

Using the

**KODAK PROFESSIONAL Device Calibration  
Software with the**

**KODAK CRT Printer Family**

*Part No. 6B6640*

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# 1 *Calibrating the Printer*

This section includes instructions for calibrating the family of *Kodak Professional* CRT Printers.

Kodak provides calibration applications for Windows NT and, except for the KPDM II, Macintosh systems.

See [“Installing the Calibration Software” on page 2-2](#) for installation instructions. See Section 2, [Using Additional Calibration Features](#), for details about the windows and dialog boxes for the application software and for additional procedures not performed with each calibration.

Calibration is the process for creating and maintaining a Look-Up Table (LUT) that produces the correct color balance for *all images printed on the Printer*. There is sufficient variation among printers that each printer must be calibrated separately.

Over time, there are several conditions which can contribute to calibration deviation. To prevent this potential deviation, it is recommended that you calibrate the Printer when you change paper type (paper emulsion, surface, lot number, and width) or when the calibration test target print is out of tolerance.

**IMPORTANT:** *For the CRT Printer Family calibration, the term “device” refers to a setup for a specific paper type/scale combination.*

*You can add, update, and delete devices as needed.*

Before calibrating, make sure that:

- within the *Kodak Professional* Device Calibration software, for each paper type/scale that your lab uses:
  - a device is defined (see [“Adding a Device” on page 2-10](#))
  - any needed changes to the configuration file are in place (see [“Editing the Device Configuration File” on page 2-17](#))
  - frame counts are determined (see [“Determining Frame Counts for a Device” on page 2-32](#))
- the paper path is threaded
- no other printer applications are active
- the densitometer is connected and calibrated
- the paper processor is in control
- the printer status as shown at the OCP is “Ready” (*not* “Printing”)

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NOTE: If the Printer is threaded and its status is Offline, press **Jog&Start** at the OCP to advance the paper and change the status to Ready.

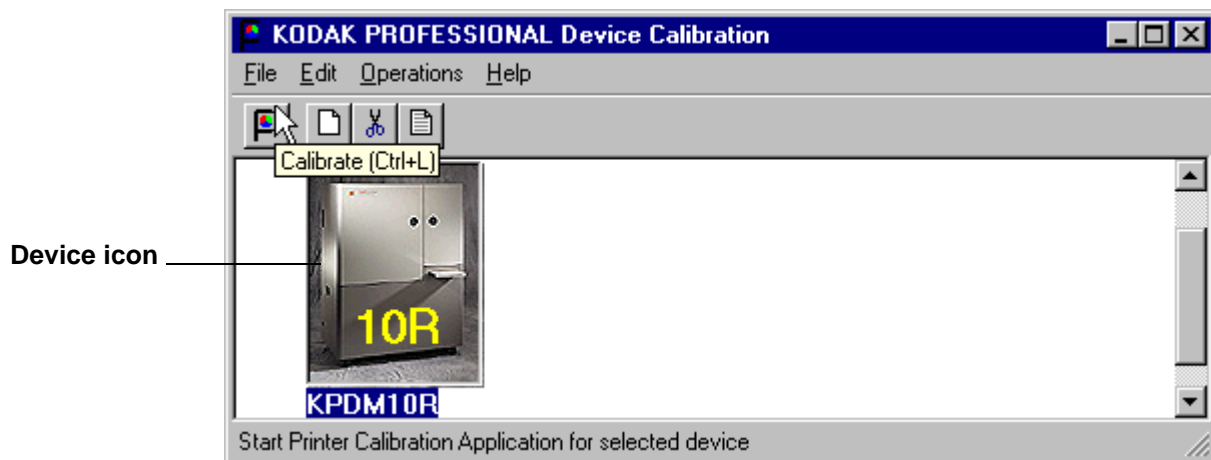
During calibration, when making a print of the test target:

- wait 15 minutes or longer after exposing a test target before processing to stabilize latent image keeping (LIK)
- read the second of the three test target prints with an X-Rite DTP36 densitometer.

## Starting the Device Calibration Software

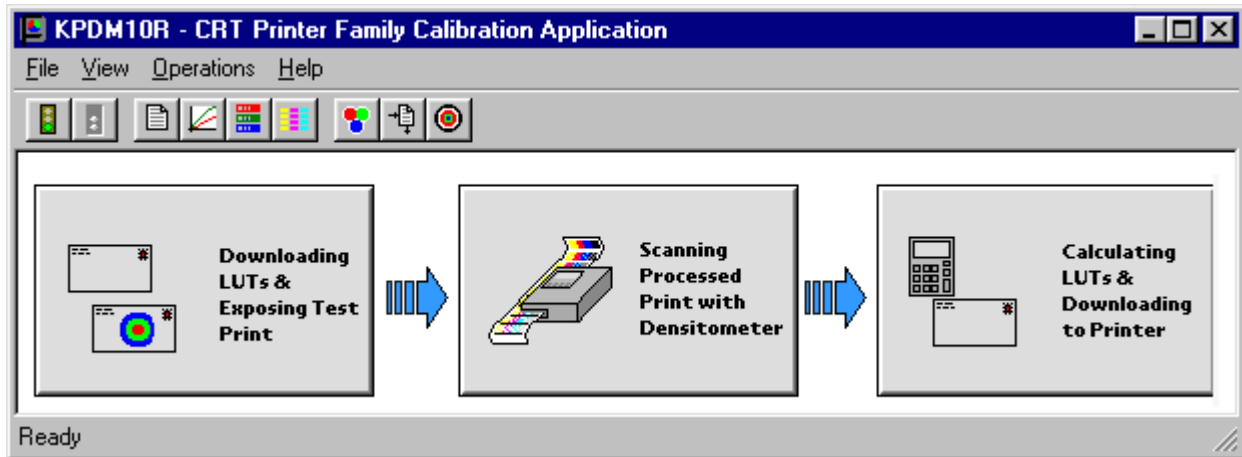
1. From the desktop of the host computer, open the KODAK PROFESSIONAL Device Calibration application.

The display shows the Device Calibration window. If no device icon is in the window or there is no icon for the device you need to calibrate, see [“Adding a Device” on page 2-10](#).



2. Select the icon for the device (printer and scale) to calibrate.
3. Click the **Calibrate** icon.

The display shows the CRT Print Family Calibration Application window.



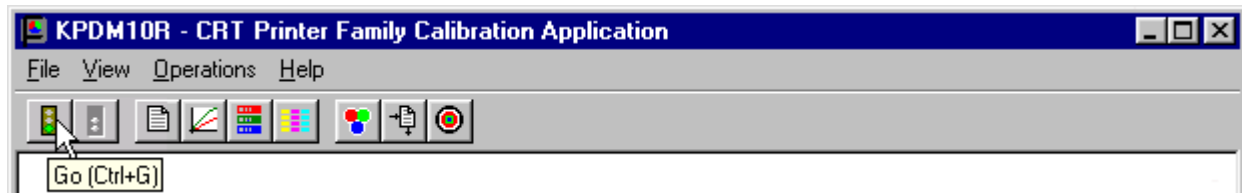
## Starting the Calibration Application and Exposing a Test Target

**IMPORTANT:** The settings in the configuration file for the selected device determine some of the actions and messages in this procedure. The configuration file is specific to your lab and its operations. For more information about the configuration file, see [“Editing the Device Configuration File” on page 2-17](#).

The instructions for the calibration procedure give options at each step. However, the software is designed so that once you select **Go** to begin, the default is highlighted so you can select the simplest option in each case. This means you can calibrate with minimum intervention or decision-making.

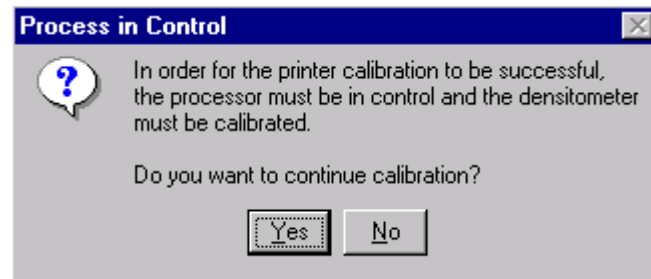
1. Click **Go** on the Calibration window.

**NOTE:** If needed, you can cancel the calibration application at any time when the Stop icon (red traffic light) lights.



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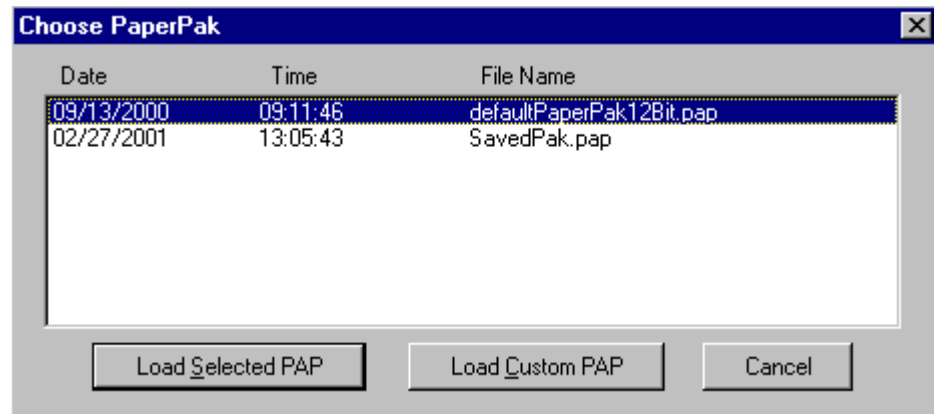
The *Downloading LUTs and Exposing Test Print* status icon highlights and (if “Ask if processor is in control?” in the configuration file is On) the display shows the Process In Control dialog box below.



***IMPORTANT:** The processor is a critical component of printer calibration; monitor it on a regular basis. Calibration can not be accurate if the processor is not in control.*

2. From the Process in Control dialog box above, click **Yes** (or **No** to exit the calibration procedure).

The display shows the Choose PaperPak dialog box.

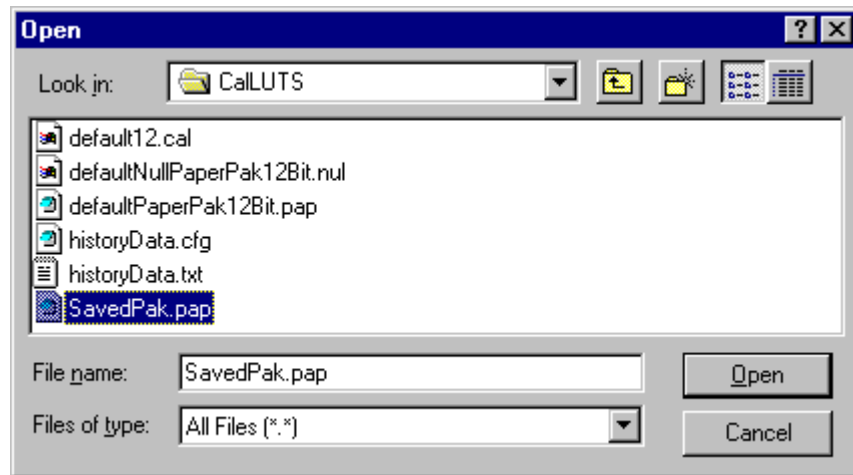




3. Either:

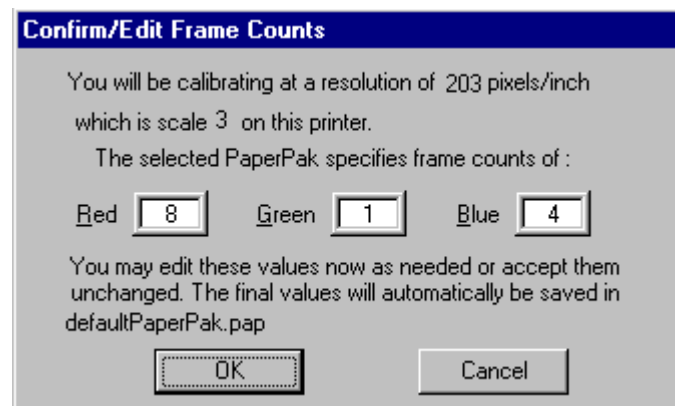
- with the selected PaperPak highlighted, click **Load Selected PAP**, or
- click **Load Custom PAP**; then browse the standard file dialog that allows PaperPaks to be imported from other areas on the hard disk or from a removable disk; select the PaperPak file you need.

The default location for PaperPaks is the **CalLUTS** folder.



(Click **Cancel** on the Choose Start PaperPak dialog box to exit.)

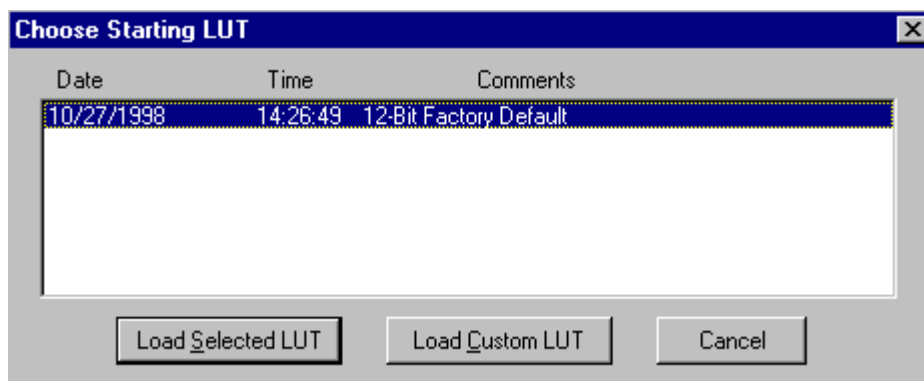
When the PaperPak has been selected, the display shows the Confirm/Edit Frame Counts dialog box.



4. Make sure the frame counts are correct, as established by your lab.
5. Click **OK**, or if needed, edit the frame counts and then click **OK**.

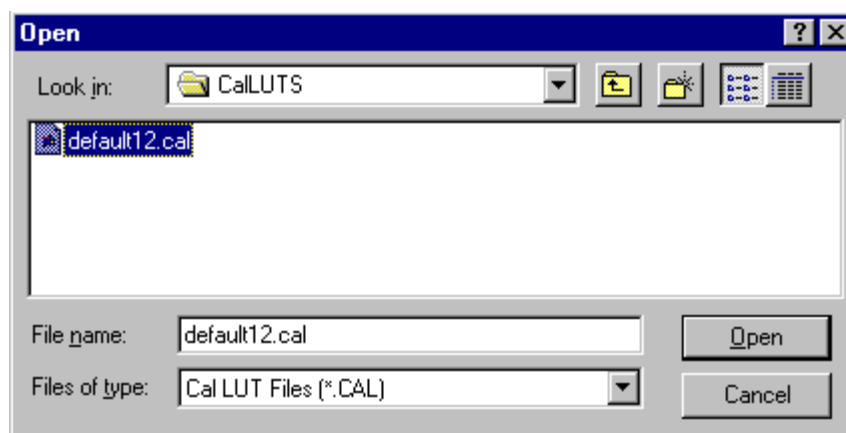
NOTE: During the initial setup process for the Printer, your lab tests and sets frame counts. See [“Determining Frame Counts for a Device” on page 2-32](#).

The display shows the Choose Starting LUT dialog box. The highlighted LUT is the most recent calibration LUT. If this is the initial calibration for the device, the 12-Bit Factory Default is highlighted.



6. Either:
  - with the starting LUT highlighted, click **Load Selected LUT**, or
  - click **Load Custom LUT**; then browse the standard file dialog that allows LUTs to be imported from other areas on the hard disk or from a removable disk; select the LUT file you need.

The default location for calibration LUTs is the **CalLUTS** folder.



(Click **Cancel** on the Choose LUT dialog box to exit.)

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After the LUT file has been selected, "The LUT was sent successfully" shows on the status bar. With the PaperPak and the LUT, the Printer can expose a print of the test target.

NOTE: The factory default for the number of copies printed is 3.

When the prints have been exposed, the *Scanning Processed Print with Densitometer* icon highlights.

7. At the OCP, perform a Batch Cut.
8. Wait for latent image keeping (LIK) to stabilize before processing. The minimum suggested time is fifteen minutes.
9. Send the test target prints to be processed.

Continue with ["Obtaining Densities."](#)

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## Obtaining Densities

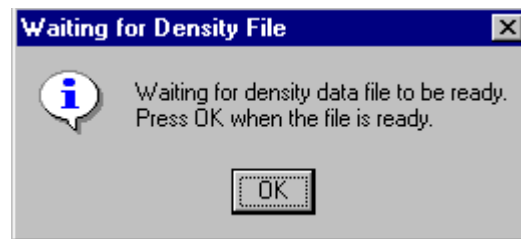
There are three methods for obtaining densities:

- from a file
- from a densitometer
- from a centralized densitometer (NT only and only if the Centralized Densitometer application is installed on your network)

The contents of the device configuration file determine which method you use (see [“Editing the Device Configuration File” on page 2-17](#)).

### Obtaining Densities from a File

*If the configuration settings include obtaining the density data from a file, the display shows the Waiting for Density File dialog box.*



If the configuration settings *do not include obtaining the density data from a file*, go to either:

- [“Using the Densitometer to Read Densities” on page 1-9](#) or
- [“Obtaining Densities from the Centralized Densitometer \(NT Only\)” on page 1-11](#)

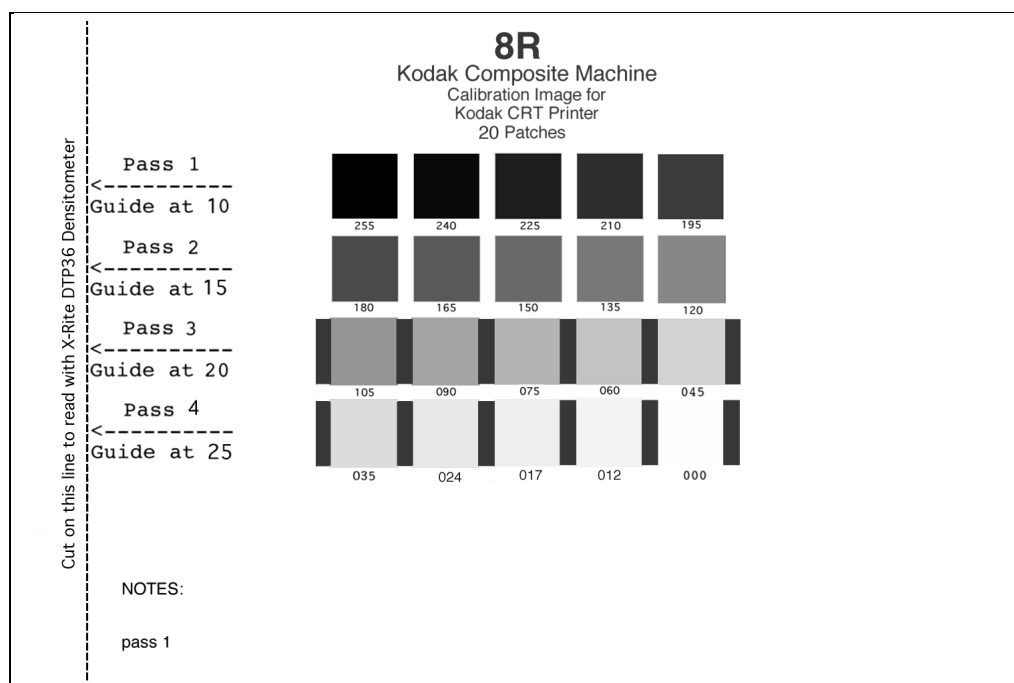
NOTE: To create a density file, see [“Creating a Density File for Use with Calibration” on page 2-55](#).

1. Click **OK** to continue with the calibration process.
2. Go to [“Completing the Calibration Procedure” on page 1-12](#).

## Using the Densitometer to Read Densities

For the most accurate reading, cut the second of the three test target prints and read its densities with an X-Rite DTP36 densitometer, as specified in this procedure.

1. Trim the processed test target print on the dashed line and along the top so the print passes through the densitometer at the correct locations.
2. Align the pass 1 arrowhead on the print (shown below) with the vertical groove on the front of the densitometer.
3. Put the print firmly in the densitometer. Keep a slight pressure on the print as it moves through the densitometer until you feel a resistance and the display shows "Reading."



A short beep from the densitometer, followed by "Pass 1 of 4 OK", indicates a successful read. "Read EKT-CRT PA2" is displayed next, indicating the densitometer is waiting for the next pass.

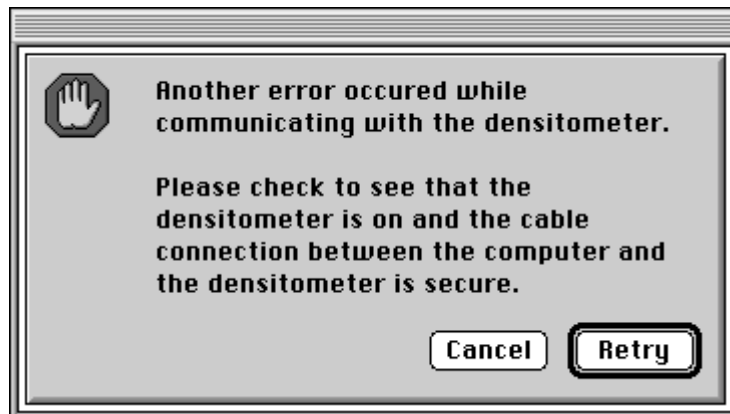
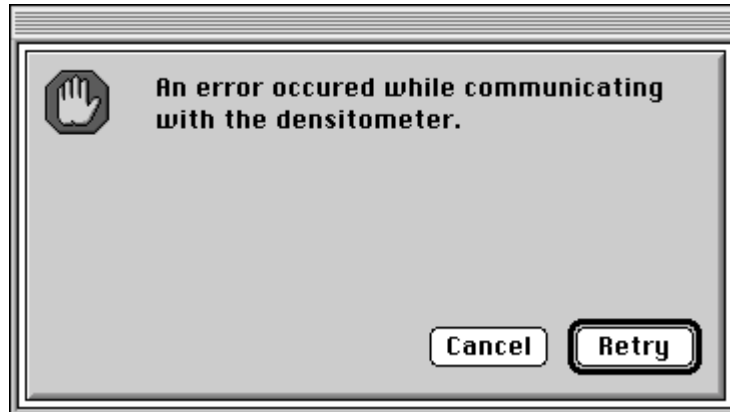
A long beep with a message to re-read the pass indicates an unsuccessful read. Read the same pass through the densitometer again. If the read continues to be unsuccessful, cancel, then restart the calibration.

- 
4. When the read is successful, repeat steps [2](#) and [3](#) until all four passes are complete. Align the arrowhead at passes 2, 3, and 4, respectively.  
For instructions on using the densitometer, see the densitometer manual.

When "Density values received" shows on the status bar, continue with ["Completing the Calibration Procedure" on page 1-12](#).

## If the Density Readings are Unsuccessful

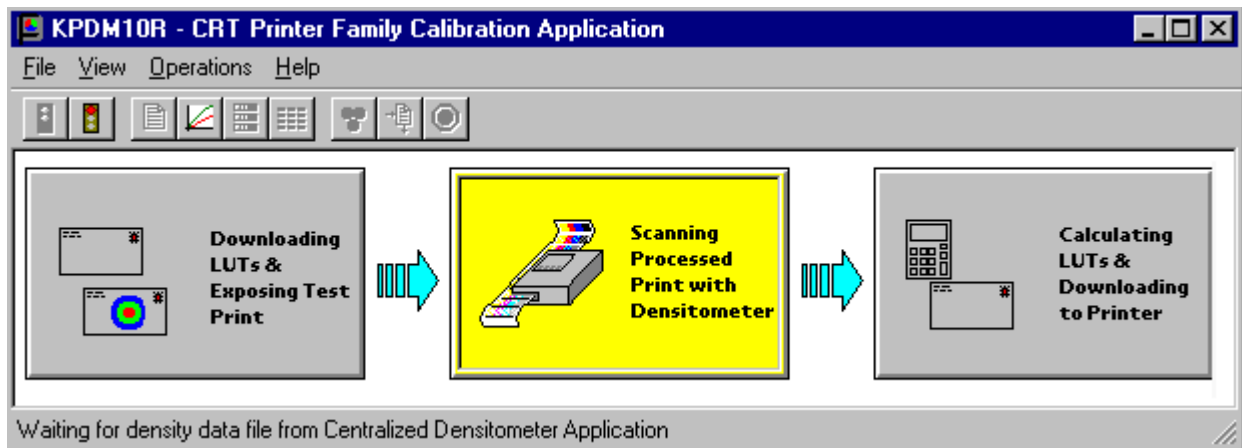
If either of the two dialog boxes below are displayed, click **Retry** after making sure the densitometer is on and the connection is secure.



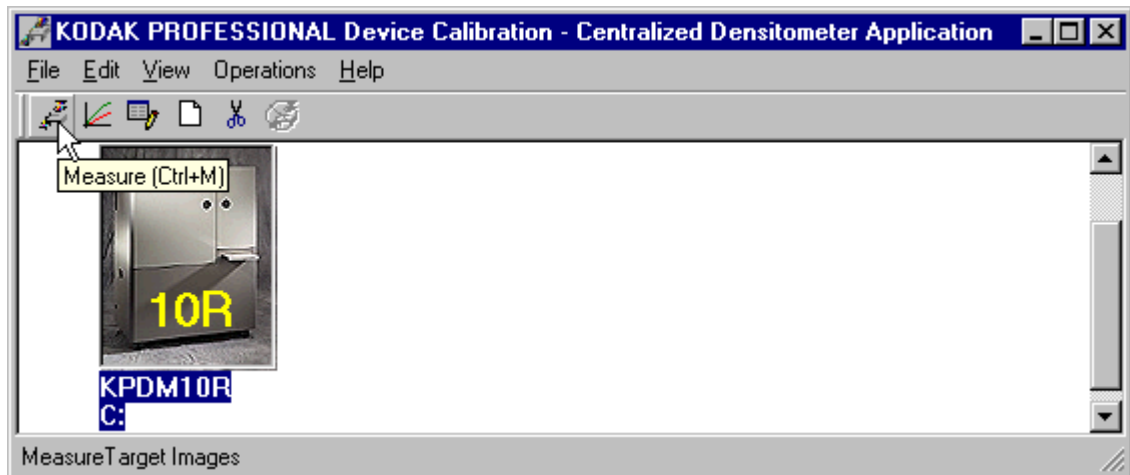
## Obtaining Densities from the Centralized Densitometer (NT Only)

NOTE: For more information about installing and using the Centralized Densitometer Application, see Section 3, [Installing and Using the Centralized Densitometer Application](#).

