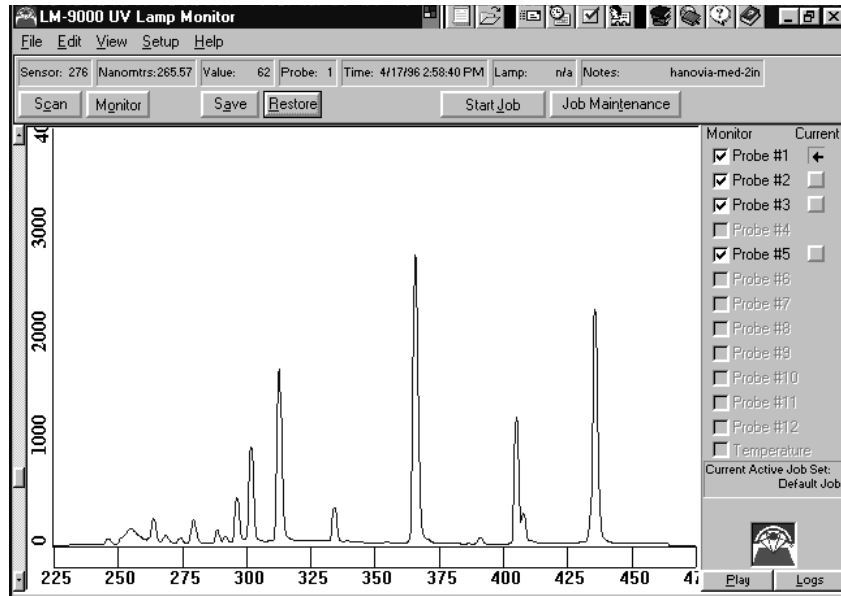


The LM-9000^ä

Lamp Monitor System



From:

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LM-9000™ LAMP MONITOR SYSTEM
SERIAL NUMBER: _____

TEMPERATURE MONITOR
NUMBER OF PROBES: _____

PROBE: 1 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 2 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 3 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 4 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 5 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 6 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 7 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 8 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 9 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 10 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 11 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

PROBE: 12 SERIAL NUMBER: _____
OFFSET: _____ COEFFICIENT 1: _____ COEFFICIENT 2: _____

LM-9000 Software License Agreement

LM-9000 Limited Warranty & Disclaimer

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You may not change the hardware/software configurations without registering and obtaining new serial numbers for the upgrades. You may not operate this software with any serial number except the serial number provided by Con-Trol-Cure. The software license may be terminated by Con-Trol-Cure if you fail to comply with this agreement.

LIMITED WARRANTY. The LM-9000™ U.V. Light Monitor is warranted by Con-Trol-Cure only to purchasers use in business or original equipment manufacture, against defects in workmanship or materials under normal use for one year after date of purchase from Con-Trol-Cure, unless otherwise stated in purchase agreement. Any part which is determined by Con-Trol-Cure to be defective in materials or workmanship and returned to Con-Trol-Cure or authorized service location, as Con-Trol-Cure designates, shipping costs prepaid, will be, as the exclusive remedy, repaired or replaced, at Con-Trol-Cure's option.

DISCLAIMER OF WARRANTY. Con-Trol-Cure has made a diligent effort to illustrate and describe the LM-9000™ U.V. Lamp Monitor in its product literature; however, such illustrations and descriptions are for the sole purpose of identification, and do not express or imply a warranty that the product is merchantable, or fit for a particular purpose, or that the product will necessarily conform to the illustrations or descriptions. No warranty or affirmation of fact, express or implied, other than as set forth in the limited warranty statement above is made or authorized by Con-Trol-Cure.

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Software designed and developed by Stephen Siegel of U.V. Process Supply, Inc. and Dirk Martin of Cheetah Enterprises.

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OVERVIEW: THE LM-9000[®] LAMP MONITOR SYSTEM

The LM-9000[®] is a Highly Modular, Computer Based, Full Spectrum UV Data Acquisition and Management System Providing Both a Continuous on-line Energy Display Graph, and Timed Automatic Data Storage, of UV Lamp Output Characteristics.

Designed to monitor the output characteristics of an individual UV lamp throughout its operational life, the LM-9000[®] Software permits multiple lamp configurations, multiple sensors per lamp, and user selection of active Probes to make installation, configuration and operation simple in a variety of applications.

Stores Job Specific Information along with the data collected such as Machine Settings, Inks Used, Supervisor & Operator Comments and Notes, for later retrieval and examination. Aids in running a job again, optimizing the performance of a job, or finding and correcting problems.

Job Start & End, Yellow Alert & Red Alert Events trigger automatic saves of the data. A pre-selected Critical Wavelength (for each probe) is constantly checked, and if intensity falls below your pre-set Yellow Alert level, the screen turns Yellow; if intensity falls below your Red Alert Level, the screen turns Red. Appropriate actions can then be taken to minimize any product failure or downtime.

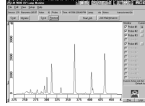
The exclusive Optics and Fiber Optic Probes will allow permanent sensor placement anywhere in the light path, on the Reflector Housing, facing up from the focal point, or even directly on the lamp.

Basic Probes can withstand up to 400° C, can optionally come in 4 levels of optical attenuation to address very high UV light levels, and will not degrade; making them ideal for High Energy (300+ watt) lamp systems.

Right Angled Probes, Air-Shuttered Right Angled Probes, Flexible Shaft Probes, and direct Clip-On designs are also available to meet any installation requirements, even in harsh or dirty environments.

Specially UV Enhanced Fiber Optic Cabling transmits all the UV energy (200nm - 450nm) within a flexible stainless steel jacket, for high reliability and high resistance to any external elements.

SYSTEM OBJECTIVES



The LM-9000[®] Lamp Monitor System is designed to Monitor an Individual UV Lamp from it's installation date to either complete failure (physical life), or to a User-Defined point where the UV Lamp is providing insufficient Output Intensity at particular Wavelengths (operational life). Its main Objective is to provide a means of reliably measuring and comparing Lamp Intensity Over Time, for those wavelengths demanded by your application.

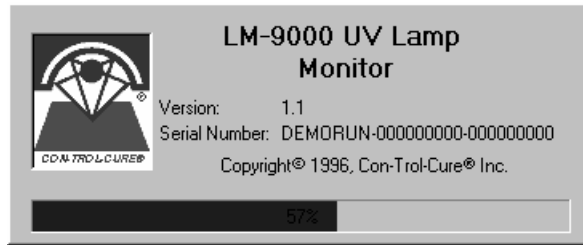
In any UV application, Lamp Output can be the variable of greatest significance, usually when particular wavelengths are no longer present, or present to the degree necessary. The Continuous Monitoring of UV Lamps can pinpoint problems, show the circumstances under which lamp output meets (or fails to meet) with your specifications, and thus reduce the amount of down-time, failed product, etc.

The system incorporates many modular components to make installation, and changing installation configurations, simple and straightforward. As with any complex system, this modularity can expose some of the other variables which can hamper efficient UV usage, and can affect reliable Data Collection Results.

NOTE: Perform a new Baseline for any active Probes whenever sampling conditions change from the original set baseline. This will establish new values for all critical calculation constants, factors and coefficients.

NOTE: If moving the LM-9000[®] System from lamp to lamp with a single lamp monitor (or machine to machine with a multiple-lamp monitor), you may see the effects of variables such as:

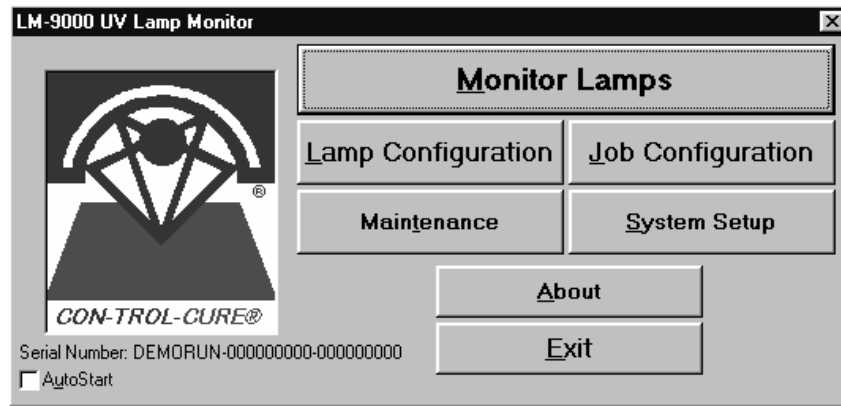
- Length of Fiber Optic cables.
- Inherent Differences between Fiber Optic Cables of the same length and specifications.
- Distance of the Probe to the Lamp.
- Position and movement of Fiber Optic cables.
- Extra (unused) length in long runs of Fiber Optic Cable.
- Number and radius of Bends in the Fiber Optic Cable.
- Position of the Probe with respect to the Lamp.
- Incident angle of the Probe with respect to the Lamp.
- Insertion Depth of the Fiber Optic Connector into the Probe.
- Insertion Depth of the Fiber Optic Connector into the Lamp Monitor Instrument.
- Angular Rotation of the Fiber Optic Connectors into both the Lamp Monitor Instrument and the Probe itself.

THE LOAD PROGRESS WINDOW (Initial Program Loading Screen):

Once you have selected the LM-9000 Lamp Monitor Software, the loading of the program will display a small Load Progress Window (see above) with a sliding “Process Status Indicator” detailing how far along it is in percent. This indicator will move right at a constant rate showing the Load Progress.

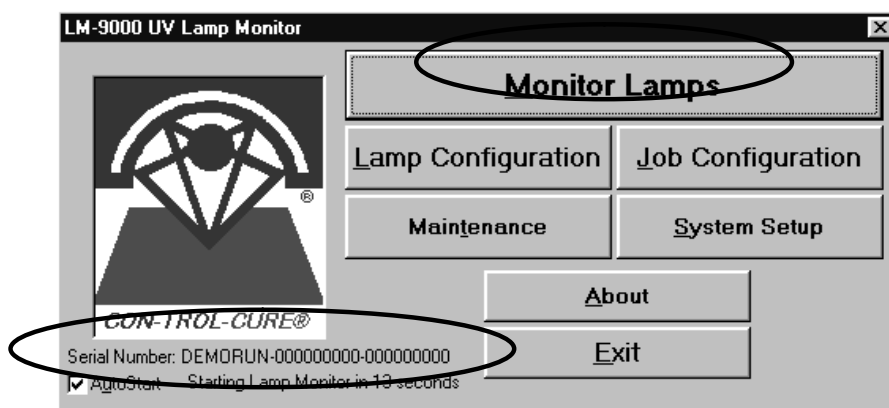
Once completed, the Load Status Window will disappear, and in its place you will see the Main Menu Screen.

MAIN MENU INSTRUCTIONS

**MAIN MENU ON-SCREEN HELP INDEX:**

<i>Serial Number.....</i>	<i>1.3.2</i>
<i>Monitor Lamps.....</i>	<i>1.3.3</i>
<i>Lamp Configuration... </i>	<i>1.3.4</i>
<i>Job Configuration.....</i>	<i>1.3.5</i>
<i>Maintenance.....</i>	<i>1.3.6</i>
<i>System Setup.....</i>	<i>1.3.7</i>
<i>About.....</i>	<i>1.3.8</i>
<i>Exit.....</i>	<i>1.3.9</i>

This is the Main Menu of the LM-9000^{ai} Lamp Monitor System Software. Lamp Job and System Parameters, Data File Archiving and Maintenance Options, and the Software License and Limited Warranty Information Can Be Viewed or Set by Selecting the Appropriate Function



SERIAL NUMBER DISPLAY

Your LM-9000™ Serial Number identifies and configures the system to support the hardware purchased with the LM-9000™.

Initially the Serial Number may be DEMORUN and a series of alpha-numeric characters. This will activate a special "Demo" mode of the program allowing only the display of Saved DataSets.

NOTE: *New Data can not be collected while in "Demo" mode.*

Upon installing the LM-9000™ Lamp Monitor Software, you will be instructed to enter the Serial Number on the Setup System General Tab.

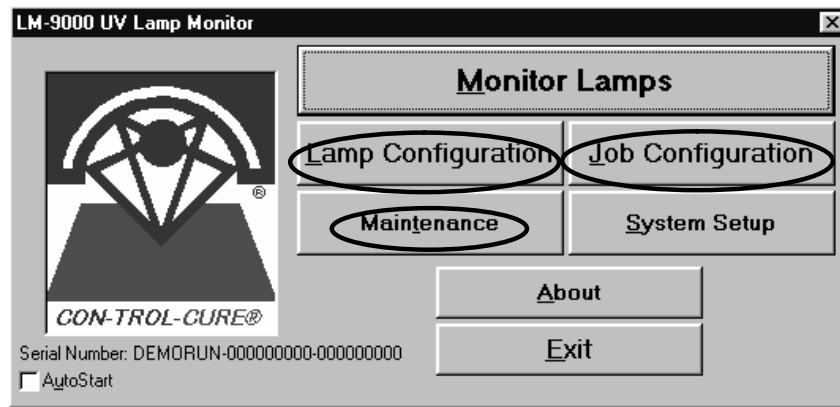
NOTE: *Improper Serial Number Entry May Disable The System. See installation notes for details.*

MONITOR LAMPS

Display of Lamp Output Intensities.

On-Screen display of Lamp Output as a Wave Length vs. Intensity plot in a Common User Access (CUA) style screen format.

NOTE: *The **AutoStart** Check Box in the Lower Left Corner Of the **Main Menu Screen** will (when Checked) **Automatically** activate the **Monitor Lamps** display of lamp output intensities after 45 seconds of inactivity. A countdown timer warning will appear 15 seconds before **AutoStart** to allow you to disable this particular automatic monitoring and reset the inactivity timer. Remove the check mark to **Disable** this feature.*



LAMP CONFIGURATION

Entry or Viewing of Historical Lamp Data.

Lamp Information is entered and stored for later examination and reference.

Information includes: Lamp Serial Number, Model or Description, Manufacturer, Date Installed, Machine ID, Number of hours in use, Number of starts, and whether this lamp is active in the present configuration

JOB CONFIGURATION

Entry or Viewing of Historical Job Information.

Job Information is entered and stored for later examination and reference.

Information includes: Job Name and Description, Machines Used and any settings, Inks Used and any notes, whether Lamp Baselineing is Allowed, Yellow and Red Alert percentages, and a button to make the on-screen Job the Current Job.

MAINTENANCE

*All File Maintenance Functions Are Accessible Within Microsoft Access®.**

All LM-9000® Lamp Monitor System Constants and Controlling Values Are Stored In The LM9000.MDB File.

*** NOTE: The database has been upgraded to Microsoft SQL Server. All further references to Microsoft Access should reflect this change.**

These are all static, unchanging tables which the system uses for internal purposes and **SHOULD NOT BE CHANGED**. All stored values are located in the following 3 data tables:

CONTROL TABLE

File: LM9000.MDB Table: ctrlCONTROL

Various **system control values** stored for inclusion in **Scan Saves** and **Job Saves**. Control Name, string values, numeric values, date values and / or a memo field may be stored for each control.

CONTROLLER TABLE

File: *LM9000.MDB* Table: *ctrlCONTROLLER*

Ô **Interface Card Controls**. For each Interface card in the system (up to 3) Controller ID, Name, whether it is installed, which card type and detector type it is, Gain, IRQ and Base Address Values are stored.

PROBE TABLE

File: *LM9000.MDB* Table: *tblPROBE*

Individual Probe Constants. For each probe (up to 12) Probe ID, type and name of A-to-D system used, Whether a probe is installed, whether it is being Monitored in the present configuration, Offsets, coefficients, frequency (sensitivity) Critical wavelengths, Yellow & Red Alert values, Calibration Factor and Associated Lamp ID.

All Scan Saves and Job Saves Are Stored In the LM9_Data.MDB file.

All Saved Data is stored in the following 10 data tables:

EVENT TYPE TABLE

File: *LM9_Data.MDB* Table: *tblEventType*

Event Definitions for Job Start & End, Yellow Alert On & Off, Red Alert On & Off. This is a static, unchanging table which the system uses for internal purposes. It Should Be Left Alone.

LAMP TABLE

File: *LM9_Data.MDB* Table: *tblLamp*

Lamp Configuration Table contains Serial#, Manufacturer, Model#, Date Installed, Machine, Active Flag, Accumulated Hours, Date of Last Use, and Count of State Changes.

JOB TABLE

File: *LM9_Data.MDB* Table: *tblJob*

Job Configuration Table contains Job Name, Machines used, Inks Used, **Yellow** and **Red Alert** Percentages, and the Show Alerts Flag.

