



SLS[®] Systems Software Utilities Guide

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Chapter 1

Introduction

This section includes the following topics:

- [Utilities Included with the System](#)
- [Starting the Utilities](#)

Utilities Included with the System

This guide describes the following software utilities provided with the SLS system:

- Remote Notification, which can tell you when builds finish or problems occur, by pager or e-mail.
- Remote Status, which checks the status of the SLS system from a remote system.
- Build Report, which extracts selected information from the build packet and the states.blog file in a spreadsheet format.
- RealMonitor, a Sinter application utility that enables you to collect (“log”) and review data about SLS system.
- LogManager, a stand-alone Sinter application utility program that lets you view and search the contents of 3DL Session Log files.

Build Report can be used immediately upon installation. Remote Notification and Remote Status require some setup and configuration to be useful. The sections that follow describe each utility in more detail.



Starting the Utilities

All of the utilities can be found on your Windows Start menu. To use the menu, select Start→ Programs→ SLS System. The SLS System menu appears. Select a utility from the menu to start it.

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Chapter 2

RemoteNotifyPro

The RemoteNotifyPro utility allows you to notify one or more people via email when certain events occur during the use of the sPro or Sinterstation system. It also can send a daily summary report of events via email.

You can also have events trigger application programs or operating system commands. The RemoteNotifyPro utility runs on the sPro or Sinterstation system. For notification via email, it requires access to an SMTP mail server.

RemoteNotifyPro is a 3D Systems' licensed application.

This section includes the following topics:

- [Starting the Remote Notification Utility](#)
- [Installing RemoteNotifyPro License](#)
- [Setting Up Remote Notification](#)



Starting the Remote Notification Utility

To start the Remote Notification utility, select Start→SLS System→Remote Notify. The RemoteNotifyPro window appears.

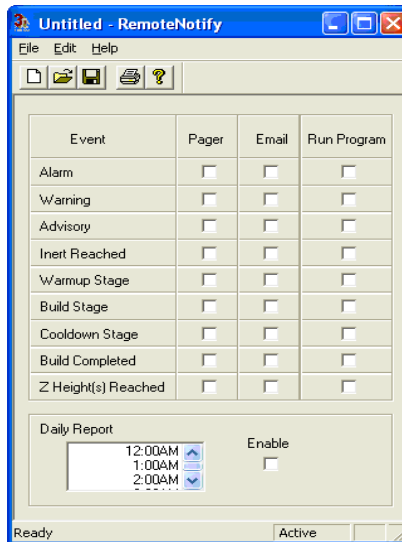


Figure 1. RemoteNotifyPro Window

Activating and Deactivating the Utility

When you start the application, it is active, meaning it will send notifications. If you want to temporarily disable notification while the application is running (for example, to make changes to notification options), select File→Deactivate. The words “Not Active” appear in the status bar at the bottom of the window. To activate the utility again, select File→Activate. Closing the RemoteNotifyPro window automatically deactivates the utility. The window must be open (or minimized) and the status set to Active in order for notifications to be sent.




Setting Up Remote Notification

Before you can use the RemoteNotifyPro utility, you must perform several setup tasks. These include selecting events that you want to be notified of, and entering the email addresses, and mail server name to be used. Optionally, you may enter application programs that you want the program to execute when an event occurs.

Settings and Data Files

The RemoteNotifyPro utility stores two kinds of information: settings files and data files. *Settings files* store your choices of what events should cause someone to be notified. They use the .cfg extension. *Data files* store names, and e-mail addresses. They use the .dat extension. Both types of files are stored in the c:\dtm\config\RemoteNotifyPro directory.

You can have several settings files, but each accesses the same Address Book for e-mail addresses.

When you initially start the utility, the settings file is untitled. After you start entering setup information, you should save a settings file by selecting File→ Save or clicking .

You can load an existing settings file by selecting File→ Open or clicking .

➤ The Remote Notification utility keeps a list of recently-used settings files on the File menu.

Events and RemoteNotifyPro Actions

Remote notification is based on events and consequences. *Consequences* are the actions the RemoteNotifyPro utility takes when a specific type of event occurs.

The *events* that can trigger an action are:

- Alarms, warnings, and advisories: You can select different consequences for each of these three types of events.
- Inert reached: The system has inerted the process chamber.



- **Stages and completion:** You can select consequences for the system's entry into each of the three build stages (warm-up, cool-down, and build) as well as for build completion.

➡ Remote Notify will send a build complete message whether the build ends normally or due to a problem.

- **Z heights reached:** You can select actions for the system to apply when the build reaches specific Z heights. See **“Installing RemoteNotifyPro License” on page 18** for more information.

For each type of event, you can send an email to one or more persons:

- In addition to notification of an individual event, you can also have a Daily Summary Report of all currently selected events emailed to selected individuals.

Optionally, you can have the system run one or more program(s) or any combination of the above.

Selecting Consequences

The RemoteNotifyPro window contains a table with a row for each type of event. In each row, you can select a check box for each type of action. For example, the following figure shows the RemoteNotifyPro window with e-mail selected for Alarm events and Daily Report is enabled.

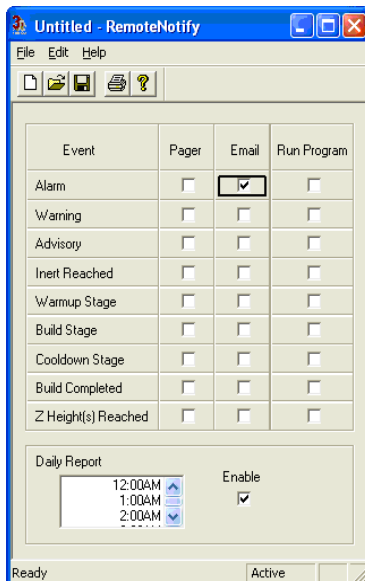



Figure 2. RemoteNotifyPro Window with Consequences Selected

In addition to selecting the check boxes, you must set up the details of each action as described in the sections that follow.

Printing Settings

You can print the table of settings and actions shown in the RemoteNotifyPro window by selecting File→ Print or clicking .



Setting Up E-Mail Notification

The Remote Notification utility can send e-mail to a different list of recipients for each event type. The e-mail message that the utility sends contains the type of event, the name of the computer sending the message, the text of the message, and a time stamp. For example:

```
Zduqlqj#iurp#KlT
```

```
Wkh#surfhvv#fkdpahu#grru#lv#qrw#odwfkhg
```

```
Wkx/#Mxo#49#44=44=6<#533<
```

To use e-mail notification, you must:

1. Set up e-mail.
2. Create an address book.
3. Create mailing lists.

The sections that follow describe each of these steps in detail.

Setting Up E-Mail Server Information

To set up e-mail, select Edit→ Mail Setup. The Mail Setup dialog box appears. Enter appropriate values in the two text boxes.

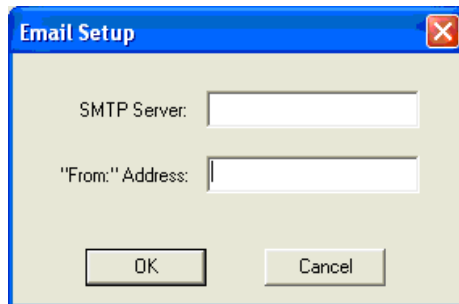


Figure 3. Mail Setup Dialog Box

SMTP Server is the name of your mail server.

“From” Address is the address that will appear in the From header on the e-mail sent by the Remote Notification utility. This can be any text string and does not have to be a valid e-mail address. If it is not a valid e-mail address, recipients will not be able to reply to e-mails sent by the utility.

➤ You may want to enter the address of a system administrator or SLS system technician so that replies go to someone equipped to handle them, or you may want to enter a nonexistent address so that no replies are possible.



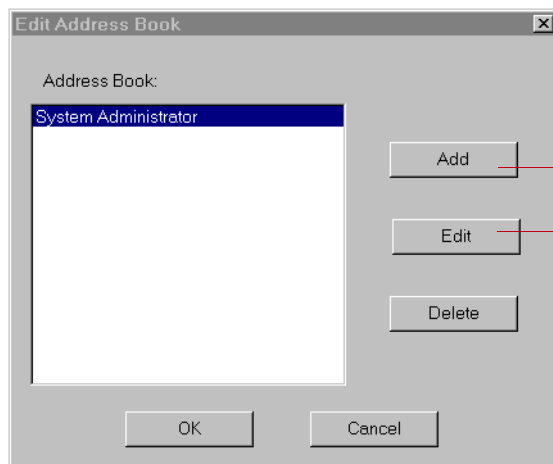
Creating an Address Book

An address book is a list of addresses to which the Remote Notification utility can send e-mail.

To create an address book for your company:

1. Select Edit→ Address Book.

The Edit Address Book dialog box appears.



Click the Add button to display a dialog box where you can add names and e-mail addresses

Select a name, then click the Edit button to change a name or e-mail address

Figure 4. Edit Address Book Dialog Box

2. For each e-mail address you want to add to the book, complete the following steps:

- a. Click the Add button.

A secondary Edit Address Book dialog box appears.



Enter the name
that will appear
in the address
book list

Enter the
actual e-mail
address

The image shows a dialog box titled "Edit Address Book". It has a blue title bar with a close button (X). The main area is light gray and contains two text input fields. The first field is labeled "Display Name:" and the second is labeled "Email Address:". Below these fields are two buttons: "OK" and "Cancel". Red lines connect the text labels on the left to the corresponding input fields.

Figure 5. Secondary Edit Address Book Dialog Box

- b. Enter appropriate information in the Display Name and Email Address text boxes.
- c. Click the OK button.

The new address book entry appears in the Edit Address Book dialog box, listed by display name.

3. To make changes to any address book entry, select the entry in the list on the Edit Address Book dialog box, then click the Edit button.

The Edit Address Book Entry dialog box appears. Make any needed changes in the text boxes, then click the OK button.

4. To delete an entry, select the entry in the list, then click the Delete button.
5. When you are finished making changes to your address book, click the OK button on the Edit Address Book dialog box.



Creating Mailing Lists

You can create a different mailing list for each event type. This list defines the e-mail addresses to which mail will be sent if an event of that type occurs. To create a mailing list:

1. Double-click an event checkbox in the Email column of the Remote Notify window.

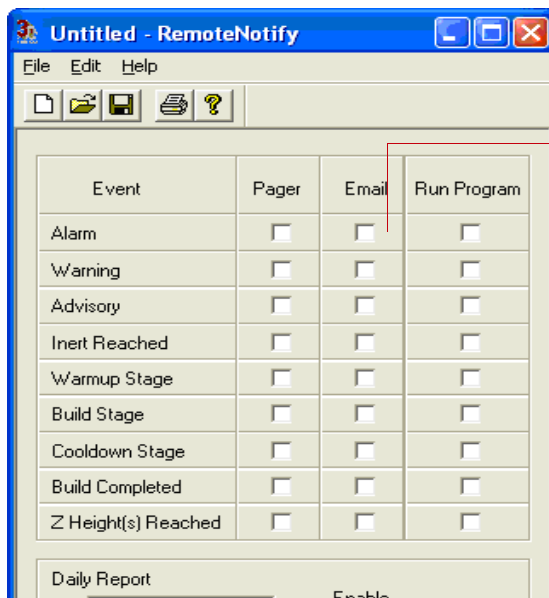


Figure 6. Displaying the Mailing List

The Email list dialog box appears.