*If the configuration settings include obtaining the density data from the centralized densitometer application, a message is displayed in the status bar.*



1. Open the Centralized Densitometer Application. The display shows the Centralized Densitometer Application window.



2. Highlight the device.
3. Click **Measure** or select *Operations->Measure* to measure the target images.

4. At the densitometer, measure the densities (see [“Using the Densitometer to Read Densities” on page 1-9](#)).

When the densities are measured, the status bar on the Centralized Densitometer Application window displays “Ready.”

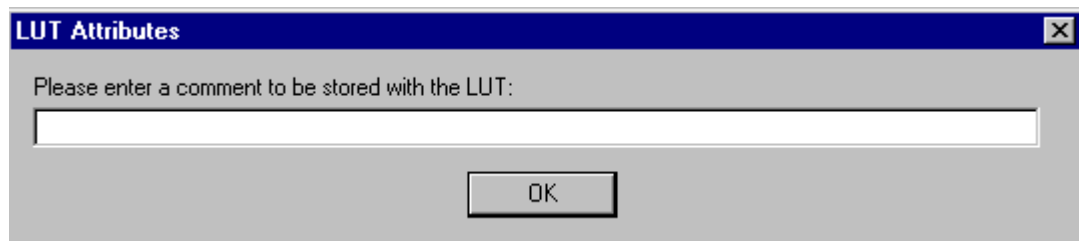
The measured densities are automatically sent to the CRT printer’s host computer.

Continue with [“Completing the Calibration Procedure.”](#)

## Completing the Calibration Procedure

The *Calculating LUTS & Downloading to the Printer* status icon highlights.

1. **If calibration is in tolerance**, the display shows the LUT Attributes dialog box.

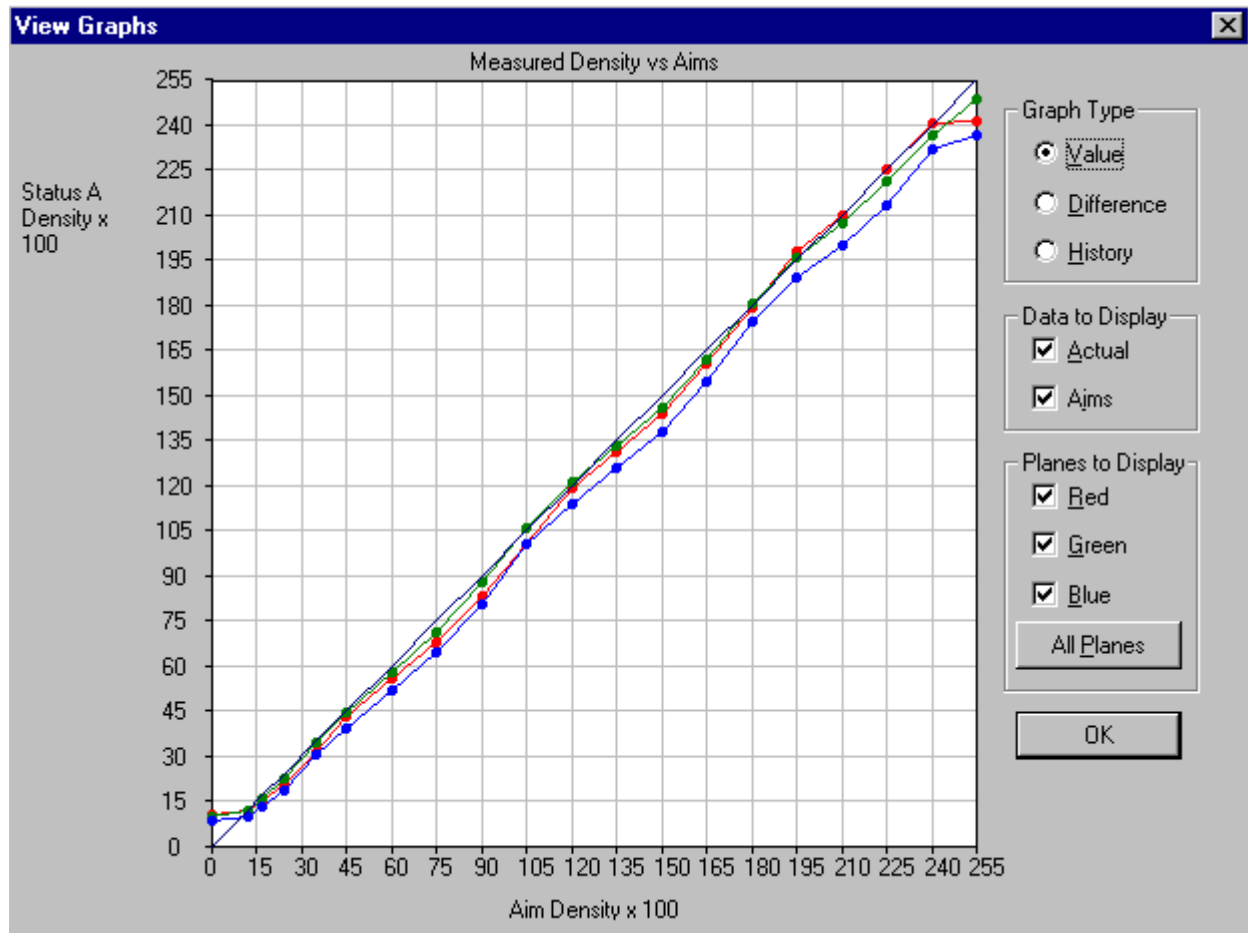


- a. Enter a name or comment in the dialog box. The comment you enter will appear on the Send LUT to Printer dialog box to identify the LUT file with a name that is meaningful to you (up to 75 characters).
  - b. Click **OK**.

The new printing LUT is calculated and downloaded. The status bar shows “Calibration Complete.”
2. **If calibration is out of tolerance**, it may be necessary to run four or more iterations of the calibration cycle to achieve a successful calibration.



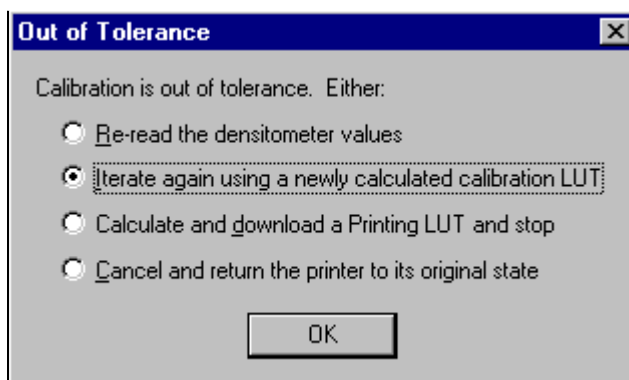
If the print densities are out of tolerance, the display shows a graph, allowing you to select the type of data and planes that you want to see displayed.



a. Click **OK**.

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If specified in the configuration file, the display shows a list of options.



**Re-read the densitometer values** is most useful when the graphs show an unusual plot. Rereading the test print lets you validate the graph, then returns you to the Out of Tolerance dialog box.

**Iterate again using a newly calculated calibration LUT** allows you to print another test print with the newly calculated LUT and see if this brings the printer within tolerance.

**Calculate and download a printing LUT and stop:** When you select this option, the LUT is calculated and the file is saved with the creation date and time as its name.

**Cancel and return the printer to its original state** saves nothing. Any corrupted data created after you saved the last time is thrown away.

- b. Select one of the four options to try to complete the calibration successfully.

## Exiting the Calibration Procedure

To exit the Calibration window, select **Quit** from the File menu on the Calibration window.

To exit the Device Calibration window, select **Quit** from the File menu on the Device Calibration window.

## 2 *Using Additional Calibration Features*

The topics covered in this section include:

- Installing the Calibration Software
- An overview of the *Kodak Professional* Device Calibration software
- Instructions for using functions of the *Kodak Professional* Device Calibration software that are not normally part of the calibration routine. These functions include:
  - Editing the log settings (applies to all devices)
  - Adding, updating, or deleting a device
  - Editing the configuration file for a device
  - Determining starting frame counts
  - Sending a PaperPak (frame counts) to the Printer
  - Sending LUTs (Look-Up Tables) to the Printer
  - Sending test targets to the Printer
  - Viewing graphs
- Installing the densitometer

*IMPORTANT: For the step-by-step procedure to calibrate the printer, see [Section 1, Calibrating the Printer](#).*

The information in this section is intended for a lab technician or a person with experience in computer systems and photographic science.

The screen captures in this manual are primarily from the Windows NT platform. Macintosh users may notice minor variations in individual user screens. Functions and procedures remain the same unless noted.

## Installing the Calibration Software

Installing the software includes installing both the *Kodak Professional Device Calibration Software* (which manages the calibration of multiple Kodak devices) and the Calibration Software for the family of *Kodak Professional CRT Printers*.

You can install the software either from a supplied CD or by downloading from the Kodak web site.

### System Requirements

#### MACINTOSH Systems

- Power MACINTOSH System 7.5 or above
- Minimum of 100 MB free disk space
- 960 K free disk space for each of as many as six configured devices
- 256 colors at 640 x 480 spatial resolution
- CD ROM Drive

#### WINDOWS NT Systems

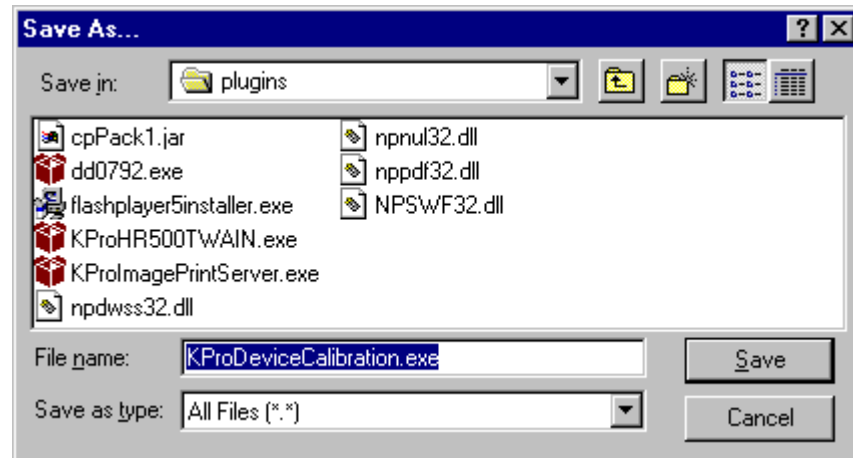
- WINDOWS NT 4.0 operating system with at least Service Pack 3
- 100 MHz PENTIUM Processor
- 64 MB Main System Memory
- VGA Monitor (640 x 480 spatial resolution)
- CD ROM Drive

### Installation Procedure

1. If you are installing the software from the supplied CD-ROM:
  - a. Place the CD in your CD-ROM drive.
  - b. When the Browser is displayed, select the CRT Printer type you are using.
2. If you are downloading the installation files from the Kodak web site, go to <http://www.kodak.com/global/en/service/software/kproHost/kpdm.shtml>.

3. Under the heading Product Support, select **Drivers, Software and Firmware**.
4. Select **Calibration Utilities**.
5. Under the heading **Download File**, select **KODAK PROFESSIONAL Device Calibration**.

The display shows the Save As dialog box.



6. Either accept the default path and file name or select another path and file name and save the file.

NOTE: The installation is similar for NT and Macintosh systems. When the instructions say, for example, click **Next** or **Install**, the first option is for NT systems; the second is for Macintosh systems.

**CAUTION:** To avoid possible damage, do not connect or disconnect the cable between your host computer and the printer when either device is powered up.

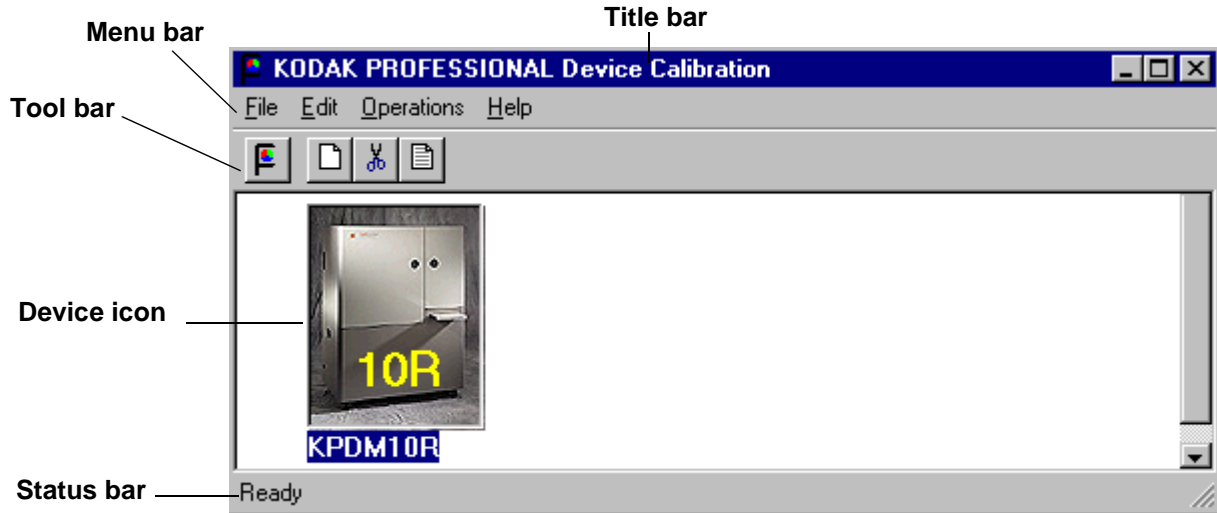
7. Open the installation file (KODAK PROFESSIONAL Device Calibration.exe). The display shows the splash screen for KODAK PROFESSIONAL Device Calibration and a Setup message.

8. After the Welcome dialog box is displayed, click **Next** or **Continue**.
9. *For Macintosh systems only*, read the readme information, then click **Continue**.
10. Read the license agreement.
  - To accept the terms and continue the installation, click **Yes** or **Agree**.
  - Or, to cancel the installation, click **No** or **Disagree**.
11. *For NT systems only*, read the readme information, then click **Next**.
12. Select the installation type:  
*For NT systems, select one of the following:*  
NOTE: The Compact option is not supported.
  - **Typical** includes Device Calibration Applications for the family of *Kodak Professional* CRT Printers and for the *Kodak Professional* LED Printer, plus the Linearization Calibration Application for the *Kodak Professional* RFS 3570+ (Speed Up) Film Scanner
  - **Custom** allows you to choose specific features for the application you choose to install, including the Centralized Densitometer Application; within the CRT Printer Family, you can choose the LFCRT, 4-inch CRT Printer, KPDM, or KPDM II.*For Macintosh systems, select **Easy Install**.*
13. Click **Next** to install the software on your system.  
The display shows a dialog box for you to designate where to install the calibration software.
14. Either accept the default path and folder or select another path and folder.
15. Click **Finish** or **OK**.  
NOTE: For NT systems, the dialog box gives you the option of reading the readme file associated with your installed applications.
16. If you installed the software from a CD-ROM, remove the CD and store it in a safe place.

## About the *Kodak Professional Device Calibration* Software

The *Kodak Professional Device Calibration* software manages and launches customized calibration software applications, including the calibration software for the CRT Printer Family.

Below is the window for the Device Calibration software.



### Description of Bars and Icons on the Device Calibration Window

The descriptions of the bars and icons apply to the Device Calibration windows.

<b>Menu bar</b>	Contains user selectable menu items
<b>Title bar</b>	Contains the application name, "KODAK PROFESSIONAL Device Calibration"
<b>Status bar</b>	Displays status or informational message
<b>Device icon</b>	Represents a device that can be calibrated
<b>Tool bar</b>	Contains user selectable menu choices activated by a shortcut keystroke or by a mouse pointer and left mouse button

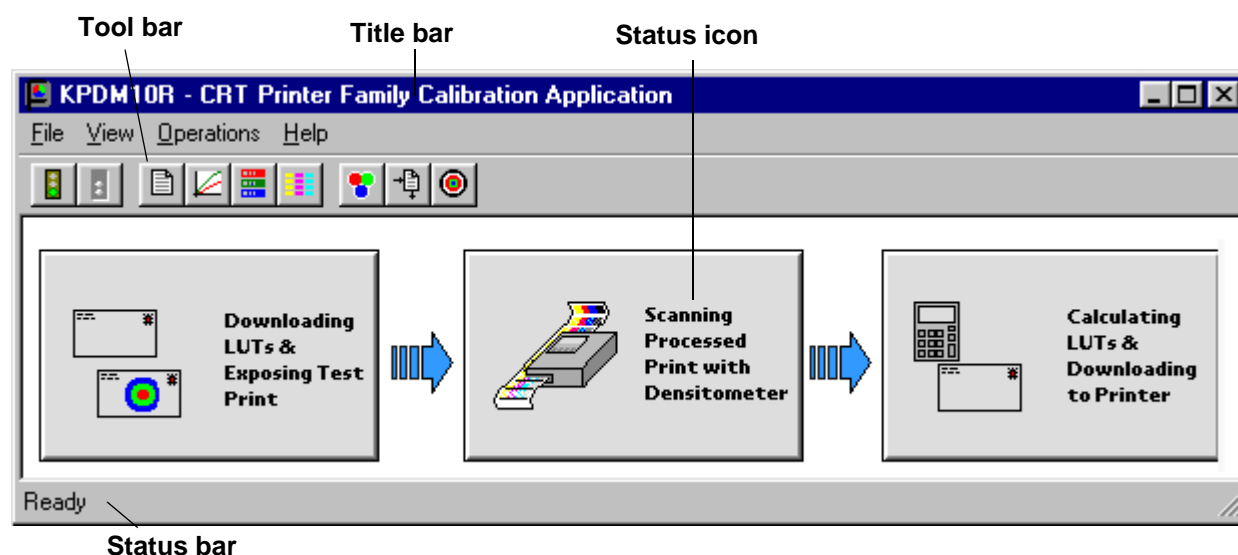
## About the Calibration Software for the CRT Printer Family

The calibration software for the family of *Kodak Professional* CRT Printers provides automated neutral density printer calibration and is designed to be used without assistance from technical experts.

NOTE: Printer calibration is one part of a color management system. Other aspects of color management are provided by applications that are independent of the Printer and the calibration software.

### Calibration Window

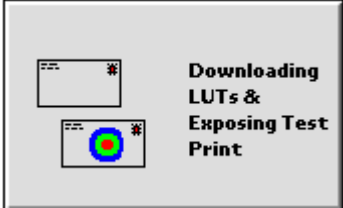

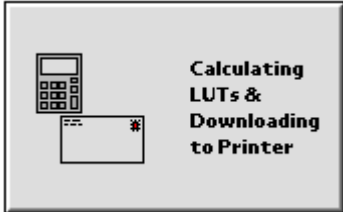
The CRT Printer Family Calibration Application window is displayed and described below.





<b>Tool bar</b>	Contains user selectable menu choices; activated by a shortcut keystroke or by a mouse pointer and left mouse button
<b>Title bar</b>	Top bar of the Calibration window; contains the name of the device being calibrated
<b>Status icon</b>	Illuminates to graphically indicate the current status of the calibration process
<b>Status bar</b>	Displays messages to the user that indicate actions or status of the calibration process

The table below defines the status icons on the Calibration window for the Printer.

<b>Function</b>	<b>Icon</b>	<b>Description</b>
Calibration Step 1		<p>This area is highlighted while the application is:</p> <ul style="list-style-type: none"> <li>initializing the Printer</li> <li>getting the current LUT and current PaperPak from the Printer</li> <li>sending the starting calibration PaperPak</li> <li>sending the starting LUT</li> <li>sending the test target image</li> </ul>
Calibration Step 2		<p>This area is highlighted while the application is waiting for density data. The density data is read through the densitometer from the processed test target, unless specified to be read from a file.</p>
Calibration Step 3		<p>This area is highlighted while the application is</p> <ul style="list-style-type: none"> <li>calculating new LUTs and</li> <li>sending the new printing LUT to the Printer</li> </ul>

## Editing the Log Settings

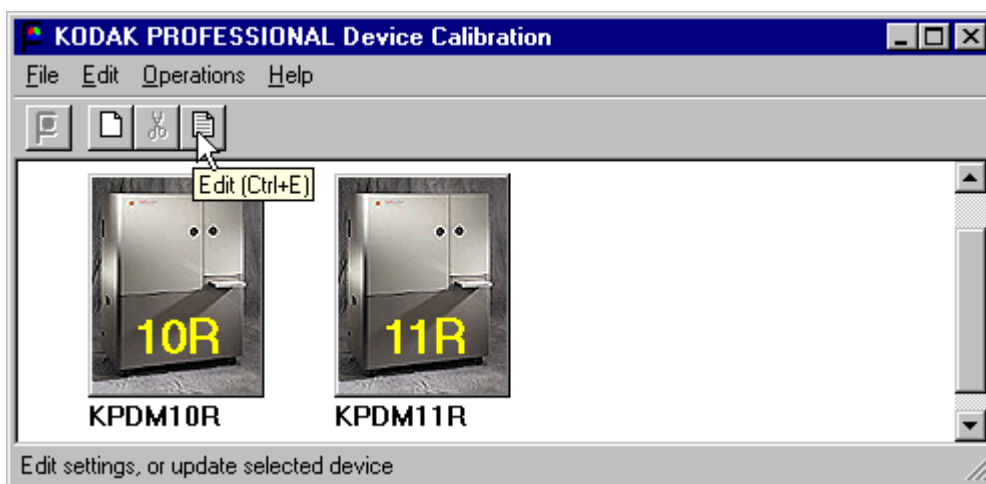
Your Device Calibration application has specific “log settings” for the purpose of keeping a history of the calibration. You may want to change the settings—the type of messages written to the log file, the number of days to keep the log file, and the name of the log file.

The log records calibration-related events and errors. The default log settings are:

- keep log for 30 days
- log all actions (events and errors)
- logfile.txt as the file name

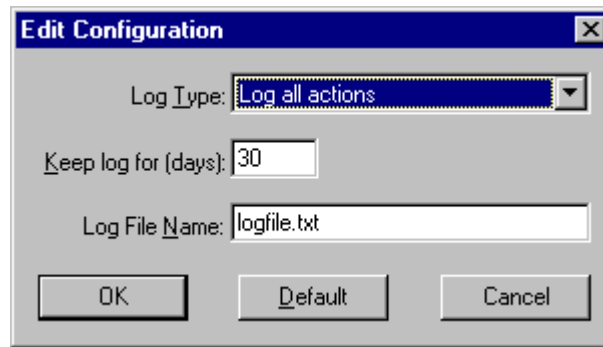
### To change the log settings for the Device Calibration:

1. On the KODAK PROFESSIONAL Device Calibration window, deselect all devices.



2. Click the **Edit** icon or select *File->Edit*.

The display shows the Edit Configuration dialog box with the default settings:



3. Edit the log settings as needed. Settings and their options are:  
**Keep log for (days):** you can keep logged data for as many as 99 days  
**Log Type**—you can specify:
  - All – log all errors and events
  - Errors – log only errors
  - Events – log only events
  - None – do not log any actions**Log File Name**—name of the file to which log entries are written.
4. Select **OK** to save the changes (select **Cancel** to exit; select **Default** to display the default settings and then **OK** to save the defaults).

NOTE: See also [“Editing Information on the History Tab” on page 2-25](#).

## Adding, Updating, and Deleting Devices

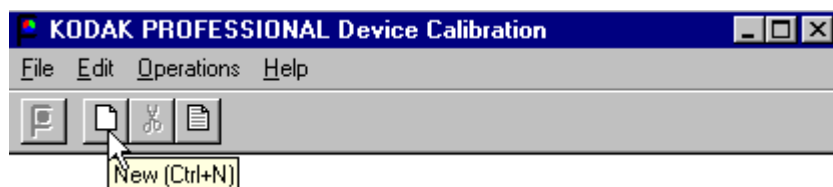
A calibration device represents a printer type. For CRT printer types it is also a specific printer/scale combination with additional attributes defined by its configuration file.

You can:

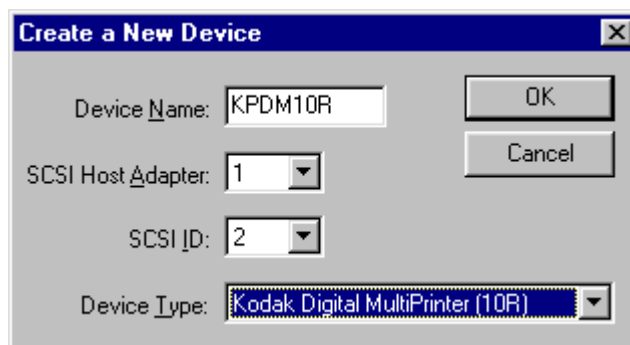
- add new devices
- update the name or SCSI ID (Target ID) of an existing device
- delete devices
- update the configuration files for devices

### Adding a Device

1. Click the **New** icon or select *File->New* on the Device Calibration window.



The display shows the Create a New Device dialog box.



NOTE: Other applications may refer to the SCSI ID as the Target ID and to the SCSI Host Adapter as the SCSI Port. The terms are interchangeable.