PROBE DATA TABLE

File: *LM9_Data.MDB* Table: *tblProbeData*

Individual Scans Table contains Time & Date, Offset & Coefficients, Frequency, Peak # Values, Peak # Wavelengths, and Temperature data stored by pressing the **Save** button. This data is acquired by pressing the **Scan** button (or the

Monitor button) on the **Monitor Screen**. Only Scans Are Stored Here.

PROBE DATA DETAIL TABLE

File: *LM9_Data.MDB* Table: *tblProbeDataDetail*

Relates to **tblProbeData**: Individual sensor data (1100 points per entry) related to an Individual **Scan** with Probe#, Scan Pixel# and Scan Value.

LAMP DATA TABLE

File: *LM9_Data.MDB* Table: *tblLampData*

Lamp baselines Table contains Time & Date, Offset & Coefficients, Frequency, Peak # Values, Peak # Wavelengths, and Temperature data for each **Lamp Baseline** generated by checking the **Setup-Baseline** element of the **Setup Drop Down Box**. Only Lamp Baselines Are Stored Here.

LAMP DATA DETAIL TABLE

File: *LM9_Data.MDB* Table: *tblLampDataDetail*

Relates to **tblLampData**: Individual sensor data (1100 points per entry) associated with each Lamp Baseline Scan with Lamp#, Scan Pixel# and Scan Value.

JOB SET TABLE

File: *LM9_Data.MDB* Table: *tblJobSet*

Job Event Table contains Time & Date, **Baseline, Yellow & Red Alert** values, and the **Event** flag for all **Job Start/End, Yellow On/Off** or **Red On/Off** Events during the course of a job.

JOB SET DATA TABLE


File: *LM9_Data.MDB* Table: *tblJobSetData*

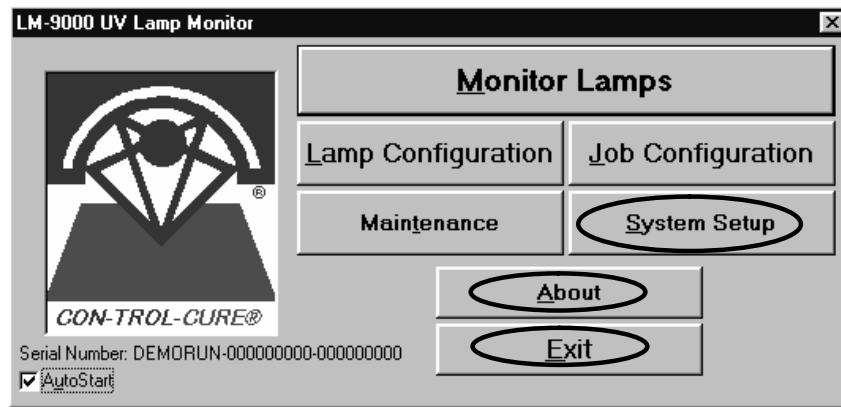
Job Scans Table contains Time & Date, Offset & Coefficients, Frequency, Peak # Values, Peak # Wavelengths, and Temperature data for **Saves** generated automatically after pressing the **Start Job** button. All Related Saves within a Single Job Stored Here.

JOB SET DATA DETAIL TABLE

File: *LM9_Data.MDB* Table: *tblJobSetDataDetail*

Relates to **tblJobSetData**: Individual sensor data (1100 points per entry) associated with each automatic Job Scan with Probe#, Scan Pixel# and Scan Value.

For Special requirements, instruction on file reporting, maintenance and archiving techniques, file transfers, and conversion options, see the User Documentation accompanying Microsoft Access .



SYSTEM SETUP

Configuration of Overall System Parameters.

“Tabbed” Selection Screen allows the user to click on individual LM-9000™ system components and features. Once a tab is selected, setup information for that component is displayed, gathered and stored.

ABOUT

Information About The LM-9000[®] Software License and Limited Warranty & Disclaimer.

NOTE: *This Program Is Licensed, Not Sold!*

Text Box allows Scrolling through Information including the address & phone number for **Con-Trol-Cure, Inc.**, the LM-9000™ Software Licensing Agreement, Program Credits, Copyright Information, the Limited Warranty and Disclaimer for the Lamp Monitor Software.

EXIT

Ends the Current LM-9000[®] Session.

Leaves the LM-9000™ Lamp Monitor Program and returns to the Windows Environment.

SETUP SCREEN (TABBED PAGE) INSTRUCTIONS:

UV Lamp Monitor Setup

General | Probe | Hardware | Graph | Timing

Company
Company Name: Test Company
Location: 1000 W. North Ave

Monitoring Machine
Machine Name: General Monitor Machine
Location: North West Corner

Change Setup Password

Serial Number: DEMORUN-000000000-000000000

Change Serial Number

OK Cancel Help

SETUP ON-LINE HELP INDEX:

General Tab..... 2.2

Probe Tab..... 2.3

Hardware Tab..... 2.4

Graph Tab..... 2.5

Timing Tab..... 2.6

Selecting System Setup from the Main Menu displays the screen above. This is a "Tabbed" selection screen which controls access to various system parameters and sensitive settings. Company information, Individual Probe Controls, Installed Hardware components, Energy Graph Display parameters and Scanning characteristics can be viewed and set from this screen.

Simply place your cursor along the top of the data entry screen, on the category of values you want, and click to bring that "tab" to the forefront.

Note: Any changes made to these values will require entry of the Supervisor Password upon pressing the OK Button and saving data.

GENERAL TAB
COMPANY NAME & LOCATION

Assign or View Your Company and Location Information.

File: LM9000.MDB Table: ctrlCONTROL Field: Control_Name Record: COMPANY

MACHINE NAME & LOCATION

Assign or View this Machine Name and its location.

File: LM9000.MDB Table: ctrlCONTROL Field: Control_Name Record: MACHINE.

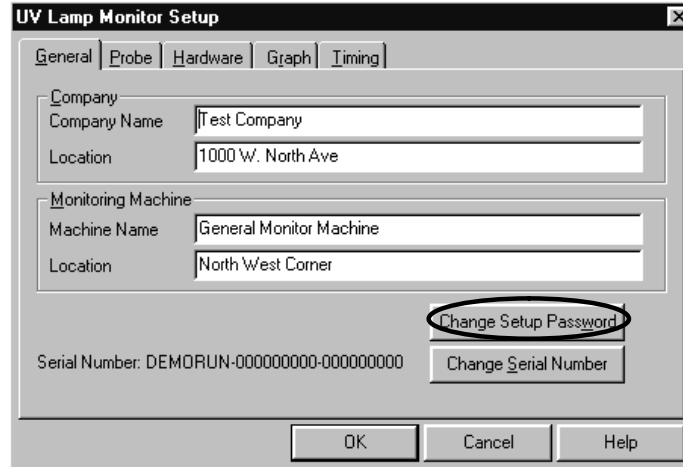
SERIAL # DISPLAY & CHANGE SERIAL NUMBER BUTTON

View the LM-9000 Serial Number, and by pressing the Change Serial Number button, enter a new or updated serial number. At initial installation, the unique Serial Number will automatically configure system components to match your purchased configuration. If you require new or updated hardware, it will come with a new Serial Number.

See Installation Notes for details.

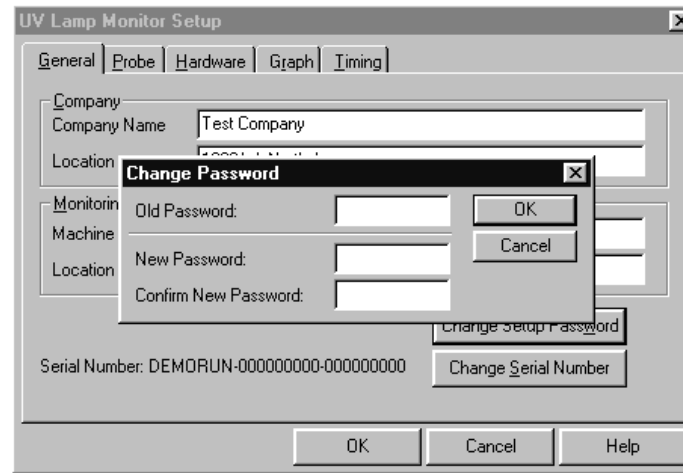
NOTE: To obtain information on systems configured with more than 12 Probes, or on how to upgrade an existing system with more Probes, please call **Con-Trol-Cure, Inc** or an Authorized Sales Representative.

General Tab: continued.....



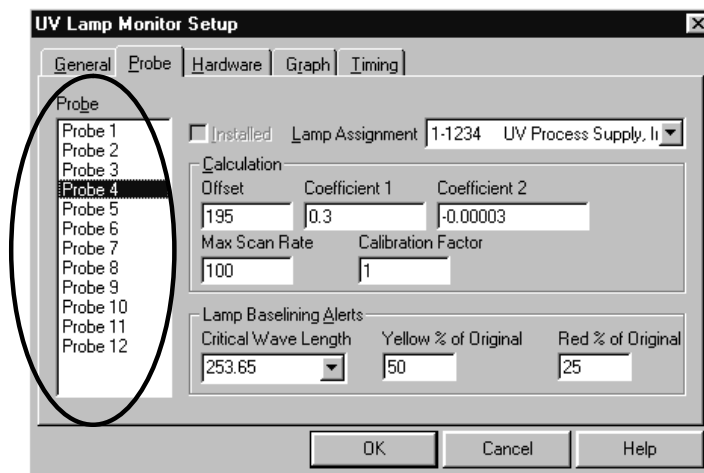
CHANGE SETUP PASSWORD

Pressing this button displays the Change Password dialog box.



Supervisory personnel will be able to enter the Old Password and then assign a New Password to protect Job Specific settings from accidental changes by regular staff. Confirmation of the New Password must be made (by re-typing the New Password in the Confirm New Password box) before the update will occur.

See Installation notes for details.

PROBE TAB**PROBE LIST BOX**

Selection List of all Probes (1 up to 12) per system:

File: LM9000.MDB Table: tbIPROBE Field: IDProbe <n>

Upon selecting one of the **Probes**, the displayed values will change to reflect the settings for that **Probe**. Entry and Viewing are then allowed for that **Probe** only.

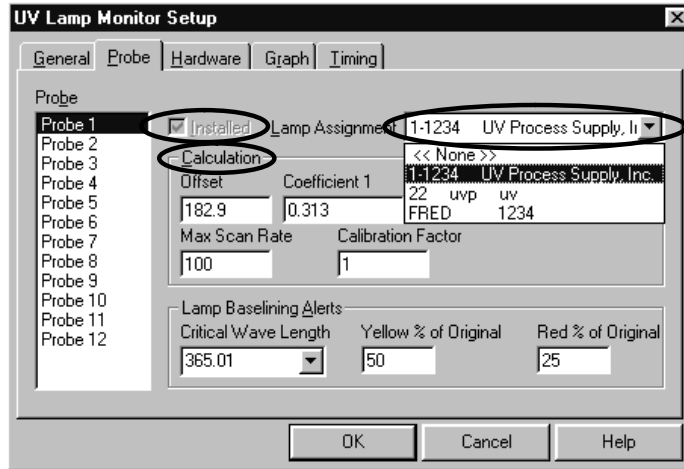
The Number of Installed **Probes** Is Determined by the **Configuration** Purchased. This is the maximum number of **Probes** which can be attached to this system.

Individual **Probes** (on multiple **Probe** configurations) can be activated or disabled in **Scans** and **Jobs**, allowing a variety of application specific layouts.

Active **Probes** are monitored in numerical order, proceeding to the next **Probe** as soon as the current **Scan Data** is saved.

NOTE: You can upgrade your LM-9000™ Lamp Monitor to add more **Probes** to a system by contacting **Con-Trol-Cure, Inc** or one of our Authorized Sales Representatives for additional hardware, a revised software license and updated Windows software.

Probe Tab: continued....



INSTALLED CHECK BOX

*Is the current **Probe** installed?*

If the currently selected **Probe** is installed, this box will be checked. If the current **Probe** is NOT Installed, this check box will be cleared.

File: LM9000.MDB Table: tbIPROBE Field: Installed

LAMP ASSIGNMENT DROP-DOWN BOX

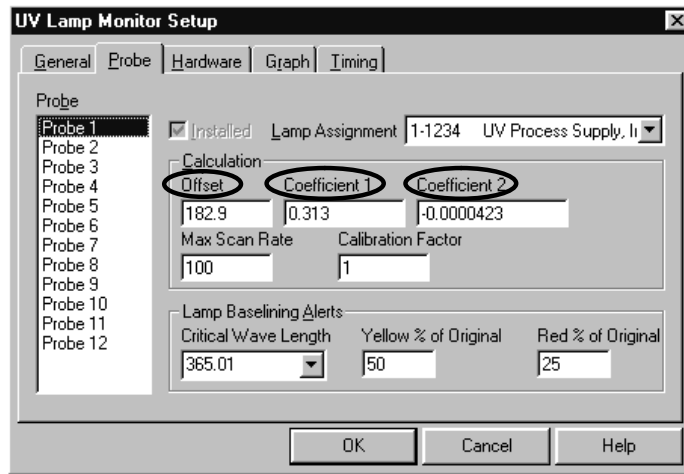
*If the current **Probe** is installed, enter the name of the Lamp, or Click the Arrow to select a lamp from the list.*

File: LM9_Data.MDB Table: tbILAMP Field: SerialNumber + Manufacturer

CALCULATION CONSTANTS

Initial Values are Approximate figures only; more refined settings are created via Calibration. NOTE: See Calibrate Lamp Monitor Instructions for details.

Probe Tab: continued....



Offset : Typical Value 190.

File: LM9000.MDB Table: tbIPROBE Field: Offset

File: LM9_DATA.MDB Table: tblLampData Field: Offset

File: LM9_DATA.MDB Table: tblProbeData Field: Offset

File: LM9_DATA.MDB Table: tblJobData Field: Offset

Coefficient 1 : Typical Value 0.3

File: LM9000.MDB Table: tbIPROBE Field: Coef1

File: LM9_DATA.MDB Table: tblLampData Field: Coef1

File: LM9_DATA.MDB Table: tblProbeData Field: Coef1

File: LM9_DATA.MDB Table: tblJobData Field: Coef1

Coefficient 2 : Typical Value -0.00003

File: LM9000.MDB Table: tbIPROBE Field: Coef2

File: LM9_DATA.MDB Table: tblLampData Field: Coef2

File: LM9_DATA.MDB Table: tblProbeData Field: Coef2

File: LM9_DATA.MDB Table: tblJobData Field: Coef2

Probe Tab: continued.....

The screenshot shows the 'UV Lamp Monitor Setup' dialog box with the 'Probe' tab selected. On the left, a list of probes from Probe 1 to Probe 12 is shown, with Probe 1 selected. The 'Calculation' section contains the following fields:

Field	Value
Offset	182.9
Coefficient 1	0.313
Coefficient 2	-0.0000423
Max Scan Rate	100
Calibration Factor	1

The 'Lamp Baseline Alerts' section contains the following fields:

Field	Value
Critical Wave Length	365.01
Yellow % of Original	50
Red % of Original	25

Buttons for 'OK', 'Cancel', and 'Help' are located at the bottom of the dialog.

Max. Scan Rate : Upper Limit on Sampling rate in Scans/Second which defines Instrument Sensitivity. **NOTE:** See Installation Notes for in-depth Discussion and Guidelines.

Desktop Systems (**PC1000**): Max. value is 500 Default Value is 50

Laptop Systems (**PCMCIA**): Max. value is 100 Default Value is 50

This factor is highly **Light Source Dependent**, **Typical Values** vary with intensity, and wavelength distribution, of the light signal. **Note:** See Installation Notes for Further Discussion and Guidelines.

File: *LM9000.MDB* Table: *tbIPROBE* Field: **Frequency**

File: *LM9_DATA.MDB* Table: *tblLampData* Field: **Frequency**

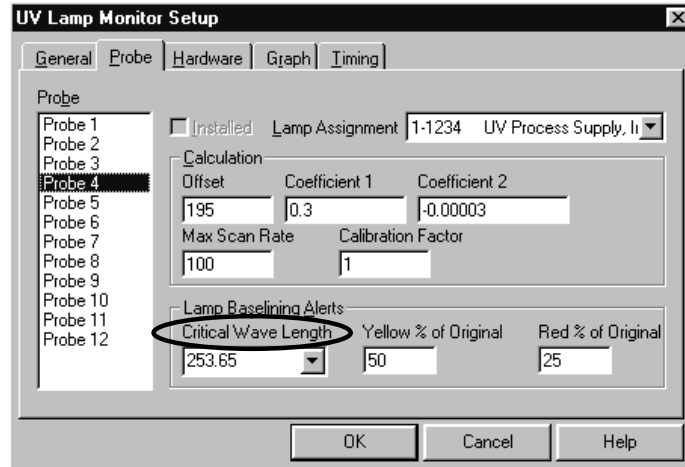
File: *LM9_DATA.MDB* Table: *tblProbeData* Field: **Frequency**

File: *LM9_DATA.MDB* Table: *tblJobData* Field: **Frequency**

Calibration Factor : Should Be Set to 1

File: *LM9000.MDB* Table: *tbIPROBE* Field: **CalibrationFactor**

Probe Tab: continued.....