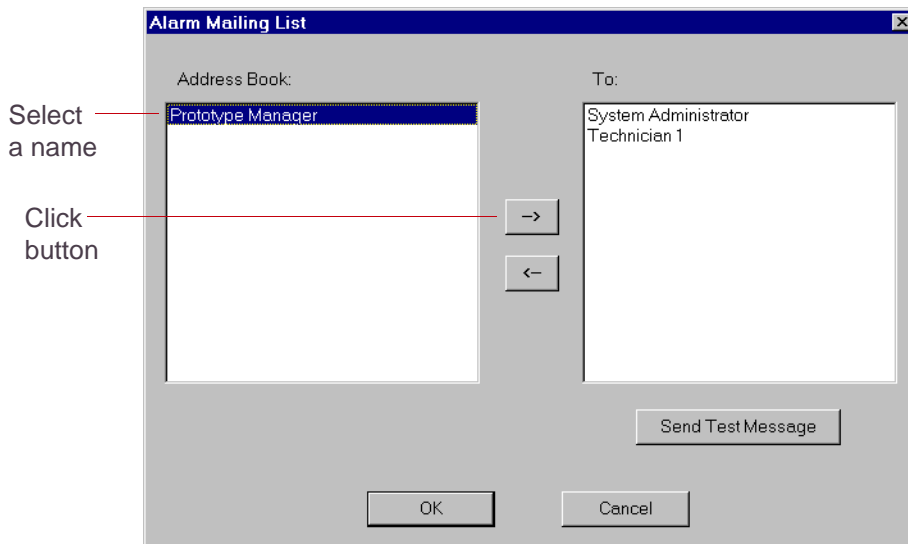



Figure 7. Sample Mailing List Dialog Box

- You can also display the list by selecting the event checkbox and then pressing the right mouse button, or by selecting the event checkbox and selecting Edit→ Mailing List.
2. Select a name in the Address Book list and click  to move it to the To list.
 3. Repeat step 2 until all desired names are in the To list.
 4. *If desired*, click the Send Test Message button.
 5. Click the OK button.
 6. Create E-Mail lists for all desired events.
 7. Create E-Mail list for the Daily Report (if desired). Although you can have the Daily Report sent out multiple times per day, you can only have one Email list.



Setting up Z-Height Triggers

You can use Z-Height triggers to select points during a build at which you want specific actions to occur. To set up Z-Height triggers:

1. Select Edit→Z Height Triggers. The Edit Z Height Triggers dialog box appears.

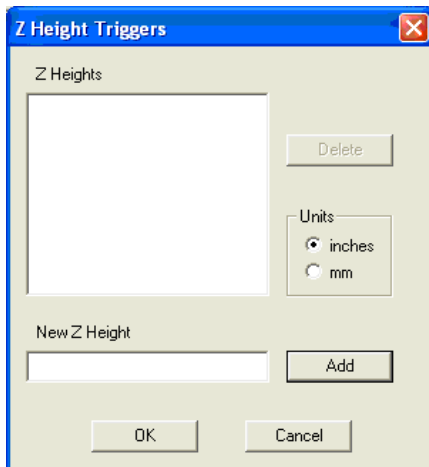


Figure 8. Z Height Dialog Box

2. Type a number in the New Z Height text box and click the Add button. This number is a relative Z height, measured from the beginning of each stage. Each Z height that you enter will trigger a Z Height Reached event and produce the action that you have selected for that event.
3. Repeat Step 2 until you have entered all desired Z heights
4. Click the OK button.



Optional Program Setup

You can have the Remote Notification utility launch programs or issue commands when specific types of events occur.

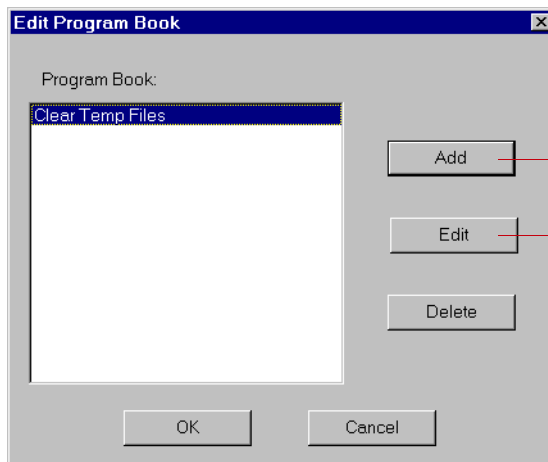
To use these features, you must:

1. Create a program book.
2. Create program lists.

The sections that follow describe each of these steps in detail.

Creating a Program Book

A program book is a list of programs and/or system commands that you can have the Remote Notify utility launch. Programs and system commands are treated the same by the Remote Notify utility.



Click the Add button to display a dialog box where you can add program names and commands

Select a name, then click the Edit button to change a name or command

Figure 9. Edit Program Book Dialog Box



3. For each program you want to add to the book, complete the following:

a. Click the Add button.

A secondary Edit Program Book dialog box appears.

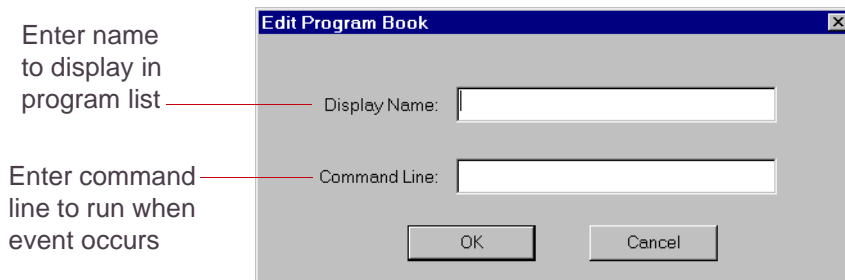


Figure 10. Secondary Edit Program Book Dialog Box

b. Enter appropriate information in the Display Name and Command Line text boxes.

c. Click the OK button.

The new program book entry appears in the Edit Program Book dialog box, listed by name.

4. To make changes to any program book entry, select the entry and then click the Edit button.

The Edit Program Book Entry dialog box appears. Make any needed changes then click the OK button.

5. To delete an entry, select the entry in the list, then click the Delete button.

6. When you are finished making changes to your program book, click the OK button on the Edit Program Book dialog box.



Creating Program Lists

You can create a different program list for each event type. This list defines the programs that will be launched if an event of that type occurs. To create a program list:

1. Double-click a cell in the Run Program column of the Remote Notification window.

The Program List dialog box appears.

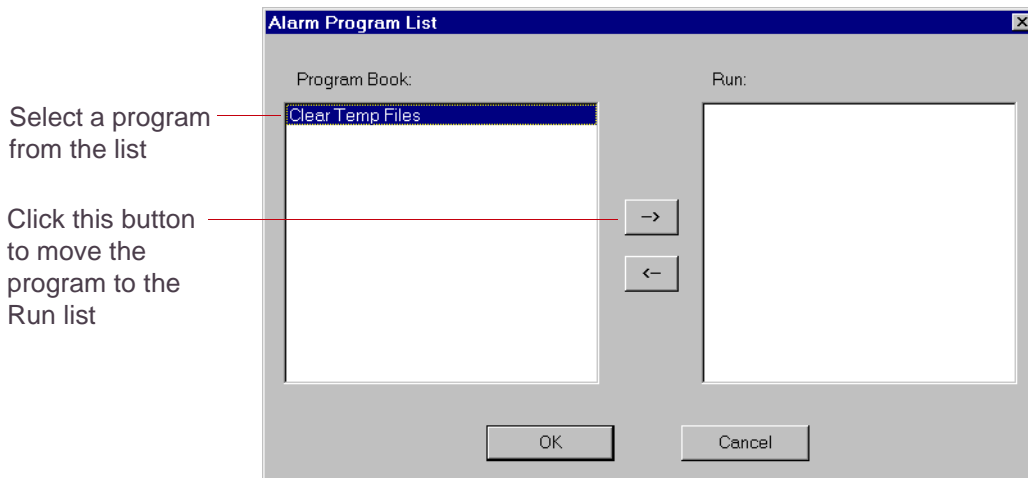



Figure 11. Sample Program List Dialog Box

➤ You can also display the list by selecting the cell and then pressing the right trackball button, or by selecting the cell and selecting Edit→Program List.

2. Select a name in the Program Book list and click  to move it to the Run list.
3. Repeat step 2 until all desired names are in the To list.
4. Click the OK button.

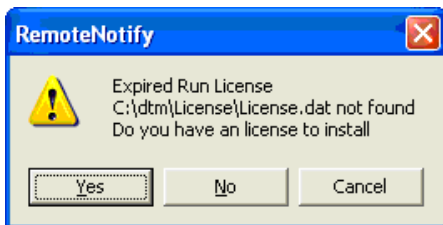


Installing RemoteNotifyPro License

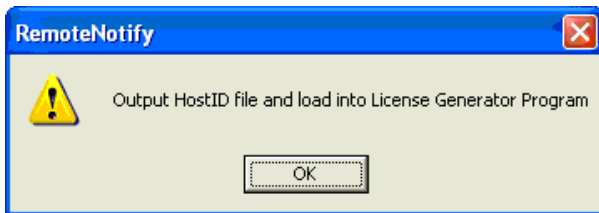
1. Start the Remote Notify utility by selecting Start→SLS System→RemoteNotifyPro.

If the Remote Notify is not found on the Start menu, go directly to dtm/bin/RemoteNotifyPro to launch the utility. You may want to create a shortcut to the utility on your desktop or pin to your Start menu.

2. If no license exists for RemoteNotifyPro or the license has expired, you will see the following:



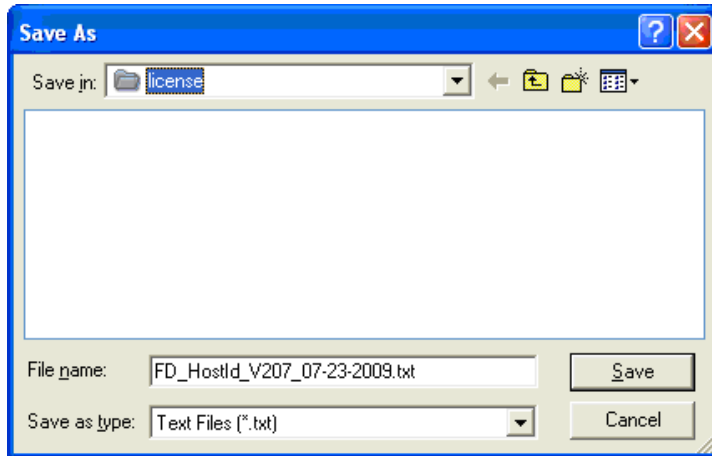
3. Select No. The following menu appears



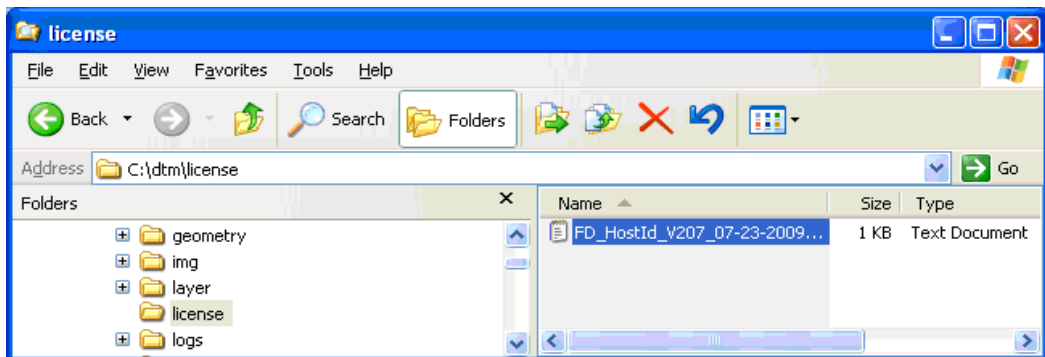
4. Click OK.