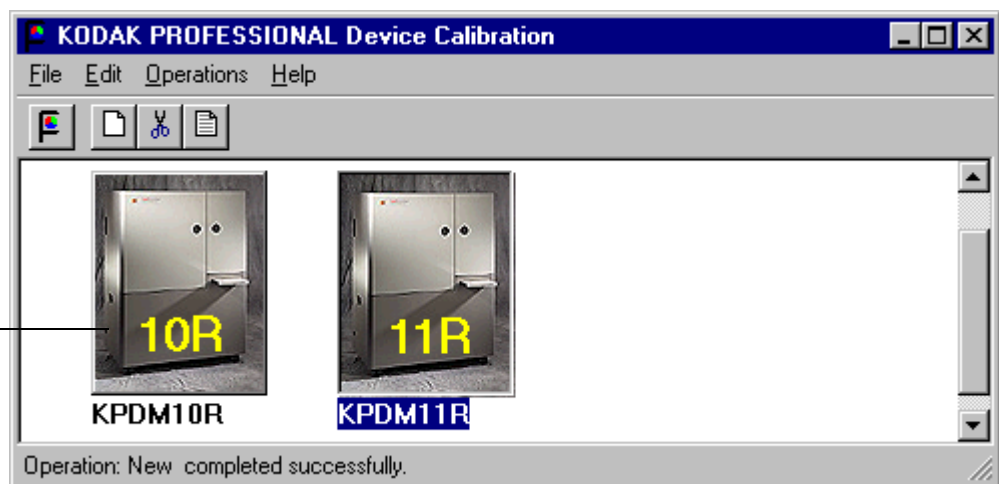
2. Enter a unique identifier as the device name. The device name must be alphanumeric with no spaces or special characters. It can contain as many as 10 characters.

**CAUTION: Calibration can be performed only if the SCSI ID (or Target ID) information is correct.**

3. Enter the correct SCSI ID information.  
The factory default is 2.
  - a. To use your host computer to determine if the SCSI ID for the Printer has changed:  
**Windows NT users:** use the Virtual Console software or the SCSI Control Panel.  
**Macintosh users:** use the SCSI probe feature.
  - b. To use the Printer to determine if its SCSI ID has changed:  
On the main menu of the OCP, check the ID number in the upper right corner.
4. Select the desired printer and resolution.
5. Click **OK** to accept the information (or **Cancel** if you decide not to add a new device).

A new device icon is displayed on the Device Calibration window.

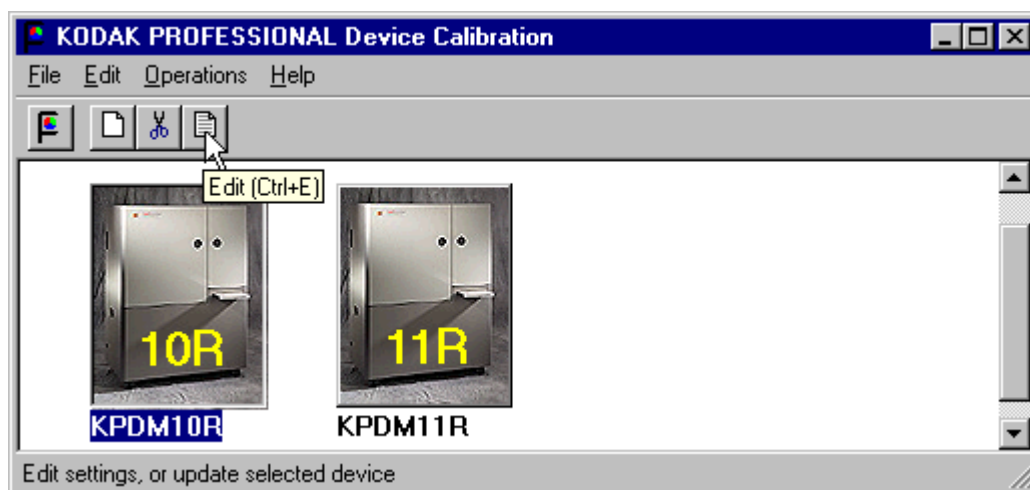
New device  
icon



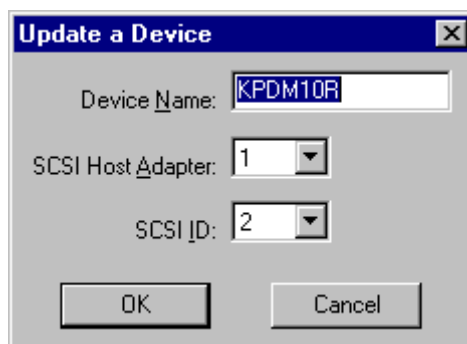
## Updating a Device

To update the name or SCSI ID for a device:

1. On the Device Calibration window, select the icon for the device to update.



2. Click the **Edit** icon or select *File -> Edit*.  
The display shows the Update a Device dialog box.

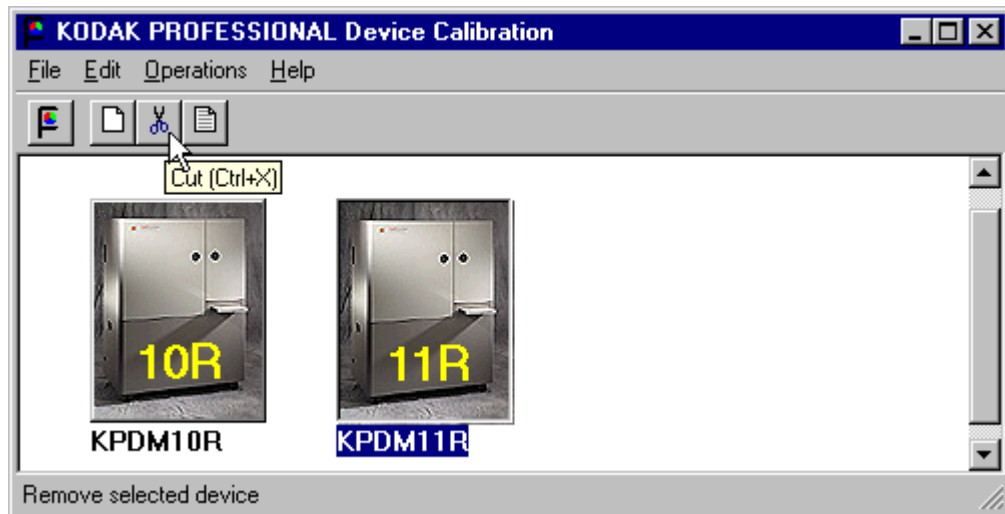


3. Edit the name, SCSI Host Adapter, or SCSI ID.
4. Click **OK** to save the changes (or click **Cancel** to ignore the changes).

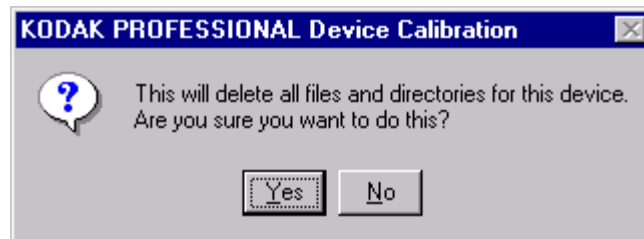
## Deleting a Device

To delete a device and all files associated with the device:

1. Select the device by clicking once on the appropriate device icon.



2. Click the **Cut** icon or select *Edit->Cut*.  
The display shows:

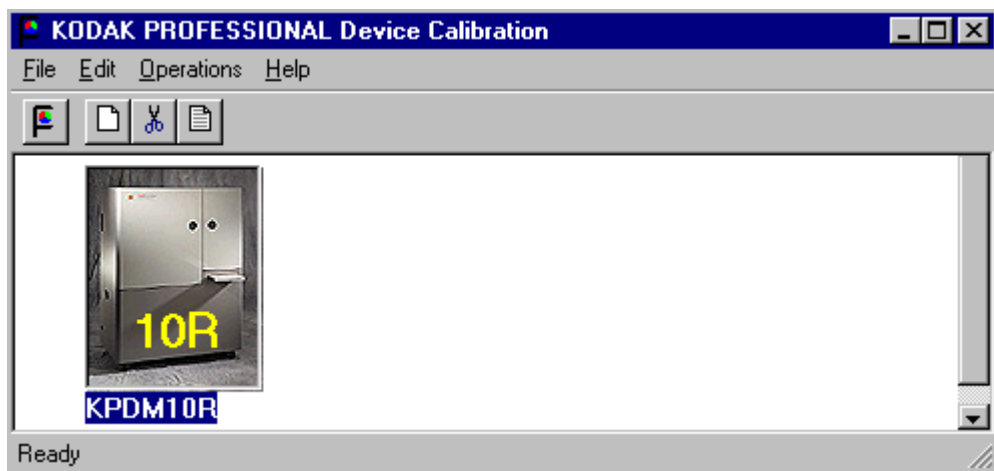


3. Click **Yes** to delete the device and associated files (or click **No** to stop the deletion process).

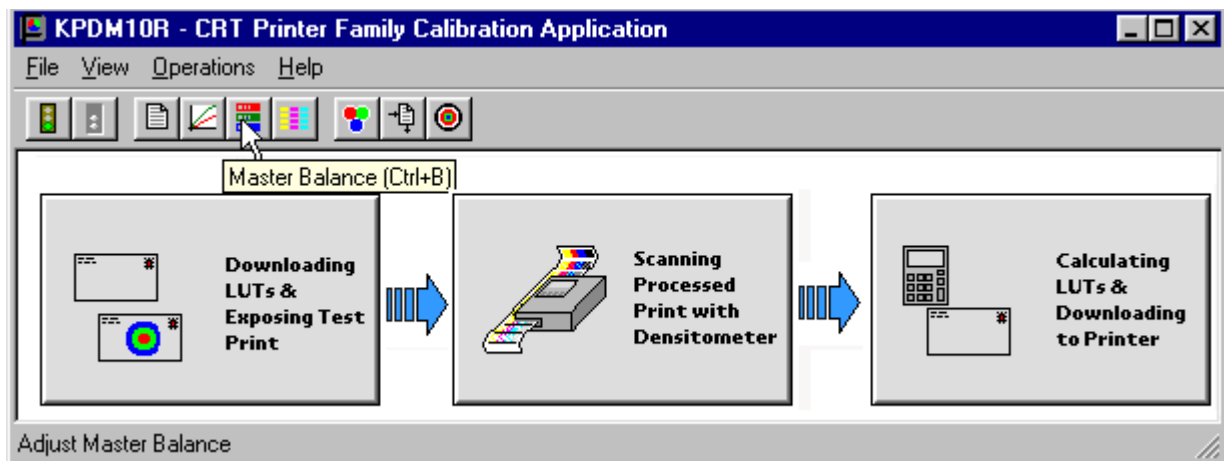
## Applying a Master Balance (NT Systems Only)

Master Balance is a method that allows a customer to temporarily modify printer neutral calibration. This may be desired for customizing a particular job or correcting for a short-term processing shift. It does not replace calibrating the printer.

1. From the Device Calibration window, double-click the device for which you want to perform a master balance.



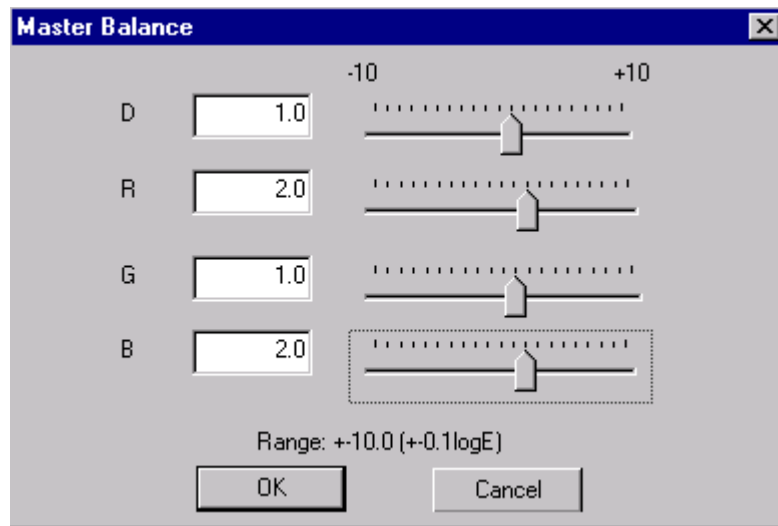
The display shows the CRT Printer Family Calibration Application window.



2. Click the **Master Balance** icon or select *Operations->Master Balance*.



The display shows the Master Balance dialog box.

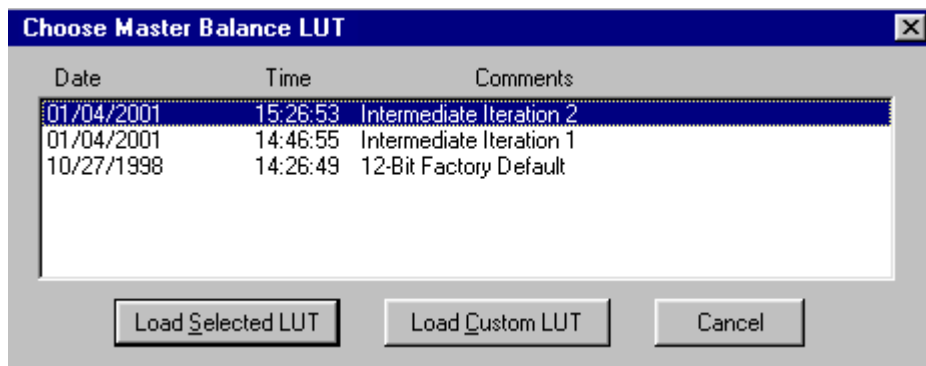


3. Click and drag the sliders as needed for Density, Red, Green, or Blue balance.  
For Density, Red, Green, and Blue, 1 unit of change is equal to 0.01 log exposure or 1 color correction (cc) units. For unit changes of less than one, you can type the number directly into the edit box.
4. Click **OK** to accept the changes (or click **Cancel** to cancel the master balance).

The display shows the Choose Master Balance LUT dialog box.

*IMPORTANT: In the next step, do not select the default LUT.*

5. Select one of the LUTs from the dialog box and click **Load Selected LUT** or click **Load Custom LUT** and follow the prompts to load a custom LUT.



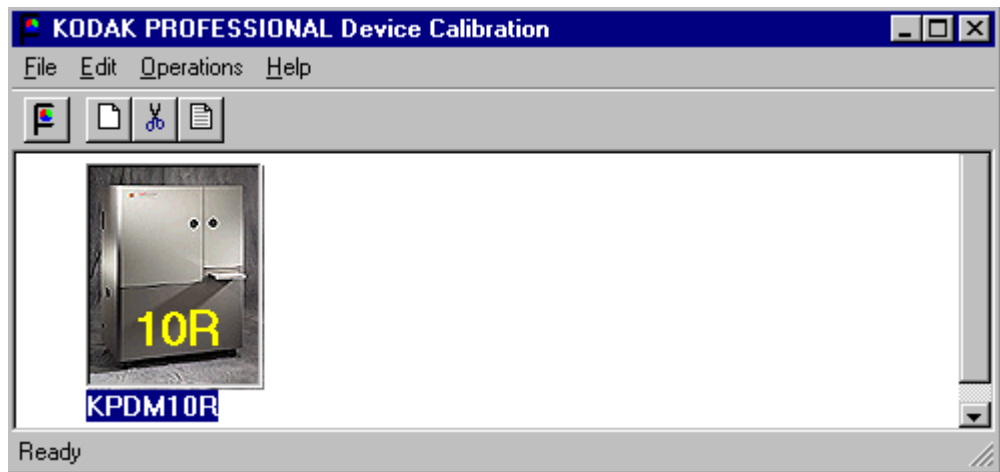
A new LUT is calculated based on the selected LUT and the input DRGB values. The LUT is downloaded to the printer, **overwriting the current LUT**. This LUT will be the current printer LUT until a new LUT is sent.

## Editing the Device Configuration File

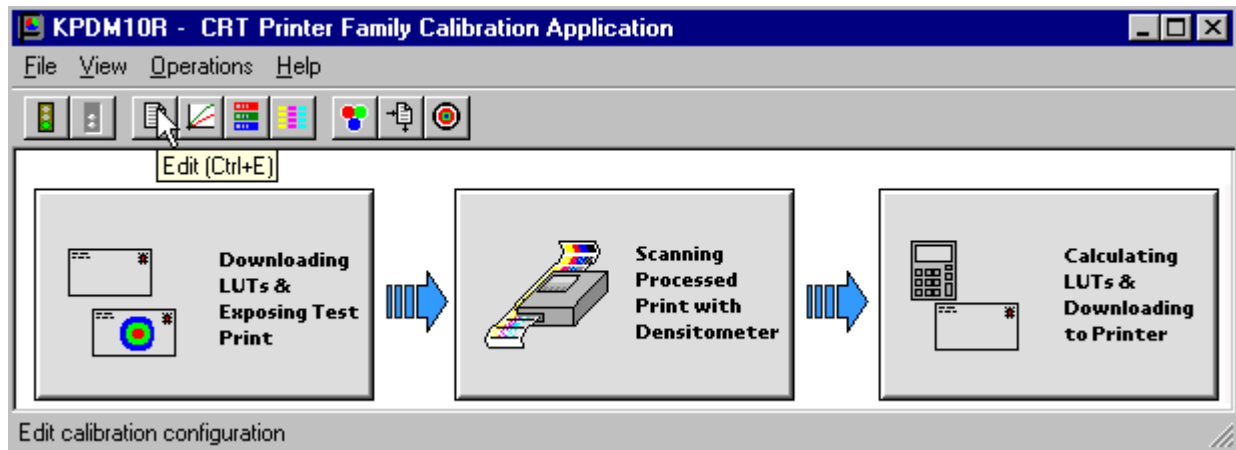
The Edit Configuration feature allows you to change the calibration configuration for a device if needed. **Kodak recommends that you use the default settings; in most cases, there is no need to edit this file.**

Each device has one set of configuration attributes. The Edit Configuration window consists of a set of six tabs—each with related configuration attributes for the selected device. If you click **OK** to save changes (includes changes made on other tabbed screens), you will overwrite the previous attributes used for the automated calibration.

1. From the Device Calibration window, double-click the icon of the device for which you want to change the calibration configuration.

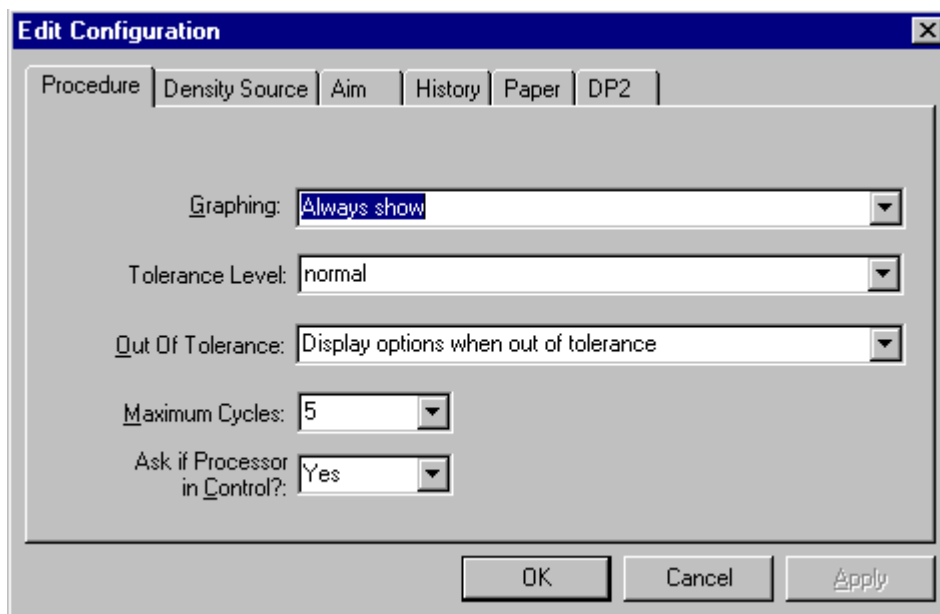


The display shows the CRT Printer Family Calibration Application window.



2. Click the **Edit** icon or select *File->Edit*.

The display shows the Edit Configuration window with the Procedure tab.



3. To edit configuration information, click the appropriate tab and follow the instructions.

**IMPORTANT:** Whenever you click **OK**, the software assumes ALL changes to the Edit Configuration are complete and the Edit Configuration window closes.

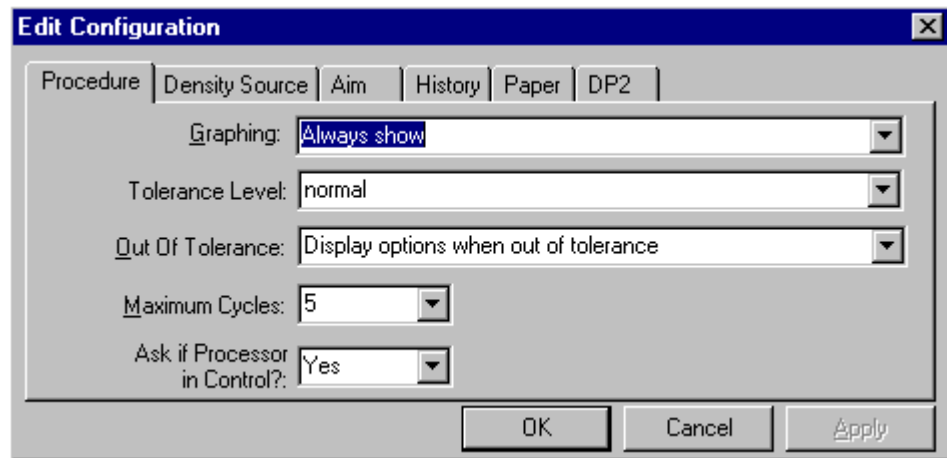
You can click **Cancel** at any time while the Edit Configuration window is open; any changes you made to any of the tabbed information are canceled and the Edit Configuration window closes.

Note that for Macintosh users only, you can click **Default** at any time to reset the attributes to their factory defaults and then click **OK** to save the defaults.

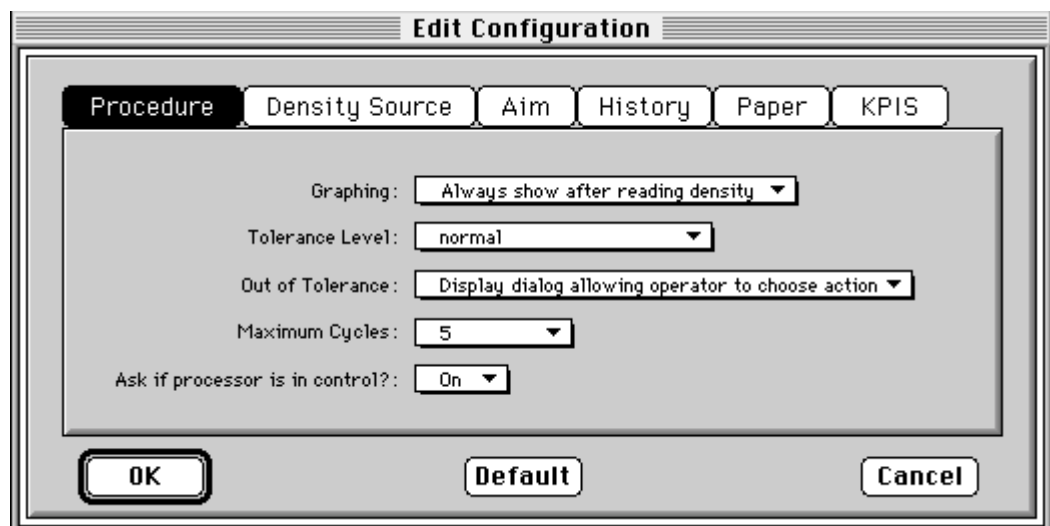
## Editing Information on the Procedure Tab

The Procedure tab contains general configuration attributes as described below. The values in the example are the default settings.

### Procedure Tab for Windows NT Systems



### Procedure Tab for Macintosh Systems



<b><i>Procedure Attribute</i></b>	<b><i>Description</i></b>
Graphing	Instructs the application when to display the graphs of the data
Tolerance Level	Indicates whether the level of tolerance is Normal, Loose, Strict, or ColorMetallic Normal
Out of Tolerance	Provides the flexibility to interact at each step or to use a fully automated calibration
Maximum Cycles	Indicates the maximum number of iterations the calibration procedure will perform if “Out of Tolerance” is set to “Automatically iterate up to maximum cycles”
Processor In Control	Indicates whether the Processor In Control dialog box is to be displayed at the beginning of the calibration process

**To edit the configuration information on the Procedure tab:**

1. Use the drop-down lists to change the Procedure information as needed.
2. If you have completed all editing (including information on the other tabs), click **OK** to save the changes and close the Edit Configuration window. (Or, click **Cancel** to cancel all changes.)
3. To continue making changes to the Configuration, click another tab and make changes as needed.

## Editing Information on the Density Source Tab

The Density Source tab specifies how the calibration application is to receive density data. The values displayed in the examples are the default settings.

### Density Source Tab for Windows NT Systems

**Edit Configuration**

Procedure | **Density Source** | Aim | History | Paper | DP2

Density Source: Get data from X-Rite DTP36

Density Source Port: COM1

Density Source File: dtp36.raw

OK Cancel Apply

### Density Source Tab for Macintosh Systems

**Edit Configuration**

Procedure | **Density Source** | Aim | History | Paper | KPIS

Density Source: X-Rite DTP36 Densitometer

Density Source Port: Printer

Density Source File: dtp36.raw

OK Default Cancel

<i><b>Procedure Attribute</b></i>	<i><b>Description</b></i>
Density Source	Indicates the source (local densitometer, file or, for PC applications only, Centralized Densitometer Application) of the density data.
Density Source Port	Indicates the name of the RS-232 port that the densitometer is connected to. This port is the source of the density data. The name of the port is specific to the computer system platform. NOTE: This is only used if the Density Source is DTP36.
Density Source File	Indicates the filename for the source of density data. This is only used if the Density Source is a file.