LAMP BASELINING ALERTS

CRITICAL WAVELENGTH

One of the six (6) chosen wavelengths can be selected as the trigger for Yellow or Red Alerts. This should be set to the wavelength your application specifies as most important. You will then be alerted when intensity levels for this wavelength drop below User-Defined percentages of Original Baseline values.

File: LM9000.MDB Table: tbIPROBE Field: CriticalWaveLength

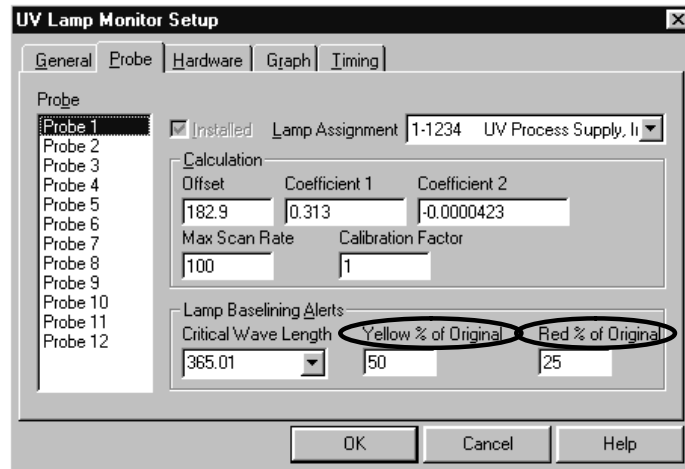
Click the arrow for the list of chosen wavelengths.

NOTE: See **Graph Tab** Instructions (in Setup System) for more information on selecting these values.

Each Probe can have different Critical Wavelengths, and different Alert Status Levels.

NOTE: See The **Graph Tab** to Specify the 6 Chosen Wavelengths From the 6 **Primary**, 2 **Secondary**, and 3 **User Defined Wavelengths** For Monitoring.

Probe Tab: continued.....



YELLOW % OF ORIGINAL VALUE:

Percentage of Original Baseline Value at the Critical Wavelength for which the Yellow Alert activates.

The Background Color on the Energy Display Graph changes from White to Yellow when the current value falls below the entered **percentage of original value**.

File: LM9000.MDB Table: tblPROBE Field: YellowAlert

File: LM9_DATA.MDB Table: tblJob Field: YellowAlert

File: LM9_DATA.MDB Table: tblJobSet Field: YellowAlert

RED % OF ORIGINAL VALUE:

Percentage of Original Baseline Value at the Critical Wavelength for which the Red Alert activates.

The Background Color on the Energy Display Graph changes from White to Red, or from Yellow to Red, when the current value falls below the entered **percentage of original value**.

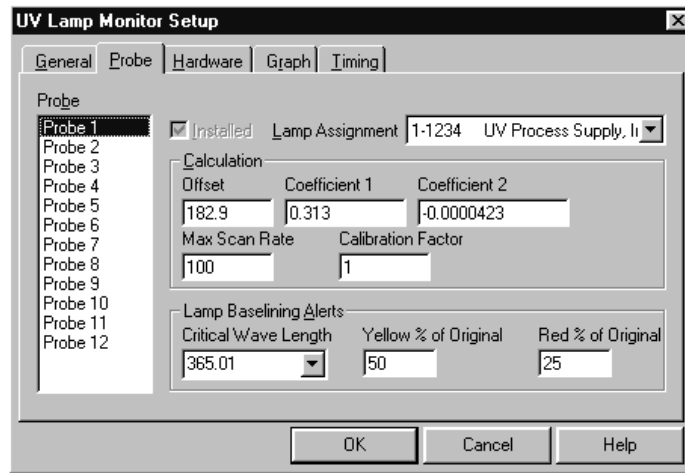
File: LM9000.MDB Table: tblPROBE Field: RedAlert

File: LM9_DATA.MDB Table: tblJob Field: RedAlert

File: LM9_DATA.MDB Table: tblJobSet Field: RedAlert

NOTE: Yellow% must be greater than Red%.

Probe Tab: continued.....



Example 1: If you need a **Yellow Alert** when lamp intensity at 254nm is at 90% of original **baseline** value, and a **Red Alert** when it is 85% of original, you would enter 90% into the Yellow % field, and 85% into the Red % field, and have specified 254nm as the **Critical Wavelength** for the desired **Probe**.

Example 2: If you need a **Yellow Alert** when lamp intensity at 365nm falls off by 10%, and **Red Alerted** when it falls off by 15%, you would enter 90% into the Yellow % field and 85% into the Red % field, and have specified 365nm as the **Critical Wavelength** for the desired **Probe**.

Yellow Alert On & Yellow Alert Off are considered Events, as are Red Alert On and Off, and Job Start and End. During a Job, the occurrence of any of these generates a complete save of all data to disk for later examination.

File: LM9_DATA.MDB Table: tblEventTypes

In Addition, on the occurrence of a Yellow or Red Alert On being registered at a particular Probe, that Probe will be highlighted, in the Action Control Center, in Yellow or Red respectively. Until the current Job is Stopped, that Probe will remain highlighted.

HARDWARE TAB**NUMBER OF MONITORING A-TO-D UNITS**

The Number of LM-9000[®] Interface cards Installed in this system. Each LM-9000[®] Interface card has its own Analog-to-Digital converter, and requires its own unique IRQ Level and Base Address.

NOTE: To obtain information on systems configured with more than 12 Probes, or on how to upgrade an existing system with more Probes, please call **Con-Trol-Cure, Inc** or an Authorized Sales Representative.

File: LM9000.MDB Table: ctrlCONTROL Field: Control_Name Record: MASTERS

One(1) indicates only a First Interface card installed.

A **First Interface card** can have up to 3 Additional **Probe Ports** added. Probes 1 through 4 will be attached to the **First Interface card**.

File: LM9000.MDB Table: tbICONTROLLER Field: Controller_Name Record: First

Two(2) indicates A First and Second Interface card installed.

Both **First** and **Second Interface Cards** can have up to 3 Additional **Probe Ports** added.

Hardware Tab: continued.....

Probes 5 through 8 will be attached to the **Second Interface card**.

File: LM9000.MDB Table: tbICONTROLLER Field: ControllerName Record: Second

Three(3) indicates a First, Second and Third Interface card has been installed.

The **First, Second and Third Interface Cards** can each have up to 3 Additional **Probe Ports** added.

Probes 9 through 12 will be attached to the **Third Interface card**.

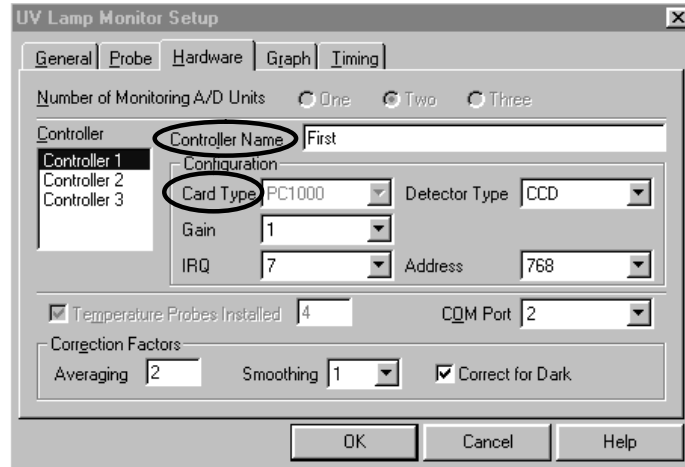
File: LM9000.MDB Table: tbICONTROLLER Field: ControllerName Record: Third

CONTROLLER LIST BOX:

Selects Display of settings for First, Second or Third LM-9000[®] Interface Controller Cards.

Upon selecting one of the Controllers, the displayed values will change to reflect the settings for that Controller. Entry and Viewing are then allowed for that Controller only.

File: LM9000.MDB Table: tbICONTROLLER

Hardware Tab: continued.....**CONTROLLER NAME**

Default Names are First, Second & Third, But user defined names may be entered in their place.

File: LM9000.MDB Table: tbICONTROLLER Field: ControllerName

Configuration Area contains hardware specific information to establish communication between the LM-9000™ Interface Controller Card(s) and the computer.

CARD TYPE

Defines the LM-9000[®] Interface Card

Select **PC1000** for Desktop Systems

Select **PC2000** for future use. New Advances or new Hardware Based Features are incorporated in our systems as they become available.

Select **PCMCIA-NI** for Laptop Systems equipped with National Instruments A to D Converter Card

Select **PCMCIA-CB** for Laptop Systems equipped with Computer Boards A to D converter Card.

File: LM9000.MDB Table: tbICONTROLLER Field: CardType

Hardware Tab: continued.....

The screenshot shows the 'UV Lamp Monitor Setup' dialog box with the 'Hardware' tab selected. The 'Number of Monitoring A/D Units' is set to 'Two'. Under 'Controller', 'Controller 1' is selected. The 'Configuration' section for Controller 1 includes: 'Controller Name' (First), 'Card Type' (PC1000), 'Detector Type' (CCD), 'Gain' (1), 'IRQ' (7), and 'Address' (768). Below this, 'Temperature Probes Installed' is checked and set to 4, and 'COM Port' is set to 2. The 'Correction Factors' section shows 'Averaging' set to 2, 'Smoothing' set to 1, and 'Correct for Dark' checked. Buttons for 'OK', 'Cancel', and 'Help' are at the bottom.

DETECTOR TYPE

Describes the Sensor Type.

Select **CCD** for the LM-9000™ Lamp Monitor. This is the Default Value.

NOTE: Use Only **CCD** in this Field

Select **PDA** for Future Versions currently under development.

File: LM9000.MDB Table: tblCONTROLLER Field: DetectorType

GAIN

Factor of Signal Strength (Set to 1)

For Future Versions currently under development.

NOTE: Set to 1 Only

File: LM9000.MDB Table: tblCONTROLLER Field: Gain

BASE ADDRESS USED (in Decimal)

The starting memory location for individual LM-9000[®] Interface cards. Default Value is 768 decimal (300h). This value may be changed if it conflicts with another card in your system to 784 decimal (310h), 800 decimal (320h), etc. by changing SW1 on the LM-9000[®] Interface card and entering the matching number here.

File: LM9000.MDB Table: tblCONTROLLER Field: Base

Hardware Tab: continued.....

See Chart 1 in the Installation Notes for available SW1 Settings on Desktop Systems.

NOTE: Laptop Systems utilize the **PCMCIA Interface Card** and Software Configuration. See Installation Notes for details.

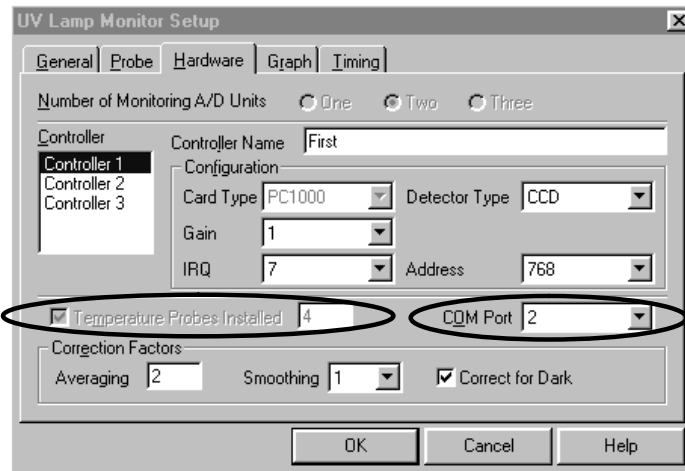
IRQ LEVEL USED

The interrupt control level for individual LM-9000[®] Interface cards. Default Value is IRQ7. This value may be changed if it conflicts with another card in your system to IRQ5, or IRQ3, by changing SW2 on the LM-9000[®] Interface card and entering the matching number (3,5, or 7) here.

File: LM9000.MDB Table: tblCONTROLLER Field: IRQ

See Chart 2-A in the Installation Notes for available SW2 Settings on Desktop Systems.

NOTE: Laptop Systems utilize the **PCMCIA Interface Card** and Software Configuration. See Installation Notes for details.

Hardware Tab: continued.....**TEMPERATURE PROBES INSTALLED?**

This check box will display whether or not this Lamp Monitor System configuration has the Temperature Data Collection Option installed. If installed, a count of the number of temperature probes will then be displayed to the right of this box.

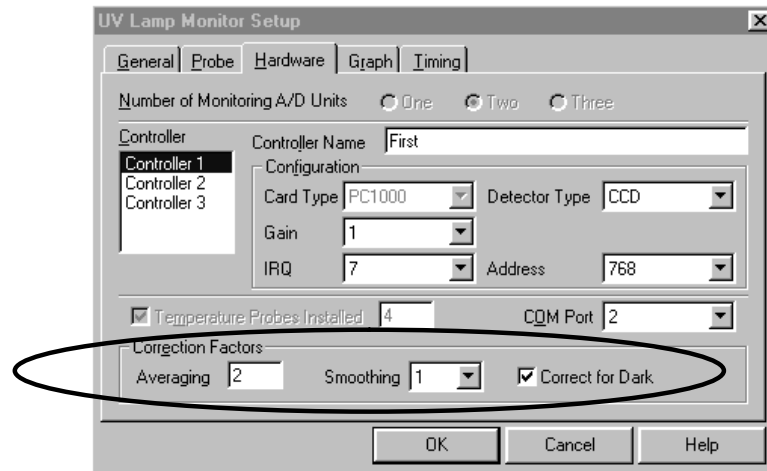
With the **RS-232 Serial Port** option and **Temperature Probes** attached, the LM-9000™ Lamp Monitor Software can also display and save temperature data associated with **individual scans**. For more information contact **Con-Trol-Cure, Inc** or an Authorized Sales Representative.

File: LM9000.MDB Table: ctrlCONTROL Record: Temperature

COM PORT

If the "Temperature Probes Installed?" box has been checked, and Temperature Probes attached, this field defines which COM Port to poll for temperature data.

File: LM9000.MDB Table: ctrlCONTROL Record: Com_Port

Hardware Tab: continued.....**CORRECTION FACTORS**

Constant values associated with the behavior of individual Probe ports, and used in various calculations or for internal diagnostics. These values are normally preset and should not be changed.

Averaging : Typically set to 2

File: LM9000.MDB Table: ctrlCONTROL Record: Averaging

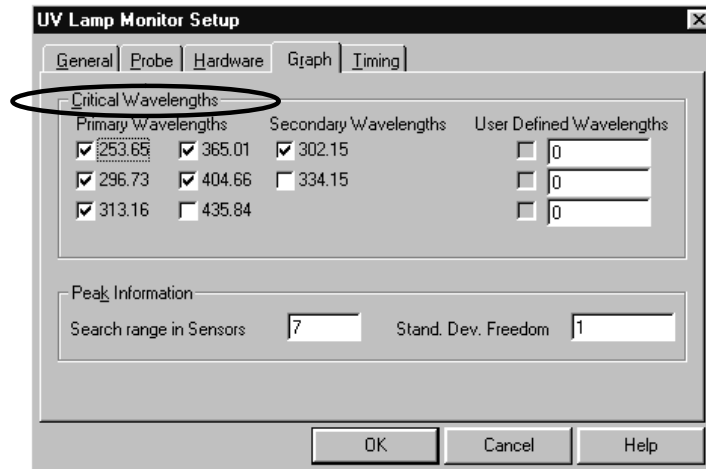
Smoothing : Typically set to 1

File: LM9000.MDB Table: ctrlCONTROL Record: Smoothing

Correct For Dark? Default Value Is “Checked”.

NOTE: ALWAYS “CHECK” THIS BOX. “unchecked” state is for Factory Supported diagnostics ONLY.

File: LM9000.MDB Table: ctrlCONTROL Record: Correct_Dark

GRAPH TAB**CRITICAL WAVELENGTHS**

Can be specified, to tailor operation of the software to your application requirements.

Primary Wavelengths For Monitoring

These Pre-Selected Wavelengths provide the basis for **Lamp Calibration**. They are the wavelengths of known prominent features found in the spectral distributions of ALL Mercury Vapor lamps. These values will most likely be values you are interested in monitoring.

Default Primary Wavelengths Encoded in Program.

Secondary Wavelengths For Monitoring

These **Alternate Wavelengths** may be selected for monitoring in place of one or two of the **Primary Wavelengths**, in situations where one or both of them are of more importance to your application.

Default Secondary Wavelengths Encoded in Program.