5. Save this text file into the dtm/license directory.

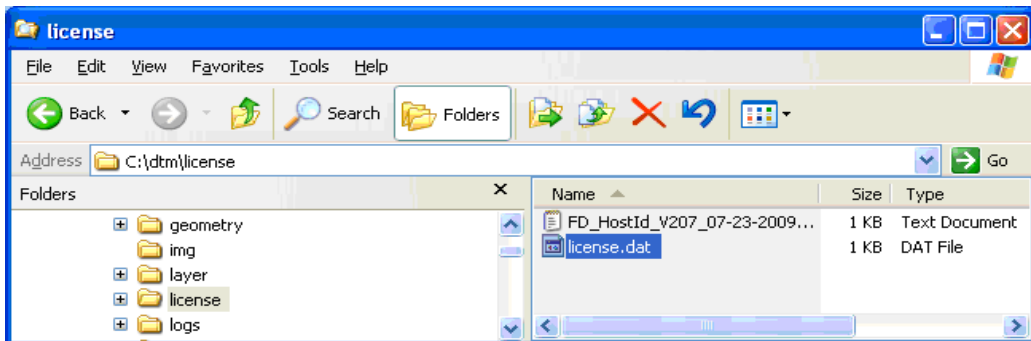


6. Send the FD_Hostid_xxxx file to 3D Systems to obtain a license file.





7. Place the license.dat file from 3D Systems into the dtm/license directory.





Chapter 3

Session Log Files

This section describes **session log files**; “consolidated” log files created by the Sinter application that contain copies of all the separate error and parameter log files Sinter generates. Session log files have a “.3DL” extension (for “**3D Log**”) and are also called “**3DL files**.”

The topics in this section describe the contents of 3DL files and how and when Sinter generates them.

- [About Session Log \(3DL\) Files](#)
- [LogManager and Session Log Files](#)
- [Session Log File Contents](#)
- [How Sinter Generates Session Log Files](#)
- [Summary – How Log Sessions Work](#)
- [Session Log File Disk Space Management](#)
- [Session Log File Descriptions](#)



About Session Log (3DL) Files

Log files can help you and 3D Systems refine and troubleshoot your SLS process. Sinter creates many separate log files during and between builds. They all have different file formats, names, and storage locations. Sinter also creates session log (.3DL) files to make it easy for you to access the data in these multiple log files.

At the start or end of a build, Sinter copies the various log files created during the previous session into a 3DL file automatically or on demand so you can view, search, and manage them in **LogManager**.

Sinter copies log files to a...

- **Build session log file** after an build completes or is terminated.
- **Manual Ops session log file** between builds, just before a new build starts.

⇒ If you ever need to work with 3D Systems Customer Support to troubleshoot your SLS process, you can send your session log files for to review instead of gathering sending many different log files.

Sinter stores 3DL files in two folders on your installation drive by default: `\dtm\3DLogs\Build` and `\dtm\3DLogs\ManualOps`.

LogManager and Session Log Files

⇒ This topic is a general discussion. For complete details, see **Chapter 5, “LogManager”**.

Run the **LogManager** utility to open, view, and search the contents of session log files. LogManager is a stand-alone program; you can run it even if Sinter is not running. To open or view any log file in LogManager, click a 3DL file in the `\dtm\3DLogs\Build` or `\dtm\3DLogs\ManualOps` folder, or, run LogManager, then choose **File > Open ...** or **File > Recent Build ...**

You mainly use LogManager to do the following:



- View the contents of the individual log files a 3DL file contains.
- View historical parameter graphs with **RealMonitor** event notations. (**RealMonitor License** required).
- Manage log file disk space by specifying how many 3DL files to keep, based on the file date or folder size.
- (If Sinter is running...) initiate a new 3DL file for the current Build session or Manual Ops session on demand

⇒ You need to run Sinter at least once to create the first 3DL file automatically.

Session Log File Contents

Build session and Manual Ops session log files contain copies of the individual log error and monitoring log files that Sinter generates during and between builds. They also contain copies of the configuration and .ini files in use when the session log file was generated.

The two tables below list the file names of the individual error and monitoring log files that Sinter copies into session log files. They also list the different types of data these log files contain.



Error Log Files

Error Log File Name	Contains...
Slicer.tlog	Slicer program (Slicer.exe) runtime errors
Plcif.tlog	PLC interface program (Plcif.exe) runtime errors
ScanIF.tlog	Scanner interface program (Scanif.exe) runtime errors
DSPIF.log (Sinterstation Pro SLS systems only)	Digital Signal Processor interface program (Dspif.exe) runtime errors
Packetio.log (Should always be empty, if not, contact 3D Systems Customer Support)	Errors in: <ul style="list-style-type: none">■ material configuration (.cfg) files; <material_name>.cfg■ machine configuration files; machine.cfg■ Build packet files; <build_name>.bpz

Monitoring Log Files

Monitoring Log Files	Contains...
States.blog	All build, part, and scale parameter values
RealMonitor log (.rmt) file <MMDDYYbuild_name>.rmt	The values of all parameters RealMonitor is monitoring
RealTimeCal.log	Data for every Real Time Calibration event. For each calibration attempt, it logs whether calibration was successful or failed—and how much adjustment, if any, was applied—and why.
RealTimeCalData.log	Summarizes each Real Time Calibration adjustment made
OfflineCal.log (Only for offline calibration)	Records how much adjustment was applied during any Offline Calibration—and why the adjustment was applied
Bds.tlog	All commands sent to the beam delivery system by the scanner interface software
Data.log	A summary of each build, including the time the build finished, the material used, and the part and feed temperature set points.



How Sinter Generates Session Log Files

While Sinter is running, it logs data to the individual log files in [Session Log File Contents](#) above regardless of whether a build is running or not. These individual log files are stored in folders separate from the \dtm\3DLogs session log file folder.

On the other hand, Sinter starts a new session log file when a build starts, then closes the session when the build terminates. The log files generated during a build are called the **Build Session Log**. In between two builds, there will also be sets of log files generated. These log files are called the **Manual Ops Session Log**.

Log Sessions

When a new session starts, individual log files are overwritten. This means individual log files on disk only contain data from the most recent session. Log data from older sessions resides in the (date/time-stamped) 3DL files to which individual log files are copied at the end of each session.

When a (Build or Manual Ops) log session closes, Sinter automatically adds all individual log files generated in the session that just closed to one compressed date/time-stamped session log (.3DL) file. It then stores the 3DL file in either:

- \dtm\3DLogs\Build if a build (“Build session”) just ended, or
- \dtm\3DLogs\ManualOps if a “Manual Ops session” just ended; i.e., a build just started

Session log file names

When a build starts, Sinter closes the Manual Ops Log Session and creates a .3DL file with the file name

machine ID_YYYY-MM-DD_HH.MM.SS_manual_ops<index#>.3DL

When a build finishes, Sinter closes the Build Log Session and creates a .3DL file with the file name:

machine ID_YYYY-MM-DD_HH.MM.SS_build packet name<index#>.3DL



Where:

machine ID is the SLS system's serial number by default. However, if you entered a custom **Machine Name** in your RealMonitor **Setting Preferences** window, that will be the *machine ID*.

YYYY-MM-DD_HH.MM.SS is the date and time when the Log Session started. (Time is in 24-hour format.)

<index#> is a number appended to the file name to prevent duplicate file names.

⇒ A 3DL file name can be up to 256 characters long.

Generating Session Log Files Manually

Sinter generates 3DL files automatically when to start and finish a build. However, you might also want to use the LogManager utility to generate a 3DL file manually if:

- When a build is terminated abnormally.
- When user wants to generated a 3DL file before a session is finished.



Summary – How Log Sessions Work

This topic summarizes the session log file actions Sinter performs when:

- Sinter starts
- A build starts
- A build finishes
- Sinter ends normally
- Sinter ends abnormally

When Sinter starts

- A new Manual Ops session starts (if Sinter terminated normally the last time you ran it...). Any existing individual log files are overwritten. (The data in all of the previous individual log files was copied/saved in a 3DL file.)

When a build starts

Sinter does the following when a build starts:

1. Closes the Manual Ops session.
2. Creates a [...]_manual_ops.3DL log file.
3. Starts a new Build Log session, overwriting data in the individual log files collected during the Manual Ops session it just closed.

When a build finishes

Sinter does the following when a build finishes:

1. Closes the Build session.
2. Creates a [...]_build packet name.3DL log file.



3. Starts a new Manual Ops session, overwriting data in the individual log files collected during the Build session it just closed.

When Sinter ends normally

Sinter does the following when it ends normally:

1. Closes the Manual Ops session (which started after the last build ended).
2. Creates a [...]_manual_ops.3DL log file.

When Sinter ends abnormally

When Sinter terminates abnormally, the next time you run it, it does the following:

1. Creates a [...]_manual_ops.3DL file or a [...]_build packet name.3DL file—depending on the state it was in when it terminated abnormally.
2. Sets the **Sinter Termination Status** in the 3DL file to **Abnormal**.

➡ **Sinter Termination Status** is shown in the Summary window box on LogManager’s RealMonitor tab. See “Summary Windows – (RealMonitor Tab Only)” on page 53.

Session Log File Disk Space Management

Typical session log files range in size from 100 KB to 1000 KB (1 MB), so you must remove old 3DL files periodically. Use the Diskspace Manage tab in the RealMonitor utility’s Preferences dialog to set limits on the size and age of 3DL files on disk. (See RealMonitor “**Setting Preferences**” on page 42.)



Session Log File Descriptions

This section describes the contents of build and manual ops session log files. It also shows how Sinter names automatically-generated 3DL files.

Build session log files

Sinter generates a build session log file when a build terminates. The build 3DL file contains all the log file data generated during that build. Build session log file names are of the format:

<buildname>MMDDYYYYHHMMSS_Build.3DL

where *buildname* is the build packet filename.

Manual Ops session log files

Sinter generates a manual ops session log file when a build starts. The manual ops 3DL file contains all the log file data generated between two builds; specifically between the a Build End event and a Build Start event.

Manual ops session log file names are of the format:

<buildname>MMDDYYYYHHMMSS_ManualOps.3DL

where *buildname* is the build packet filename for the build that started.



Chapter 4

RealMonitor

This section describes RealMonitor, a Sinter application utility that enables you to collect (“log”) and review data about SLS system. RealMonitor starts when you start Sinter and stops when you exit Sinter. It logs data continually by default while Sinter is running, but you can pause or stop logging (then restart it) at any time.

With RealMonitor, you can watch data plots update in real time and compare parameters while your SLS system operates. After a build, use **LogManager** to view and analyze the data logged by RealMonitor and other Sinter software modules in the log files the Sinter application creates.

⇒ See “**LogManager**” on page 46 for further information.

This section includes the following topics:

- [RealMonitor License](#)
- [Logging Data with RealMonitor](#)
- [Comparing Parameters in RealMonitor](#)
- [Zooming in X and Y](#)
- [Printing Plots](#)
- [Setting Preferences](#)
- [Creating a Session Log File Manually](#)



RealMonitor License

RealMonitor and **LogManager** are licensed applications. You only need one license—a **RealMonitor** license—to make full use of both RealMonitor and LogManager.

You can log data about your system before you install a RealMonitor license, but you must install a license before you can view data plots in RealMonitor and LogManager.

RealMonitor logs data whether you have a license or not. So, even if you don't have a license, you can still send log files to 3D Systems Customer Support if you need help resolving problems.

Installing a RealMonitor License

To install a RealMonitor license, click the **Enable** button on the RealMonitor toolbar as shown in **Figure 12** below.