**To edit the configuration information on the Density Source tab:**

1. Use the drop-down lists to change the Density Source information as needed.
2. If you have completed all editing (including information on the other tabs), click **OK** to save the changes and close the Edit Configuration window. (Or, click **Cancel** to cancel all changes.)
3. To continue making changes to the Configuration, click another tab and make changes as needed.



## Editing Information on the Aim Tab

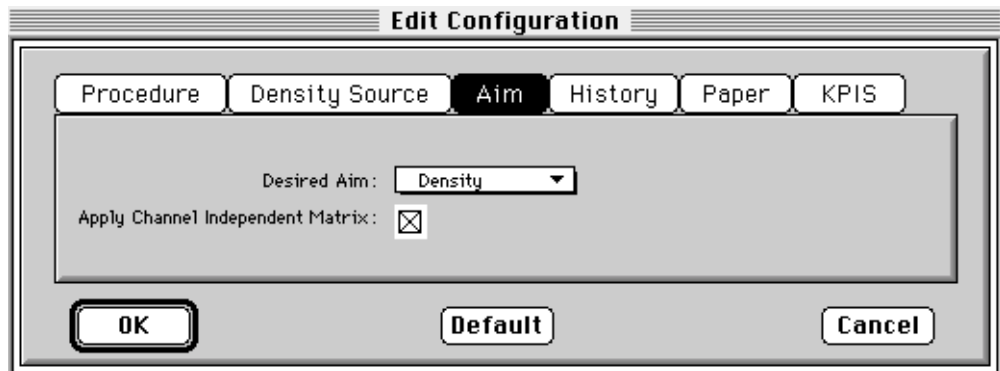
The Aim tab specifies:

- whether aims used for calibration are to be Density Aims or Lightness Aims
- whether to apply the Channel-Independent Matrix

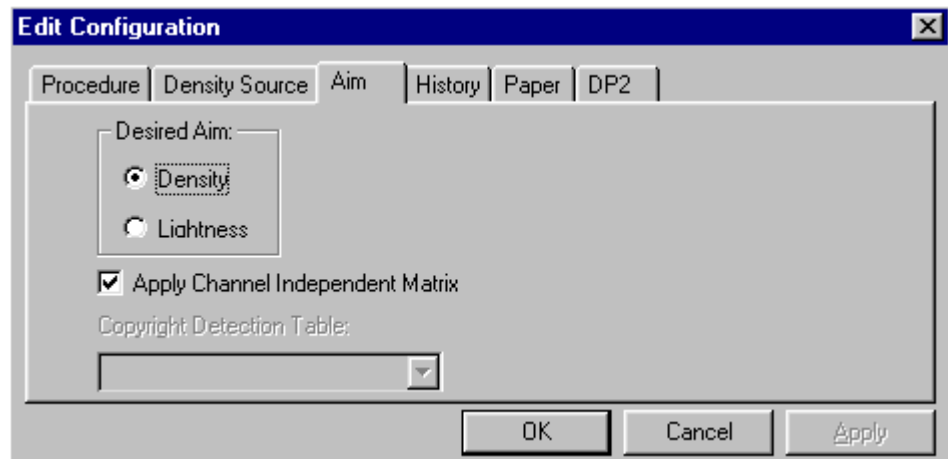
NOTE: Copyright Detection is not available for CRT Printers.

The values displayed in the example are the default settings.

### Aim Tab for Macintosh Systems



### Aim Tab for Windows NT Systems



<i><b>Attribute</b></i>	<i><b>Description</b></i>
Desired Aim	Indicates whether to use Density Aims or Lightness Aims for calibration. Using Lightness Aims will improve both the highlights and shadows of your prints.
Apply Channel Independent Matrix?	Indicates whether or not to apply the Channel-Independent Matrix to the aim values. If the matrix is applied, the number of cycles required to successfully calibrate the printer should be reduced.
Copyright Detection Table	This feature is not available for the CRT Printer Family.

**To edit the configuration information on the Aim tab:**

1. Change the Aim information as needed.
2. If you have completed all editing (including information on the other tabs), click **OK** to save the changes and close the Edit Configuration window. (Or, click **Cancel** to cancel all changes.)
3. To continue making changes to the Configuration, click another tab and make changes as needed.

## Editing Information on the History Tab

The History tab specifies information about maintaining calibration history data. The values displayed in the example are the default settings.

### History Tab for Windows NT Systems

The screenshot shows a Windows-style dialog box titled "Edit Configuration". It has a tabbed interface with tabs for "Procedure", "Density Source", "Aim", "History", "Paper", and "DP2". The "History" tab is selected. Inside the dialog, there are two main sections: "LUT History" and "Log File". The "LUT History" section contains a text field labeled "Keep history for (days):" with the value "182". The "Log File" section contains a text field labeled "Keep log for (days):" with the value "30", a dropdown menu labeled "Log Type:" with "Log all actions" selected, and a text field labeled "Log File Name:" with the value "logFile.txt". At the bottom right, there are three buttons: "OK", "Cancel", and "Apply".

### History Tab for Macintosh Systems

The screenshot shows a Macintosh-style dialog box titled "Edit Configuration". It has a tabbed interface with tabs for "Procedure", "Density Source", "Aim", "History", "Paper", and "KPIS". The "History" tab is selected. Inside the dialog, there are four text fields: "Keep history for (days):" with the value "182", "Log Type:" with a dropdown menu showing "All", "Keep log for (days):" with the value "30", and "Log File Name:" with the value "logfile.txt". At the bottom, there are three buttons: "OK", "Default", and "Cancel".

<b>Attribute</b>	<b>Description</b>
Keep History For (days)	Indicates the number of days that the calibration LUT, density data and LUT history information (trend data) is to be kept. Information older than the specified number of days will be deleted.
Log Type	Indicates the type of log file available during calibration. All recordable events or just the recordable errors can be logged to a selected filename.
Keep log for (days)	Indicates the number of days that the error and events information is to be kept. Information older than the specified number of days will be deleted.
Log File Name	The name of the file that contains the logged information.

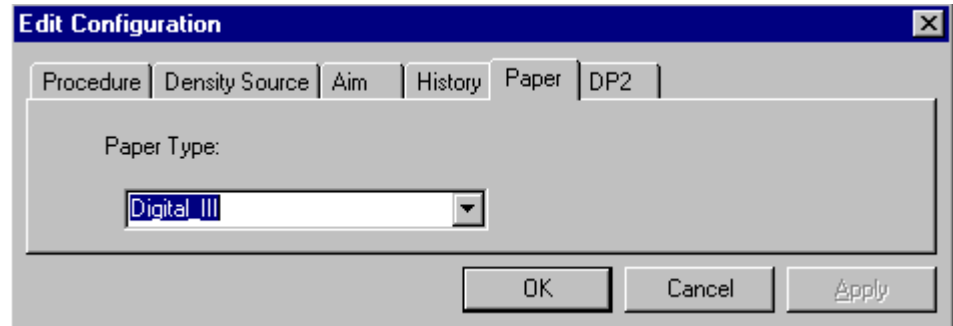
**To edit the configuration information on the History tab:**

1. Change the History information as needed.
2. If you have completed all editing (including information on the other tabs), click **OK** to save the changes and close the Edit Configuration window. (Or, click **Cancel** to cancel all changes.)
3. To continue making changes to the Configuration, click another tab and make changes as needed.

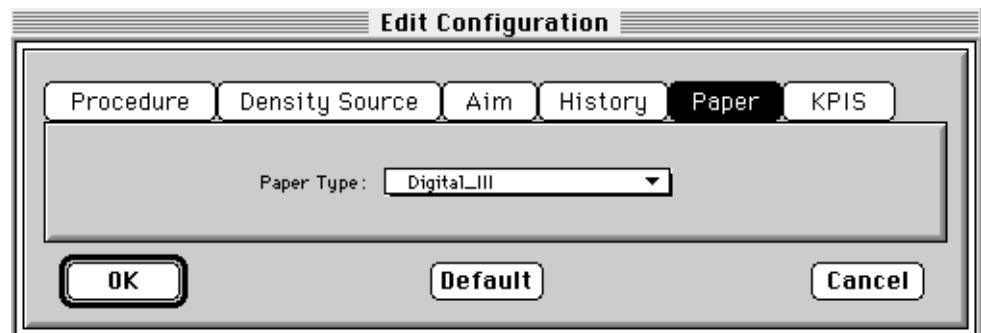
## Editing Information on the Paper Tab

The Paper tab allows you to specify the paper being calibrated. The value displayed in the example is the default setting.

### Paper Tab for Windows NT Systems



### Paper Tab for Macintosh Systems



Attribute	Description
Paper Type	Select from the list of supported paper types.

### To edit the configuration information on the Paper tab:

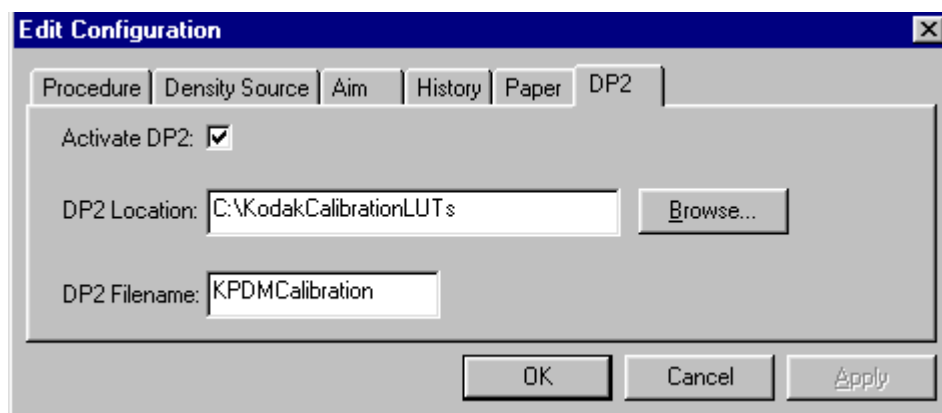
1. Change the Paper Type if needed.
2. If you have completed all editing (including information on the other tabs), click **OK** to save the changes and close the Edit Configuration window. (Or, click **Cancel** to cancel all changes.)
3. To continue making changes to the Configuration, click another tab and make changes as needed.

NOTE: If you select Color Metallic paper, you need to change the tolerance level (on the Procedure tab) to ColorMetallicNormal.

## Editing Information on the DP2 Tab (NT Systems Only)

The DP2 tab specifies whether to activate DP2 functionality, and if so, names the directory and filename designated for the DP2 information.

When you click the DP2 tab of the Edit Configuration window, the information below is displayed.



<i>Attribute</i>	<i>Description</i>
Activate DP2	Indicates if the calibration procedure should copy the generated LUT file to the DP2 location and filename specified. When you select <i>Operations-&gt;Send LUT</i> or <i>Operations-&gt;Master Balance</i> , the LUT is also sent to the DP2 location to be used with the DP2 system.
DP2 Location	Directory to contain generated LUT file for use with DP2
DP2 Filename	Name of the file containing the LUT; you are asked to confirm the file copy, if the file already exists.

1. If DP2 is not already activated, click the **Activate DP2** checkbox (click again to deactivate) so that the dialog box looks like the example above.
2. To change the DP2 Location, type a new directory name or click **Browse** and select another directory.
3. If needed, change the DP2 Filename.
4. If you have completed all editing (including information on the other tabs), click **OK** to save the changes and close the Edit Configuration window. (Or, click **Cancel** to cancel all changes.)
5. To make other changes to the Configuration, click another tab and make changes as needed.

## Editing KPIS Information (Macintosh Systems Only)

If you are using the calibration output files with the KPIS system, it is necessary to activate KPIS and assign a filename and location to the output file.

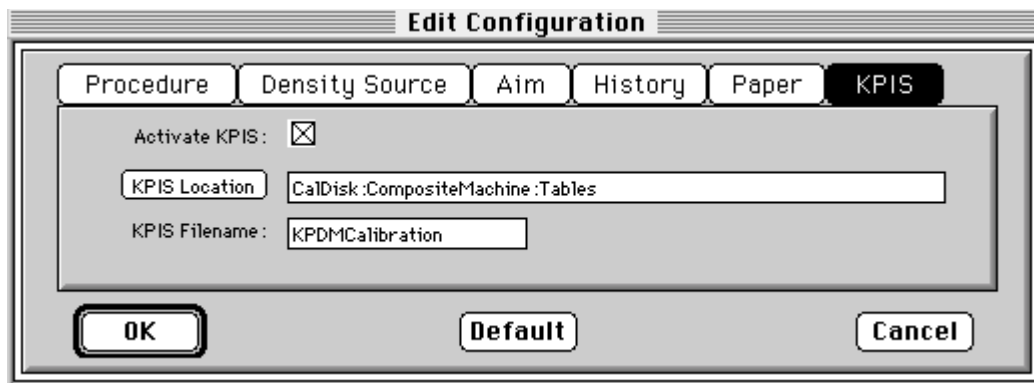
When you click the KPIS tab, the information below is displayed. The values in the example are the default settings.

The screenshot shows a Macintosh-style dialog box titled "Edit Configuration". It has a tabbed interface with tabs for "Procedure", "Density Source", "Aim", "History", "Paper", and "KPIS". The "KPIS" tab is selected and highlighted. Inside the "KPIS" tab, there is a section with the following controls: a label "Activate KPIS:" followed by an unchecked checkbox; a label "KPIS Location:" followed by a text input field; and a label "KPIS Filename:" followed by a text input field. At the bottom of the dialog box, there are three buttons: "OK", "Default", and "Cancel".

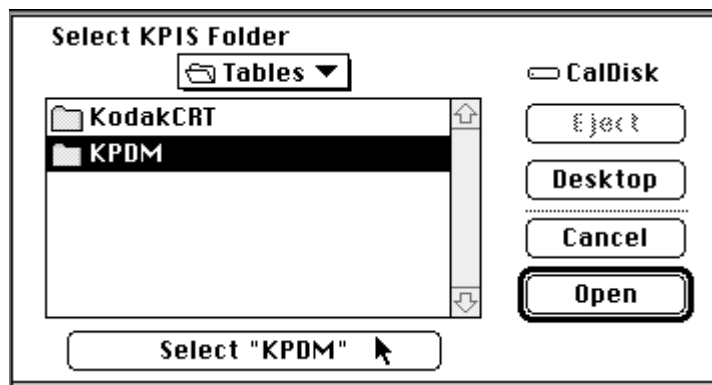
<i><b>Attribute</b></i>	<i><b>Description</b></i>
Activate KPIS	Indicates if the calibration procedure should generate a LUT file for use with the KPIS system
KPIS Location	Directory to contain generated LUT files for use with KPIS
KPIS Filename	Name of the file containing the KPIS LUT files

1. Click the **Activate KPIS** checkbox (click again to deactivate).

The display shows the Edit Configuration window with the default settings for KPIS Location and KPIS Filename.



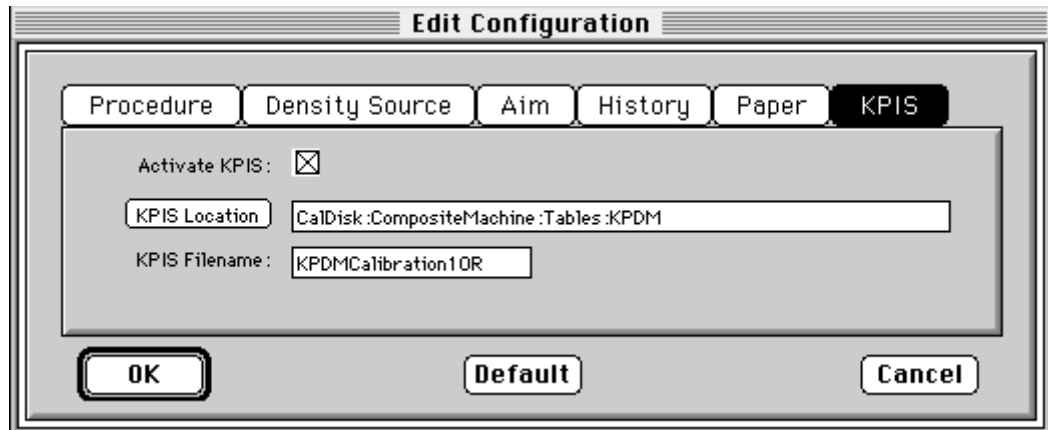
2. To change the directory for the KPIS file, click **KPIS Location**. The display shows the Select KPIS Folder dialog box.



- a. If needed, browse to find the folder you want.
- b. Click **Select "directoryname"** (the example above shows **Select "KPDM"**).
- c. If you use more than one device, edit the KPIS Filename to include the format.



The display shows that the file name for the current device will be KPDMCalibration10R and will be in the directory **CalDisk:CompositeMachine:Tables:KPDM**.



The display shows the updated Edit Configuration window with updated File Location of CalDisk:CompositeMachine:Tables:KPDM.

## Completing the Edit Configuration

When finished, click **OK** to save the attributes. (Click **Cancel** to exit the dialog box without saving your changes. Click **Default** at any time to reset the attributes to their factory defaults and then **OK** to save the defaults.)

## Determining Frame Counts for a Device

*IMPORTANT: Determining frame counts must be done before any prints can be made. For each device, it is a one-time procedure.*

### About Frame Counts

A frame is a minimum unit of exposure time used in a CRT Printer. Frame counts are represented by integers. An increase in frame counts increases the exposure time and decreases productivity.

You need to determine frame counts as the first step to calibrating the Printer for each paper type and scale.

The purpose of determining starting frame counts is to determine the combination of red, green, and blue frame counts that will produce optimum contrast for a paper type. This is usually a DMax (patch 20 or black) value within a range of 2.1 to 2.3 density units.

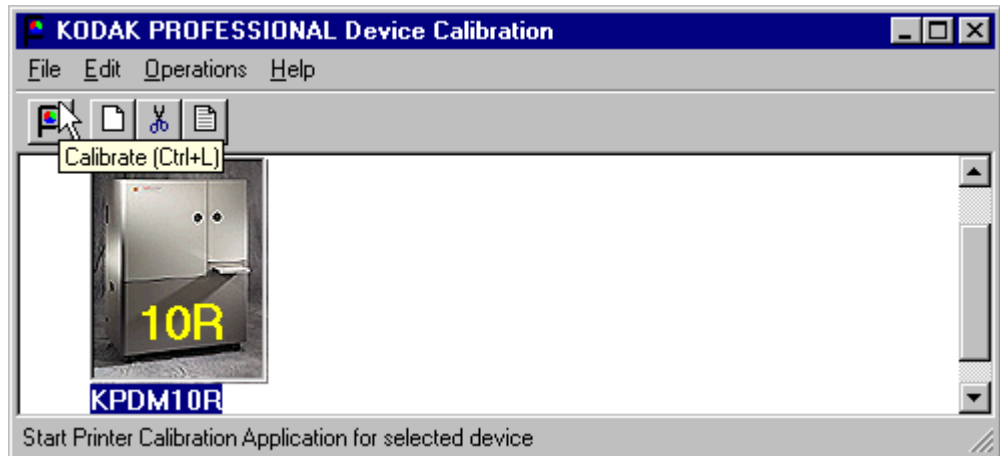
The calibration software contains default frame counts for Digital III Paper on the selected printer. However, optimum frame count values vary among printers and among paper types. Because contrast is an important factor in producing quality prints, you will want to fine-tune the frame counts.

It is important to note that the red and green values and the green and blue values interact. This means changing the red value will not only change the red density, but will also change the green density. Changing the green density changes the blue density.

## Using the Software to Calculate Frame Counts

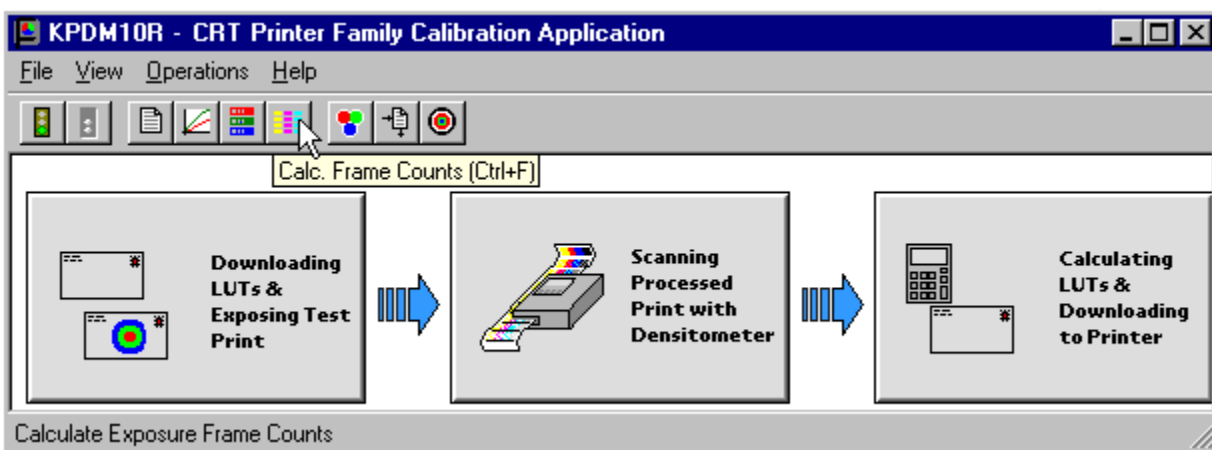
1. From the desktop of the host computer, open the KODAK PROFESSIONAL Device Calibration application.

The display shows the Device Calibration window. If there is no device icon for the device you need to calibrate, see [“Adding a Device” on page 2-10](#).



2. Select the device to calibrate.
3. Click the **Calibrate** icon or select *Operations->Calibrate*.

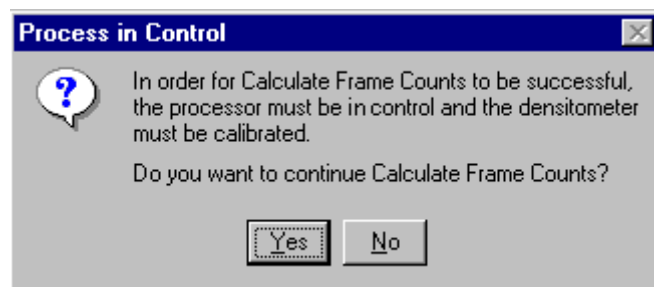
The display shows the Calibration window.



*IMPORTANT: Macintosh users: in the step below, click only one time. If you double-click the icon, the Calculate Frame Counts procedure will start again after it ends.*

4. Click the **Calc. Frame Counts** icon or select *Operations->Calc. Frame Counts*.

If "Ask if processor is in control?" in the configuration file is On, the display shows the Process In Control dialog box below.



*IMPORTANT: The processor is a critical component of printer calibration; monitor it on a regular basis. The calculation of frame counts can not be accurate if the processor is not in control.*

5. From the Process in Control dialog box, click **Yes** (or **No** to exit the procedure).

The status bar shows messages and the display shows the Input Frame Count Parameters dialog box.

NOTE: For NT systems, the display shows recommended minimum and maximum frame counts and maximum density for each resolution of the Printer.

	Cyan	Mag	Yel
	Red	Green	Blue
Minimum Frame count	6	1	1
Maximum Frame Count	10	4	5
Maximum Density	215	170	195

Buttons: Make Test Print, Cancel

6. Refer to the tables on the next pages for recommended minimum and maximum frame counts and maximum densities for each color.

NOTE: The maximum densities are separations that when combined produce the "Aim" DMax density.

7. Enter or confirm the values for each color.

On the dialog box above, for a 10R test print, for example, you would enter:

	<i>Red</i>	<i>Green</i>	<i>Blue</i>
Minimum Frame Count	6	1	1
Maximum Frame Count	10	4	5
Maximum Density	215	170	195

## Tables of Frame Counts and Densities

The tables below include starting minimum and maximum frame counts and maximum densities for Kodak Professional Digital III Paper for the Digital Multiprinter, Digital Multiprinter II, and the Large Format CRT Printer. These are default values for NT systems.

