without a valid license installed, the licensing dialog box appears. Or you can click the Enable button in Real Monitor to display it. You can also upgrade your license at any time by clicking the Enable button in either application.

Click to  
enable a  
license



Figure 1. Real Monitor, Before Enabling a License



The application displays a dialog box with your computer's identification code. Contact 3D Systems as directed in the dialog box and provide your code. 3D Systems Customer Support will provide you with a license password specific to your system. Enter the license password in the license dialog box.

## License Types

Several types of licenses are available for the Real Monitor and Real Monitor Viewer applications.

- The Default license, which comes with the software, allows your system to log data but not view it. 3D Systems personnel can still retrieve and analyze data logged in this manner.
- A Basic license allows you to log data and view it in real time, as well as view saved monitoring data.
- An Advanced license has the capabilities of the Basic license, and also allows you to export data to a delimited file, as well as use a dynamic-link library (DLL) to access the logged data in real time from a custom application program.

## Replacing Licenses

The license password will persist after an upgrade of the SLS system software. However, you will need to contact 3D Systems Customer Support to get a new password if you do either of the following:

- Reinstall your operating system
- Change your network configuration; (for example, if you replace your network card)



## Starting the Applications

Real Monitor cannot be started or stopped on its own; instead, it starts and stops automatically with the Sinter application.

You can start Real Monitor Viewer by clicking the Real Monitor Viewer shortcut in the SLS System folder on your Start menu. You can run Real Monitor Viewer while Sinter and Real Monitor are running, and you can run multiple copies of Real Monitor Viewer.

## Logging Data with Real Monitor

Real Monitor does not track your system all the time. Two boxes underneath the Real Monitor toolbar offer options for starting and ending monitoring.

The application defaults to starting monitoring at the beginning of a build and ending it when the build is over. It returns to these settings when you end a build or restart the Sinter application, so that Real Monitor always monitors each new build unless you specifically change its settings.

The other start options include:

- Manual, which enables the Start button; click it when you want to start monitoring.
- Beginning of build stage
- Beginning of cool down stage
- Specified warm up height
- Specified build height

Similar options exist for ending monitoring.



## Comparing Parameters in Either Application

The two diagnostic applications display similar graphs, allowing you to view and compare machine parameters over time. For each parameter section, you can select a parameter in the Plot Parameter list. The system graphs the parameter to the right.

 If you want to view more than two parameters with Real Monitor Viewer, you can launch an additional copy of the application, load the same log file, but select different parameters to view in it.

### Parameter Graphs

Parameter graphs within the applications show a variety of data about a build.

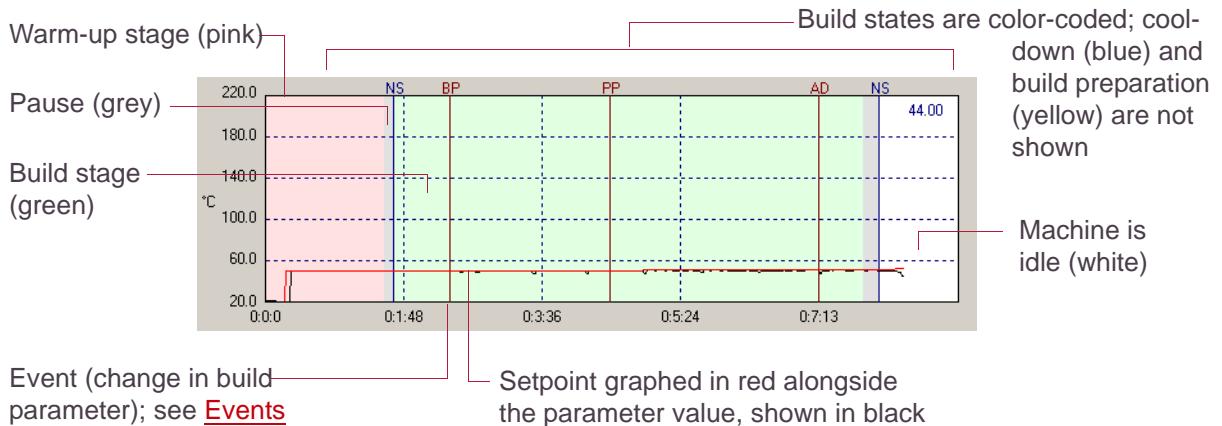


Figure 2. Sample Parameter Graph



## Events

Real Monitor tracks a number of events during a build. Events are marked with a vertical line, and an abbreviation (above the line). The line and abbreviation are also color coded. The following table shows the monitored events:

Abbreviation	Event	Description
PM	Pause Monitor	Monitoring was paused.
SR	Sample Rate	The sampling rate was changed by the user.
BP	Build Parameter	A build parameter was manually adjusted.
PP	Part Parameter	A part parameter was manually adjusted.
BM	Build Mode	The build mode was manually adjusted
AD	Add/Delete Parts	Parts were manually added or deleted
PC	Prime Cycle	A prime cycle was run.
NS	Next Stage	The system was manually directed to move to the next stage of the build.
TM	Terminate	The build was manually terminated.
AL	Alarm	A system alarm occurred.

## Zooming in X and Y

In either application, you can change the visible portion of either of the two graphs displayed in the window by clicking the Zoom X or Zoom Y buttons.

After clicking Zoom X or Zoom Y, use the left





and right mouse buttons to zoom in and out. The zooming action is centered on the region of the graph where you click your pointer.

Use the mouse wheel, if available, to scroll within the graph. If you place the mouse inside the plot, the graph is scrolled on the X axis. Placing the mouse on the left side of the plot allows you to scroll in the Y axis.

Click the Reset button to return to the original zoom settings.

## Setting the Y Scale Range

Click the Y-Scale button to display a dialog box with fields for minimum and maximum values of the Y axis for either graph.

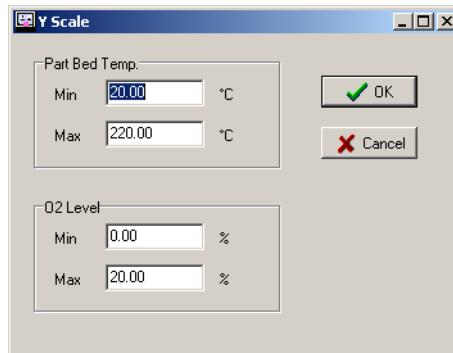


Figure 3. Y Scale Dialog Box

## Printing Plots

Click the Print button in either application to display a dialog box of printing options. The system prints the two current graphs to the printer you select.



## Preferences

The two applications have similar but separate preference options. Click the Pref button in either application to display a preferences dialog box.

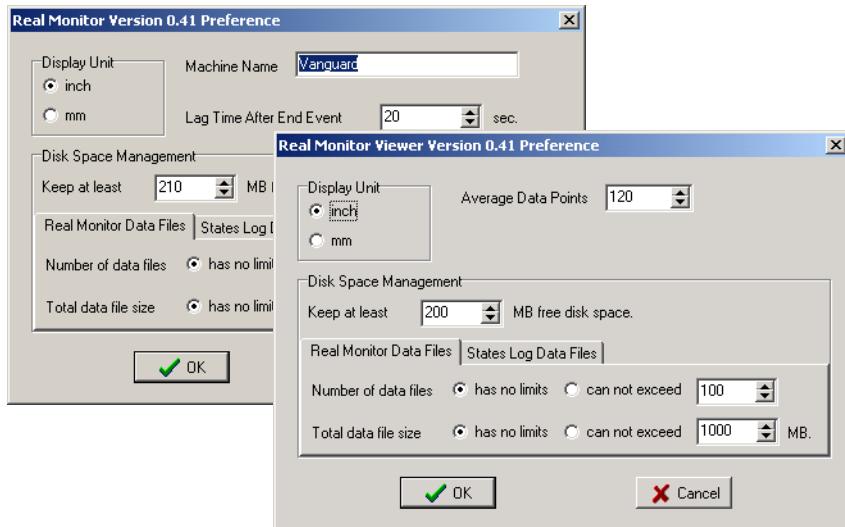


Figure 4. Preferences in Real Monitor/Real Monitor Viewer

In either application, you can use the preferences dialog box to:

- Change the display unit (inches or millimeters)
- Set data file limits for both Real Monitor data and States Lot data, in terms of available disk space, number of data files used, and total data file size.



## Real Monitor Options

**Machine Name:** This field determines the machine name that will be written to the log file. The default value for this name is taken from the SLS system configuration files; if this name does not reflect the name you use to identify your machine, edit the field.

**Lag Time After End Event:** Sets how long Real Monitor continues logging after a build is complete.

## Real Monitor Viewer Options

**Average Data Points:** When you display pinpoint data with Real Monitor Viewer, it displays an average value for the point, created by averaging the point with as many preceding points as are specified by this value. See [Viewing Pinpoint Data](#) for more information.