User Defined Wavelengths For Monitoring

These **Application Specific Wavelengths** may be selected for monitoring in place of one, two or three of the **Primary Or Secondary Wavelengths**, in situations where one or more of them are of more importance to your application.

File: LM9000.MDB Table: ctrlControl Records: UserWave1 through UserWave3

Graph Tab: continued

UV Lamp Monitor Setup

General | Probe | Hardware | **Graph** | Timing

Critical Wavelengths

Primary Wavelengths	Secondary Wavelengths	User Defined Wavelengths
<input checked="" type="checkbox"/> 253.65	<input checked="" type="checkbox"/> 365.01	<input type="checkbox"/> 0
<input checked="" type="checkbox"/> 296.73	<input checked="" type="checkbox"/> 404.66	<input type="checkbox"/> 0
<input checked="" type="checkbox"/> 313.16	<input type="checkbox"/> 435.84	<input type="checkbox"/> 0

Peak Information

Search range in Sensors: Stand. Dev. Freedom:

OK Cancel Help

NOTE: A Total of 6 Wavelengths MUST Be Selected Between The Primary, Secondary, and User Defined Wavelengths.; No More, No Less.

User Selected Critical Wavelengths: File: **LM9000.MDB** Table: **ctrlCONTROL**

Records: **WAVE1** Through **WAVE6**

PEAK INFORMATION*Controls For Auto-Calibration*

Once a particular lamp's 6 chosen Wavelengths have been specified and calibrated, the LM-9000™ Software will automatically identify the real Peak by searching a range of wavelengths to the left and to the right of the pre-chosen Wavelength in which the highest value is the peak.

NOTE: This **Auto-Calibration** feature is only possible because UV Lamps (mercury vapor or metal halide) have known peaks occurring at known wavelengths. Other light sources can use this feature if their peak wavelengths are both **known** and **visible** on the Energy Display Graph.

SEARCH RANGE IN SENSORS

Number of Sensors (as displayed on the **Energy Display Graph**) to the left, and to the right, of the pre-chosen wavelength(s) to look for the actual Highest Value(s). This field is typically set to 7.

NOTE: There are approximately **3 Sensors per Nanometer** making lower values undesirable.

File: **LM9000.MDB** Table: **ctrlCONTROL** Field: **Peak_Search**

Graph Tab: continued.....

The screenshot shows the 'UV Lamp Monitor Setup' dialog box with the 'Graph' tab selected. The 'Critical Wavelengths' section is expanded, showing three columns: 'Primary Wavelengths', 'Secondary Wavelengths', and 'User Defined Wavelengths'. The 'Primary Wavelengths' column has three checked entries: 253.65, 296.73, and 313.16. The 'Secondary Wavelengths' column has two checked entries: 302.15 and 404.66. The 'User Defined Wavelengths' column has three unchecked entries, each with a '0' in a text box. Below this, the 'Peak Information' section is expanded, showing 'Search range in Sensors' with a value of '7' and 'Stand. Dev. Freedom' with a value of '1'. The 'Stand. Dev. Freedom' field is circled in red. At the bottom of the dialog are 'OK', 'Cancel', and 'Help' buttons.

Critical Wavelengths		
Primary Wavelengths	Secondary Wavelengths	User Defined Wavelengths
<input checked="" type="checkbox"/> 253.65	<input checked="" type="checkbox"/> 302.15	<input type="checkbox"/> 0
<input checked="" type="checkbox"/> 296.73	<input checked="" type="checkbox"/> 404.66	<input type="checkbox"/> 0
<input checked="" type="checkbox"/> 313.16	<input type="checkbox"/> 334.15	<input type="checkbox"/> 0
	<input type="checkbox"/> 435.84	

Peak Information

Search range in Sensors: 7

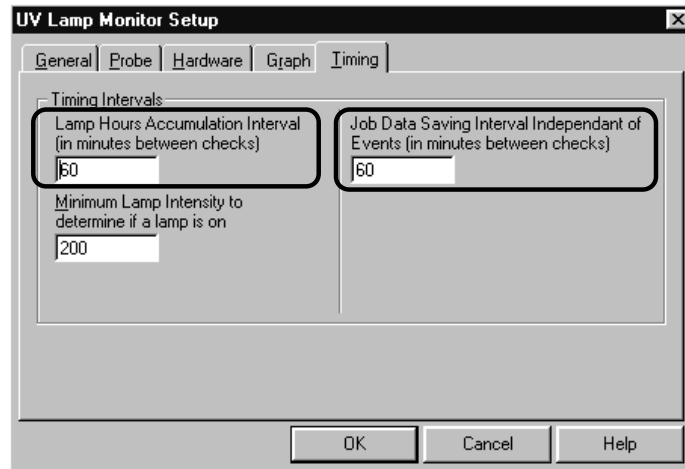
Stand. Dev. Freedom: 1

STANDARD DEVIATION FREEDOM

Denotes an allowable error factor in calculations when performing **Calibration** procedures. Value ranges from **0.01 to 1.5** **Recommended Value: 1.0**

See **Calibration Instructions For Details**

File: LM9000.MDB Table: ctrlCONTROL Field: Calibration

TIMING TAB**LAMP HOURS ACCUMULATION INTERVAL**

Enter & Display Interval Between Accumulated Lamp Hours counter updates.

Valid Range 1 to 600 minutes (1 minute to 10 hours) between **Lamp Hours Accumulation** counter updates. Typical Value is 15 minutes between counter updates.

File: LM9000.MDB Table: ctrlCONTROL Record: Lamp_Interval

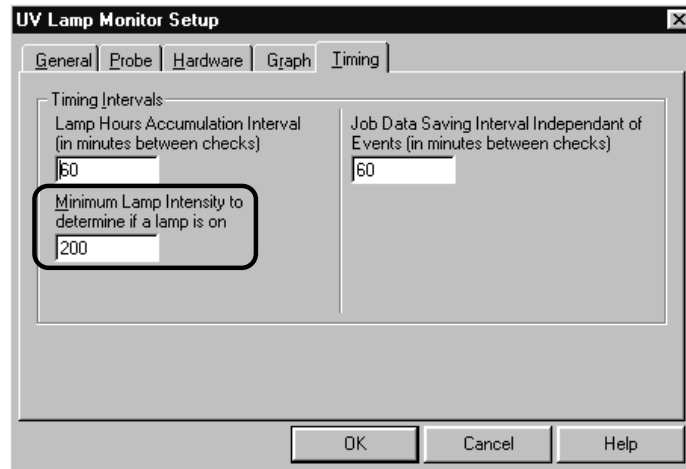
JOB DATA SAVING INTERVAL

Enter & Display Interval Between Saved Job Scans (in minutes).

During the performance of a **Job**, data will **automatically** be written to the database at this interval, **regardless** of any change in intensity value at the Critical Wavelength.

File: LM9000.MDB Table: ctrlCONTROL Record: Job_Interval

Timing Tab: continued.....



MINIMUM LAMP INTENSITY

Enter & Display a Minimum Lamp Intensity value, below which the LM-9000[®] will consider the Lamp “Turned Off”. Typically set to 200.

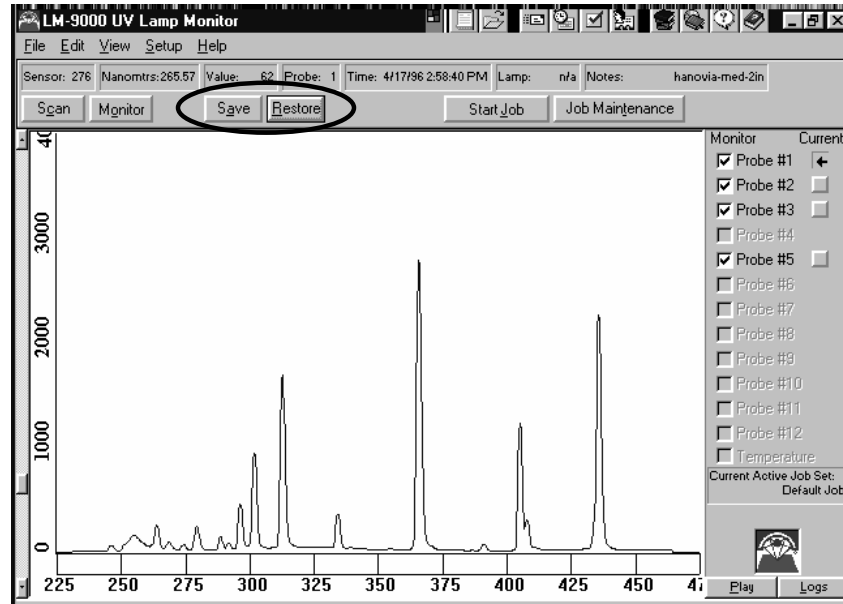
File: LM9000.MDB Table: ctrlCONTROL Record: Min_Lamp_Value

If allowed to remain running all the time, the LM-9000™ Software is able to determine the number of **Lamp Starts**, and assess the accumulated hours in use for each lamp (each active **Probe**) connected to the system by detecting Change of State. The **Minimum Lamp Intensity** value is the threshold for determining Change of State.

File: LM9_DATA.MDB Table: tblLAMP Field: StateChange

File: LM9_DATA.MDB Table: tblLAMP Field: AccumulatedHours

SAVE & RESTORE DATASETS INSTRUCTIONS



SAVE BUTTON

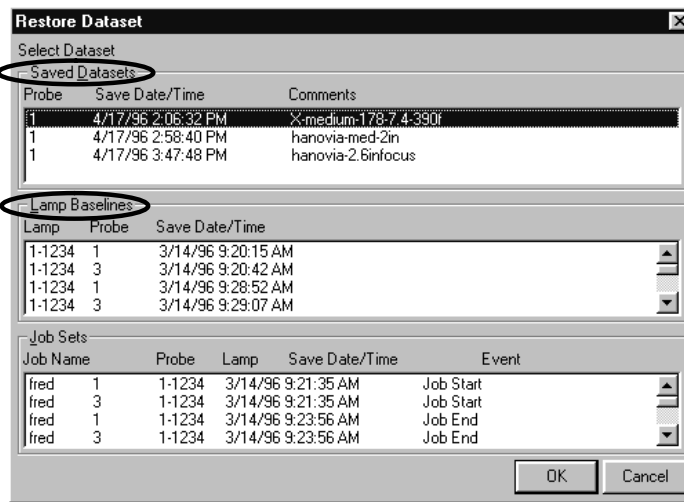
Pressing this Button at any time will force a save of all current Single Scan information, including Lamp Output at all wavelengths, and Data Set Information with date & time. Single Scan data is acquired by pressing the **Scan** button (or by stopping a **Monitor** session) and then pressing the Save button.

Writes Values to File: LM9_DATA Table: tblProbeData and Table: tblProbeDataDetail

RESTORE BUTTON

Pressing this Button opens the Restore Data Sets window, allowing selection and retrieval of individual Data Sets, Lamp Baselines, or Entire Jobs.

RESTORE DATA SETS SCREEN



SAVED DATASETS

Displays a list of individual scans saved by the user. These are the resulting **Data Sets** obtained by pressing the **SAVE** button.

Probe Number

File: LM9_DATA Table: tblProbeData Field: IDProbe

Save Date & Time

File: LM9_DATA Table: tblProbeData Field: ScanTime

Comments

File: LM9_DATA Table: tblProbeData Field: Comments

LAMP BASELINES

Displays a list of individual lamp **Energy Display Graphs** designated as the **Original State of the Lamps**. These **Data Sets** are the result of clicking the **Baseline Lamp/Probe** on the **Setup** Pulldown Menu of the Monitor Lamps Screen

Lamp ID

File: LM9_DATA Table: tblLampData Field: IDLamp

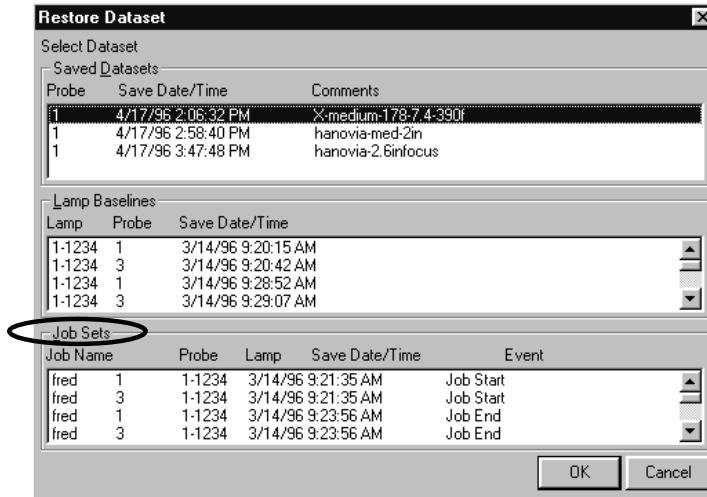
Probe Number

File: LM9_DATA Table: tblLampData Field: IDProbe

Save Date & Time

File: LM9_DATA Table: tblLampData Field: ScanTime

Restore DataSets: continued.....



JOB SETS

Displays a list of individual **Job Set Descriptions** that keep a group of **Job** related **scans** together. These are the resulting Data Sets obtained by pressing the **Start Job** button, and subsequently by any registered **Events** until a **Job End** occurs.

Job Name / Number

File: LM9_DATA Table: tblJob Field: JobName

From Table: tblJobSetData Field: IDJobSet

Probe Number

File: LM9_DATA Table: tblJobSetData Field: IDProbe

Lamp ID

File: LM9_DATA Table: tblJobSetData Field: IDLamp

Save Date & Time

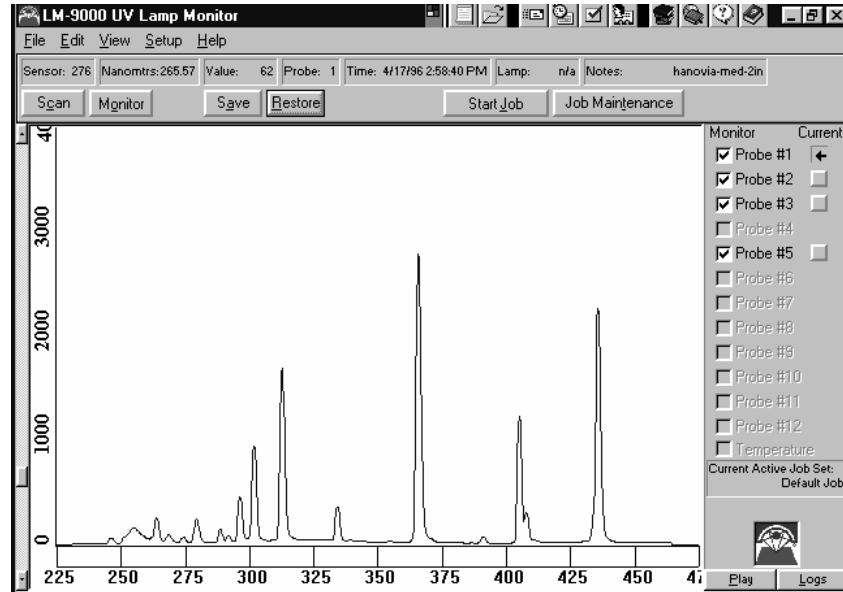
File: LM9_DATA Table: tblJobSetData Field: ScanTime

Event

File: LM9_DATA.MDB Table: tblEventTypes Field: EventName

From File: LM9_DATA.MDB Table: tblJobSetData Field: IDEventType

MONITOR LAMPS INSTRUCTIONS



MONITOR LAMPS ON-LINE HELP INDEX:

Energy Display Graph Area..... 4.2

Windows Menu Bar..... 4.3

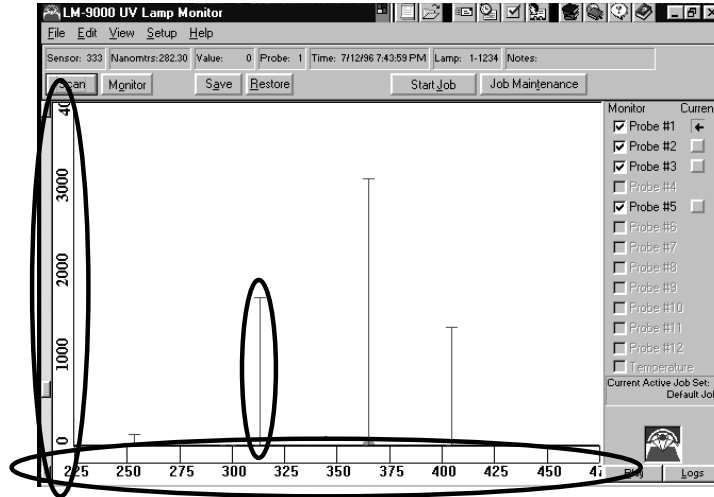
“At-A-Glance” Windows toolbar..... 4.4

Critical Wavelength Indicator..... 4.5

Action Buttons toolbar..... 4.6

Action Control Center..... 4.7

This is the Main Workplace for the Lamp Monitor System. The Monitor Lamps Screen has been divided into functionally related groups: Daily Operations, System Status and Setup, Data Retrieval, and Warning Messages. The Windows Menu Bar across the top of the Screen, the “At-A-Glance” and Actions toolbars below them, the Energy Display Graph in the center, and the Action Control Center to the right all work to provide up-to-date information quickly.