Click to open the license dialog

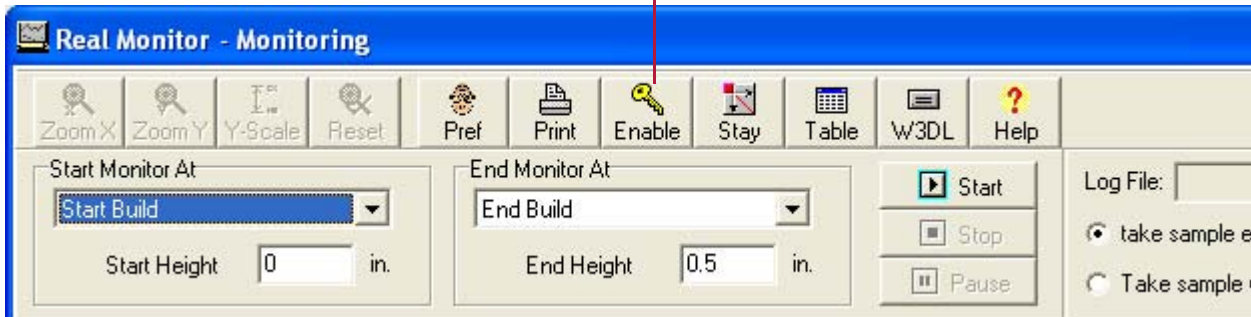


Figure 12. RealMonitor, before enabling a license

You can also install a RealMonitor license by running the 3D Systems software licensing utility from the Windows Start menu. Choose **Programs > SLS System > Install 3D License**, then select **RealMonitor** in the **License For** drop-down list.



➤ If you install 3D Systems LS Software and a RealMonitor license on a separate, stand-alone computer (to run the Build Setup application), you can view the parameter data plots in LogManager's RealMonitor tab.

Click **Next** to display your SLS system's **Computer ID** in the License window, along with a blank text box for your RealMonitor license **Activation Password**. Contact 3D Systems Customer Support by email or phone and provide your Computer ID. 3D Systems will provide you with a RealMonitor license **Activation Password** specific to your SLS system. Enter **Your Activation Password** in the License window.

What a RealMonitor License Enables

- **Without a RealMonitor license** – you can use RealMonitor to log data during and between builds (which it does by default when you run Sinter), create consolidated 3DL **Session Log Files**, and manage the amount of disk space 3DL files use. In LogManager, you can open a 3DL file, then browse, search, and filter text data in individual Sinter log files without a RealMonitor license.
- **With a RealMonitor license** – you can do everything above—plus view live data plots in RealMonitor and historical data plots in LogManager. The data plots show parameter values as a function of time or build z-height. These graphs include vertical lines showing when, or at what z-height, various build events occurred. You also get the option to overlay a moving average trend line.

In addition, with a RealMonitor license you can export data to a delimited file, as well as use a dynamic-link library (DLL) to access logged data in real time from a custom application program.

Replacing a RealMonitor License

The license activation 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)



Logging Data with RealMonitor

The RealMonitor utility starts automatically when you start the Sinter application. When you enter Build or Manual Ops mode in Sinter, RealMonitor opens a new Build or Manual Ops session (3DL) log file and starts logging data to many individual Sinter log files. It then copies the individual log files into time-stamped 3DL files at the end of the session. (See [Chapter 3, “Session Log Files”](#) for further details.)

One of the most important individual log files that gets copied into a 3DL file is the RealMonitor Log (.rmt) file. There are two types of .rmt files; one for Build data and one for Manual Ops data. This section describes both types of .rmt files, and various ways you can start and stop logging data to them.

RealMonitor (.rmt) Log Files

Two Sinter log files store the values of all parameters RealMonitor can display on its data plots. They are:

<BuildPacketName>.rmt – for the current Build session

ManualOps.rmt – for the current Manual Ops session

These two .rmt log files (and the other individual Sinter log files) are copied into the time-stamped 3DL session log file created at the end of each Build session and Manual Ops session.

RealMonitor automatically logs data to *<BuildPacketName>.rmt* while Sinter is in Build mode. However, it does *not* automatically log data to ManualOps.rmt data in Manual Ops mode. To log data to ManualOps.rmt, you must click the **Start** button (see [Figure 13., “Start, Stop and Pause buttons,”](#) on page 35) when Sinter is in Manual Ops mode.



Starting and Stopping Logging to a RealMonitor (.rmt) Log File

You can stop, pause, and restart logging data to either of the two **RealMonitor (.rmt) Log Files** at any time using the **Start**, **Stop**, and **Pause** buttons below the RealMonitor toolbar.

If you wish to start or stop logging to the current .rmt file when a specific event occurs, you have several events to choose from in the lists under **Start Monitor At** and **End Monitor At** (below the RealMonitor toolbar).

After you select a Start or End event, specify the build height at which you want RealMonitor to begin watching for the event to occur.

Click these buttons to start, stop, or pause data logging to .rmt log files at any time.

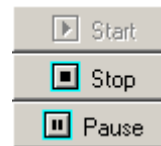


Figure 13. Start, Stop and Pause buttons

Choose an event to Start Monitoring At or End Monitoring At from these drop-down lists.

Start Monitor At

Start Build

Start Height 0.5 in.

End Monitor At

End Build

End Height 1 in.

Enter the build height at which you want RealMonitor to start watching for the selected Start or End event to occur.



Comparing Parameters in RealMonitor

The two parameter data plots RealMonitor displays allow you to view and compare SLS system parameters in real time. You can also scroll back in time (or z-height)—all the way back to the start of the current build—to compare parameters earlier in the build. For each parameter section, you select a parameter in the **Plot Parameter** list and the system graphs it on the right.

⇒ To compare more than two parameters at once, or to compare parameter values in older builds, use **LogManager's RealMonitor** tab. You can compare more than two parameters by running multiple instances of LogManager and selecting different parameters to view in each instance. Then, for ease of comparison, use LogManager's time synchronization function to synchronize the data displayed in each instance. (See **"LogManager Log Tabs"** on page 57 for more information.)



Parameter Graphs and Plotting Options

Parameter graphs show a variety of data about a build.

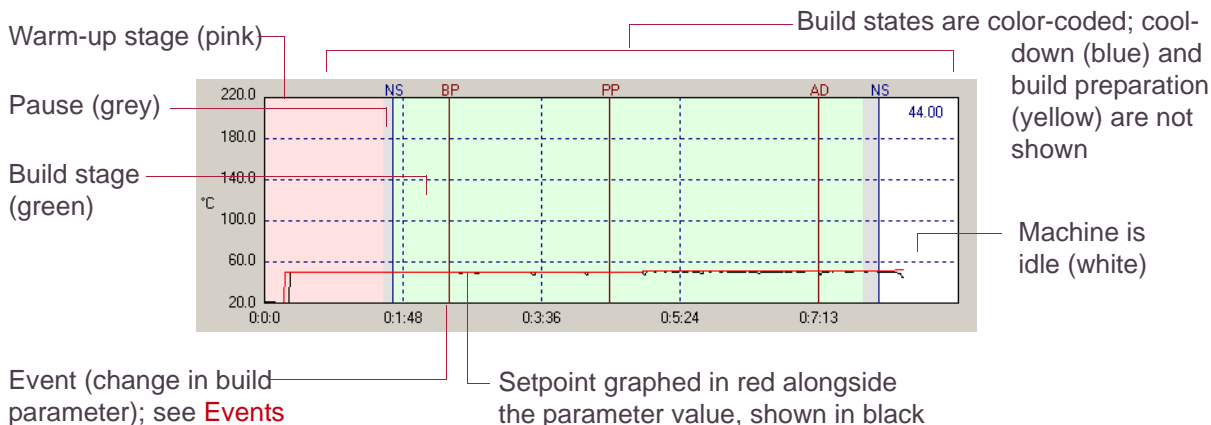


Figure 14. Sample Parameter Graph

Plot Parameter Options

You have four parameter graph display options in RealMonitor's **Plot Parameter** box:

Against. selects the x-axis units. Choose one of the following:

- **Time Stamp** (default), the actual times data points were logged
- **Time Elapsed**, the time elapsed since the start of build when data points were logged
- **Stage Height Z**, the z-height when data points were logged.

Plot Parameter	
Part Bed Temp.	▼
Against	Time Stamp ▼
<input checked="" type="checkbox"/>	Actual Value
<input type="checkbox"/>	Set Point
<input type="checkbox"/>	Average Over 120



Actual Value displays parameter actual value curve.

Set Point displays parameter set point value curve.

Average Over [*number of data points*] displays parameter moving average curve. Use this moving average curve to help detect trends you might not see on the Actual Value curve. The moving average is calculated for the most recent *number of data points*. The default = **120** data points. You can change the moving average *number of data points* in the RealMonitor **Preferences** window. (See “**RM Settings Preferences Tab**” on page 44.)



Events

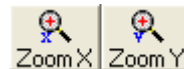
RealMonitor tracks a number of events during a build. Events are marked with a vertical line, and an abbreviation (above the line). The line and abbreviation are also color coded. The following table shows the monitored events:

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.
R1	Calibration on	The system began real-time calibration.
R0	Calibration off	The system stopped real-time calibration.
RA	Real-time adjustment	A calibration adjustment occurred.



Zooming in X and Y

You can change the visible portion of either of the two graphs displayed in the RealMonitor window by clicking the **Zoom X** or **Zoom Y** toolbar button.



After clicking Zoom X or Zoom Y, click on the graph where you want the zoom centered, then use the left and right mouse buttons to zoom in and out.

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

⇒ The Zoom X button changes the x-axis zoom on both graphs. The Zoom Y button on changes the y-axis of the graph you clicked on.

Setting the Y Scale Range Click the **Y-Scale** toolbar button to display a dialog box with fields for minimum and maximum values of the Y axis for either of the two parameter graphs. (See **Figure 16** below.)



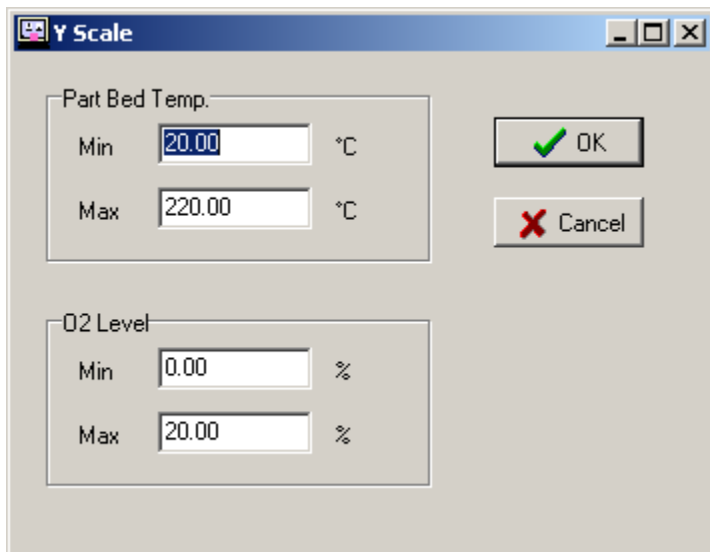


Figure 16. Y Scale Dialog Box

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



The **Zoom Factors** button reports the current zoom factors the x-axis (same for both graphs) and the separate zoom factors for the upper (**Y1**) and lower (**Y2**) graphs.

Zoom Factors			
X:	Y1:	Y2:	
1.5	1.0	1.0	



Printing Plots

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

Setting Preferences

Click the **Pref** toolbar button to display a the RealMonitor **Preference** window. Set your preferences on any or all of the four Preference window tabs described below, then click **OK** to save them.

General Preferences Tab

Use this tab to enter company and machine information, select the display units, and choose the date and time format used to time stamp the data that RealMonitor logs.

➡ The Machine Serial Number is read-only. It is set by 3D Systems.