### For KPDM with Digital III Paper

<b><i>Magnification</i></b>	<b><i>Minimum and Maximum Frame Counts and Maximum Densities</i></b>		<b><i>Red</i></b>	<b><i>Green</i></b>	<b><i>Blue</i></b>
4R	<i>Frame Counts</i>	<i>Minimum</i>	1	1	1
		<i>Maximum</i>	4	3	3
	<i>Maximum Density</i>		215	170	195
5R	<i>Frame Counts</i>	<i>Minimum</i>	1	1	1
		<i>Maximum</i>	4	3	3
	<i>Maximum Density</i>		215	170	195
6R	<i>Frame Counts</i>	<i>Minimum</i>	3	1	1
		<i>Maximum</i>	5	3	3
	<i>Maximum Density</i>		215	170	195
8R/A4	<i>Frame Counts</i>	<i>Minimum</i>	4	1	1
		<i>Maximum</i>	8	3	5
	<i>Maximum Density</i>		215	170	195
10R	<i>Frame Counts</i>	<i>Minimum</i>	6	1	1
		<i>Maximum</i>	10	4	5
	<i>Maximum Density</i>		215	170	195
11R	<i>Frame Counts</i>	<i>Minimum</i>	8	1	3
		<i>Maximum</i>	12	4	6
	<i>Maximum Density</i>		215	170	195
12R	<i>Frame Counts</i>	<i>Minimum</i>	10	1	3
		<i>Maximum</i>	14	5	7
	<i>Maximum Density</i>		215	170	195

## For KPDM II Printers with Digital III Paper

<b>Magnification</b>	<b>Minimum and Maximum Frame Counts and Maximum Densities</b>		<b>Red</b>	<b>Green</b>	<b>Blue</b>
5R	Frame Counts	Minimum	1	1	1
		Maximum	6	3	3
	Maximum Density		215	170	195
6R	Frame Counts	Minimum	1	1	1
		Maximum	6	3	5
	Maximum Density		215	170	195
7R	Frame Counts	Minimum	1	1	1
		Maximum	6	3	5
	Maximum Density		215	170	195
8R/A4	Frame Counts	Minimum	1	1	1
		Maximum	7	3	5
	Maximum Density		215	170	195
9R	Frame Counts	Minimum	1	1	1
		Maximum	8	3	6
	Maximum Density		215	170	195
10R	Frame Counts	Minimum	1	1	1
		Maximum	8	3	6
	Maximum Density		215	170	195
11R	Frame Counts	Minimum	1	1	1
		Maximum	9	3	7
	Maximum Density		215	170	195
12R	Frame Counts	Minimum	1	1	1
		Maximum	10	4	7
	Maximum Density		215	170	195

## For KPDM Printers with Color Metallic Paper

<b>Magnification</b>	<b>Minimum and Maximum Frame Counts and Maximum Densities</b>		<b>Red</b>	<b>Green</b>	<b>Blue</b>
5R	Frame Counts	Minimum	2	1	1
		Maximum	8	6	6
	Maximum Density		215	170	195
6R	Frame Counts	Minimum	2	1	1
		Maximum	8	6	6
	Maximum Density		215	170	195
7R	Frame Counts	Minimum	4	1	1
		Maximum	10	6	6
	Maximum Density		215	170	195
8R/A4	Frame Counts	Minimum	6	2	2
		Maximum	12	6	6
	Maximum Density		215	170	195
10R	Frame Counts	Minimum	9	2	1
		Maximum	16	7	6
	Maximum Density		215	170	195
11R	Frame Counts	Minimum	11	3	2
		Maximum	18	10	7
	Maximum Density		215	170	195
12R	Frame Counts	Minimum	12	3	3
		Maximum	19	10	8
	Maximum Density		215	170	195



## For LFCRT Printers with Digital III Paper

<i><b>Magnification</b></i>	<i><b>Minimum and Maximum Frame Counts and Maximum Densities</b></i>		<i><b>Red</b></i>	<i><b>Green</b></i>	<i><b>Blue</b></i>
5R	<i>Frame Counts</i>	<i>Minimum</i>	2	1	1
		<i>Maximum</i>	8	4	5
	<i>Maximum Density</i>		215	170	195
6R	<i>Frame Counts</i>	<i>Minimum</i>	5	1	2
		<i>Maximum</i>	9	4	6
	<i>Maximum Density</i>		215	170	195
8R	<i>Frame Counts</i>	<i>Minimum</i>	10	2	4
		<i>Maximum</i>	14	6	8
	<i>Maximum Density</i>		215	170	195
10R	<i>Frame Counts</i>	<i>Minimum</i>	15	2	4
		<i>Maximum</i>	19	6	8
	<i>Maximum Density</i>		215	170	195
11R	<i>Frame Counts</i>	<i>Minimum</i>	20	3	9
		<i>Maximum</i>	24	7	13
	<i>Maximum Density</i>		215	170	195

8. From the Input Frame Count Parameters dialog box, click **Make Test Print** (or **Cancel** to exit the procedure).

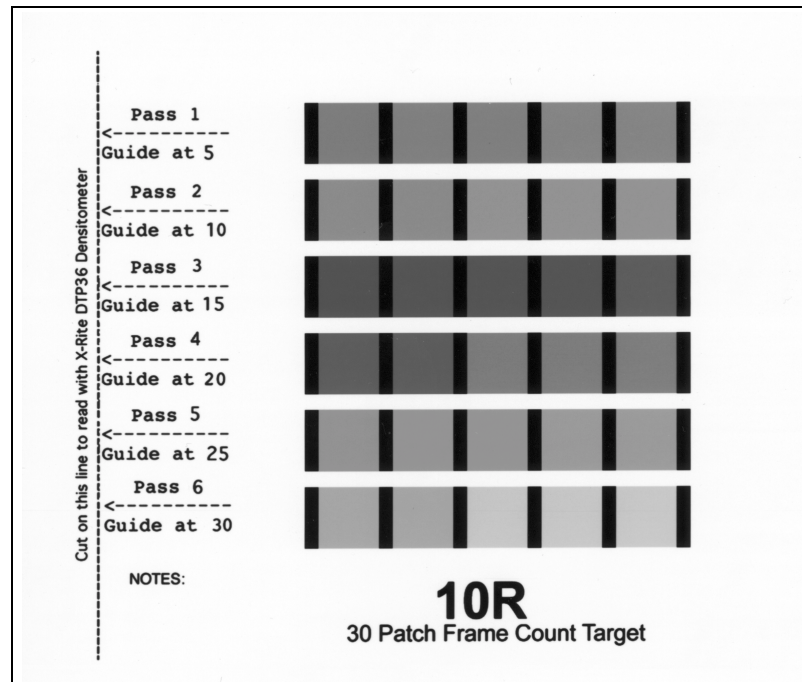
NOTE: Any of the messages below may be displayed if the values do not fall within valid ranges:

<b>Message</b>	<b>Explanation/Remedy</b>
Some minimum frame count values are greater than their corresponding maximum frame count values.	The maximum frame count value for a color must be greater than its corresponding minimum value.  Enter the suggested values from the table.
The difference between minimum and maximum frame count values must be equal to or greater than 1 and less than 10.	The minimum and maximum frame count values can not be the same; for example, a minimum value of 3 and a maximum value of 3 is invalid. The maximum value cannot be more than 9 greater than the minimum value; for example, a minimum value of 3 and a maximum value of 13 is invalid.  Enter the suggested values from the table.
Some frame count values are out of range. Valid frame count values range from 1 to 198.	Enter the suggested values from the table.
Some density values are out of range. Valid density values range from 10 to 255.	

9. If you receive one of the messages above, make the correction and click **OK**. Messages display on the status bar as the test target is printed and the densitometer initializes.
10. When
  - “Waiting for 6 strips of density data. See the Densitometer for instructions...”
  - or “Waiting for density data file from Centralized Densitometer Application” displays,
  - a. Perform a Batch Cut at the OCP.
  - b. Wait for latent image keeping (LIK) to stabilize before processing. The minimum suggested time is fifteen minutes.
  - c. Send the test target prints to be processed.

Continue with [“Reading the Densities.”](#)

1. Trim the processed test target print on the dashed line and along the top so the print passes through the densitometer at the correct locations.
2. Align the pass 1 arrowhead on the print (shown below) with the vertical groove on the front of the densitometer.
3. Put the print firmly in the densitometer. Keep a slight pressure on the print as it moves through the densitometer until you feel a resistance and the display shows "Reading."



- A long beep with a message to re-read the pass indicates an unsuccessful read. If the read continues to be unsuccessful, cancel, then restart the calibration.

5. When the read is successful, repeat steps 2, 3, and 4 until all six passes are complete. Align the arrowhead at passes 2, 3, 4, 5, and 6, respectively.

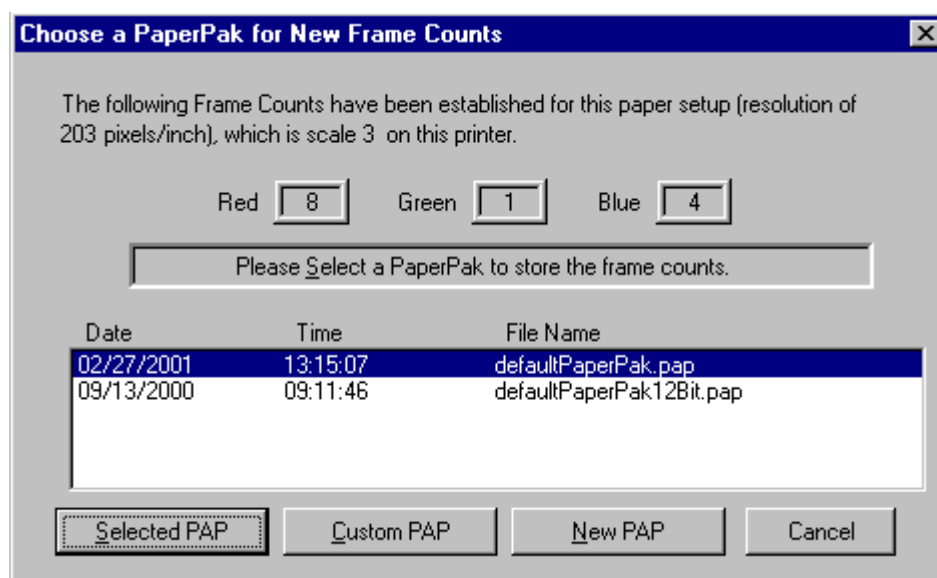
NOTE: For instructions on using the densitometer, see the densitometer manual.

### If the Density Readings are Unsuccessful

If a dialog box displays stating that an error occurred while communicating with the densitometer or that the density data is not in the correct format, click **Retry** after making sure that the densitometer is on, the connection is secure, and the densitometer is calibrated.

### Saving the Calculated Frame Counts

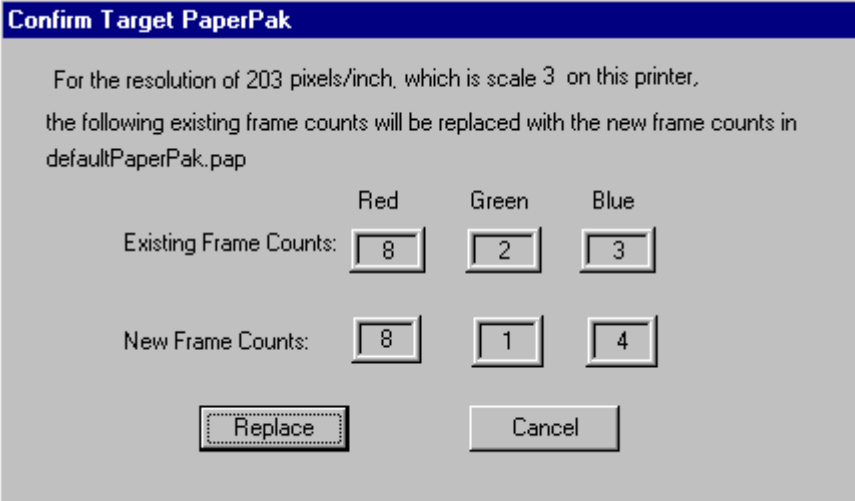
After a successful density read, the frame counts are calculated and the display shows the Choose a PaperPak for New Frame Counts dialog box.



### Saving the Frame Counts in the Selected PaperPak File

1. With the PaperPak file highlighted (in the example, defaultPaperPak.pap), click **Selected PAP**.

The display shows the Confirm Target PaperPak dialog box.



The dialog box is titled "Confirm Target PaperPak". It contains a message: "For the resolution of 203 pixels/inch, which is scale 3 on this printer, the following existing frame counts will be replaced with the new frame counts in defaultPaperPak.pap". Below this message, there are two rows of input fields. The first row is labeled "Existing Frame Counts:" and has three fields for Red (8), Green (2), and Blue (3). The second row is labeled "New Frame Counts:" and has three fields for Red (8), Green (1), and Blue (4). At the bottom, there are two buttons: "Replace" and "Cancel".

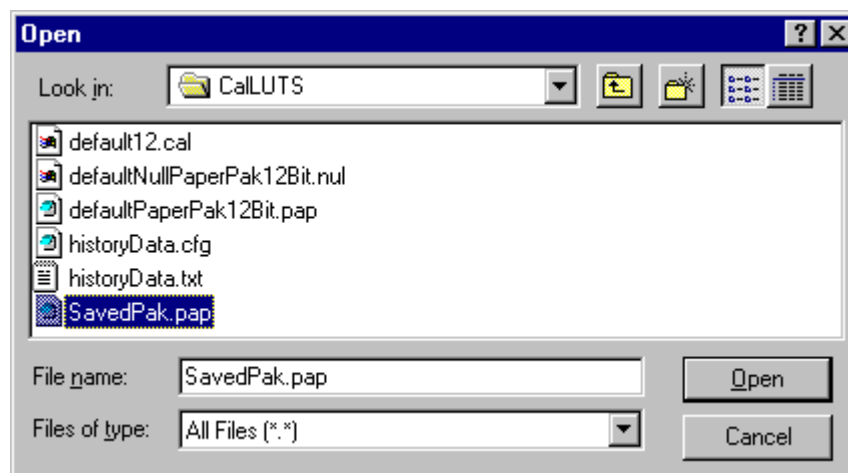
	Red	Green	Blue
Existing Frame Counts:	8	2	3
New Frame Counts:	8	1	4

2. Click **Replace** to replace the frame counts (or **Cancel** if you do not wish to replace the frame counts).

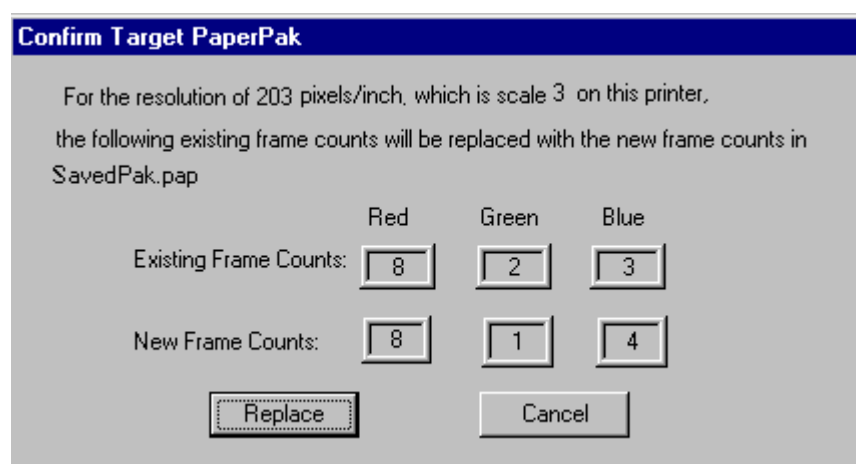
## Saving the Frame Counts in a Custom PaperPak

1. From the Choose a PaperPak for New Frame Counts dialog box, click **Custom PAP**.

The display shows the standard Open dialog box. Make sure the CalLUTS folder is displayed.



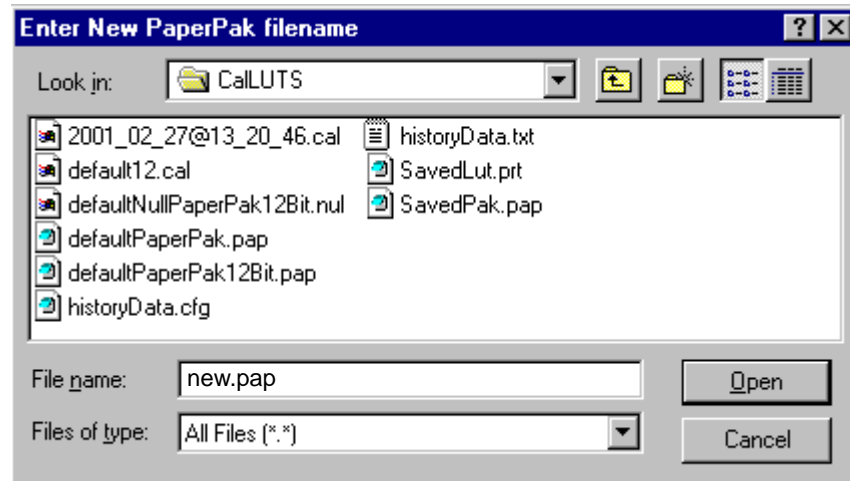
2. Highlight a custom file with a file extension of ".pap" and click **Open**.  
The software checks that the file contains valid data; if not, a message is displayed. If the file is valid, the display shows the Confirm Target PaperPak dialog box.



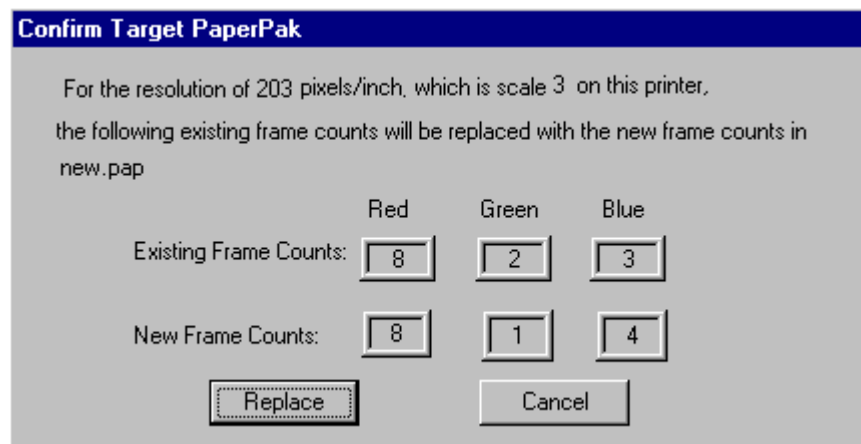
3. Click **Replace** to replace the existing frame counts as indicated (or **Cancel** if you do not wish to replace the frame counts).

### Saving the Frame Counts in a New File

1. From the Save Frame Counts dialog box, select **New PAP**. The display shows the Enter New PaperPak filename dialog box. Make sure the CalLUTS folder is displayed.
2. Type a file name, making sure it ends with the file extension “.pap” and click **Save**.



The display shows the Confirm Save Frame Counts dialog box.



3. Click **Replace** to save the frame counts for the indicated scale (or **Cancel** if you do not wish to replace the frame counts).

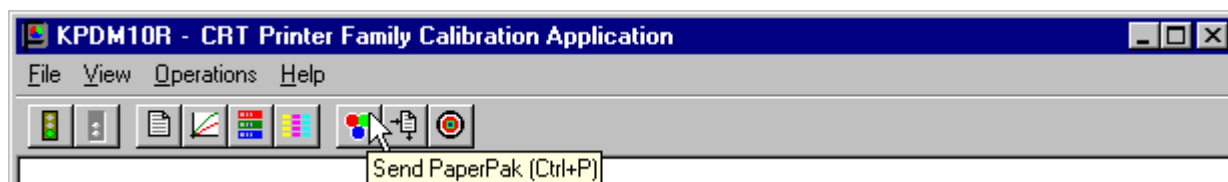
## Sending PaperPaks, LUTs, or Test Targets for Devices

Only do these procedures when determining frame counts or when you are sure of what the outcome will be. Kodak can not be responsible for invalid results.

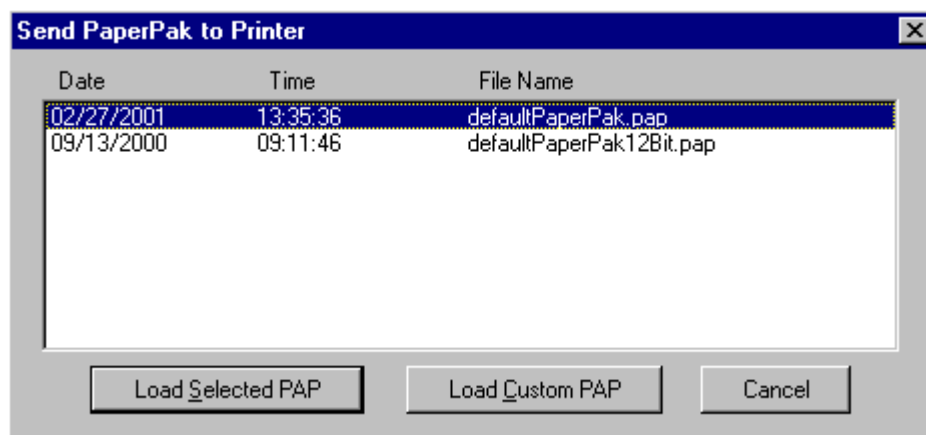
### Sending PaperPaks

The Send PaperPak feature enables you to overwrite the current printer PaperPak. This option sends the selected PaperPak to the Printer, overwriting any existing PaperPak.

1. On the Calibration window, click the **Send PaperPak** icon or select *Operations->Send PaperPak*.



The display shows:





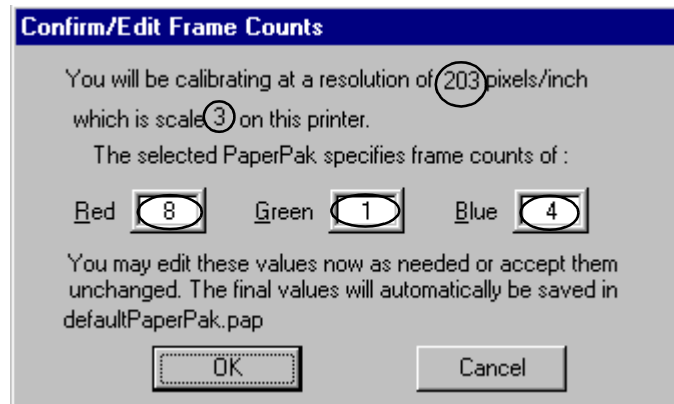
2. Either:
  - with the selected PaperPak highlighted, click **Load Selected PAP**, or
  - click **Load Custom PAP**; then browse the standard file dialog that allows PaperPaks to be imported from other areas on the hard disk or from a removable disk; select the PaperPak file you need.

The default location for PaperPaks is the **CalLUTS** folder.

(Click **Cancel** to go back to the Calibration window.)

The system downloads the highlighted PaperPak.

The display shows the Confirm/Edit Frame Counts dialog box.



NOTE: The circled values may be different from what you see.

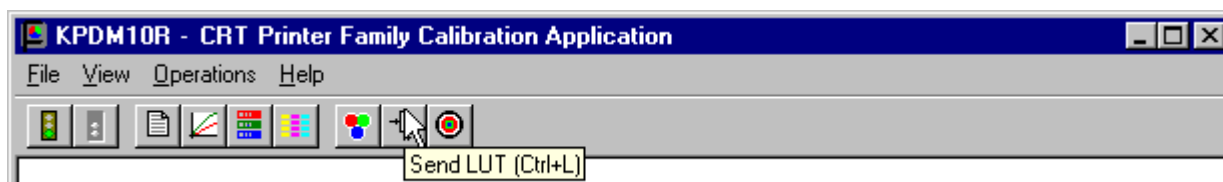
3. Click **OK**, or if needed, make changes to the frame counts and then click **OK**. The status bar shows "The PaperPak was sent successfully."

(Click **Cancel** to go to the Calibration window.)

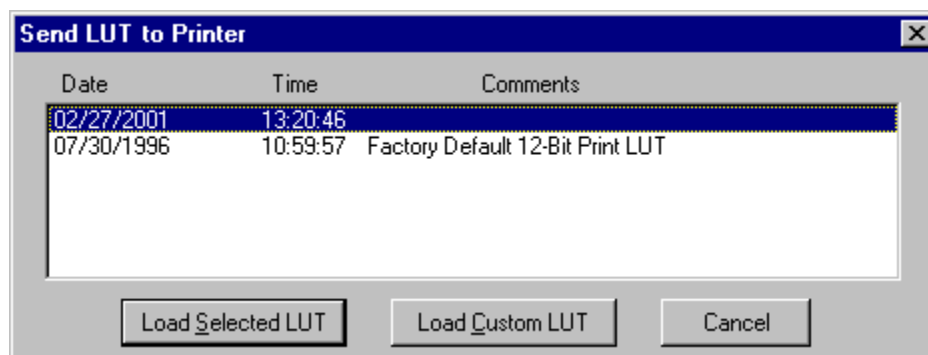
## Sending LUTs

The Send LUT feature enables you to overwrite the current printer LUT. This option sends the selected LUT to the Printer, overwriting any existing LUT.

1. On the Calibration window, click the **Send LUT** icon or select *Operations->Send LUT*.



The display shows the Send LUT to Printer dialog box.



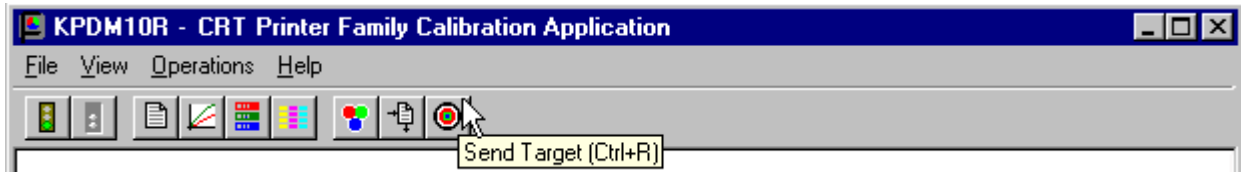
**CAUTION: Macintosh users: If you are selecting a LUT in step 2 as part of the process for determining frame counts, you must select "Pick Custom LUT" and select a calibration LUT from the CalLUTS folder.**

2. Either:
  - select one of the LUTs from the dialog box, then click **Load Selected LUT**, or
  - click **Pick Custom LUT**; then browse the standard file dialog that allows LUTs to be imported from other areas on the hard disk or from a removable disk; select the LUT file you need.The default location for calibration LUTs is the **CalLUTS** folder.

## Sending Test Targets

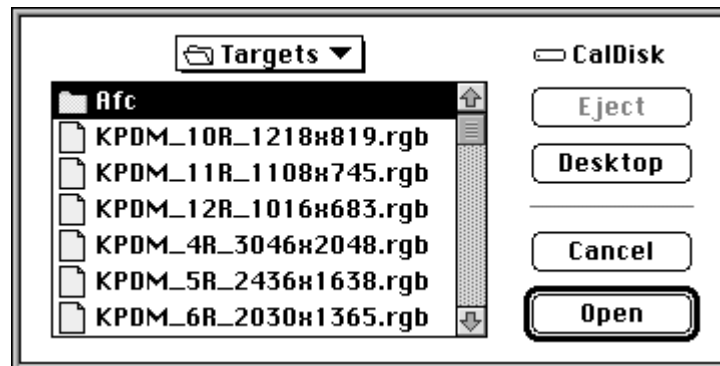
The Send Target to Printer feature enables you to send any properly formatted test target file to the Printer without going through the calibration process. The test target file must contain image data in the correct format (raw RGB planer) for the Printer.

On the Calibration window, click the **Send Target** icon or select *Operations->Send Target*.