Monitor Lamps: continued.....Energy Display Graph Area

The primary section of the Monitor Lamps Screen shows the plot of Lamp Intensity vs. Wavelength.

“Y-AXIS” (VERTICAL) = RELATIVE INTENSITY VALUE SCALE

Values increase from bottom to top.

Values are changeable using the Scale Adjustment Slider control to the left of the “Y-axis”.

“X-AXIS” (HORIZONTAL) = WAVELENGTH VALUE SCALE

Values increase from left to right.

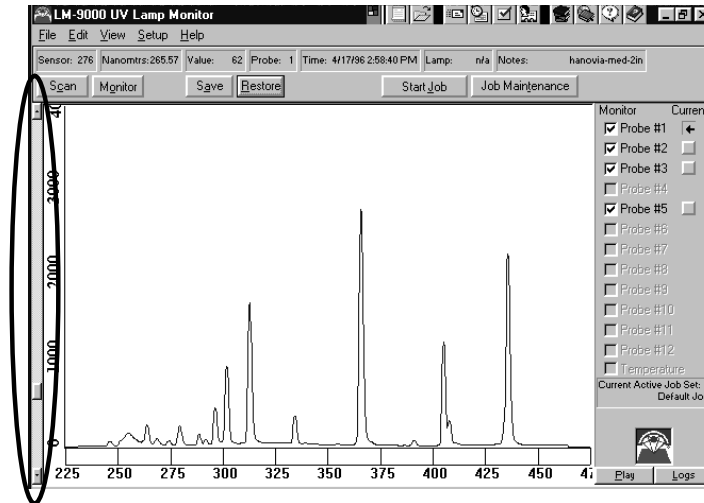
Values are measured in Nanometers (nm).

PEAK INDICATOR DROP LINES

Optional red “T”-bar highlight for the six (6) pre-selected wavelengths for monitoring & recording.

Horizontal portion of “T”-bar indicates intensity for that Peak.

Vertical portion of “T”-bar indicates intensity at indicated Wavelength.

Monitor Lamps: continued..... Screen Elements

To Activate select the View Menu on the Pulldown Menu Bar and check the Draw Peaks box

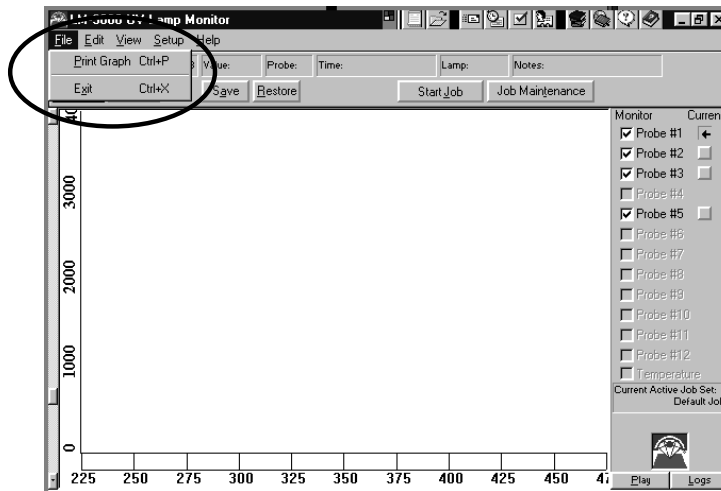
SCALE ADJUSTMENT SLIDER

Adjusts the Relative Intensity (Y-axis / Vertical) scale to allow viewing of peak or low values which have gone above or below the Energy Display Graph borders.

Located to the left of the Relative Intensity Scale, with an “Up” button near the top, a “Down” button near the bottom, and the “Slider” indicating position.

To gain greater detail on lower intensity values (“near-horizontal” lines) down at the bottom of the **Energy Display Graph**, lower the **Scale Adjustment Slider**.

To see peaks which have shot above the top horizontal border of the **Energy Display Graph**, raise the **Scale Adjustment Slider**.

Monitor Lamps: continued.....File Menu

Menu Bar: The standard Windows “Pull-down” Menus (File, Edit, View, Setup and Help)

FILE MENU COMMANDS**PRINT GRAPH**

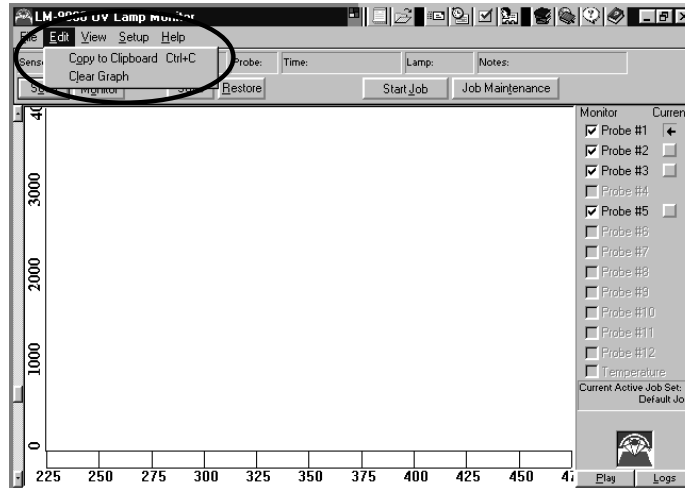
Sends the Current Energy Display Graph to the printer.

To print saved **Energy Display Graphs**, simply restore the **Data Set** or **Job Set** and then choose the **File-Print Graph** command.

EXIT

Leads user back to the LM-9000 \hat{O} Main Menu.

NOTE: DO NOT LEAVE Monitor Lamps while Monitor Button is pressed in. Especially on Multiple Lamp Systems

Monitor Lamps: continued.....Edit Menu**EDIT MENU COMMANDS:****COPY TO CLIPBOARD**

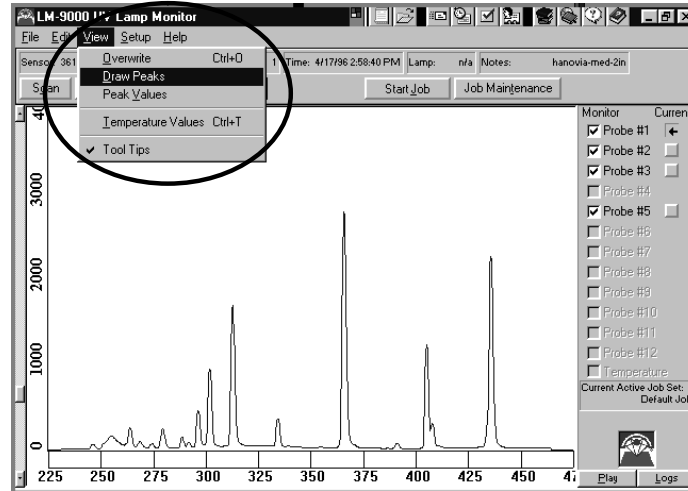
Places a copy of the currently displayed **Energy Display Graph** onto the Windows Clipboard for inclusion in another document (such as a Word document or e-mail). To export saved **Energy Display Graphs**, simply restore the **Data Set** or **Job** and then choose the Copy command

CLEAR

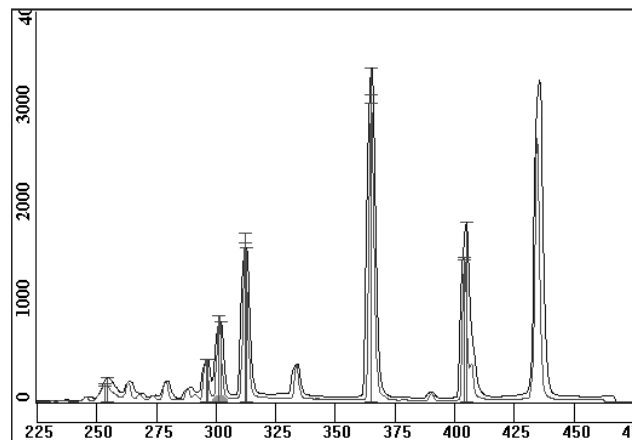
Empties the Current Energy Display Graph from the screen.

NOTE: Either select another **Data Set to Restore**, begin a **Scan**, or begin Monitoring to put new data on cleared screen.

NOTE: Very useful when selecting Data for **Overwrite Display**. From a clear screen the user can selectively restore individual **Data Sets**, **Lamp Baselines**, or **Events** to compare against each other on one screen.

*Monitor Lamps: continued.....View Menu***VIEW MENU COMMANDS****OVERWRITE**

Activates or Disables the Display of subsequent Energy Display Graphs on top of those already present on screen. Normally left unchecked to allow the latest scan to dominate the screen.

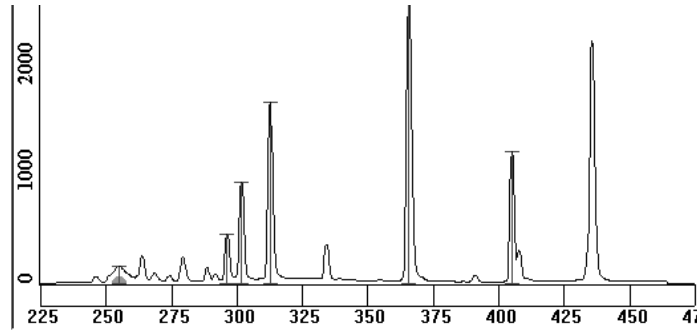


NOTE: Overwriting of Automatic Scans while Monitoring Lamps can be useful when you suspect subtle changes are occurring. Heavier lines (or Drop Lines), or blotchy lines on the Energy Display Curve can indicate where the changes are occurring.

Both the Line forming the **Energy Display Curve** and the Peak Indicator **Drop Lines** will be **overwritten** on top of any data on screen.

Changes in intensity at any wavelength will show up as multiple lines if the changes are large or a thicker solid line if the changes are subtle.

NOTE: From a clear screen the user can selectively restore individual **Data Sets, Lamp Baselines, or Job Events** to compare against each other on one screen.



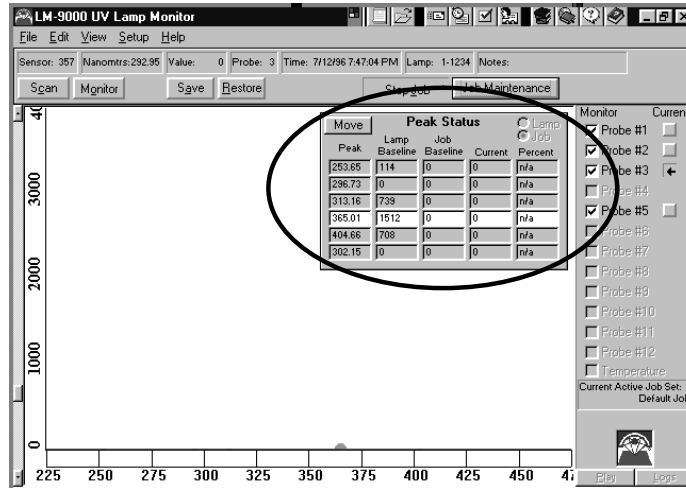
DRAW PEAKS

When Checked, Activates or Disables the red "T"-bar Drop Lines at the 6 chosen peaks

Horizontal portion of "T"-bar indicates Peaks.

Vertical portion of "T"-bar indicates Wavelength.

Monitor Lamps: continued....View Menu View Peaks



VIEW PEAK VALUES

Displays or Hides the **Peak Status Box** which shows Information including Peak Wavelength, Lamp Baseline Value, Job Baseline Value, Current Value for Lamp **OR** Current Value for Job (see **Lamp / Job Toggle** in **Peak Status Box**), and Percent Loss (or gain) for each of the six (6) chosen peaks.

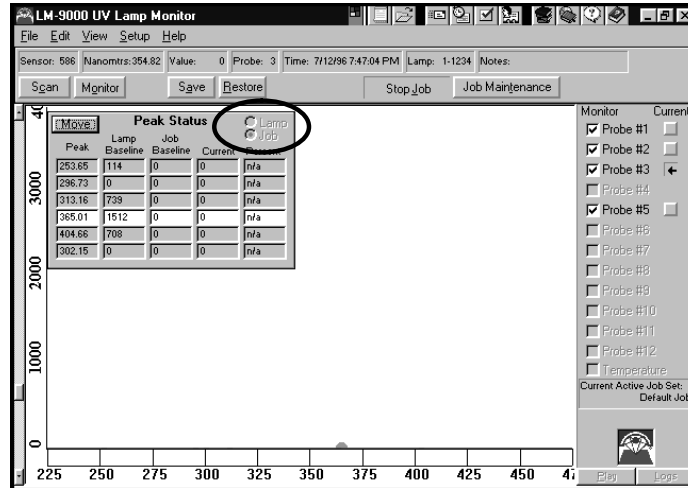
PEAK STATUS BOX CONTROLS:

MOVE BUTTON

Shifts the Peak Status Box from the Left Side of the Energy Display Graph screen to the Right Side.

Use this when the **Peak Status Box** overwrites or is covered up by On-Screen Peaks.

Monitor Lamps: continued.....View Menu

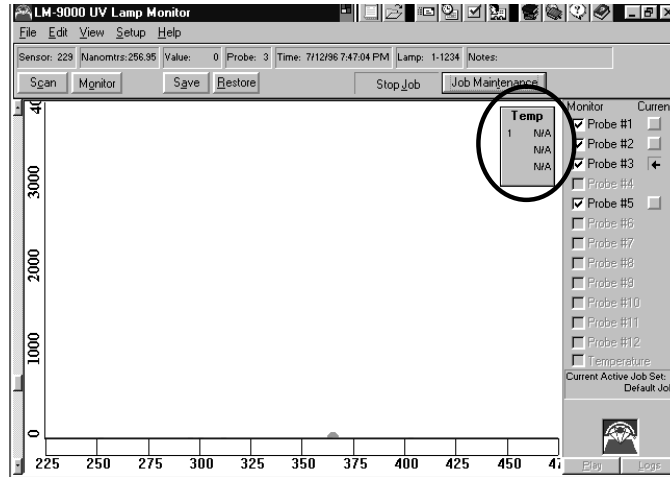


LAMP / JOB TOGGLE

Changes display of Current and Percent Values from the Current Lamp to the Current Job.

Use this when changing between specifications for an established job and the current state of the lamp.

TEMPERATURE



Activates or disables Temperature Bar Display (Requires the RS-232 Serial Port option and temperature Probe(s) installed)

TOOL TIPS



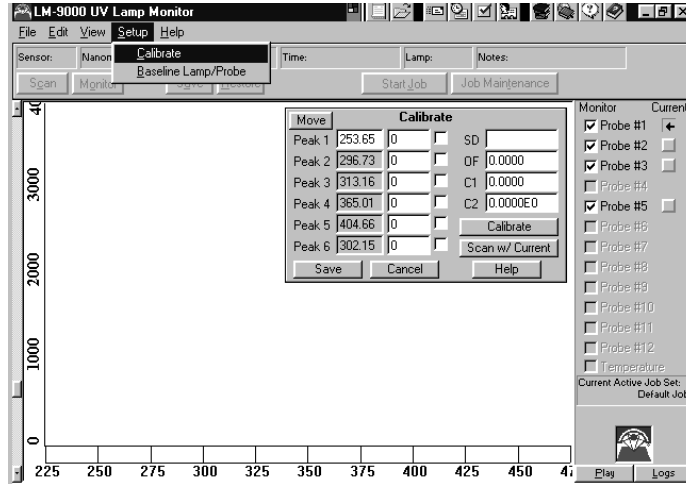
Activates or Disables On-Screen tips on Button functions when the cursor is initially moved to a button.

Monitor Lamps: continued.....Setup Menu

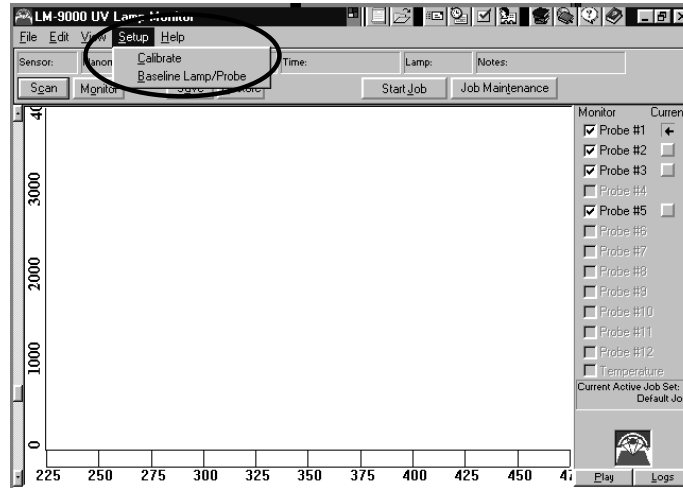
SETUP MENU COMMANDS

CALIBRATE

Activates the Calibrate Lamps Entry Screen.