The screenshot shows the 'Preference - Real Monitor' dialog box with the 'General' tab selected. The dialog has four tabs: 'General', 'Diskspace Manage', 'RM Settings', and 'RM Event'. The 'General' tab contains the following fields and options:

- Company Name:** DTM SLS Phoenix Stretch Simulato
- Machine Name:** Phoenix
- Machine Serial Name:** NA
- Display Unit:** inch, mm
- Date/Time Format:** ISO Standard (YYYY-MM-DD HH:MM:SS), American (MM/DD/YYYY HH:MM:SS), Local Standard (2007-06-04 16:33:30)



DiskSpace Manage Preferences Tab

Use this tab to specify limits—in number of files, megabytes (MB), or Days—on the amount of disk space session log files can occupy.

You can set three types of limits on both Build session files and Manual Ops session files. To set a limit, select **can not exceed**, then enter (or scroll to select) the limit value.

Number of 3DL files Keeps the last m 3DL files on disk, where m is between:

- **10 and 10000** Build session log files; default $m = 100$ files
- **5 and 10000** Manual Ops session log files; default $m = 5$ files

When the number of session log files on disk equals the limit m , the oldest (based on time stamp) is deleted when a new file is added.

Total 3DL file size Keeps up to n MB of session log files on disk, where n is between:

- **500 MB and 1000000 MB (1000 GB)** Build session log files; default $n = 1000$ MB (1 GB).
- **500 MB and 1000000 MB (1000 GB)** Manual Ops session log files; default $n = 500$ MB.

The screenshot shows the 'Preference - Real Monitor' dialog box with the 'DiskSpace Manage' tab selected. The 'General' tab is also visible. The 'Keep at least' field is set to 50 MB free disk space. The 'Disk Space Management for Build Session' section has three rows: 'Number of 3DL files' (radio buttons for 'has no limits' and 'can not exceed', with 'can not exceed' selected and a value of 100), 'Total 3DL file size' (radio buttons for 'has no limits' and 'can not exceed', with 'can not exceed' selected and a value of 1000 MB), and '3DL file life age' (radio buttons for 'has no limits' and 'can not exceed', with 'can not exceed' selected and a value of 30 Days). The 'Disk Space Management for Manual Ops Session' section has three rows: 'Number of 3DL files' (radio buttons for 'has no limits' and 'can not exceed', with 'can not exceed' selected and a value of 5), 'Total 3DL file size' (radio buttons for 'has no limits' and 'can not exceed', with 'can not exceed' selected and a value of 500 MB), and '3DL file life age' (radio buttons for 'has no limits' and 'can not exceed', with 'can not exceed' selected and a value of 10 Days).



When the amount of disk space used by session log files exceeds the n MB limit, the oldest file(s) (based on time stamp) are deleted until disk space used drops below n MB.

3DL file life age Keeps up to d Days of 3DL files on disk, where d is between:

- **10** and **10000** Build session log files; default $m = 100$ files
- **5** and **10000** Manual Ops session log files; default $m = 5$ files


When the number of days exceeds the limit d , any files with a time stamp older than d Days are deleted.

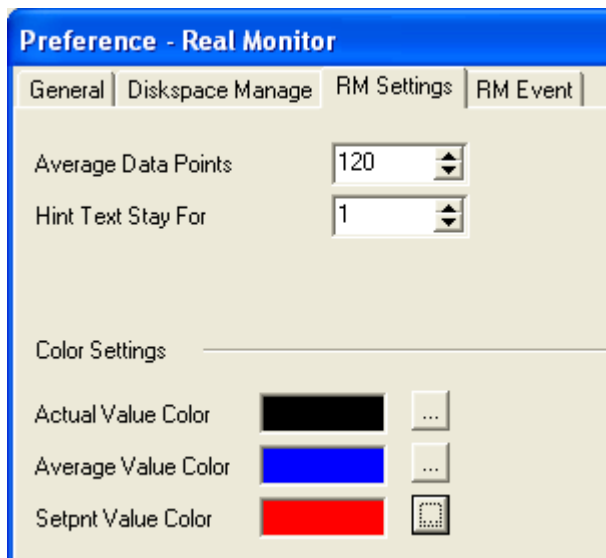
RM Settings Preferences Tab

Use this tab to set the following:

Average Data Points The default number of data points over which RealMonitor calculates the moving average plotted on parameter graphs. (See “Average Over [number of data points]” on page 38.)

Hint text stay for The number of seconds hint text remains visible when you pointer hovers a RealMonitor toolbar button.

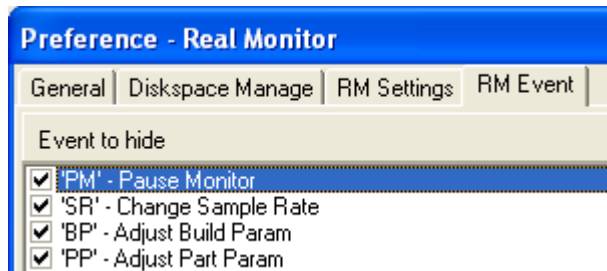
Color Settings Lets you set different colors for the **Actual Value**, **Average Value**, and **Setpoint** curves in RealMonitor parameter graphs. Click the  button to choose a color.





RM Events Preferences Tab

Use this tab to select the **Events** you want RealMonitor to show. The events you select are highlighted on RealMonitor's parameter graphs with vertical lines and two-letter abbreviations. For event descriptions, see **"Events"** on page 39.



Creating a Session Log File Manually

Use RealMonitor's **W3DL** toolbar button to manually create a session log (3DL) file for the current log session. When you click the W3DL button, RealMonitor does the following:



- Closes the current 3DL file if a session is in progress and writes the file to disk, time-stamping it with the current time.
- Opens a new (Build or Manual Ops) 3DL file (depending on which mode Sinter is in) and begins logging data in this new 3DL file.



Chapter 5

LogManager

This section describes LogManager, a stand-alone Sinter application utility program that lets you view and search the contents of 3DL **Session Log Files**. You launch LogManager separate from Sinter. It runs in a window with several tabs; one for each log file Sinter generates.

➔ LogManager replaces the older RealMonitor Viewer and BrowseLog utilities. It handles all of their functions and adds some new ones.

You need a RealMonitor license to take full advantage of LogManager. You can view and search text data stored LogManager without a license. With a license, you can also view parameter data plots of RealMonitor log file data.

This section includes the following topics:

- [RealMonitor License for LogManager](#)
- [About LogManager](#)
- [Starting LogManager](#)
- [LogManager Window](#)
- [LogManager Menus](#)
- [LogManager Log Tabs](#)
- [Time-Tracking Log File Data](#)
- [Synchronizing Multiple LogManager Windows](#)
- [Time Zone Localization](#)
- [Opening Individual Log Files](#)
- [Comparing Parameters in LogManager](#)
- [Printing Plots](#)
- [RealMonitor Log Viewing Options](#)



RealMonitor License for LogManager

LogManager and **RealMonitor** are licensed applications. You only need one license—a **RealMonitor** license—to make full use of both LogManager and RealMonitor.

You can log data about your system before you install a RealMonitor license, but you must install a license before you can view data plots in LogManager and RealMonitor.

See “**RealMonitor License**” on page 31 for a complete information on the RealMonitor license for LogManager, including:

- **Installing a RealMonitor License** so you can access all functionality in LogManager
- **What a RealMonitor License Enables** in the LogManager utility
- **Replacing a RealMonitor License** if necessary

About LogManager

LogManager enables you to do the following:

- Open Build and Manual Ops **Session Log Files** (3DL files) and view their contents.
- Open and view individual Sinter error and monitoring log files, such as RealMonitor log (.rmt) files, Slicer (.tlog) files, and States log (.blog) files.

Unlike the **RealMonitor** utility, you don't need to run Sinter to start LogManager.



Starting LogManager

You can start LogManager from your Windows Start menu by choosing **Programs > SLS System > LogManager**. You can also start LogManager by double-clicking one of the following log files in Windows Explorer:

- Build or Manual Ops 3DL file in `..\dtm\3DLogs\Build` or `..\dtm\3DLogs\ManualOps`
- RealMonitor (.rmt) log file in `..\dtm\logs\RMDData`
- States log (.blog) file in `..\dtm\Logs`

Windows should launch LogManager with the selected log file loaded.

LogManager will run on your SLS system computer while Sinter and RealMonitor are running—or not. Or, you can run LogManager on a stand-alone computer separate from the SLS system.

Running Multiple Instances of LogManager

LogManager opens **Session Log Files** (“3DL files”) one at a time, but you can run multiple “instances” of LogManager (i.e., “open several LogManager windows”) on a single computer. This is useful if you want to:

- View several 3DL files at once
- View one 3DL file several different ways

In addition, LogManager lets you “synchronize” multiple instances of LogManager to make it easier for you to compare data values that were logged at the same time and date. See **“LogManager Log Tabs” on page 57** for further information.



LogManager Window

After you start LogManager, a single window opens (Figure 17 below). If you open a 3DL session log file (using **File > Open**), several “log tab” buttons appear along the top of the window. Each tab button corresponds to an individual log file stored in the 3DL session log file you opened. (If you open an individual log file instead of a 3DL file, only one log tab button appears.)

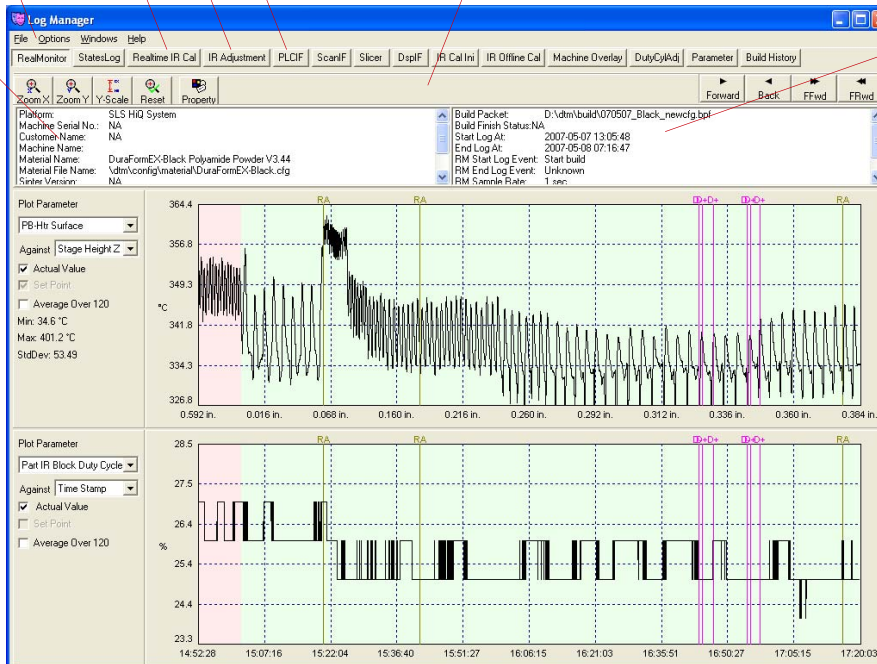
Log Tab buttons

Action Bar

Menus

Summary:
Machine
information

Summary:
Build
information



Main
Display

Figure 17. LogManager window (showing RealMonitor tab view for RealMonitor log (.rmt) file)



LogManager Window Elements

Each LogManager window element shown in [Figure 17](#) is described in this section.

Log Tab Buttons

Use Log Tab buttons to view all available data in the currently loaded individual log file or 3DL session log file. When you open a log file in LogManager, you only see Log Tab buttons corresponding to the data in that log file.

3DL session log files typically have more Log Tab buttons than individual log files. However, Manual Ops 3DL files have fewer Log Tab buttons than Build 3DL files, because Manual Ops 3DL files do not contain RealMonitor data.

See [“LogManager Log Tabs” on page 57](#) for further information.

Menus

See [“LogManager Menus” on page 55](#).