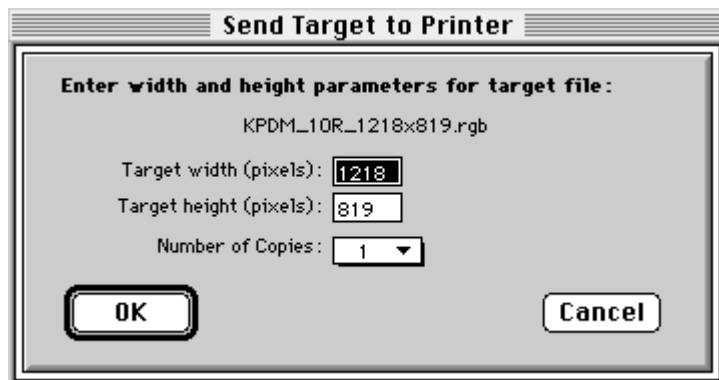
## For Macintosh Systems

The display shows the Open dialog box. You may need to change the directory on this dialog box to get to the Targets folder.



1. Scroll to the test target you need and click **Open**.

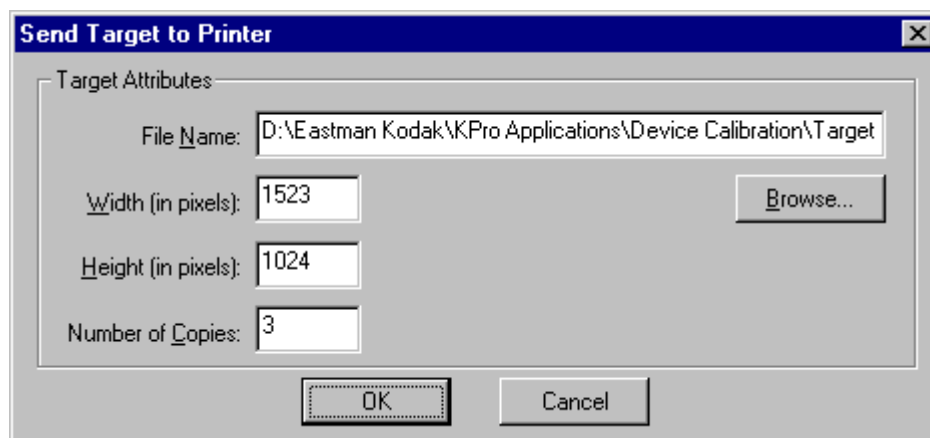
The display shows the Send Target to Printer dialog box.



2. If needed, edit the values.
  3. Click **OK** to save the values (click **Cancel** to exit).
- The test target is sent to the Printer.

### For Windows NT Users

The display shows the Send Target to Printer dialog box.

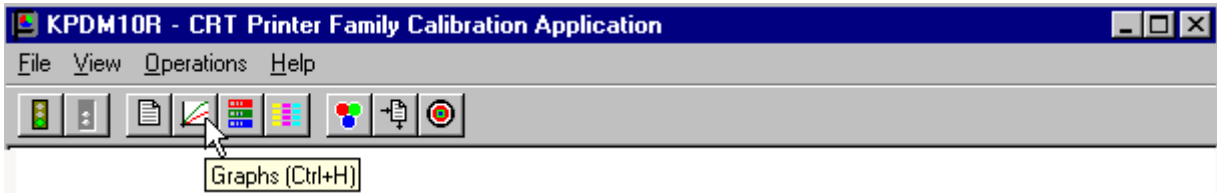


1. Either:
  - Edit the values, if needed, or
  - Click **Browse**; then follow the prompts to load a custom test target and edit those values, if needed.
2. Click **OK** to save the values (click **Cancel** to exit).

The test target is sent to the Printer.

## Viewing Graphs

The View Graphs feature provides access to graphs generated by the last calibration process for a device.



1. Click the **Graphs** icon or select *View->Graphs*. The display shows the most recent graph, based on the last calibration data.

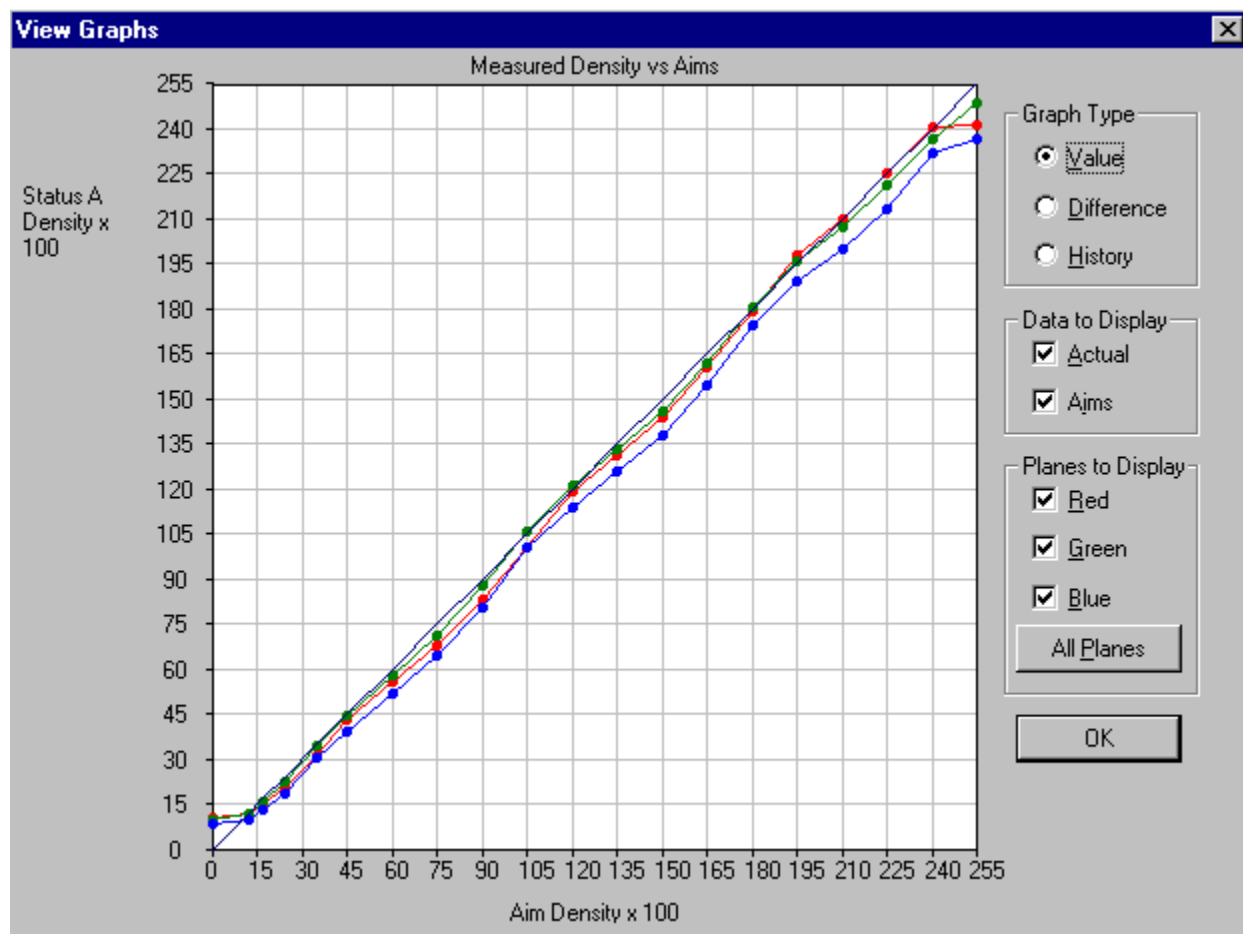
**To view a different graph (change the graph settings) from the same calibration data:**

1. Select the desired Graph Type.
2. Select the desired Display Data.
3. Select the desired Display Planes.
4. Click **OK**.

The displays that follow are examples of the Values, Tolerance, and Spread graphs.

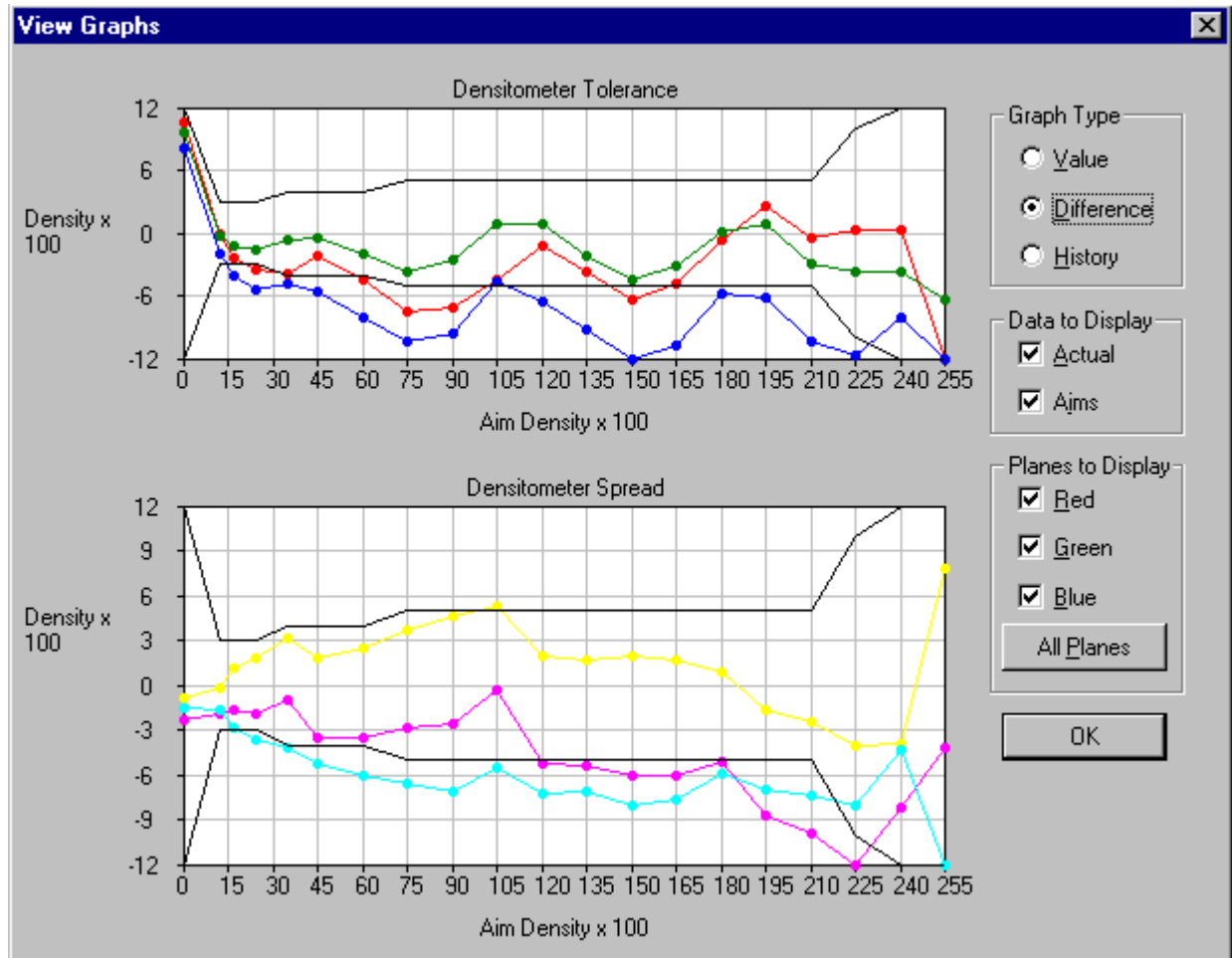
## Value Graph

The Value Graph shows actual data in relation to aim data. Ideally, all three colors would fall on the aims line.



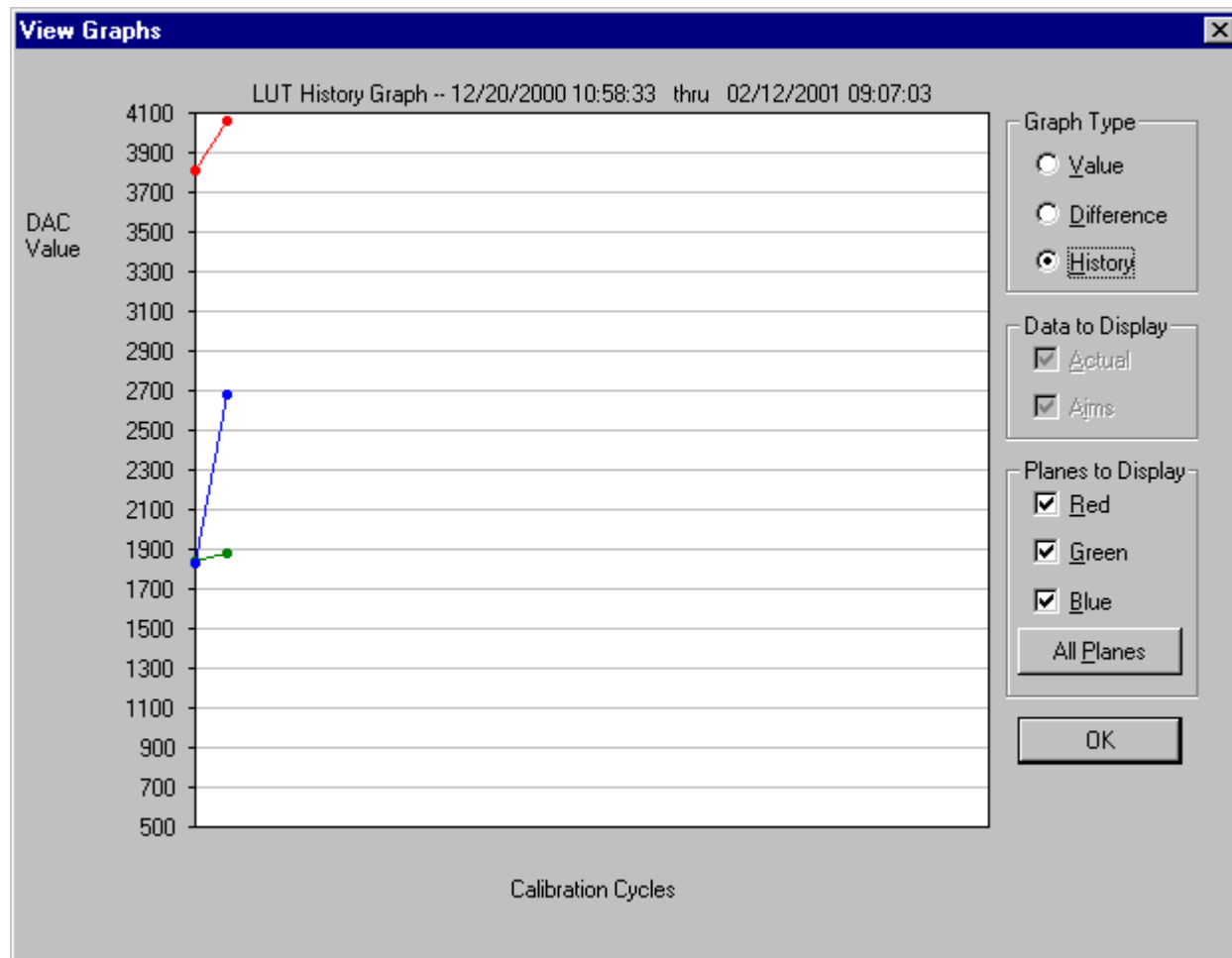
## Difference Graph

The Difference Graph shows if the actual values are within tolerance. You can see from the graph below that the result of the calibration is an out-of-tolerance situation.



## History Graph

The History Graph shows the values for each calibration cycle.





## Creating a Density File for Use with Calibration

During calibration, you have the option of obtaining density data from a file or by scanning a processed test target through an X-RITE DTP 36 densitometer. The option is determined by the entry in the calibration configuration file. If the configuration file is set up to receive density data from a file and you are creating the file:

1. Scan the print into your densitometer.
2. Save the data to file using the density data file format specification (see [“File Formats”](#) below). The *Kodak Professional* Device Calibration software does not perform this function.
3. Move the density data file that you just saved to the “Dens” folder within the device folder for your specific device. The filename should match the Density Source File selected on the Density Source tab of the Edit Configuration window (see [“Editing Information on the Density Source Tab”](#) on page 2-21).

### File Formats

NOTE: If a file contains data in a tabular format, each entry may be separated by multiple spaces and tabs; however, when the file is saved by the application, each group of multiple spaces and tabs is automatically converted to a single tab.

#### DensityDataRaw (TECHNET Format)

Example:

```
R2340 G1000 B2010  
R2350 G1010 B2020  
R2360 G1020 B2030  
R2370 G1030 B2040
```

## Connecting the X-Rite DTP36 Densitometer to the Host Computer

1. Plug the flat 8-pin telephone-type connector into the port on the densitometer.
2. *For Macintosh systems*, plug the other end of the cable into the printer port of the computer.
3. *For Windows NT systems*, plug the other end of the cable into the appropriate serial port.

NOTE: It is not necessary to connect the extra pieces of the cable.

**IMPORTANT:** *Densitometers require calibration at regular intervals. Refer to your densitometer manual or instructions on how to calibrate your densitometer and perform a calibration.*

# **3 Installing and Using the Centralized Densitometer Application**

*IMPORTANT: This chapter applies only to users of WINDOWS NT Systems.*

The Centralized Densitometer Application topics covered in this section include:

- Installing the application on a WINDOWS NT System
- Modifying printer and port information
- Viewing graphs

## **Installing the Centralized Densitometer Application**

If you have a network of printers and will be using the Centralized Densitometer application, install it on the host computer that will be connected to the central densitometer.

NOTE: The *Kodak Professional* Device Calibration application must be installed on each host PC connected to a printer. The Centralized Densitometer application must be installed on the computer connected to the densitometer.

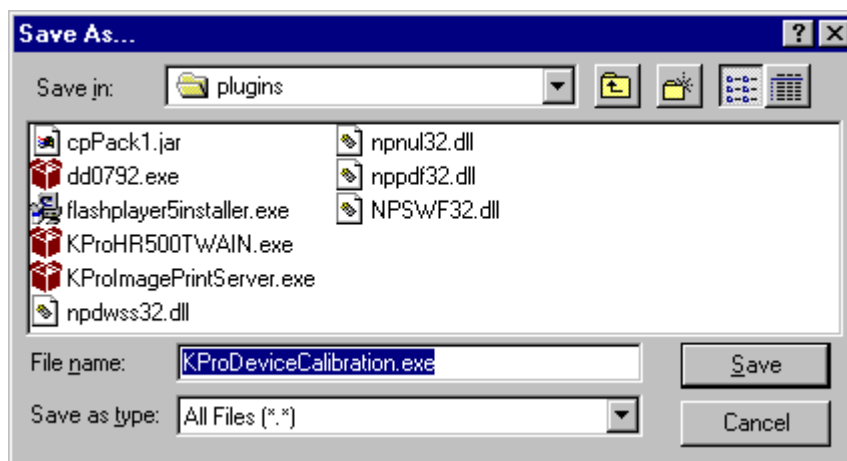
### **System Requirements**

- WINDOWS NT 4.0 with service pack 3 or higher
- 170 KB available disk space
- At least 2 MB main system memory
- CD ROM Drive

## Installation Procedure

1. If you are installing the software from the supplied CD-ROM:
  - a. place the CD in your CD-ROM drive.
  - b. When the Browser appears, select the type of CRT Printer you are using.
2. If you are downloading the installation files from the Kodak web site, go to <http://www.kodak.com/global/en/service/software/kproHost/kpdm.shtml>.
3. Under the heading Product Support, select **Drivers, Software and Firmware**.
4. Select **Calibration Utilities**.
5. Under the heading **Download File**, select **KODAK PROFESSIONAL Device Calibration**.

The Save As dialog box appears.

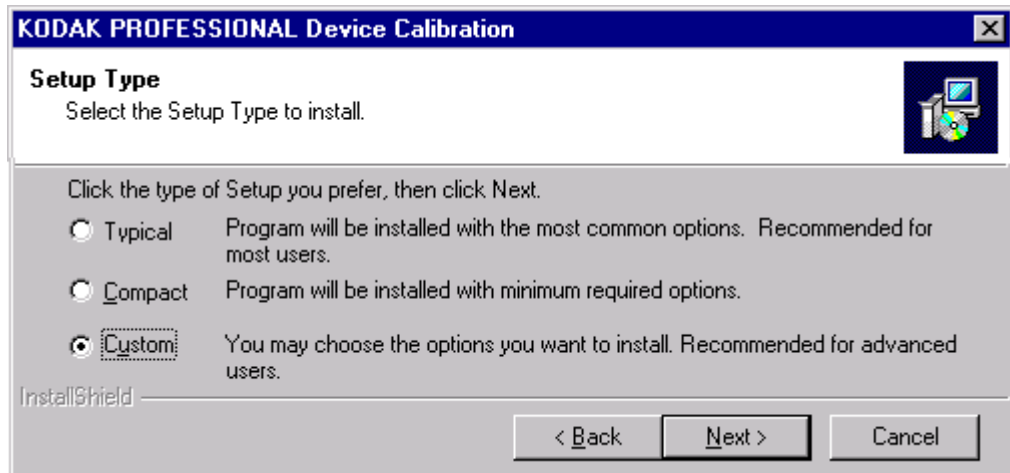


6. Either accept the default path and file name or select another path and file name and save the file.
7. Open the installation file (KODAK PROFESSIONAL Device Calibration.exe). The display shows a splash screen for KODAK PROFESSIONAL Device Calibration and a Setup message.
8. After the Welcome dialog box is displayed, click **Next**.

9. Read the license agreement.
  - To accept the terms and continue the installation, click **Yes**.
  - Or, to cancel the installation, click **No**.
10. Read the readme information, then click **Next**.

The display shows a dialog box for choosing the destination location.
11. Either accept the default path and folder or click **Browse** to select another path and folder.

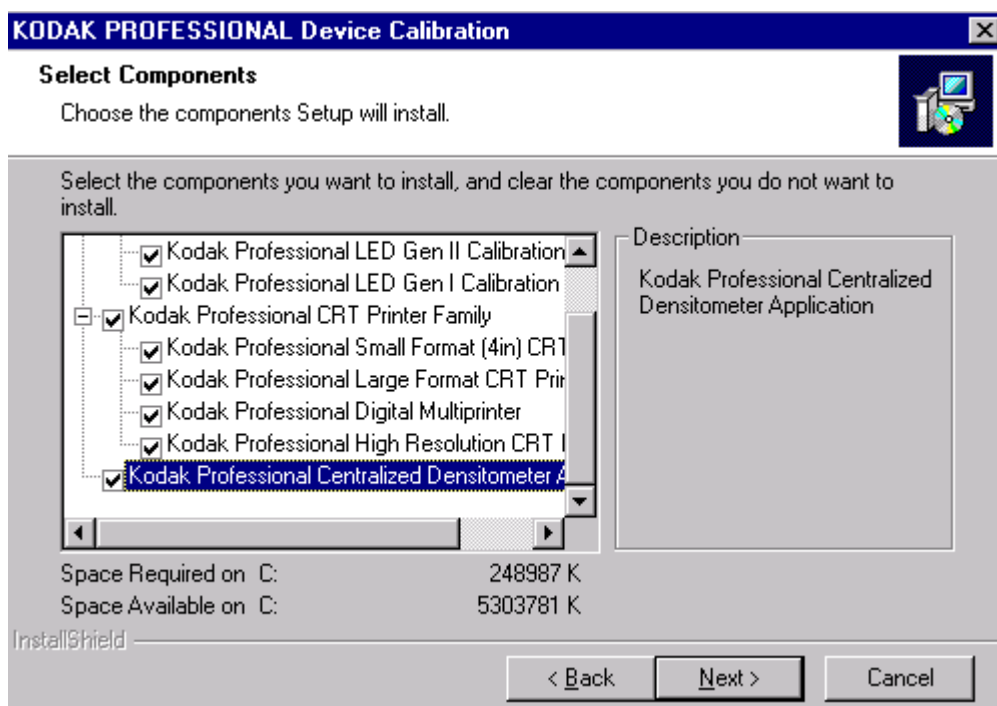
The Setup Type dialog box appears.



12. Select **Custom** and click **Next**.

The Select Components dialog box appears.

13. Click to check the box next to *Kodak Professional Device Calibration – Centralized Densitometer* and click **Next**.

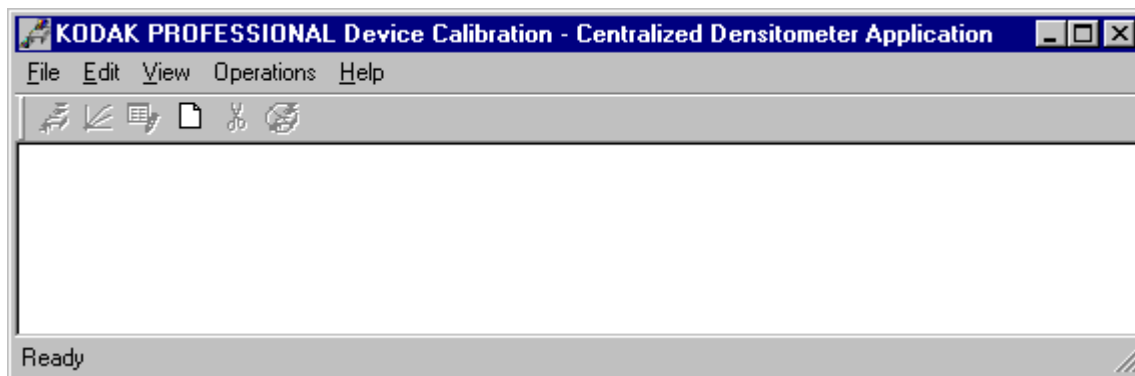


14. Click **Next** to install the software on your system.  
The Setup Status dialog box appears. You do not need to do anything unless you want to cancel the setup.
15. When the setup is complete, click **Finish** to restart the host computer.
16. If you used a CD to install the software, remove the CD-ROM and store it in a safe place.