See **Calibrate Lamps Help** for details.

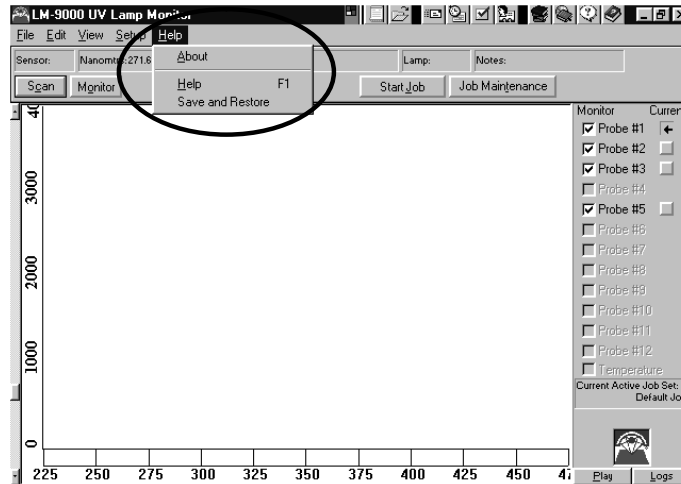
Monitor Lamps: continued.....Setup Baseline**BASELINE A LAMP/PROBE**

Uses the Current **Energy Display Graph** Information as the Initial Value for the lamp or active **Probe**. This information is saved to disk as a special "**Baseline**" record.

NOTE: Use only when you install a new lamp, change the physical configuration of system components, or when first installing the LM-9000 software.

NOTE: Once the new lamp has become stable (after initial power up and getting to operating temperature), pressing this button will cause the Current Lamp Intensity values to be used as the Original/Initial Values for the lamp.

NOTE: All readings from this time forward will show current state and the percentage of gain or loss in intensity value since **Baseline** Values were established for this lamp.

Monitor Lamps: continued.....Help Menu**HELP MENU COMMANDS****ABOUT**

Information About The LM-9000[®] Software License and Limited Warranty.

NOTE: *This Program Is Licensed, Not Sold!*

Text Box allows the user to Scroll through Information including **Con-Trol-Cure, Inc.**'s address & phone numbers, the LM-9000™ Software Licensing Agreement, Program Credits, Copyright Information, and the Limited Warranty for the LM-9000™ Lamp Monitor Software.

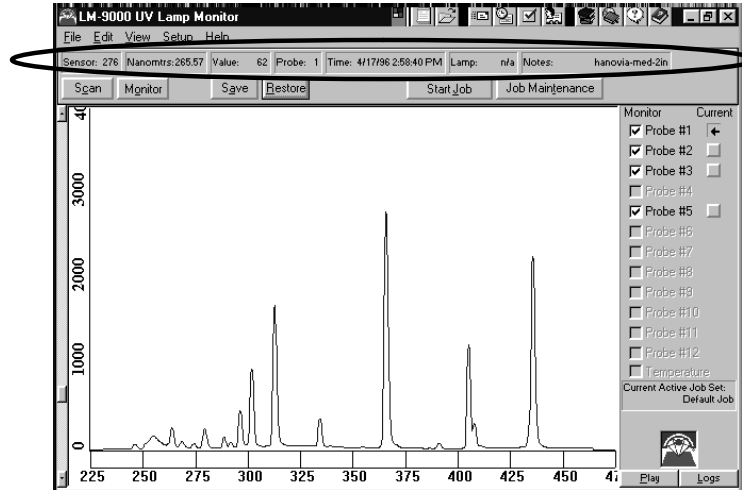
HELP

Information on the Monitor Lamps Controls, their functions and notes on usage.

SAVE & RESTORE

Information on Saving Data Sets, Lamp Baselines, and Job Sets, as well as information on retrieval at some later time for comparisons or to reproduce a Job or Run.

Monitor Lamps: continued....."At-A-Glance Toolbar

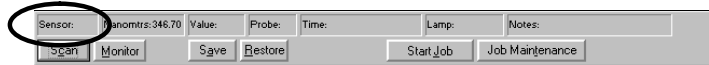


AT-A-GLANCE" TOOLBAR AREA

Information windows which show details about the present Energy Display Graph Screen Data.

Current mouse position detail (sensor, Nanometers and intensity), Active Probe number, Lamp Number and pertinent notes or comments are displayed in individual windows along this toolbar.

NOTE: This toolbar **ALWAYS Displays Present Screen Data.** When viewing Restored data On-Screen, these windows will reflect machine state at the time and date of the Restored Scan.



SENSOR # WINDOW

Sensor # Window shows the Physical Sensor Number at the current mouse position.

Useful for **Calibration** and to find reference points along the **Energy Display Curve.**

Monitor Lamps: continued....."At-A-Glance" toolbar**NANOMETERS WINDOW**

Nanometers Window (Nanomtrs) shows the corresponding Wavelength at the current mouse position.

Useful for **Calibration** and to find reference points along the **Energy Display Curve**.

VALUE WINDOW

Value Window shows Intensity value at the current mouse position.

Useful for **Calibration** and to find reference points along the **Energy Display Curve**.

PROBE # WINDOW

Probe # Window shows the number of the Probe whose data is currently being displayed.

Useful when performing initial installation of **Probes**, and when Restoring A **Data Set** to compare readings.

TIME (& DATE) WINDOW

Shows the time and date for the currently displayed Energy Display Graph.

Useful when Restoring a **Data Set** to compare readings. This window will show the Date & Time when the **Data Set** was stored, to make finding problems easier.

*When **Monitoring Lamps**, this window will show when the last **Automatic Save** was performed.*

LAMP NUMBER WINDOW

Shows the Lamp ID for the currently displayed Energy Display Graph.

Useful when Restoring a **Data Set** to compare readings. This window will show the Date & Time when the **Data Set** was stored, to make finding problems easier.

Monitor Lamps: continued....."At-A-Glance" toolbar



NOTES WINDOW

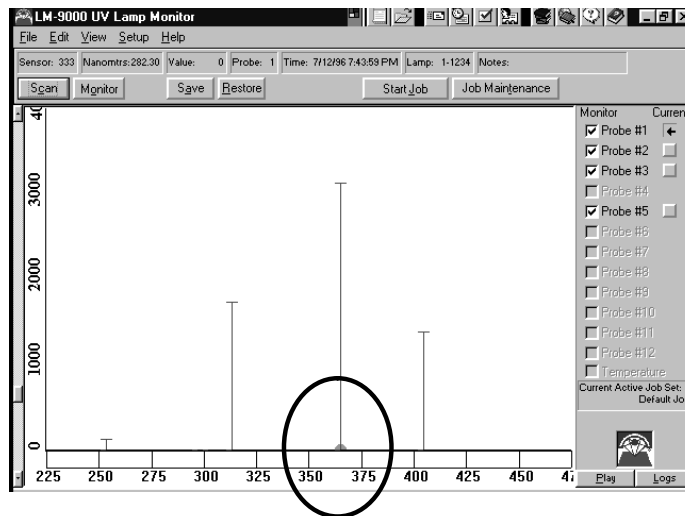
*Shows the Scan Comments for any Restored Scan **OR***

*Shows the Lamp Number for any Restored Lamp Baseline **OR***

*Shows the Job Name for any Restored Job Data Set **OR***

Shows Job Name for the currently displayed Energy Display Graph (if any job had been assigned) for any present activity.

Useful when Restoring a **Data Set** to compare readings. This window will show the Date & Time when the **Data Set** was stored, to make finding problems easier.



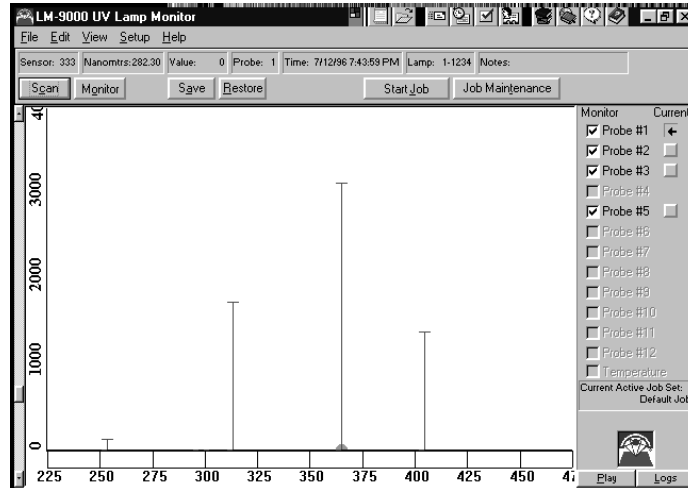
CRITICAL WAVELENGTH INDICATOR

A Green Dot, appearing just above the Wavelength Axis (Zero Intensity) at the selected Critical Wavelength.

Displays the selected wavelength which triggers **Yellow** or **Red Alerts** for any **Present Activity, OR**

Displays the selected wavelength which triggered **Alerts** on **Restored Data Sets.**

Monitor Lamps: continued..... Action Buttons toolbar



ACTION BUTTONS TOOLBAR AREA

Located just below the “At-A-Glance” Toolbar.

Perform special tasks when pressed. Single Scan, Repeated Scanning, Job or Data Set Save & Restore, Start a Job and quick access to the Job Maintenance Screen are “One-Button” easy.



SCAN BUTTON

A Single **Scan** Is Performed and Displayed for each Press. To Save a **Data Set** obtained during a Single **Scan**, Press the **Save** button

MONITOR BUTTON

When pressed in, Begins Monitoring of lamp(s), repeatedly performing Single **Scans** and Displaying them until stopped. Operational speed is Computer Dependent (Faster Processors yield quicker response times).

To Stop Monitoring, click the **Monitor Button** again and it will pop back up.

NOTE: To Save a **Data Set** obtained during **Monitoring**, first **Stop Monitoring**, then Press the **Save** button.

Monitor Lamps: continued.....Action Buttons Toolbar**SAVE**

Save the Current On-Screen **Data Set** Active only in Single **Scan** mode.

RESTORE

Activates the **Restore Data Sets** Window and allows selection of **Data Set** or **Job Set** data to restore for review.

START JOB

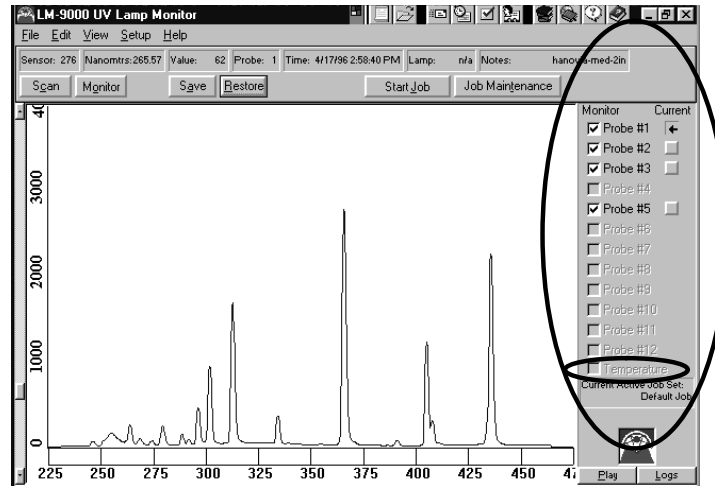
Begins logging of all subsequent **Automatic Lamp Scans** to the currently selected Job. Automatic Lamp Scan **Saves** will occur at the selected **Job Data Saving Interval** (See **Timing Tab** of System Setup screen for details). Events will also trigger a complete save of all data for later review.

***NOTE:** This is similar to **Monitoring Lamps**, but Automatically Saves information to the database, and stores additional user supplied information with each record. **Jobs** are most useful when machine settings and conditions are recorded for later retrieval.*

JOB MAINTENANCE

Activates the **Job Maintenance** Screen and allows selection or entry of **Job Information**, or any comments, for later review.

See **Job Configuration Help** for details.

Monitor Lamps: continued.....Action Control Center**ACTION CONTROL CENTER**

Shows current status of All Probes (1 through 12)

Installed **Probes** will be Highlighted in this window located to the right of the **Energy Display Graph**.

NOTE: Display **ALWAYS** indicates **Current System Setup**. Any Scan or Timed Monitoring Event will utilize these settings.

PROBE SELECTION

Selectively activate or deactivate any Installed Probes

Activate by checking the box to the left of a highlighted **Probe** number.

De-Activate by removing the Check Mark.

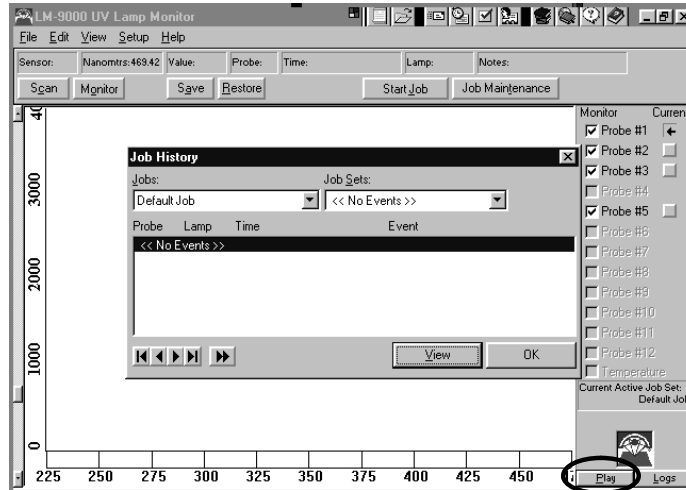
TEMPERATURE DATA COLLECTION TOGGLE

Displays whether or not **Temperature Data** is being gathered along with the Lamps Wavelength Intensity information.

NOTE: *Temperature Data Collection is an OPTIONAL feature of the LM-9000. If your configuration included the **RS-232 Serial Port Option** and **Temperature Probes**, consult the Installation Notes accompanying the system for detailed information.*

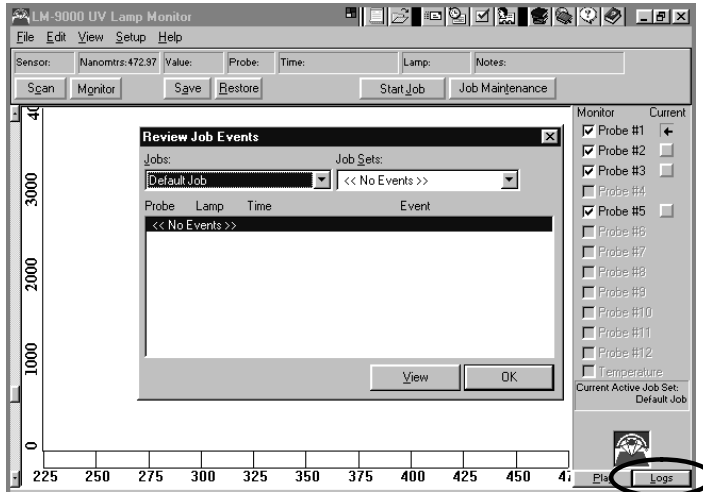
Contact Con-Trol-Cure, Inc. or an Authorized Sales Representative for further details.

Monitor Lamps: continued.....Action Control Center



PLAY BUTTON

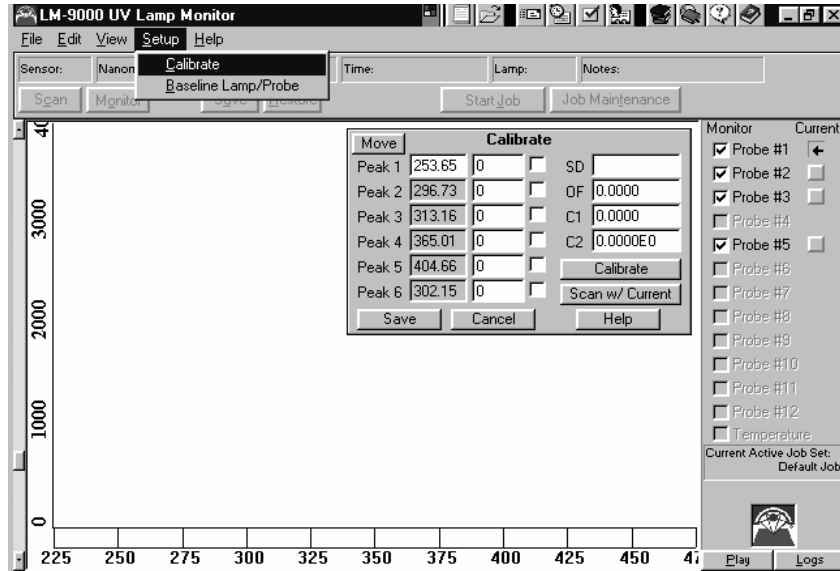
Pressing the Play button displays a list of Job History Records for selection and display.