Action Bar Buttons

The Action Bar buttons operate on the data your currently viewing in the [Main Display](#). For example, buttons on the RealMonitor tab’s Action Bar enable you to zoom and scale parameter data plots. Action Bar buttons on other Log Tabs enable you to manipulate your view of text data; for example, Search, Collapse, and Expand text data entries.

See [“LogManager Log Tabs” on page 57](#) for descriptions of Action Bar buttons in the various Log Tabs.

Main Display

This is where the actual file content is displayed. There are various Main Display formats in LogManager. The one you see depends on the type and content of the file you are viewing.

The following describes the different types of Main Displays you see when viewing different types of files in LogManager:



- When viewing RealMonitor Log (.rmt) file data, you see data plots in the Main Display on the RealMonitor tab.
- When viewing States Log (.blog) file data—or data from other log (.tlog) files containing ISO-formatted time-stamped entries—the Main Display shows clickable time-stamped data item entry lists along with the contents of the selected entry. You can select, browse, and search through time stamped entries in these files. This Main Display format is used on the following Log Tabs: StatesLog, Realtime IR Cal, IR Adjustment, PLCIF, ScanIF, Slicer, DutyCylAdj, and BDS. (See [Figure 18.](#), “StatesLog tab for States Log (.blog) file,” on page 52 for an example of the StatesLog Main Display.)
 - ⇒ ISO (International Standards Organization) time stamp format is
YYYY-MM-DD_HHMMSS —> Message.
- The Main Displays for other types of files you can view in LogManger, such as .ini files and machine and build data files, are either tabular, or simple text listings. These Main Display formats are found on the following Log Tabs: IR Cal Ini, IR Offline Cal, Machine Overlay, and Build History.



StatesLog tab selected

Expand/Collapse buttons
(view more/less in Summary)

Search
button

Summary
(data for
selected
entry on
the left)

Main
Display

Currently selected entry
(data displayed in Summary on the right)

Item #	Time Stamp
7081	2007-05-07 15:20:09
7082	2007-05-07 15:20:10
7083	2007-05-07 15:20:11
7084	2007-05-07 15:20:12
7085	2007-05-07 15:20:13
7086	2007-05-07 15:20:14
7087	2007-05-07 15:20:15
7088	2007-05-07 15:20:16
7089	2007-05-07 15:20:17
7090	2007-05-07 15:20:18

2007-05-07 15:20:15

- Inbound-> ADD_POWDER_LAYER_NOT_REACHED_P
- Inbound-> ALP_TO_PST_STATE_I, Status = 0000 0000 0000 0010
- Inbound-> CHAMBER_TEMP_P, 3552
- Inbound-> PART_BED_TEMP_P, 1852
- Inbound-> CHAMBER_TEMP_P, 3558
- Inbound-> PART_BED_TEMP_P, 1860

Figure 18. StatesLog tab for States Log (.blog) file



Summary Windows – (RealMonitor Tab Only)

Two Summary windows at the top of the RealMonitor tab Main Display list identifying information for the machine and build that generated the log file you are viewing.

Summary: Machine information

- **Platform Type** – the SLS system model on which this data was logged:
 - Sinterstation HiQ or HiQ +HS
 - Vanguard or Vanguard HS, or
 - Sinterstation 2500^{plus}
- **Machine Name** – the Machine Name you entered on the **General Preferences Tab** in **RealMonitor**.
- **Machine Serial Number** – the (read-only) Machine Serial Number shown on the **General Preferences Tab** in **RealMonitor**. (The serial number is set by 3D Systems.)
- **Customer Name** – the Company Name you entered on the **General Preferences Tab** in **RealMonitor**.
- **Material Name** – the default material selected when this log file was generated. (This value is in the material configuration file, *material_name.cfg*.)
- **Material File Name** – the material configuration file name, *material_name.cfg*, for the default material selected when this log file was generated.
- **Sinter Version** – the Sinter application software version that generated the log file you are viewing.
- **Build Setup Version** – the Build Setup application software version that created the build packet “Build Packet Name” above. If you are viewing a Manual Ops session 3DL file, the Build Setup Version is always “NA” (Not Applicable).



- **Slicer Time Stamp** – the time stamp for the start of the Slicer software module as recorded in the log file.

Summary: Build information

- **Build Packet Name** – the name of the build packet that generated this log file. If you are viewing a Manual Ops session 3DL file, the Build Packet Name is always “Manual Ops.”
- **Build Finish Status** – build termination status; “Normal” if the build finished normally; “Abnormal” if the build started, but did not finish normally.)
- **Start Log At** – the time RealMonitor started logging to this log file.
- **End Log At** – the time RealMonitor stopped logging to this log file.
- **RM Start Log Event** – the event that triggered the start of RealMonitor logging. (See RealMonitor build “[Events](#)” on page 39.)
- **RM End Log Event** – the event that triggered the end of RealMonitor logging. (See RealMonitor build “[Events](#)” on page 39.)
- **RM Sample Rate** – the number of seconds between consecutive RealMonitor log entries (or “samples”) in this log file.
- **RM Config File** – the name of the active RealMonitor configuration file when this log file was generated.



LogManager Menus

Commands on each LogManager menu are described below.

File Menu

- **Open ...** opens 3DL files, or individual log files such as Real Monitor file, States Log File etc.
- **Recent Files ...** lists the filenames and time stamps of the 10 most recently viewed 3DL file(s) in this instance of LogManager.
- **Export** – saves the log file data you are currently viewing to tab-delimited ASCII text file (requires **RealMonitor License**).
- **Report** – generates a custom build report after a build is complete. The available options include build parameters, part parameters and build times.
- **Print** – prints the data in the Log Tab Main Display you are currently viewing. If you are viewing parameter graphs on the RealMonitor tab's Main Display, you can print both graphs to a printer or a bitmap file.
- **Preference** – opens LogManager's Preference window. The settings in this window are a subset of those in **RealMonitor**'s Preference window. See **“Setting Preferences” on page 42 in Chapter 4, “RealMonitor”** for preference setting descriptions and instructions.
- **Exit** – exits the currently selected LogManager instance. (All other running instances remain open.)

Options Menu

The time tracking and synchronization commands on this menu help you compare data in individual log files within one 3DL session and across multiple 3DL sessions.

- **Time Tracking** – automatically selects the same entry time stamp in every Log Tab, based on your current entry selection. See **“LogManager Log Tabs” on page 57**.



- **Time Synchronization** – automatically sets the same data view settings in all open, running LogManager windows, based on the data view settings in the currently selected LogManager window. This works whether you’re viewing the same 3DL file in multiple windows, or different 3DL files in multiple windows. See “[Synchronizing Multiple LogManager Windows](#)” on page 70.

Windows Menu

These window resizing commands act on the currently selected instance of LogManager:

- **Default Size** – set the LogManger window to its default size.
- **Maximize** – enlarges the LogManager window to fill the display area.
- **Minimize** – shrinks the LogManager window to a title bar at the bottom of the display.

Help Menu

- **About ...** opens a window showing the LogManager software version number along with 3D Systems contact information.
- **Help ...** displays the online documentation for LogManager.
- **License** – displays the license password entry window for a [RealMonitor License](#).



LogManager Log Tabs

This section describes the views of log data you see under each Log Tab button in LogManager. The Action Bar and Main Display, which vary from one Log Tab to the next, are described separately for each Log Tab in LogManager.

RealMonitor

RealMonitor Tab

The RealMonitor tab contains an Action Bar with buttons for manipulating the appearance of the two parameter graphs in its Main Display. It also contains Plot Parameter controls for changing the plotting options on the two graphs.

The RealMonitor tab displays the time-stamped contents of a RealMonitor log file; file name format **MMDDYYbuildname.rmt**. RealMonitor log files contain the values of all parameters RealMonitor acquires between the start and end of logging during a build.

RealMonitor Tab Action Bar Buttons

Use RealMonitor tab Action Bar buttons to adjust the parameter plot zoom, view **Display Build Properties**, and scroll the parameter graphs forward and back.

- **Zoom X** – click this button, then click inside a parameter graph to interactively change the x-axis zoom factor for both the upper and lower graphs. (See **“Zooming in X and Y”** on page 40 for further information.)
- **Zoom Y** – click this button, then click inside a parameter graph to interactively change that graph’s y-axis zoom factor. (See **“Zooming in X and Y”** on page 40 for further information.)
- **Y-Scale** – click this button to open the **Y-Scale** dialog box (see **Figure 16** on page 41) and enter the upper and lower y-axis ranges for the two currently displayed parameter graphs. (See **“Zooming in X and Y”** on page 40 for further information.)
- **Reset** – click to return to the original zoom settings.





- **Zoom Factors** – shows the current zoom factors for the x- and y axes on both parameter graphs. (See “**Zooming in X and Y**” on [page 40](#) for further information.)

Zoom Factors		
X: 1.5	Y1: 1.0	Y2: 1.0

RealMonitor Tab Main Display

The RealMonitor tab Main Display (see [Figure 19 on page 59](#)) contains two Summary windows; one for Machine information (on the left) and one for Build information (on the right). (See “[Summary Windows – \(RealMonitor Tab Only\)](#)” on [page 53](#) for further information.)

Below the Summary windows in the RealMonitor tab Main Display are two parameter graphs with Plot Parameter controls for setting plotting options.

- ⇒ The parameter graph and plotting options for the graphs in LogManager’s RealMonitor tab Main Display are the same as those for the parameter graphs in the RealMonitor utility. See “[Parameter Graphs and Plotting Options](#)” on [page 37](#) in [Chapter 4, “RealMonitor”](#) for details and instructions.

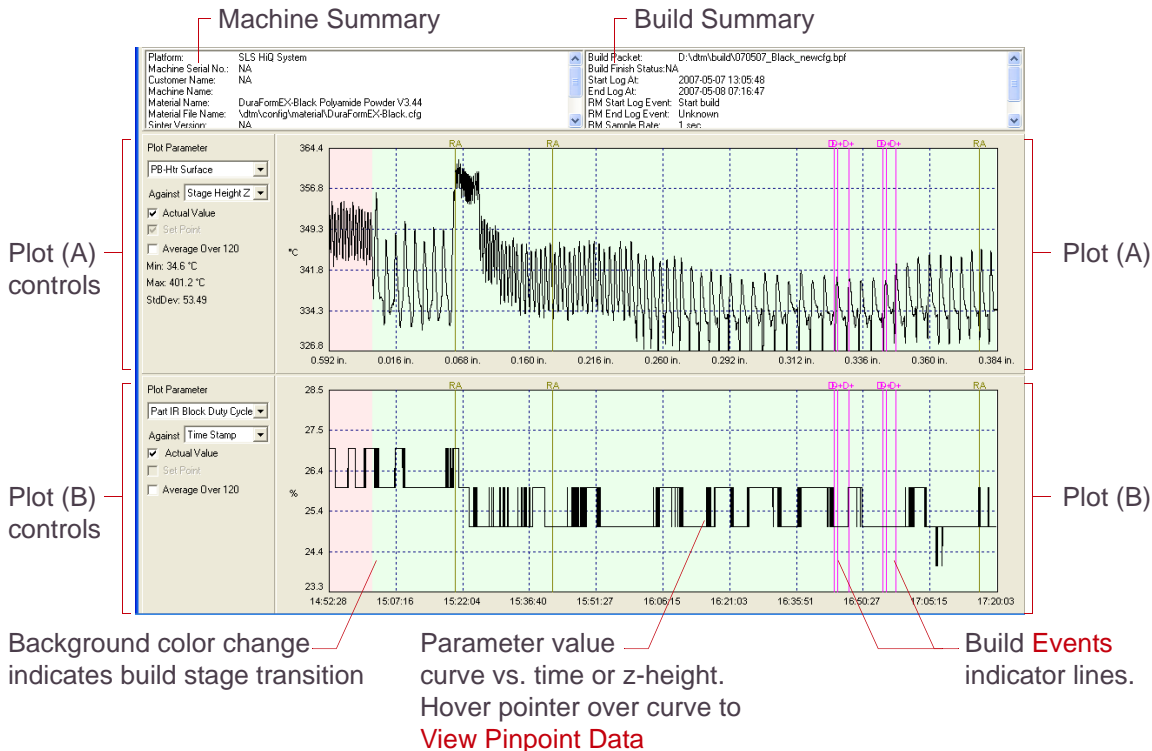


Figure 19. RealMonitor tab Main Display in LogManager



StatesLog

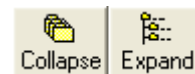
StatesLog (.blog) File Tab

The StatesLog tab contains an Action Bar with buttons for manipulating the time-stamped states log data entries listed in its Main Display window(s).