## Reviewing Logged Data with Real Monitor Viewer

Use Real Monitor Viewer to view log files (.rmt files) generated by Real Monitor from past builds. Real Monitor Viewer has additional features for viewing data that are not available in Real Monitor.

### Loading a Real Monitor Log File

Click the Browse button to display a standard Windows file-opening dialog box, and use it to open a Real Monitor log file to examine with Real Monitor Viewer. By default, Real Monitor data files are stored in the \dtm\logs\RMDData folder.



Most of Real Monitor Viewer's buttons remain inactive until you load a log file.

Basic build packet and machine information for the selected log file

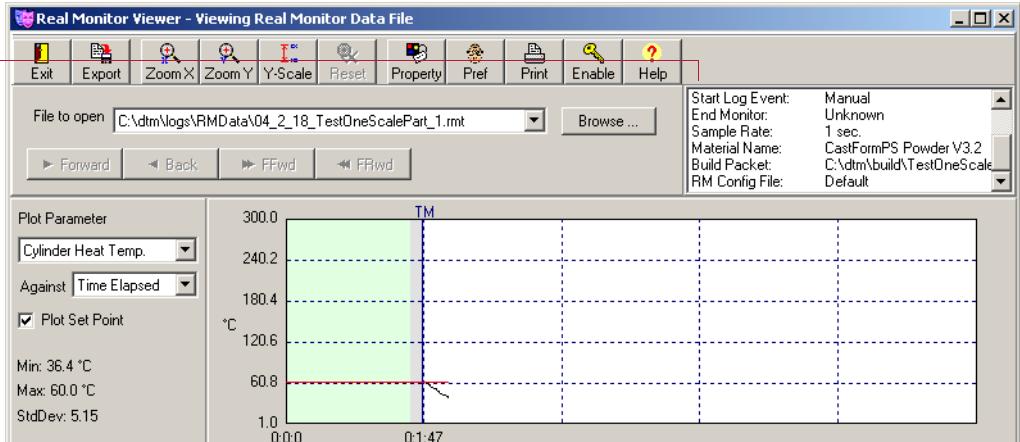


Figure 5. Real Monitor Viewer Window

## Viewing Pinpoint Data

To get more specific information about a point on the Real Monitor Viewer graph, hover your mouse pointer over the point, or click on the point:

- When you pause your mouse pointer over a point on the plotted graph, information about the data point appears in a pop up window, including its value (y), time (x), stage height and set point, as well as an average value created by averaging the current point with some number of preceding points (defined by the Average Data Points preference option). If an event is associated with the data point, the event description also appears.



- When you click on a point on the curve, green horizontal and vertical lines pinpoint your location, and the application displays a popup window with information about the selected point. When you have selected a point in this way, you can move the selection forward or backward through the graph with the arrow keys on your keyboard.

## Displaying Build Properties

Click the Property button in Real Monitor Viewer to display a dialog box with information about the build whose data you are viewing. Basic information such as the platform, machine name, and material type is displayed at the top of the window, with details such as build and part parameters displayed in tabs at the bottom.

Click tabs to display different categories of information

Print the data or save it to a file

The Properties dialog box displays the following information:

- Platform: Vanguard SLS System
- Machine Name: Vanguard
- Start Log At: 2/18/2004 9:50:50 PM
- End Log At: 2/18/2004 10:14:17 PM
- Start Log Event: Start Build
- End Log Event: User stopped
- Sample Rate: 1 sec.
- Material Name: CastFormPS Powder V3.2
- Build Packet: C:\ndm\build\TestOneScalePart.bpf
- BM Config File: Default
- Material File Name: \\dhs\conf\material\CastFormPS.sta

The dialog box has tabs for Build Parameters, Part Parameters, Scale & Offset, Min,Max,STDEV, and Build Time. The Build Parameters tab is active, showing a table of heater set points:

Build Parameter Name	Warm Up Stage	Build Stage	Cool Down Stage
Part Heater Set Point	85.0	85.0	40.0
Left Feed Heater Set Point	50.0	50.0	50.0
Right Feed Heater Set Point	50.0	50.0	50.0
Part Cylinder Heater Set Point	60.0	60.0	60.0
Piston Heater Set Point	60.0	60.0	60.0

Buttons at the bottom include Print, Save To File, and Close.

Figure 6. Properties Dialog Box



## Exporting Data Files

If you have an Advanced license, you can export data when you are using Real Monitor Viewer. Click the Export button to save data from the current file to a text file.