LOG BUTTON

Pressing the Logs Button Displays a list of Job Events for selection and display.

CALIBRATE LAMP MONITOR INSTRUCTIONS

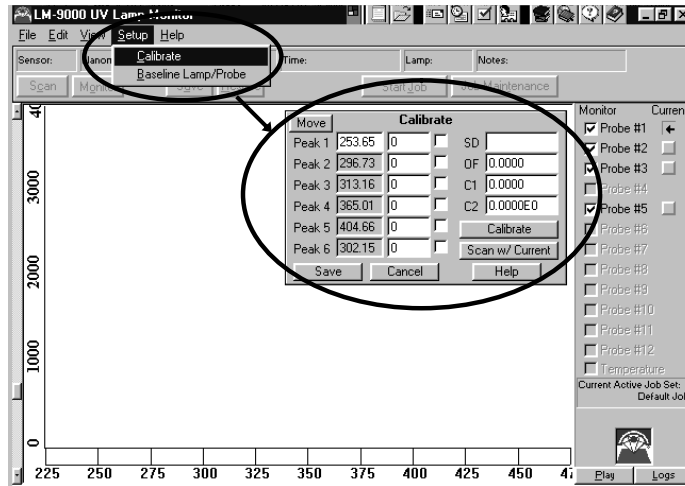


CALIBRATE LAMPS ON-LINE HELP INDEX

- Wavelength / Sensor Table..... 5.3*
- Calculation Constants Area..... 5.4*
- Move Button..... 5.5*
- Save Button..... 5.6*
- Cancel Button.....5.7*
- Calibrate Button..... 5.8*
- Scan w/ Current Button..... 5.9*
- Help..... 5.10*

Configures LM-9000[®] to Optimal for Present Physical Setup by defining the relationship between the Peak Wavelengths and the individual sensors.

Calibrate Lamps: continued.....



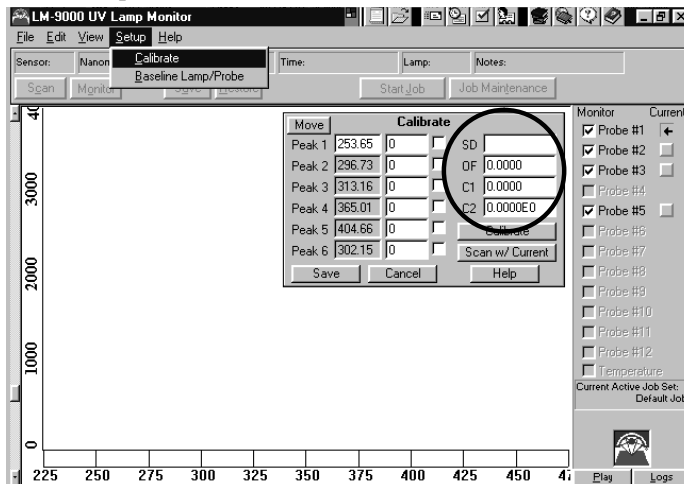
WAVELENGTH / SENSOR CORRELATION TABLE

Allows Entry and Displays the six (6) Chosen Peaks, and the Sensor Numbers associated with them.

FOR EACH OF THE 6 CHOSEN PEAKS:

Select a Wavelength **Table Entry** for which there is an obvious peak visible On-Screen, move the cursor to that peak on the **Energy Display Curve**, and click when the "Cross Hair" cursor is on the highest pixel of the peak. The sensor number associated with that wavelength will now be updated in the On-Screen table.

Calibrate Lamps: continued.....



CALCULATION CONSTANTS AREA

Values used to report the wavelengths associated with each individual sensor, and for labeling cursor movement properly as you move the cursor along an Energy Display Curve. Values are derived from Calibration Procedures.

STANDARD DEVIATION (SD):

Temporary value which is displayed only during Calibration.

Reference Standard Deviation Freedom limit in Setup Instructions and Calibration Notes for more information.

OFFSET (OF):

Beginning point (x intercept) of calculation.

This field's value will typically be around 190.

COEFFICIENT #1 (C1):

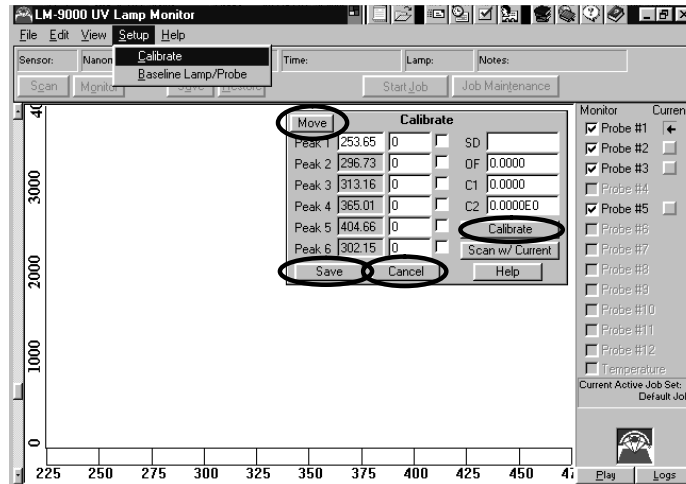
First order polynomial constant needed to plot the Energy Display Graph.

This field's value will typically be around 0.3

COEFFICIENT #2 (C2):

Second order polynomial constant needed to plot the Energy Display Graph.

This field's value will typically be -0.00003

Calibrate Lamps: continued.....**MOVE BUTTON**

Moves The Calibrate Lamp Box from the Left Side of the Energy Display Graph screen to the Right Side.

Use this when On-Screen Peaks overwrite or are covered up by the Calibrate Lamp Box.

SAVE BUTTON

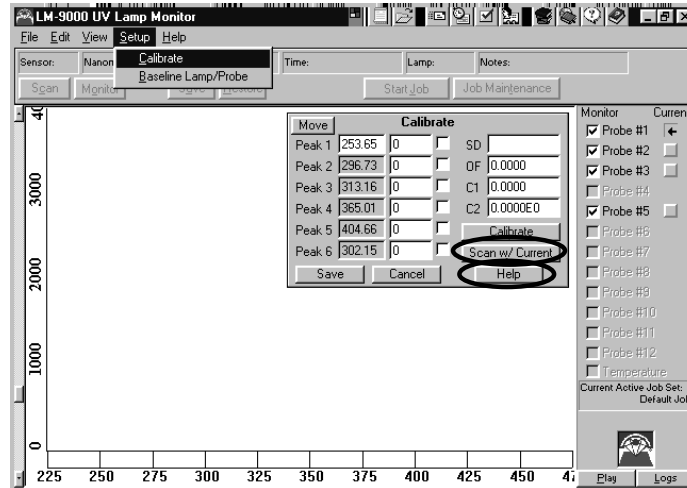
Saves all current Table Entries and Calculation Constants as the new defaults.

CANCEL BUTTON

Abandons any changes made in the Table Entries or Calculation Constants areas.

CALIBRATE BUTTON

Sets all current Table Entries as the New Defaults.

Calibrate Lamps: continued.....**SCAN W/CURRENT BUTTON**

Gets a new scan using the current Table Entries. Peaks and Axis information should have a closer correspondence with the newly entered information. If this is so, press Calibrate to save the new defaults.

HELP

Displays On-Screen Help for Calibrate Lamps.

JOB MAINTENANCE SCREEN INSTRUCTIONS

JOB MAINTENANCE ON-LINE HELP INDEX:

Job Setup Information..... 6.2
Baseline area..... 6.3
Job Record Controls..... 6.4
Set Current Job Button..... 6.5
OK Button..... 6.6

JOB SETUP INFORMATION AREA

Entry and Viewing of Job Information.

Job Name, a list of machines used for the job, and a list of inks used on the **Job** can be entered.

Information entered here can be used for later reference in order to more accurately reproduce desired results, or to eliminate undesirable effects.

Job Maintenance: Continued.....
BASELINE AREA*Entry and Viewing of the User Selected Yellow Alert and Red Alert percentages of Original Value.*

Enter percentage of Original Value at which the **Yellow Alert** Screen (the background color of the **Energy Display Graph**) should be displayed. Enter a lower percentage of Original Value at which the **Red Alert** Screen should be displayed.

Select Either:

Start of Job to use the initial Job Baseline(s) as the basis of Original Value.

OR

Start of Lamp to use the individual Lamp Baseline(s) as the basis of Original Value.

Job Maintenance: continued.....
JOB RECORD CONTROL BUTTON AREA

Allows Scrolling through existing Job Records.

First, Previous, Next, and Last buttons let you review **Job Records** for reference or to aid in running the Job again.

ADD NEW BUTTON

Entry of New Job Records occurs by pressing the Add New button.

Enter new Job Setup Information into the blank form presented.

The Save & Cancel Buttons will become active when entering a New **Job Record**. To Keep the information entered press Save when completed. To quit New **Job Record** without saving the entry, press the Cancel Button anytime.

DELETE BUTTON

Removes existing Job Records for jobs you no longer need.

By selecting the target Job and depressing the Delete Button, unused Jobs, temporary settings or experimental **Job Sets** can be permanently removed.

Job Maintenance: continued.....
SET CURRENT JOB BUTTON

Makes the Currently displayed Job Information the default settings.

In combination with the **Job Data** Control Buttons (above), depressing the Set Current Job button will make the currently selected **Job Record** the basis for the Job you are about to run.

OK BUTTON

Accepts the present settings. Returns from the Job Maintenance Screen.

To exit without making any changes press the Close Button [X] in the upper right corner of the Job Maintenance Screen instead.

LAMP MAINTENANCE SCREEN INSTRUCTIONS

LAMP MAINTENANCE ON-LINE HELP INDEX:

Lamp Setup Information..... 7.2

Lamp Data Controls..... 7.3

OK Button..... 7.4

LAMP SETUP INFORMATION AREA

Entry and Viewing of Lamp Information.

Serial #, Model and Specification Number, Manufacturer, the Date the lamp was installed, and which machine it is installed in. A Check Box indicates whether or not the Currently Selected Lamp is active.

LAMP DATA CONTROL BUTTON AREA

Allows Scrolling through existing Lamps.

First, Previous, Next, and Last buttons let you review **Lamp Records** for reference, or to aid in replacing a Lamp.

Lamp Configuration: continued.....
ADD NEW BUTTON

Entry of new Lamp Records occurs by depressing the Add New button.

Enter new Lamp Setup Information into the blank form presented.

The Save & Cancel Buttons will become active when entering a New **Lamp Record**. To Keep the information entered press Save when completed. To quit New **Lamp Record** without saving the entry press the Cancel Button anytime.

DELETE BUTTON

Removes existing Lamp Records for Discarded or broken lamps.

By selecting the target Lamp and depressing the Delete Button, you can permanently remove a lamp from the system.

OK BUTTON

Accepts current Lamp Information as the new defaults. Returns from the Lamp Maintenance Screen.

To Exit without making any changes, press the Close Button [X] in the upper right corner of the Lamp Maintenance Screen.

LM-9000™ LAMP MONITOR SYSTEM COMPONENTS***Desktop or Laptop Computer***

See following page for minimum system requirements.

LM-9000ä PC Interface Controller Board(s)

First, Second and Third 16 bit ISA PC Boards each can have three additional Probe Controller Boards attached.

First Board is assigned as Probe 1. Probes 2, 3, and 4 will be connected to First Board.

Second Board is assigned as Probe 5. Probes 6, 7, and 8 will be connected to Second Board.

Third Board is assigned as Probe 9. Probes 10, 11, and 12 will be connected to Third Board.

Fiber-Optic Cable

Available in 2 and 10 meter standard lengths. Custom Length cables can be special ordered.

LM-9000ä Optical Probe(s)

Basic Probes

Right-Angle Probes

Thin Profile Probes

LM-9000™ Lamp Monitor Installation Diskettes (3)

DESKTOP COMPUTER SYSTEM REQUIREMENTS:

IBM-PC compatible w/ 80486 25Mhz or higher

8 MB Ram minimum (12 MB recommended)

15 MB of free hard disk space for application, Basic Monitoring Data, and 50 Data Set Saves.

Approx. 5 MB free hard disk space per 100 full Data Set Saves.

VGA / SVGA or Compatible Display

Microsoft Windows 3.1 or Windows '95

A Windows compatible Graphics Printer

LAPTOP COMPUTER SYSTEMS REQUIREMENTS:

IBM-PC compatible w/ 80486 25Mhz or higher

One Type II PCMCIA Slot

8 MB Ram minimum (12 MB recommended)

15 MB of free hard disk space for application, Basic Monitoring Data, and 50 Data Set Saves.

Approx. 5 MB free hard disk space per 100 full Data Set Saves.

VGA / SVGA or Compatible Display

Microsoft Windows 3.1 or Windows '95

A Windows compatible Graphics Printer

STEP 1: Software Installation

Install LM-9000's Lamp Monitor Software

WINDOWS 3.1

- *From Program Manager: Close All applications running in other windows. Close All open program Items.*
- *Click on <File> from the Windows Menu*
- *Select <Run> from the File Menu*
- *Type **A:\Setup** <press Enter>*
- *Accept all Default Answers To Questions Presented*
- *Application will be installed to **C:\LM9000**, windows Program Group and Icons will be placed on the desktop*

WINDOWS 95'

- *Close All open applications running in other windows. Close All active Pop-Up Applications like the Microsoft Office Toolbar.*
- *Click the <START>Button*
- *Select <RUN> from the Start Menu*
- *Type **A:\Setup** <press Enter>*
- *Accept all Default Answers to Questions Presented.*
- *Application will be installed to **C:\LM9000**, Windows Programs listing will be updated to include LM-9000 Lamp Monitor Program Group and LM-9000 Program Items.*

STEP 2: Hardware Installation:

Setting DIP Switches on the PC Interface Controller Boards

NOTE: The following pertains only to PC Interface Controller Boards, not the Additional Probe Boards connected to a PC Interface Controller. Additional Probe Boards have no surface mounted Integrated Circuits (chips) and no dip switches to set.

There are two parameters that must be set with dip switches on the LM-9000™ PC Interface Controller Boards: the Base Address and the IRQ Interrupt Request Level.

Default settings are:

Base Address: **768 decimal (300 hex)**

IRQ Interrupt: **IRQ 7**

You will need to turn on your computer, let it boot up, and check the system resources already in use BEFORE installing any new hardware.

WINDOWS 3.1:

- From Program Manager Select **File...Run**
- Type **MSD** and press <Enter>
- Select <**IRQ's**> to Examine resource usage of IRQ's and the Base Addresses associated.
- Select <**Device Drivers**> to Examine resource usage of Base Addresses.
- Select <**TSR's**> to Examine resource usage of additional Base Addresses.

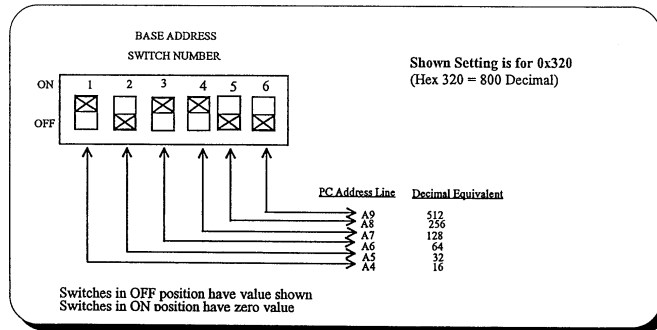
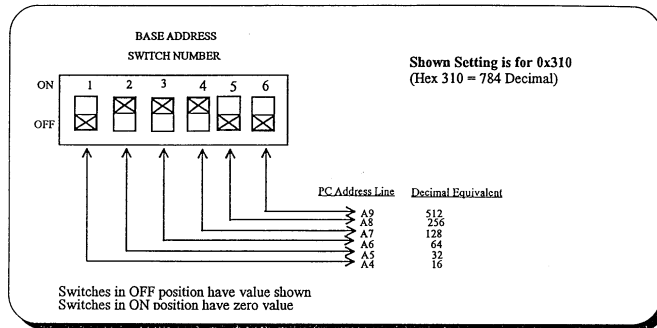
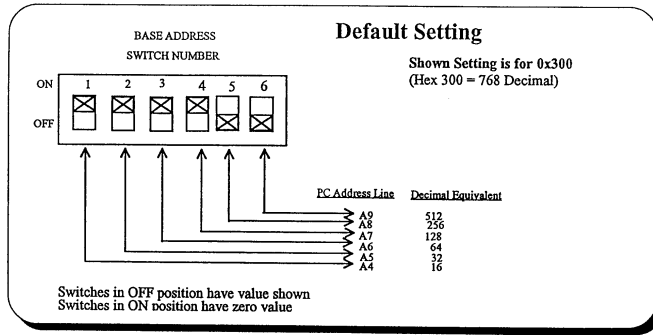
WINDOWS '95:

- Click the <**Start**> button, select **Settings...Control Panel**
- Double Click the **System** Icon
- Select **Device Manager**
- Click on <**Computer**>
- Click on <**Properties**>
- Select **Interrupt Request (IRQ)** to examine resource usage of IRQ's
- Select **Input/Output (I/O)** to examine Base Address Usage

NOTE: Unique Combinations of IRQ and Base Address are required

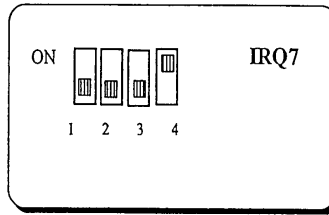
It is suggested that the IRQ and Base Address be free and open to the exclusive use of the LM-9000™ Board. Avoid any and all conflicts. Try to avoid sharing resources held by Sound Boards.