The StatesLog tab displays the contents of the log file, **States.blog**, which contains all Build, Part, and Scale & Offset parameter values.

StatesLog Tab Action Bar

- **Search** – opens **Search States Log** window. (See [Figure 20 on page 61](#) below.) Use this window to find and select items to search for (“Search Items”) in the states log file. The search starts when you click OK to close the Search States Log window. The search results are shown in the StatesLog tab Main Display.
- **Next/Previous** – search down (forward)/up (backward) for the next occurrence of the **Search Items** currently set in the Search States Log window (shown in [Figure 20 on page 61](#) below).
- **Collapse/Expand** – minimize (Collapse) or maximize (Expand) the amount of text data shown in the right Main Display pane for the currently selected states log Item/Time Stamp.





Enter search string to search for items in list below you want to add to the **Search Items**

Select a **Search Item**, then click **Delete** to remove it from the **Search Items** list.

Select an item in this list, then click **Add** to add it to the **Search Items** list on the right.

List of **Search Items**

Click **OK** to start search

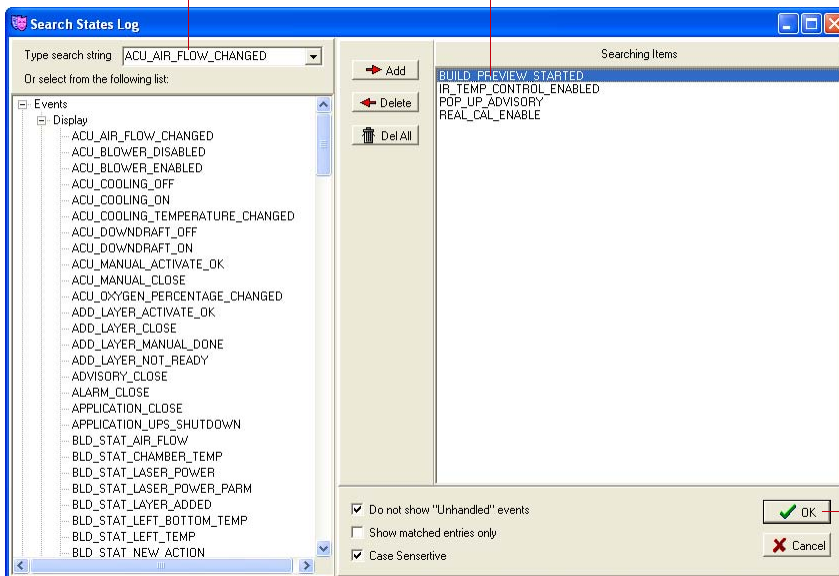
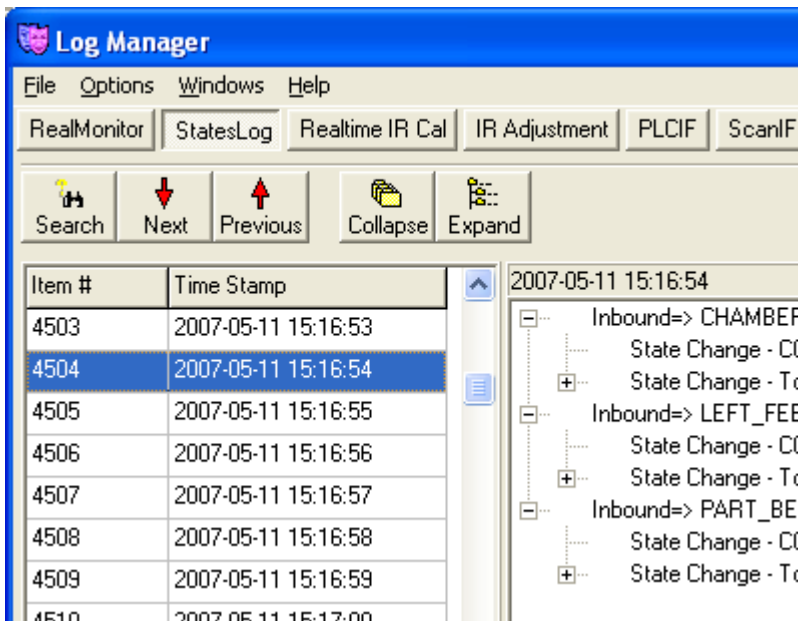


Figure 20. Search States Log window in StatesLog tab

StatesLog Tab Main Display

Description Main Display; (Short List) shows list of log file entries by Item # and time stamp on the left; right pane shows contents of single currently selected log file entry data. You can Search, Expand, and Collapse this. (List All) shows table of log data with Item #, Time Stamp, and data columns.



Select an **Item/ Time Stamp** in list on the left to display Item's data contents in the right.

Contains either:
(a.) The data contents for the currently selected **Item/ Time Stamp** on the left, or,
(b.) The data contents for the **Search Items** found.
(Expanded view shown.)

Figure 21. StatesLog tab Main Display



Time-Stamped Log (.tlog) File Tabs

Realtime IR Cal | IR Adjustment | PLCIF | ScanIF | Slicer | DutyCylAdj | BDS

Time-stamped log (.tlog) tabs in LogManager all have the same Action Bar buttons and Main Display. The Action Bar buttons change your view of the time-stamped text log data listed in the Main Display. A Search button is also included.

Time-stamped Log Tabs include:

.tlog File Tab	Displays Log File	Log File Contains
Realtime IR Cal	RealTimeCal.log	Data for every Real Time Calibration event. For each calibration attempt, it logs whether calibration was successful or failed—and how much adjustment, if any, was applied—and why.
IR Adjustment	OfflineCal.log	For offline calibration only: Records how much adjustment was applied during any Offline Calibration—and why the adjustment was applied
PLCIF	Plcif.tlog	PLC interface program (Plcif.exe) runtime errors
ScanIF	ScanIF.tlog	Scanner interface program (Scanif.exe) runtime errors
Slicer	Slicer.tlog	Slicer program (Slicer.exe) runtime errors
DutyCylAdj		
BDS	Bds.tlog	All commands sent to the beam delivery system by the scanner interface software

Time-Stamped Log (.tlog) Tabs Action Bar

- **Short List** – displays the time-stamped log file data in a left and right pane, similar to the StatesLog Main Display shown in [Figure 21 on page 62](#). You select an **Item/Time Stamp** on the left to display its contents on the right.
- **List All** – displays the time-stamped log file data in a scrollable table in a single pane.





- **Search** – lets you search for a text string in the log file. Enter the text string in the search text box, then click the **Search** button. All Items containing the search string appear in the Main Display. Click the drop-down arrow on the Search button to change the search direction and turn case-sensitivity on or off.





Time-Stamped Log Tabs Main Display

The Main Display you see on time-stamped log tabs depends on whether you have the **Short List** or **List All** action bar button selected.

Short List Main Display

The screenshot shows the Log Manager application window with the 'Short List' button selected. The main display area shows a table with two columns: 'Item #' and 'Time Stamp'. The first row is highlighted.

Item #	Time Stamp
1	2007-05-11 14:02:48
2	2007-05-11 14:08:13
3	2007-05-11 14:08:53
4	2007-05-11 14:12:53
5	2007-05-11 14:13:33
6	2007-05-11 14:14:13
7	2007-05-11 14:14:53
8	2007-05-11 14:15:23

Details for Item 1:
 Fri 05/11/07 14:02:48
 Build Packet Name: D:\adm\build\0
 IRCall File Name=D:\adm\config\ma
 Material=DuraFormEX-Black.cfgIRC
 Material=DuraFormEX-Black.cfgRee
 Blackbody Set Temperature = 197.0
 Blackbody Set Temperature = 197.0

List All Main Display

The screenshot shows the Log Manager application window with the 'List All' button selected. The main display area shows a table with three columns: 'Item #', 'Time Stamp', and a detailed data field. The first row is highlighted.

Item #	Time Stamp	
85	2007-05-11 15:17:36	z = 0.356 BB Actual Temp (RTD Reading) = 197.00 BB Temp Reading Part = 196.5 Left = 197 BB Temp Location Part = 50.4 Left = 81.2 Part IR Hist = 196.7 196.7 196.5 Left IR Hist = 197.0 197.0 197.0 Right IR Hist = 196.9 196.9 196.7
86	2007-05-11 15:18:25	z = 0.360 BB Actual Temp (RTD Reading) = 196.96 BB Temp Reading Part = 196.7 Left = 197 BB Temp Location Part = 49.7 Left = 17.6 Part IR Hist = 196.7 196.5 196.7 Left IR Hist = 197.0 197.0 197.2 Right IR Hist = 196.9 196.7 196.7
87	2007-05-11 15:19:15	z = 0.364 BB Actual Temp (RTD Reading) = 196.99 BB Temp Reading Part = 196.7 Left = 197 BB Temp Location Part = 49.5 Left = 81.7

Figure 22. Time-Stamped Log Tabs Main Display



Machine Status File Tabs

IR Cal Ini | IR Offline Cal | Machine Overlay

Machine Status file tabs in LogManager all have the same Action Bar buttons and Main Display. The Action Bar buttons change your view of the text data listed in the Main Display. A text Search tool is also included.

Machine Status file tabs include:

.tLog File Tab	Displays Log File	Log File Contains
IR Cal Ini	IRCal.ini	Current IR sensor scale values from latest IR calibration
IR Offline Cal	IROfflineCal.log	Manual offline IR calibration results
Machine Overlay	machine.ovrl	Machine overlay file listing

Machine Status File Tabs Action Bar

- **Sel All** – Select all text in file; click again to deselect all.



- **Search** – Enter search text in the box; click Search to find all occurrences of the search text in the file. Search results are shown in the Main Display.