## Using the Centralized Densitometer Application

1. Click the *Windows* Start button and select Programs -> Eastman Kodak -> KProApplications -> KODAK PROFESSIONAL Device Calibration -> KODAK PROFESSIONAL Centralized Densitometer to open the Centralized Densitometer application.

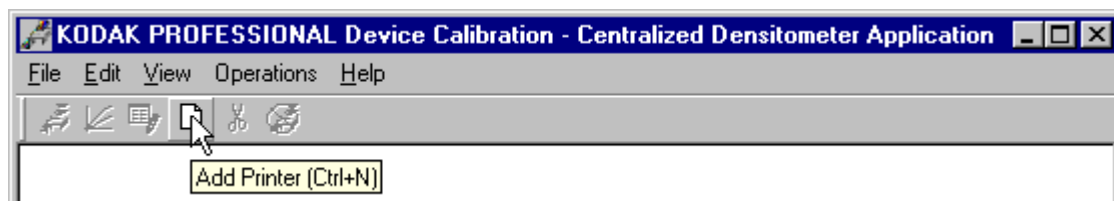
The display shows the Centralized Densitometer Application window.



With the *Kodak Professional* Device Calibration - Centralized Densitometer Application, you can:

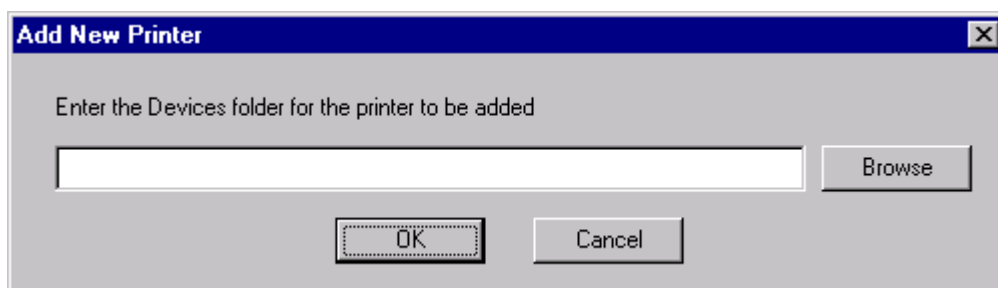
- add or delete a printer
- change the densitometer port
- for a selected printer
  - change the printer information
  - measure the density during a calibration cycle
  - view calibration graphs

### Adding a Printer

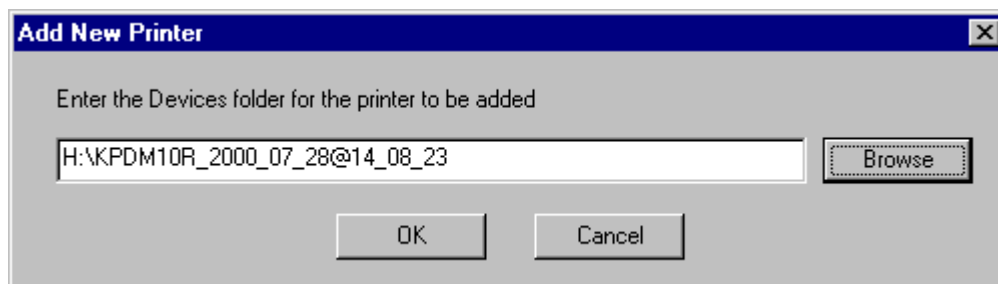


1. Click the **Add Printer** icon or select *File->New* on the Centralized Densitometer Application window.

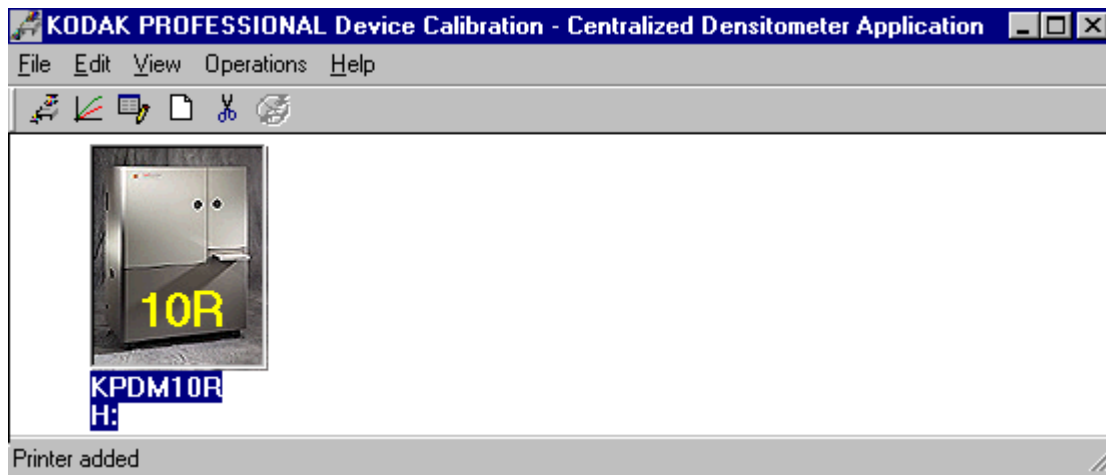
The Add New Printer dialog box appears.



2. Either type a path or click **Browse** and select a path. Click **OK**.

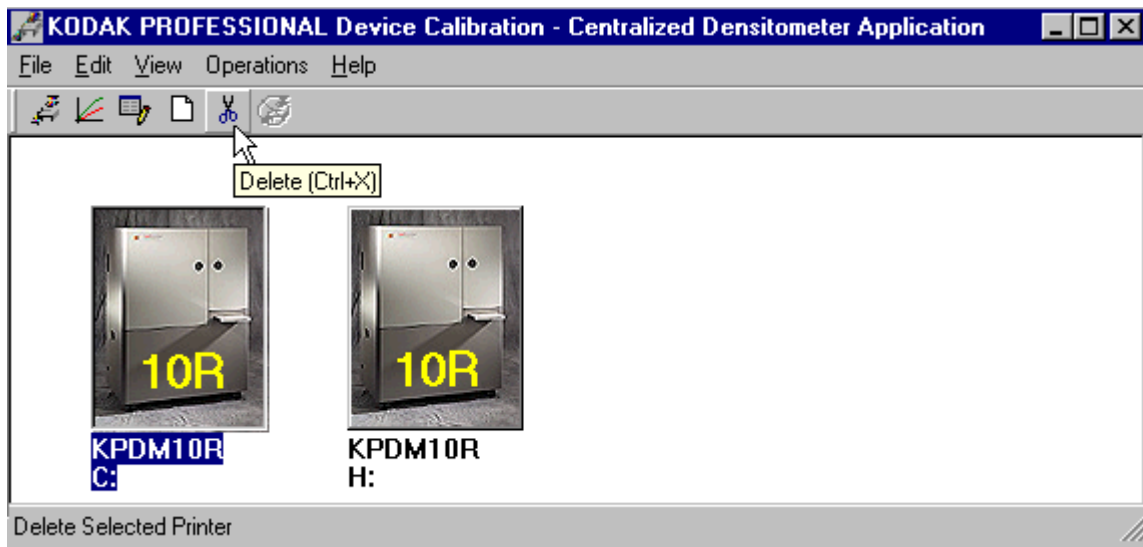


The display shows the Centralized Densitometer Application window with the new printer added.



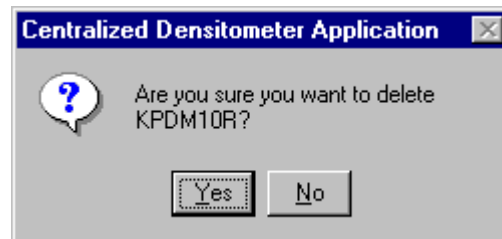


## Deleting a Printer



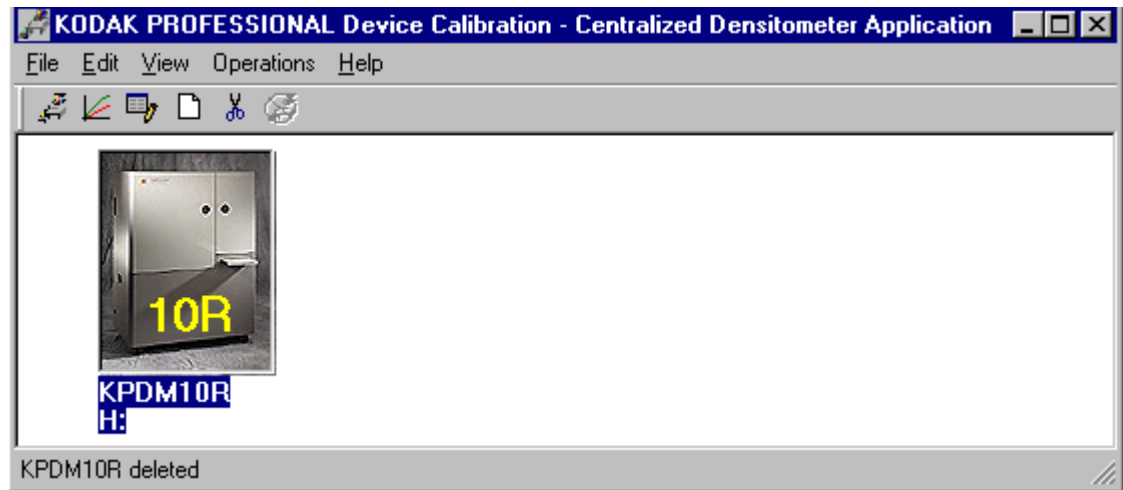
1. Highlight the printer you want to delete.
2. Click the **Delete** icon or select *Edit->Delete Printer* on the Centralized Densitometer Application window.

The display shows the following dialog box.

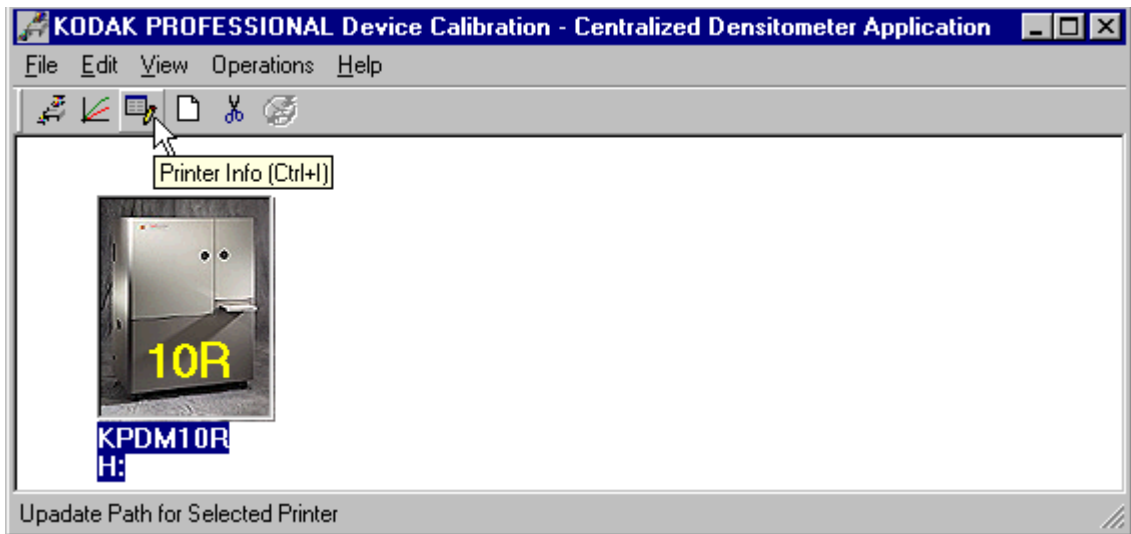


3. Click **Yes** to delete the printer.

The selected printer is no longer visible in the Centralized Densitometer Application window.

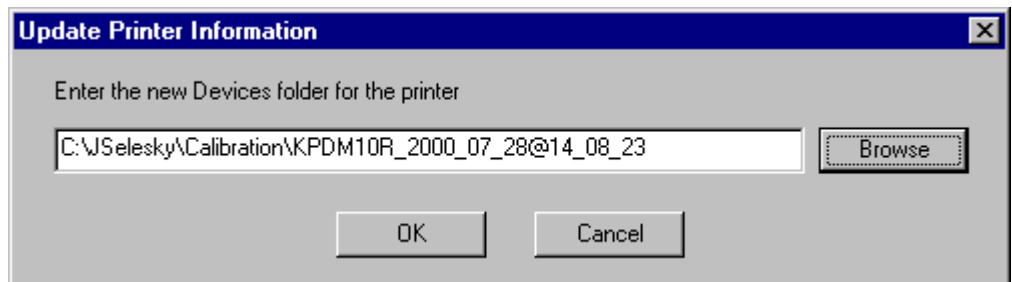


## Changing Printer Information



1. Highlight the printer for which you want to change the information (location).
2. Click the **Printer Info** icon or select *Edit->Printer Info* on the Centralized Densitometer Application window.

The Update Printer Information dialog box appears.

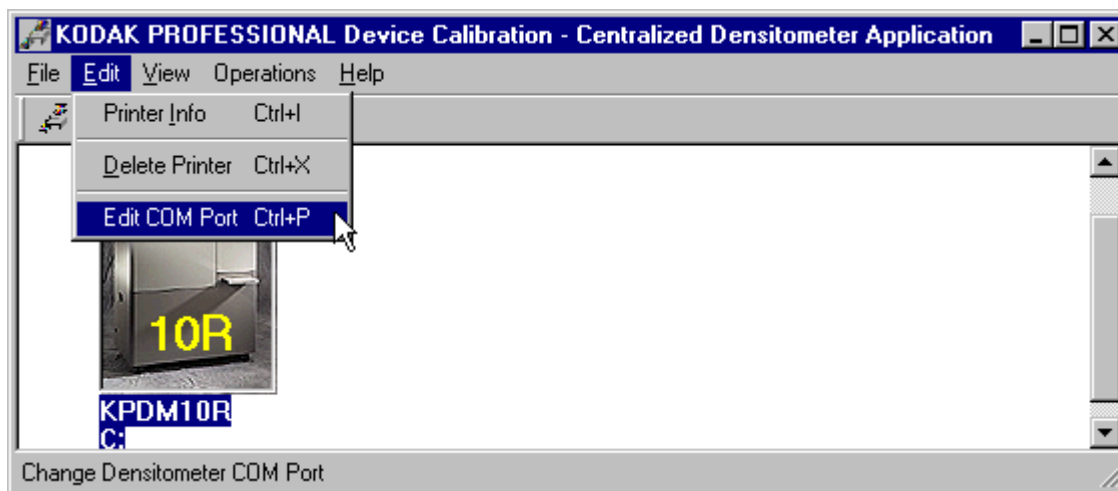


3. Change the location for the printer as needed and click **OK**.

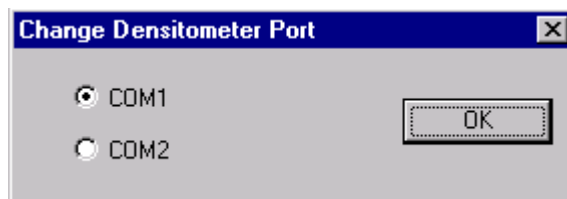
## Changing the Densitometer Port

You can change the designation of the port on your host computer to which the densitometer is attached.

1. Select *Edit->Edit COM Port* on the Centralized Densitometer Application window.

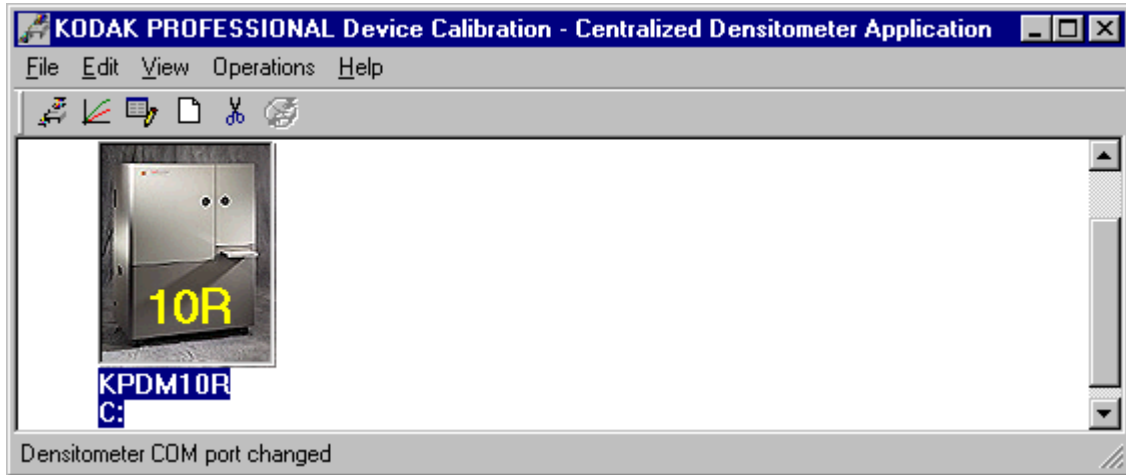


The Change Densitometer Port dialog box appears.



2. Click in the circle next to either COM1 or COM2 and click **OK**.

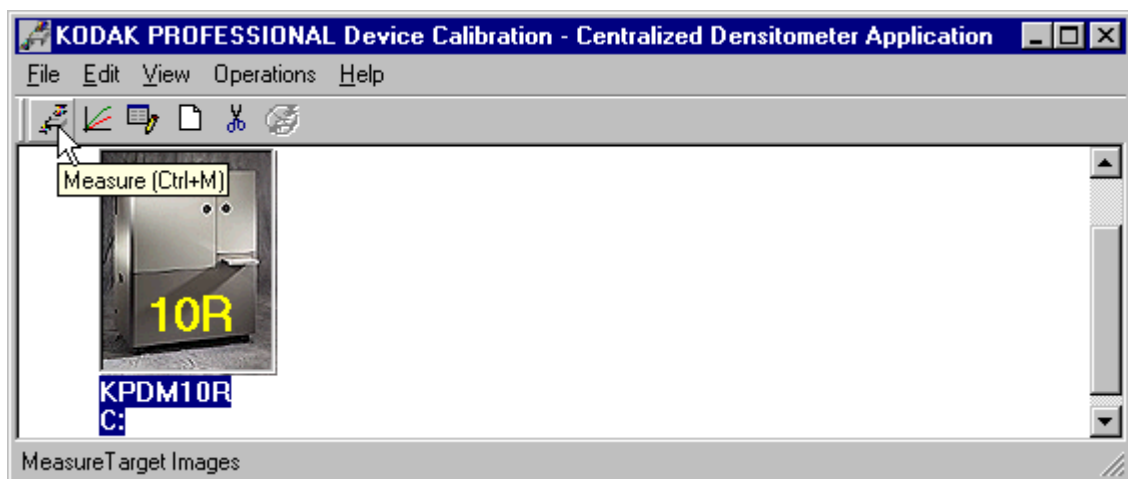
If you change the port, a message is displayed on the status bar of the Centralized Densitometer Application window.



## Measuring Densities During a Calibration Cycle

**IMPORTANT:** To use the centralized densitometer application for measuring densities for a calibration cycle, the density source of “centralized densitometer” must have been selected in the edit configuration dialog for the device being calibrated; see [“Editing Information on the Density Source Tab” on page 2-21](#).

1. Open the Centralized Densitometer Application. The display shows the Centralized Densitometer Application window.



2. Highlight the printer.
3. Click **Measure** or select *Operations->Measure* to measure the target images.
4. At the densitometer, measure the densities (see [“Using the Densitometer to Read Densities” on page 1-9](#)).

When the densities are measured, the status bar on the Centralized Densitometer Application window displays “Ready.”

The measured densities are automatically sent to the CRT printer’s host computer.

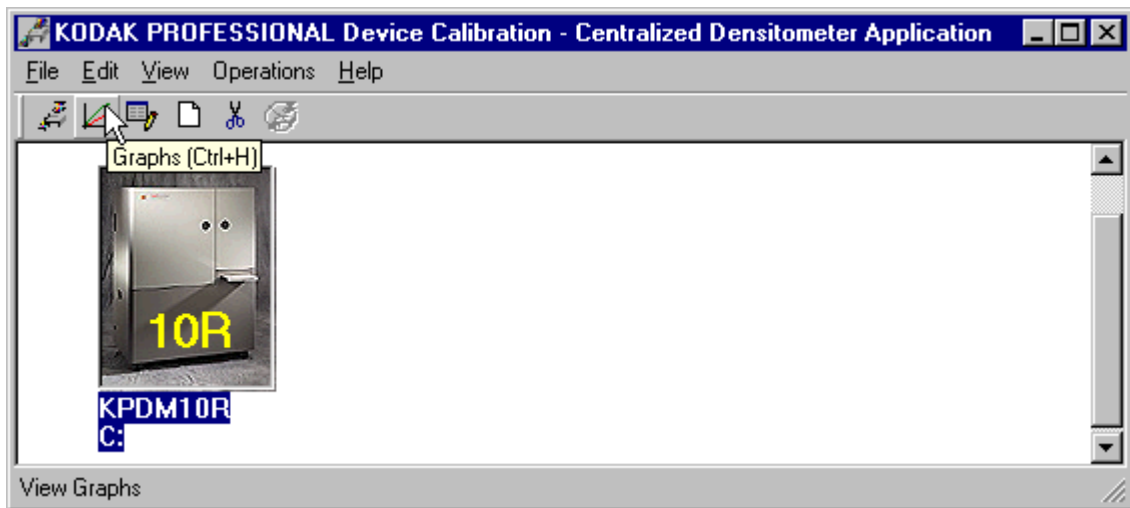
## Viewing Calibration Graphs

The View Graphs feature provides access to the available graphs from the most recently completed calibration of the selected device.

For examples of the graphs, see [“Viewing Graphs” beginning on page 2-51](#). The Value and Difference Graphs reflect the densitometer values that were last read. The History Graph displays the data from completed calibrations.

**To view calibration graphs from the Centralized Densitometer application:**

1. Highlight the printer you want to view graphs and click **Graphs** or select *View->Graphs*.



One of the graphs appears; typically it is the Value graph.

2. Select the Graph Type that you want to view. When the graph is displayed, select the type of data and planes that you want to see displayed.

NOTE: You will get a message if there is no calibration data for the selected device.





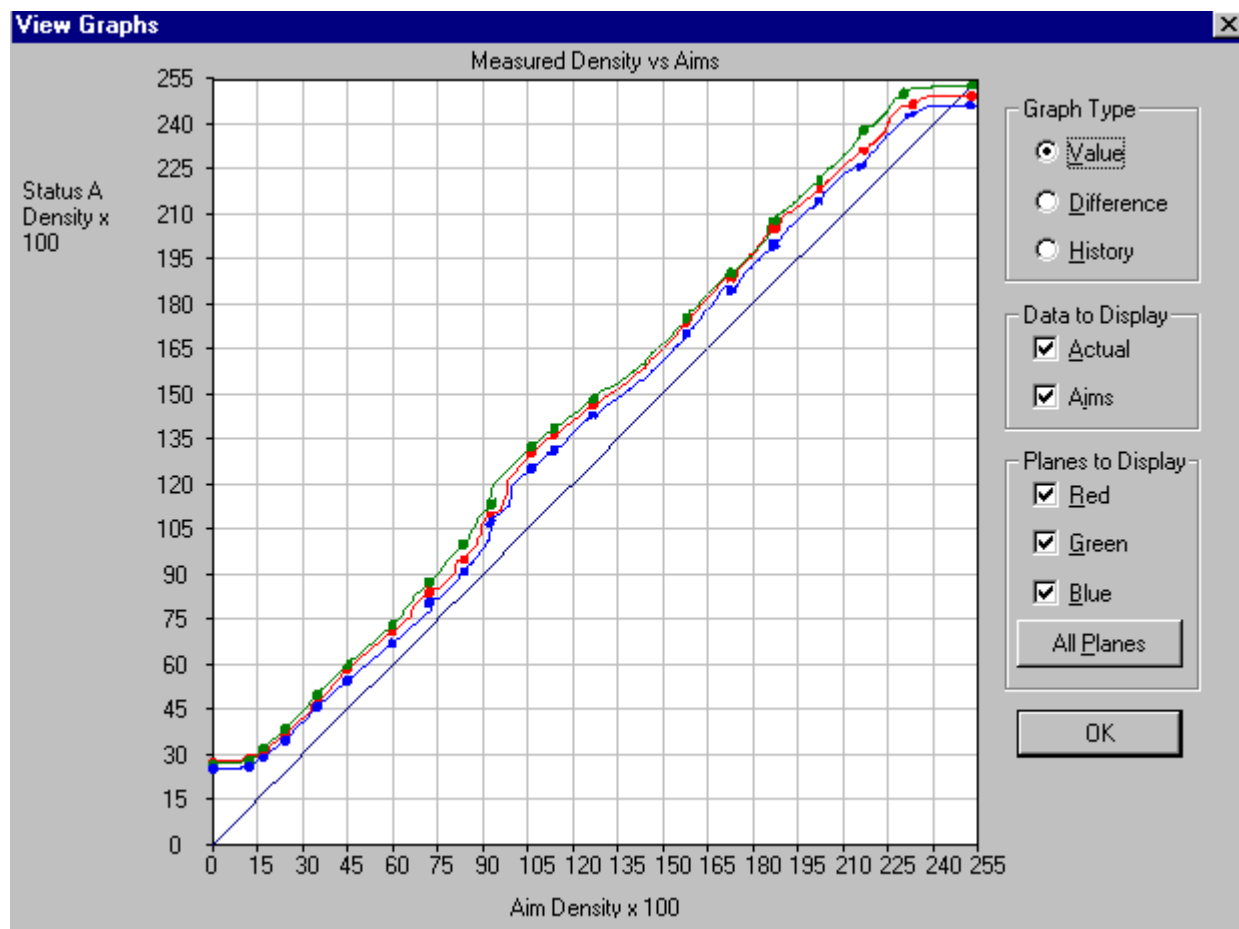
# Appendix A: Troubleshooting

This section lists errors you may occasionally have while using:

- the KODAK Device Calibration Software and the CRT Printer Family Calibration Software
- the X-RITE DTP36 Densitometer

## Calibration Graph

The graph below is an indication that the calibration performed was out of tolerance.



This may result from invalid densitometer readings. If you see a graph that looks similar to the one above, perform another calibration cycle.

# Calibration Errors

## Numeric Calibration Error Codes

<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
1	The following file is locked: <i>_filename_</i> .	The system is trying to access a file that is currently in use.	Close any other applications that may be accessing the file.
2	The following file is protected: <i>_filename_</i> .	The system is trying to access a protected file.	Change the protections on the file to grant access to the user.
3	The following file was not found: <i>_filename_</i> .	The system was trying to access a file that it could not find.	Verify that the filename on one of the configuration dialog windows is correct.
4	Error: <i>_oserror_</i> occurred during operation: <i>_operation_</i> on file: <i>_filename_</i> .	An operating system error occurred.	<ul style="list-style-type: none"> <li>• Rerun the application.</li> <li>• Reboot the operating system</li> </ul>
5	The following file is in an incorrect format: <i>_filename_</i> .	The file does not conform to the application specification.	Verify the file format.
6	The following file already exists: <i>_filename_</i> .	The system is trying to save to a file that already exists.	<ul style="list-style-type: none"> <li>• Delete the existing file.</li> <li>• Change the filename.</li> </ul>
7	There is not enough space to create: <i>_filename_</i> .	The system is trying to save a file but there is not enough disk space.	Remove any unnecessary files to increase free disk space.
8	There are too many files to open <i>_filename_</i> .	Too many files are open.	Close some files and or applications.
9	You do not have permission to open file <i>_filename_</i> .	The file permission is invalid.	Rerun the application.
10	Error copying print LUT to DP2 folder (can't open <i>_filename_</i> ).	The folder doesn't exist or is read-only.	Modify the protection on the folder.

<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
11	Error creating DP2 LUT folder	A folder of the same name may exist.	Change the selected folder name.
101	No response from device: <i>_devicename_</i> .	The device is not responding to the system.	Verify that the device is connected and on-line.
102	Device not found: <i>_devicename_</i> .	The system was trying to access a device that it could not find.	Verify that the device name on one of the configuration dialog windows is correct.
103	The following device is indicating it is not ready: <i>_devicename_</i> .	The device is not ready.	Wait several minutes and try the activity again.
104	The following device is busy: <i>_devicename_</i> .	The device is busy.	Wait several minutes and try the activity again.
105	The following device is not a TTY port: <i>_devicename_</i> .	The port name in the configuration file does not refer to a valid serial port.	Change the port name in the configuration file to a valid serial port.
106	The following device is closed: <i>_devicename_</i> .	The serial port closed during system reading.	<ul style="list-style-type: none"> <li>• Verify that no other application is accessing the port.</li> <li>• Restart the application.</li> </ul>
107	No data on device: <i>_devicename_</i> .	No data is available for the system to read on the serial port.	<ul style="list-style-type: none"> <li>• Verify that the densitometer is connected correctly.</li> <li>• Restart the application.</li> </ul>
108	Error: <i>_oserror_</i> occurred during operation: <i>_operation_</i> on device: <i>_devicename_</i> .	An operating system error occurred.	<ul style="list-style-type: none"> <li>• Rerun the application.</li> <li>• Reboot the operating system</li> <li>• If problem continues, call for service.</li> </ul>
109	Invalid Device ID: <i>_devicename_</i> .	A new device was created with an incorrect device ID.	Edit the device ID to reflect the correct device ID.
110	Unable to perform operation: <i>_operation_</i> Status Message: <i>_statmsg_</i> Error Message: <i>_errmsg_</i> .	An unknown device error occurred.	Use the information in the status message and error message to resolve the device error.

<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
111	There is insufficient memory for the requested operation on device: <i>_devicename_</i> .	The application does not have enough memory to complete the operation.	Close the other applications and unnecessary windows.
112	A communications time-out occurred during operation on device: <i>_devicename_</i> .	The connection between the printer and host computer was lost.	Check that all cables are properly connected.
113	A device driver for the following device could not be found: <i>_devicename_</i> .	The application could not find the necessary device software to communicate with the printer.	Make sure that the Calibration Application and ASPI SCSI device driver are installed correctly.
114	An error occurred during communications to the following device: <i>_devicename_</i> .	<ul style="list-style-type: none"> <li>• The cable between the printer and the host computer is worn.</li> <li>• One or more of the connections between the printer and the host computer has malfunctioned.</li> </ul>	<ul style="list-style-type: none"> <li>• Check that all cables are properly connected.</li> <li>• Check the cables and connections between the printer and the host computer for wear and if necessary, replace them.</li> </ul>
115	An operation error occurred during communications to the following device: <i>_devicename_</i> .	<ul style="list-style-type: none"> <li>• The cable between the printer and the host computer is worn.</li> <li>• One or more of the connections between the printer and the host computer has malfunctioned.</li> </ul>	<ul style="list-style-type: none"> <li>• Check that all cables are properly connected.</li> <li>• Check the cables and connections between the printer and the host computer for wear and if necessary, replace them.</li> </ul>
116	A software warning has been issued by the following device: <i>_devicename_</i> Error Message: <i>_errmsg_</i>	A software error has occurred on the printer.	Resolve printer error condition.
117	A software error has been detected by the following device: <i>_devicename_</i> Error Message: <i>_errmsg_</i>	An error has occurred on the printer.	Resolve printer error condition.
118	A SCSI ID for the following device was not found: <i>_devicename_</i> .	SCSI driver not found.	Reinstall the SCSI driver on host computer.

<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
119	The wrong SCSI ID was specified for the following device: <i>_devicename_</i> .	SCSI ID is incorrect.	Set the Target SCSI ID to the printer SCSI ID.
120	This device has been setup for the wrong model of printer: <i>_devicename_</i> .	The chosen device has not been found.	Verify chosen device matches the printer model.
121	Unable to read STATUS from device: <i>_devicename_</i> .	Unable to see the printer.	Check SCSI cable connections.
122	The selected LUT contains data that exceeds the limits of this printer.	Trying to send a 12-bit LUT to a 10-bit printer.	Select a 10-bit LUT file.
201	An error occurred while trying to allocate memory.	The system is trying to allocate memory; however, no memory is available.	Close any unnecessary applications.
202	The following parameter is invalid: <i>_parametername: _parametervalue_</i> .	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
203	The function is not supported by the class.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
204	This function has not been implemented.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
205	Must enter the following field: <i>_field_</i> .	The operator left a configuration field blank.	Enter information in the blank configuration field.
301	The following key was not found: <i>_key_</i> .	<ul style="list-style-type: none"> <li>An internal error occurred with the software.</li> <li>One of the files was edited manually and a key was changed.</li> </ul>	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>Restore the key to its previous value.</li> <li>If problem continues, call for service.</li> </ul>

<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
302	The following grouper was not found: <i>_grouper_</i> .	<ul style="list-style-type: none"> <li>An internal error occurred with the software.</li> <li>One of the files was edited manually and a grouper was changed.</li> </ul>	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>Restore the grouper to its previous value.</li> <li>If problem continues, call for service.</li> </ul>
303	The call depends on a current grouper, but the current grouper has not been set.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
501	An error occurred while applying the data.		
601	A bad count was entered. The expected count was: <i>_count_</i> .	<ul style="list-style-type: none"> <li>A file was edited manually and an incorrect number of rows was entered.</li> <li>An internal software error occurred.</li> </ul>	<ul style="list-style-type: none"> <li>Manually enter the correct number of rows in the file.</li> <li>If problem continues, call for service.</li> </ul>
602	An error occurred during the calculation process.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
701	Patch <i>_patch_</i> , column <i>_column_</i> , value <i>_value_</i> is beyond tolerance <i>_tolerance_</i> for aim <i>_aim_</i> .	A density patch was out of tolerance.	Perform another calibration cycle.
702	Patch <i>_patch_</i> has a spread of <i>_spread_</i> which is out of range <i>_range_</i> .	The spread between colors for a given density patch is out of tolerance.	Perform another calibration cycle.
703	CalToleranceFile can only be initialized once.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
704	CalToleranceFile::initialize must be called first.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>

<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
801	Could not find row: <i>_row_</i> .	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
802	Could not find column: <i>_column_</i> .	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
803	Could not find element - column: <i>_column_</i> . row: <i>_row_</i> .	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
804	Row value was not set before using.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
805	Column value was not set before using.	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
806	Error deleting row: <i>_row_</i> .	An internal error occurred with the software.	<ul style="list-style-type: none"> <li>Restart the application.</li> <li>If problem continues, call for service.</li> </ul>
807	Element at row: <i>_row_</i> ; column: <i>_col_</i> value: <i>_val_</i> failed audit.	An input file had incorrectly formatted data in it at the location indicated.	<ul style="list-style-type: none"> <li>Verify that you are using the correct file.</li> <li>Edit the file and correct the format.</li> </ul>
910	Configuration file field: <i>_filename_</i> is invalid. Calibration will be cancelled.	The user entered an incorrect value in a configuration file.	<ul style="list-style-type: none"> <li>Enter the correct value.</li> <li>Reinstall the application.</li> <li>If problem continues, call for service.</li> </ul>
911	Error <i>_errcode_</i> occurred. Processing stopped.	An internal error occurred with the software.	Restart the application.
919	Error occurred preparing to handle exit from Kodak Device Calibration. Will not perform cleanup at exit.	An internal error occurred with the software.	Restart the application.

<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
921	Unable to return the printer to its original state. Fix printer problem and re-calibrate.	The application was trying to cancel but received an error when sending the original LUT back to the printer.	Printer is in an unknown state. Correct any printer problems and restart the application.
922	There is already a printer open. Please close the open printer first.	User tried to open a printer when the printer was already open.	Close the open printer.
923	An error occurred during the loading of a printer. Please check to make sure the file chosen was of the correct type and/or format.	An error occurred during the loading of a printer.	Check that the file chosen was the correct format or type.
924	No printer loaded.	The operator has not yet opened a printer.	Open a printer.
941	The height and width values do not agree with the size of the target file.	The specified size does not match the file size.	Enter the correct file size.
942	Unable to configure densitometer. Densitometer configuration file may be corrupt or lost.	The file CalDevDensGen2.cfg is corrupt or lost.	Restart the application. If problem continues, call for service.
1003	Unable to load default configuration file: <i>_filename_</i> .	The default configuration file was deleted or renamed or moved.	Restore the file manually or reinstall the software.
1004	Unable to set values in new configuration file.	An internal error occurred with the software.	Restart the application.
1005	Unable to save configuration file: <i>_filename_</i> .	The system is trying to save a file but there is not enough disk space.	Remove any unnecessary files to increase free disk space.
1006	Configuration file field: <i>_field_</i> is invalid.	The user entered an incorrect value in a configuration file.	<ul style="list-style-type: none"> <li>• Enter the correct value.</li> <li>• Reinstall the application.</li> </ul>



<b>Code</b>	<b>Status Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
1007	Unable to remove directory: <i>_directory_</i> .	The user does not have the authority to update the directory.	Verify that the user has update authority on the directory.
1101	Density DMIN/DMAX points are invalid.	Density points are invalid.	Reread density values on densitometer or make a new calibration print.
1102	Density data is not monotonic increasing.	Density data is invalid.	Reread density values on densitometer or make a new calibration print.
1103	Exceeded maximum number of allowable data errors.	Density data is invalid.	Reread density values on densitometer or make a new calibration print.
1104	Asymmetric Density Groupings are invalid.	Density data is invalid.	Reread density values on densitometer or make a new calibration print.
1201	Unknown response from densitometer.	During initialization, the application received an unknown response from the densitometer.	Verify that the baud rate of the densitometer matches that of the applications configuration.
1202	Error: <i>_error_</i> from densitometer.	An unexpected error was returned from the densitometer.	Calibrate the densitometer. If the problem continues, check the manual for the densitometer.
1203	Error: Number of patches seen by densitometer is incorrect.	Unable densities on densitometer.	Try adjusting frame counts or reread the density patches on the densitometer.
1300	Values have not been loaded	The matrix file is missing.	Create a new device.
1301	Data or Matrix files have not yet been loaded	The matrix file is missing.	Create a new device.
1302	Data cannot be saved, must first apply the matrix	The matrix file is missing.	Create a new device.

## Non-Numeric Calibration Error Messages

<b>Error Message</b>	<b>Possible Cause/Subsystem</b>	<b>Possible Solution</b>
An underrun error occurred during communications to the following device.	<ul style="list-style-type: none"> <li>The cable between the printer and the host computer is worn.</li> <li>One or more of the connections between the printer and the host computer has malfunctioned.</li> </ul>	<ul style="list-style-type: none"> <li>Check that all cables are properly connected.</li> <li>Check the cables and connections between the printer and the host computer for wear and, if necessary, replace them.</li> </ul>
An UNKNOWN error occurred during communications to the following device.	An unknown error occurred in the application.	<ul style="list-style-type: none"> <li>Restart the calibration application.</li> <li>If the problem continues, make sure that the Calibration Application and ASPI SCSI device driver are installed correctly.</li> </ul>
Device not found.	The host computer attempted to contact the printer at the specified SCSI ID but did not get a response.	<ul style="list-style-type: none"> <li>Make sure that the printer is turned on and is on-line.</li> <li>Make sure that the Calibration Application and ASPI SCSI device driver are installed correctly.</li> </ul>
Invalid Device ID.	The host computer attempted to contact the printer at the specified SCSI ID but did not get a response.	Make sure that the printer is turned on and is on-line.
The following device is busy.	The printer at the specified SCSI ID is busy.	Check that all cables are properly connected.
The following device is closed.	The connection between the printer and host computer was lost.	Check that all cables are properly connected.

## Densitometer Errors

<b>Code</b>	<b>Message</b>	<b>Explanation</b>
<01>	BAD_COMMAND	The densitometer does not recognize a command.
<02>	PRM_RANGE_ERROR	One or more data or address parameters is out of range. See the command guide for parameter limits.
<03>	DISPLAY_OVERFLOW_ERROR	An attempt was made to read or write beyond the end of the display. Valid addresses for the display range from 0x00 to 0x20 (0 to 31 decimal).
<04>	MEMORY_OVERFLOW_ERROR	An attempt was made to read or write beyond the end of the external RAM within the densitometer. Valid addresses for the external RAM range from 0x0000 to 0x7fff (0 to 32767 decimal).
<05>	INVALID_BAUD_RATE	The parameter included with the BR command was invalid. Valid parameters are 06 (1200), 0C (2400), 18 (4800), 30 (9600), and 60 (19200).
<06>	INVALID_PHOTO_STRIP	The specified photographic control strip does not exist.
<07>	TIMEOUT	The time interval between characters has exceeded 5 seconds.
<08>	PRM_SYNTAX_ERROR.	An invalid character was found in the command string.
<09>	INVALID_PASS	The requested pass does not exist for the currently stored strip (e.g., specifying pass 5 for a 4-pass strip).
<0a>	INVALID_STEP	The requested step does not exist for a given pass in the currently stored strip (e.g., specifying step 25 or step 0 on a 21-step pass).
<0b>	NO_DATA_AVAILABLE	Data was requested but no data is stored in memory.
<0c>	MISSING_PARAMETER	One or more required parameters was omitted.

<b>Code</b>	<b>Message</b>	<b>Explanation</b>
<10>	LAMP_MARGINAL	The lamp output is at approximately 50% of its original brightness. Strip readings can still take place, but to maintain proper accuracy and repeatability, replace the lamp as soon as possible.
<11>	LAMP_FAILURE	The lamp is either burned out or its output is at a level too low for acceptable readings. The densitometer will not read strips until the lamp is replaced and the densitometer is re-calibrated.
<12>	STRIP_RESTRAINED	During calibration, the calibration strip was held or restrained as it passed through the unit. Do not hold the strip as it is reading and make sure the read path is clear of any foreign matter.
<13>	BAD_CAL_STRIP	During calibration, the calibration strip was unrecognizable. The strip may have been inserted backwards, upside down, or held so that it slipped on the internal rollers. This also may be an indication that the strip needs to be replaced.
<14>	MOTOR_ERROR	During calibration, a problem was detected with the drive motor. This can occur if the strip is held back while reading.
<20>	INVALID_READING	The strip just read was not recognized by the densitometer.
<21>	WRONG_COLOR	After a strip reading, the step wedge just read was not the color specified for that pass or strip as defined in the densitometer editor menu.
<23>	NEEDS_CALIBRATION	The calibration check that was done immediately after reading a strip indicated that the unit needs calibration. This occurs when the reading taken from the opal glass after the strip exits the unit differs from the reading taken during calibration by more than the internal tolerance (default is 0.1 X, Y, or Z). The tolerance can also be changed by the RCI command CC (Check Cal tolerance).

<b>Code</b>	<b>Message</b>	<b>Explanation</b>
<26>	NO_VALID_DATA	The measure type is set to CONT and the strip that was read contained nothing but base material. Base material is defined as measuring less than 0.5D in the visual channel. For negative (black) based materials, base material is defined as measuring less than twice the reflectance of a measurement taken near the trailing edge of the strip. the densitometer uses a measurement taken at about 0.25 inches from the trailing edge of the strip to determine if it is positive or negative based. Any measurement greater than 10% reflectance is considered positive based; anything else is considered negative based.
<27>	BAD_PATCH	If the Pattern Recognition comparison window is set to 0 or 1, this error may result when a single patch on the strip is bad due to dirt, smears, creases, etc. (See explanation of CW command for more information.)
<30>	BAD_STRING_LENGTH	A strip definition string received as part of the DS (Define Strip) RCI command did not contain the correct number of characters.
<31>	BAD_CHARACTER	A non-printable character was received in one of the name fields (strip name or pass name). Printable characters are in the range 0x20 to 0x7E, inclusive.
<32>	BAD_MEAS_TYPE	The value for the measure type field was greater than 3. Valid values are 0 through 3.
<33>	BAD_COLOR	The value for the color field was greater than 9.
<34>	BAD_STEPS	The value for the number of steps was greater than 72.
<35>	BAD_STOP_LOCATION	The value for the guide setting was less than 4 or greater than 30.
<36>	BAD_OUTPUT_TYPE	The value for the output type was greater than 5.
<37>	MEMORY_ERROR	The definition could not be stored.

<b><i>Code</i></b>	<b><i>Message</i></b>	<b><i>Explanation</i></b>
<38>	BAD_N_FACTOR	The n-factor (used in Dot calculations) is either less than 0500 (0.500) or greater than 4500 (4.500).
<39>	STRIP_DOESNT_EXIST	The SD command was issued and the requested strip does not exist.
<3A>	BAD_MIN_MAX_VALUE	The value for the min/max field was greater than 4.
<40>	BAD_SERIAL_NUMBER	An attempt was made to redefine one of the stored serial numbers with a number containing one or more invalid digits.

# Appendix B: Manually Determining Frame Counts

When choosing frame counts to reach a target DMax, choose the red, green, and blue values that are close to, or slightly higher than, the optimum DMax range (for Digital III paper, red – 2.25, green – 2.20 and blue – 2.15 are optimum).

NOTES: Not all photographic papers support a DMax of above 2.1 in all three colors.

The combined characteristics of the cathode ray tube (CRT) and Digital Photographic paper results in a very low number of frame counts needed for the green exposure. This produces a coarse adjustment of the green Dmax. When determining the green frame counts, select the first value that produces a density higher than the Dmax aim, even though the difference is significant. The calibration software has sufficient range to accommodate the higher Dmax.

When you enter frame counts in this procedure for a Digital Multiprinter with Digital III paper, use the initial values for the most frequently used scales (magnifications) that are suggested below:

<b>Scale (magnification)</b>	<b>Red</b>	<b>Green</b>	<b>Blue</b>
12R	11	3	5
11R	10	2	5
10R	8	2	3
8R	6	2	2
6R	5	1	2
5R	4	1	2
4R	3	1	2

The recommended procedure for determining the best frame counts is to create three test targets, each one using:

- the recommended values from the chart above
- the recommended values minus one
- the recommended values plus one

For example for 8R, you would send test targets with these sets of frame counts:

R	G	B
6	2	2
5	1	1
7	3	3

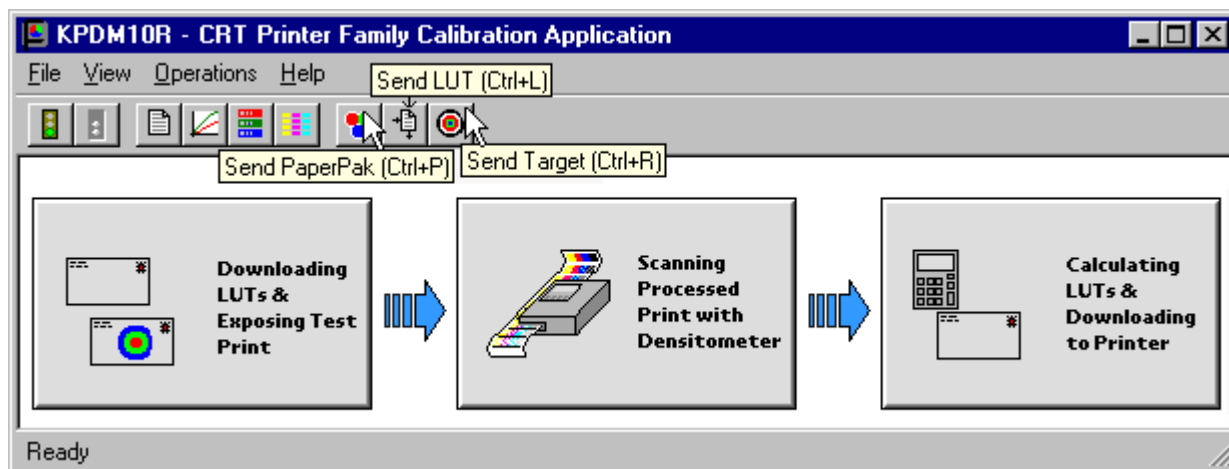
Next, you would process the test prints, then measure and record DMax for each test target. The test target that produces the best DMax values (for Digital III paper: red – 2.25, green – 2.20, blue – 2.15) determines the starting frame counts.

## Procedure to Determine the Frame Counts for a Scale

Use this procedure with Macintosh and Windows NT systems.

1. Press **Jog&Start** at the operator control panel (OCP) to put the Printer in “Ready” mode.
2. On the Device Calibration window, select the icon of the device for which you are determining frame counts. (If the device is not on the Device Calibration window, add it; see [“Adding a Device” on page 2-10](#))
3. Click **Calibrate**.

The display shows the Calibration window.



4. From the Calibration window, in sequence:
  - a. Click **Send PaperPak** to send the PaperPak (see [“Sending PaperPaks” on page 2-46](#)) with the recommended frame counts.

For example, if you are determining frame counts for an 8R device, edit the frame counts to be 6, 2, and 2.



**IMPORTANT:** When sending the LUT file, make sure you select “Send Custom” then navigate to the CalLUTS folder and choose the default12.cal file.

- b. Click **Send LUT** to send the LUT file (see “Sending LUTs” on page 2-48).
- c. Click **Send Target** to send the Test Target (see “Sending Test Targets” on page 2-49).
5. Repeat step 4 (a, b, and c) twice for the second and third set of frame counts (in the example, the values would be 5, 1, 1 and 7, 3, 3).
6. Process the test targets.
7. Set up the densitometer to read the test target:
  - a. To go to the main menu of the densitometer, simultaneously press the two right-most buttons.
  - b. Select PAP from the main menu on the densitometer.
8. Send one pass of the first processed test target through the densitometer and record the Dmax for each color:
  - a. To go to the main menu of the densitometer, press the two right-most buttons simultaneously.
  - b. From the main menu of the X-Rite DTP36 densitometer, press [**P1**].
  - c. Press [**Data**].
  - d. Read the DMax patch (Pass 1).
  - e. Record the values directly on the test target.
9. Repeat step 8 for the second and third test targets.
10. Determine which set of frame counts gave the best DMax reading:
  - Using the 8R values as an example, the recorded DMax values are:

R	G	B	R	G	B
6	2	2	<b>2.20</b>	<b>2.46</b>	<b>2.26</b>
5	1	1	<b>1.80</b>	<b>1.55</b>	<b>1.92</b>
7	3	3	<b>2.44</b>	<b>2.68</b>	<b>2.35</b>

In this example, the red and blue values are within the preferred 2.2 to 2.3 range.

Although the green value of 2.46 is slightly higher than the preferred maximum of 2.3, a frame count of 1 gives a DMax of only 1.55 and a frame count of 3 gives a DMax of 2.68, which is even higher than 2.46.

Therefore, in this example the starting frame counts for 8R are **6, 2, 2**.

- Using 10R values as an example, the three test targets are sent with the frame counts below and produce the DMax values shown:

<b>R</b>	<b>G</b>	<b>B</b>	<b>R</b>	<b>G</b>	<b>B</b>
8	2	3	1.85	2.09	<b>2.24</b>
7	1	2	1.50	1.16	1.96
9	3	4	2.12	<b>2.51</b>	2.35

In this example, the blue value of the second print is within the 2.2 to 2.3 range.

The green value of 2.51 from the third print is as close as possible to the preferred values (frame counts must be integers; a frame count of 4 would produce an even higher DMax).

Therefore, the starting 10R frame counts for green and blue are 3 and 3, with red not yet determined (none of the frame counts produced a DMax of 2.25).

In this example it is necessary to send two more test targets.

<b>R</b>	<b>G</b>	<b>B</b>	<b>R</b>	<b>G</b>	<b>B</b>
10	3	3	<b>2.26</b>	2.52	2.25
11	3	3	2.38	2.53	2.22

So, for 10R the starting frame counts are 10, 3, 3.

You have determined the best frame counts for this scale. Use these frame counts for calibrating the Printer for this device.



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