Machine Status File Tabs Main Display

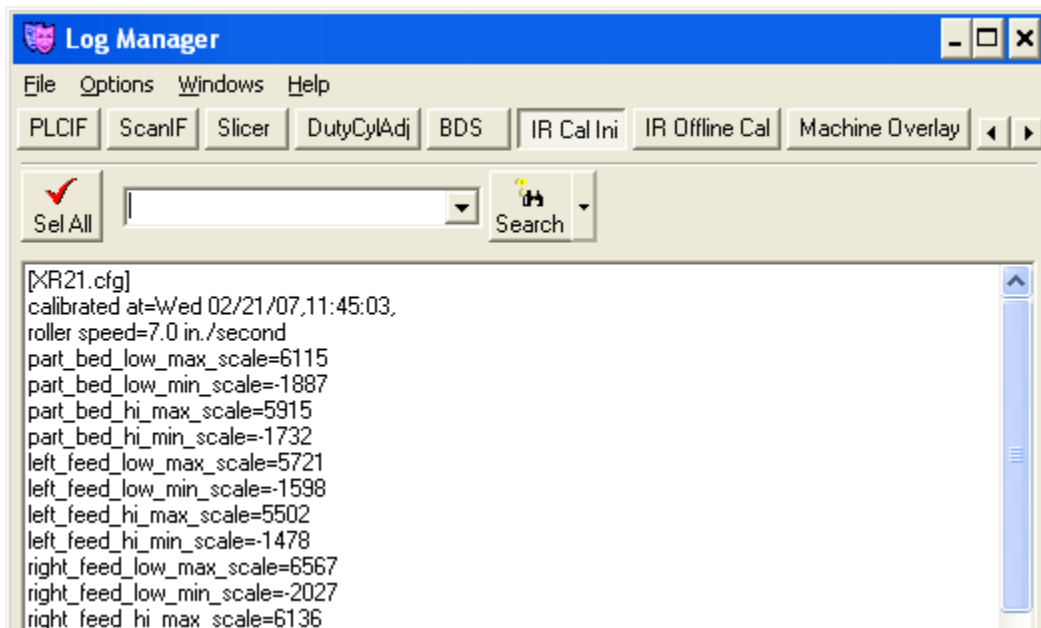


Figure 23. Machine Status File Tabs Main Display



Build History

Build History File Tab

Unlike other Log Tabs in LogManager, the Build History tab has no Action Bar; only a table of build history data in the Main Display (Figure 24 on page 69). Each row in the table contains the build history data for one build. The top row always shows the history data for the most recent build.

The columns in the build history table list the following data for each build:

End Build Time	Time-stamp for the Build End event
Build Height	Total height of the build; number of layers X layer thickness
Part Temp-0.25"	Part bed temperature recorded by the Part IR sensor 0.25 inches into the build
Left Temp-0.25"	Left feed temperature recorded by the left feed IR sensor 0.25 inches into the build
Right Temp-0.25"	Right feed temperature recorded by the right feed IR sensor 0.25 inches into the build
Part Temp-End	Part bed temperature recorded by the Part IR sensor at the end of the build
Left Temp-End	Left feed temperature recorded by the left feed IR sensor at the end of the build
Right Temp-End	Right feed temperature recorded by the right feed IR sensor at the end of the build
Material	Default material selected in Sinter when this build was run



Build History Tab Main Display

End of Build time-stamp

Part bed and feed temperatures

Default material

One row of data per build

End Build Time	Build Height	Part Temp-0.25"	Left Temp-0.25"	Right Temp-0.25"	Part Temp-End"	Left Temp-End"	Right Temp-End"	Material
7/13/2006 2:10:02 PM	5.444 in	175.0	138.0	138.0	175.0	138.0	138.0	DuraForm Polyamide
7/16/2006 4:59:55 AM	8.652 in	175.0	138.0	138.0	175.0	138.0	138.0	DuraForm Polyamide
7/18/2006 6:19:04 AM	3.401 in	174.0	138.0	138.0	174.0	138.0	138.0	DuraForm Polyamide
7/20/2006 7:04:53 AM	12.545 in	174.0	140.0	140.0	174.0	136.0	136.0	DuraForm Polyamide
7/22/2006 6:36:13 AM	11.521 in	175.0	138.0	138.0	175.0	138.0	138.0	Glass Filled DuraForr
7/24/2006 4:14:10 PM	8.375 in	187.0	135.0	135.0	187.0	135.0	135.0	DuraFormEX Polyam
7/24/2006 5:08:03 PM	8.375 in	187.0	135.0	135.0	187.0	135.0	135.0	DuraFormEX Polyam
7/25/2006 10:13:02 PM	8.461 in	187.0	135.0	135.0	187.0	135.0	135.0	DuraFormEX Polyam
7/27/2006 1:06:03 AM	2.403 in	187.0	135.0	135.0	187.0	135.0	135.0	DuraFormEX Polyam
7/27/2006 4:08:51 PM	5.617 in	175.0	140.0	140.0	175.0	140.0	140.0	Glass Filled DuraForr
7/27/2006 5:00:13 PM	5.617 in	175.0	140.0	140.0	175.0	140.0	140.0	Glass Filled DuraForr
7/27/2006 7:02:02 PM	5.617 in	175.0	140.0	140.0	175.0	140.0	140.0	Glass Filled DuraForr
7/28/2006 4:59:34 AM	3.277 in	187.0	135.0	135.0	187.0	135.0	135.0	DuraFormEX Polyam
7/31/2006 12:41:40 AM	15.884 in	175.0	140.0	140.0	175.0	140.0	140.0	Glass Filled DuraForr
8/8/2006 6:46:53 AM	8.938 in	177.0	140.0	140.0	177.0	140.0	140.0	Aluminum Filled Dura
8/12/2006 5:22:07 PM	7.712 in	175.0	138.0	138.0	175.0	138.0	138.0	DuraForm Polyamide
8/17/2006 5:43:11 PM	7.712 in	175.0	138.0	138.0	175.0	138.0	138.0	DuraForm Polyamide
8/18/2006 7:06:10 PM	7.712 in	175.0	138.0	138.0	175.0	136.0	136.0	DuraForm Polyamide
8/25/2006 6:39:28 PM	6.730 in	173.0	140.0	140.0	173.0	140.0	140.0	DuraForm Polyamide
8/26/2006 2:37:22 AM	8.386 in	173.0	140.0	140.0	173.0	140.0	140.0	DuraForm Polyamide
8/26/2006 3:00:13 PM	3.103 in	175.0	138.0	138.0	175.0	138.0	138.0	DuraForm Polyamide

Figure 24. Build History File Tab Main Display



Time-Tracking Log File Data

Select **Options Menu** > **Time Tracking** to automatically select the same entry time stamp in every Log Tab. This helps you compare data in different log files that was recorded at the same time.

To see how this works, try the following with **Time Tracking** selected:

1. Click on a time-stamped log file entry in the current Log Tab.
2. Click on a different Log Tab button; one for a log file that has time-stamped entries.
3. Note that the same entry time stamp is selected in the new Log Tab.

Synchronizing Multiple LogManager Windows

Select **Options Menu** > **Time Synchronization** to automatically sets the same data view settings in all open, running LogManager windows, based on the data view settings in the currently selected LogManager window.

Time Synchronization helps you compare data, whether you're viewing the same 3DL file in multiple windows, or different 3DL files in multiple windows.

⇒ You must have log files loaded in two or more LogManager windows to use this feature.

When you select **Options** > **Time Synchronization**, LogManager matches the views of the data items below in all open LogManager windows with your view of these items in the currently selected (“focused”) LogManager window.

- **View data** – The specific Log Tab currently in view, such as the RealMonitor tab or StatesLog tab.
- **X Scale** - The x scale (zoom factor) of the data plots on the RealMonitor tab
- **Y Scale** - The y scale (zoom factor) of the data plots on the RealMonitor tab.
- **Currently focused time** – If you have multiple LogManager windows open and to view:



- **The same 3DL file** – the focused time stamp in the focused LogManager window sets the focused time stamp in all other open LogManager windows viewing that same 3DL file.
- **Multiple 3DL files** – the 3DL files in all open LogManager windows are set to the same time into the build as the 3DL file in the focused LogManager window.

If you select a different LogManager window, then select **Options > Time Synchronization** in *that* window, it now becomes the focused window that the other open windows track.



Time Zone Localization

The date and time stamps in the log file can be recorded at different time zones. The date and time stamps in the file name will always be in the time zone which has been recorded. However, we will have an option to display the date and time in either the local time or original time within the LogManager program. This option should be set in the preference section and should be persistent.

Opening Individual Log Files

As we mentioned before the Log Manager can open individual log files such as Real Monitor Log files, States Log Files, or other error log files. There will only be two cases you will need to open individual files:

- Open legacy log files. Those log files was created before this change can be opened as individual log file use this utility.
- Open individual log files during a log session. In this case, the 3DL file has not yet been generated. When the user chooses to open this type of log file, a copy of the log file is opened instead of the original so that the logging can continue without interruption. Therefore the file you opened will be a snapshot of the time that you opened it. Any new log data after you opened the file will not be refreshed into the display.

Comparing Parameters in LogManager

While LogManager's **RealMonitor Tab** and the **RealMonitor** utility in Sinter both display the same parameter data plots. This enables you to view and compare two machine parameters over time.

However, if you want to compare more than two parameters, you can launch additional instances of LogManager, load the same log file in each window, then select different parameters to view in each window's RealMonitor tab.



➤ See “Parameter Graphs and Plotting Options” on page 37 and “Events” on page 39 in for further information about comparing parameters on RealMonitor parameter graphs.

Printing Plots

Select **File > Print** in the LogManager window to print both two parameter graphs currently displayed in the RealMonitor tab. You can print the graphs to a printer or to bitmap file.

RealMonitor Log Viewing Options in LogManager

You can use LogManager to view log files (.rmt files) generated by RealMonitor from past builds. LogManager also has other features for viewing data that are not available in RealMonitor.

Loading an Individual RealMonitor Log (.rmt) File

As an alternative to loading an entire Build session 3DL file, you can load an individual RealMonitor log (.rmt) file in LogManager if you just want to view RealMonitor parameter graphs. Use **File > Open** in LogManager open an individual RealMonitor log (.rmt) file to view. RealMonitor data files are stored in the `\dtm\logs\RMDData` folder by default.

➤ The Action Bar buttons on the RealMonitor tab remain inactive until you load a RealMonitor log file, (or a Build session 3DL file that contains a RealMonitor log file).

➤ See Figure 19., “RealMonitor tab Main Display in LogManager,” on page 59.



View Pinpoint Data

To get more specific information about a point on a data plot on the RealMonitor tab, 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.

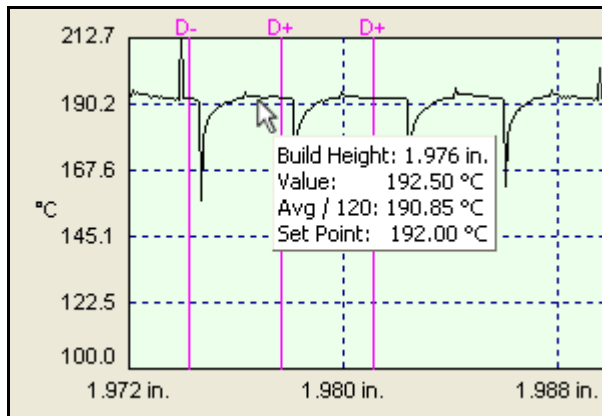


Figure 25. Hover pointer to view pinpoint data

Display Build Properties

Click the **Property** button in on the RealMonitor tab's Action Bar 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 screenshot shows a 'Properties' window with a blue title bar. The main area contains a list of properties for a 'SLS HiQ System'. Below this is a tabbed interface with four tabs: 'Build Parameters', 'Part Parameters', 'Scale & Offset', and 'Min,Max,STDEV'. The 'Build Parameters' tab is active, displaying a table of heater set points. At the bottom, there are buttons for 'Print', 'Save To File', and 'Close'.

Build Parameter Name	Warm Up Stage	Build Stage	Cool Down Stage
Part Heater Set Point	(0.000,100.0) (0.100,192.0)	192.0	(0.000,192.0) (0.090,1
Left Feed Heater Set Point	(0.000,100.0) (0.100,137.0)	137.0	(0.000,137.0) (0.090,1
Right Feed Heater Set Point	(0.000,100.0) (0.100,137.0)	137.0	(0.000,137.0) (0.090,1
Part Cylinder Heater Set Point	135.0	135.0	(0.000,135.0) (0.090,1
Piston Heater Set Point	(0.000,130.0) (0.004,150.0)	150.0	(0.000,150.0) (0.090,1

Figure 26. Properties Window

Exporting Data Files

If you have an RealMonitor license installed on the computer that LogManager is running on, you can export data from LogManager. Select **File > Export** from the LogManager menu to save data from the currently loaded log file to a text file.



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