If there is a conflict with another Board in your computer the base address may be changed via switch SW1 as shown below:



The IRQ level may be changed via switch SW2. Set ONLY ONE of SW 2's switches to the ON position at any one time. Note: There are only 4 valid IRQ's:

IRQ Level	Switch to set ON
IRQ2	1
IRQ3	2
IRQ5	3
IRQ7	4



NOTE: Only IRQ 3, IRQ5 and IRQ7 are utilized by the LM-9000ä Software. DO NOT SET BOARDS TO USE IRQ2

Quick Chart 1

SW1 Base Address Settings (These Are The Only Allowed Values)

Hex	Dec	SW1.1	SW1.2	SW1.3	SW1.4	SW1.5	SW1.6
300	768	ON	ON	ON	ON	OFF	OFF << Default >>
310	784	OFF	ON	ON	ON	OFF	OFF
320	800	ON	OFF	ON	ON	OFF	OFF
330	816	OFF	OFF	ON	ON	OFF	OFF

QUICK CHART 2-A

SW2 IRQ Level For Desktop Systems

NOTE: Only 1 Switch Of The 4 May Be In The ON Position At Any Time

IRQ	Try This...	SW2.1	SW2.2	SW2.3	SW2.4
IRQ3	Third	OFF	ON	OFF	OFF
IRQ5	Second	OFF	OFF	ON	OFF
IRQ7	First	OFF	OFF	OFF	ON << Default >>

QUICK CHART 2-B

IRQ Level For PCMCIA Equipped Laptop Systems

NOTE: There are NO Physical Switches to set on the PCMCIA Card. However IRQ's MUST be set in the DOS environment and within the PCMCIA Card Services "INI" configuration file. See the Installation Notes On "Configuring the PCMCIA Card" for details.

IRQ	Try This...
IRQ3	Third
IRQ5	First << DEFAULT >>
IRQ7	Second

STEP 3: Inserting the Boards Into The Desktop System

NOTE: Be Certain That the Computer is Unplugged.

- *Remove the cover from the Desktop Computer following the manufacturer's instructions.*
- *Unscrew the cover plate bracket at the back of the available expansion slot on the computer's motherboard. (Retain the screw for re-assembly.)*
- *Remove the cover plate bracket and store it with other unused hardware. It will not be needed again until the LM-9000 system hardware is removed from this machine.*
- *Remove LM-9000 Instrument(s) from the anti-static bag(s). Be careful to handle the PC Interface Controller Boards only by their edges, avoiding contact with the gold edge connectors along the bottom.*
- *Insert the PC Interface Controller Board into the expansion slot selected. Press Down Firmly (but gently) until Board is seated.*
- *Secure the PC Interface Controller Board bracket with the screw removed from the cover plate.*

To install Additional Probe Boards:

- *Remove cover plate bracket from expansion slots next to PC Interface Controller Board, retain the screw, store the cover plate.*
- *The connecting ribbon cable must have the appropriate number of Header Assemblies to connect the matching number of Additional Probe Boards:*

Example: A ribbon cable with three headers is needed to connect two Additional Probe Boards to a PC Interface Controller Board.

- *Run the connecting ribbon cable between the 16 pin headers near the top of the boards, being careful not to twist the cable. Cable will be color coded (red or black on one edge) to indicate Pin 1 orientation. Pin 1 on any Additional Probe Boards must connect to Pin 1 on the PC Interface Controller Board.*

NOTE: 16 Pin Header Near Top of Both the PC Interface
And Additional Probes

- pin 1

(Viewed as though holding the board with the Gold Edge Connectors at the bottom with Board Bracket to the Right)

- *Insert the Additional Probe Board into the expansion slot selected. Press down firmly (but gently) until Board is seated. Secure Additional Probe bracket with the screw removed from the cover plate.*

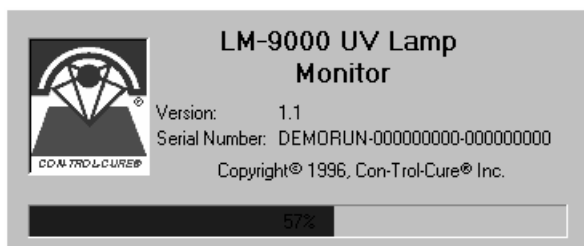
Repeat as necessary for all remaining Additional Probe Boards.

STEP 4: Run the software for the first time.

NOTE: *In order to make sure the LM-9000ä Hardware is recognized by the system, the Lamp Monitor Software needs to be configured and tested. This will ensure the IRQ and Base Address assignments are correct.*

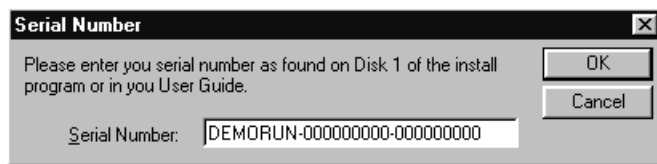
A: SERIAL # & SECURITY CODE IMPLEMENTATION

1) When you start the LM-9000ä Software for the first time, the Program Load Status Gauge (below) will pause and display the Serial Number Entry window and ask you for your Authorized Serial Number.



2) The Default Serial Number (DEMORUN-000000000-000000000) will be displayed. This Serial Number Entry window (below) invokes the special “Demo” mode of the software, allowing only the viewing of already saved DataSets.

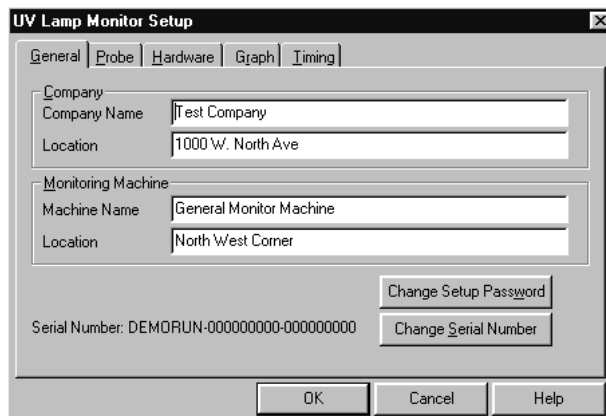
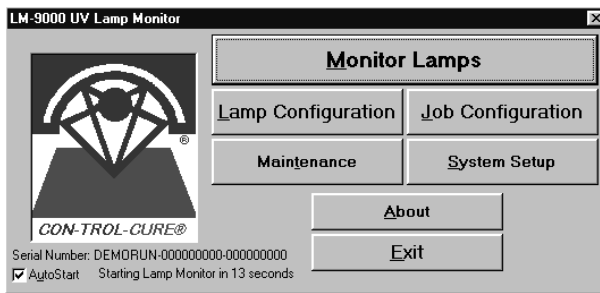
3) Type Your Authorized Serial Number (found inside the cover of the LM-9000 Lamp Monitor System Documentation) exactly as shown.



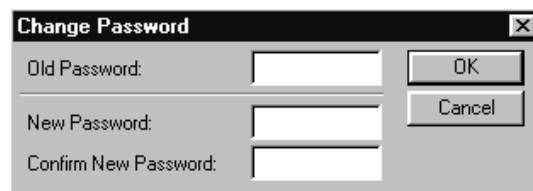
System Configuration Parameters are automatically set based on the Serial Number.

NOTE: *Improper Serial Number Entry may disable the system.*

4) If you accepted DEMORUN as your serial number to try out the system first, and now wish to activate the Scan and Monitor capabilities, click on System Setup button of the Main Menu (above), select the General tab, and press the Change Serial Number button (below). The Serial Number Entry window will be displayed and allow entry of your Authorized Serial Number.



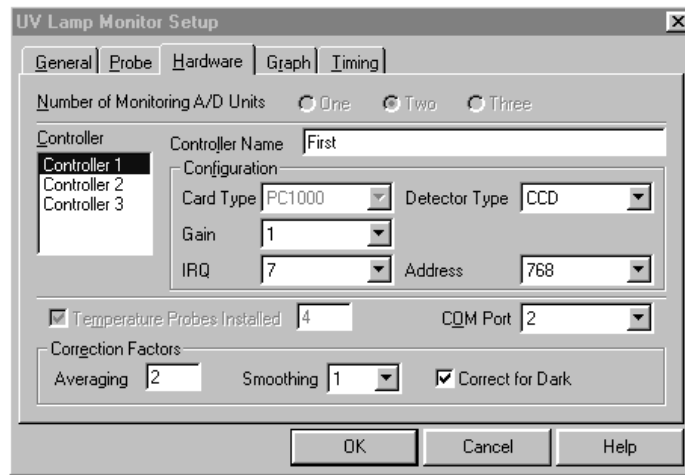
5) A password can be established to protect Setup Information. Any time changes are made to vital Setup Information, and the OK button is pushed, the operator will be required to enter the password before values are saved.



6) To Change the Setup Password, Enter the Old Password (Initial Value was 1234) and type & confirm the New Password. Press the OK Button to accept the New Password, or the Cancel Button to abort New Password Entry.

B: CONFIGURE SYSTEM PARAMETERS

1) Once back to the System Setup General Tab, click on the Hardware Tab.



2) Select the PC Interface Controller Board(s) by positioning the cursor in the Controller List Box (upper left) and clicking on the Controller #.

In the Configuration Area (Center of the screen) the controller Card Type and Detector Type will already be filled in.

IMPORTANT NOTE: The **IRQ Settings** and **Base Address Assignments** Of All PC Interface Controller Boards **MUST** Match the Settings Displayed by the LM-9000's Lamp Monitor Software.

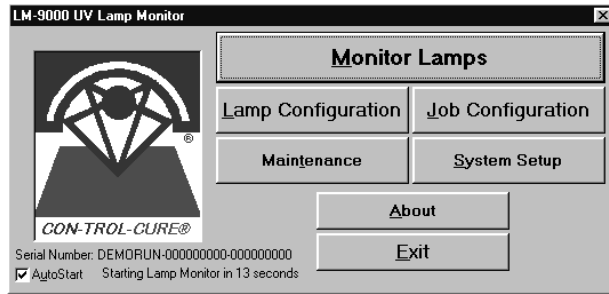
3) Click on the First Installed PC Interface Controller Board.

4) Click the Down Arrows next to the IRQ and Address entry boxes to examine choices on the pulldown lists, and configure the Software to match the settings established by DIP switches on the Interface Controller Board(s).

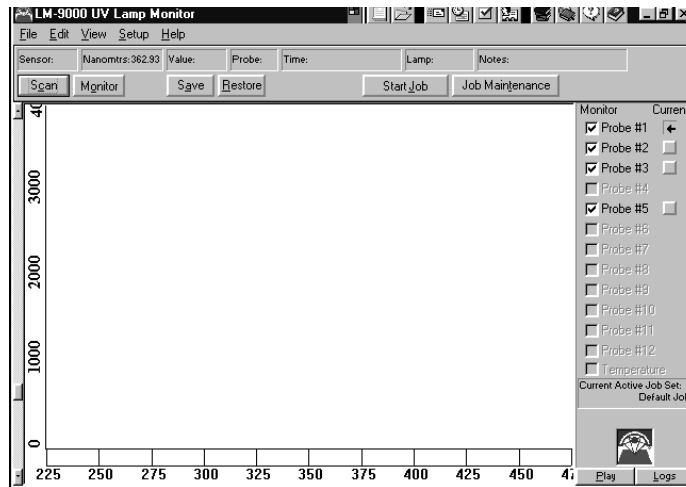
Repeat with the next PC Interface Controller Board selection, matching IRQ and Base Address Settings.

5) Press The <OK> Button to Accept Any Changes to Settings, or press <Cancel> to abort Hardware Setup.

C: MONITOR LAMPS



1) From The Main Menu select Monitor Lamps and the following Lamp Monitor Screen appear:



STEP 5: Fiber-Optic Cable Installation

A: INSERT FIBER-OPTIC CABLE INTO LM-9000ä INSTRUMENT.

- 1) *Insert the free end of the Fiber-Optic Cable into the threaded fitting. Slide the retaining nut on the Cable end down over the threads and tighten until finger tight.*

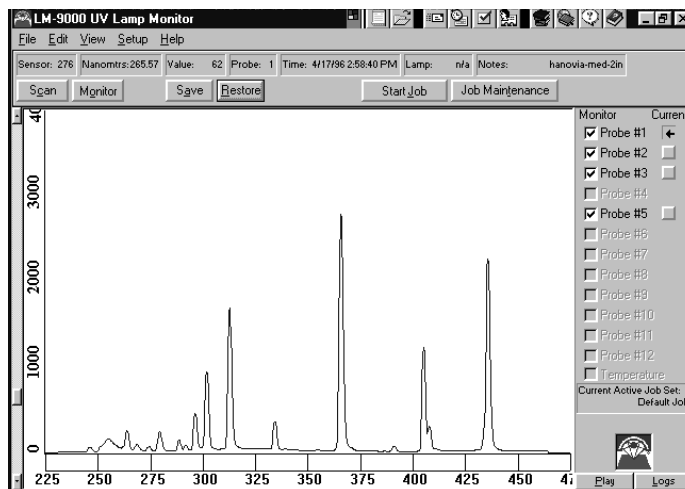
Our specially designed Fiber-Optic Cabling is sheathed in a flexible stainless steel covering to protect it from accidental damage. Please keep in mind that Fiber-Optic Cabling is delicate, and needs to be handled with care. Abuse of Fiber-Optic Cable is likely to result in damage or breakage not covered by the Equipment Warranty.

NOTE: *The Fiber Optic Cabling is Tested, Inspected and Certified to work per specifications at the time it was shipped. Shipping, unpacking, and normal handling will not damage the cables.*

Improper handling and abuse will result in damage to cables, such as forcing bends with too small a radius, stretching the cable assembly, coiling the cable without both ends being free, etc. Any damage incurred to the Fiber-Optic Cable Assembly is solely the purchaser's responsibility.

NOTE: *The DB9 connector on the LM-9000ä PC Interface Controller Board is used to trigger a Scan for pulsed light sources, such as the PX-1 Pulsed Xenon Flash or other device. Do not plug any other devices, such as a mouse, modem or serial cable into this connector.*

- 2) *Activate A U.V. Light Source. Direct the free end of the Fiber-Optic cable towards the light source.*



Your screen, while not the same as above, should now have visible peaks and valleys.

*If the peaks appear to shoot above the top horizontal border, or there are only little bumps running along the bottom horizontal border, try using the **Scale Adjustment Slider** on the left vertical border to increase or decrease the Intensity Scale Values.*

If the Scale Adjustment Slider does not provide satisfactory results, try adjusting the position of the Fiber Optic cable closer or farther away from the U.V. light Source.

The **Calibration procedure** will align the Wavelength Scale (horizontal axis) values with the prominent, known peaks you do see.

NOTE: *Before you perform Calibration procedures the first time, you may wish to explore the software and familiarize yourself with its other features. This will likely improve your proficiency at calibration techniques and troubleshooting.*

B: INSTALL PROBES INTO / ONTO / AROUND U.V. LAMP AREA.

There are NO Barriers to Probe Installation. Basic Probes can be installed anywhere in the U.V. light path, on the reflector (if any), at the level of the product, etc. As long as the probe is in view of the Lamp Output, the probe can be placed there.

NOTE: It is **unwise** to install probes under moving webbing, underneath the product, or in the path of moving parts within the Lamp Enclosure, as this will produce a “**Shutter**” effect during Scans. Alongside the product, Away from moving parts, next to any moving webs, or on the reflector itself are the desired placements for your probes.

Temperature Limits for Constant Operation:

Basic Probes: 400° Celsius.

Fiber-Optic Cable Ends: 300° Celsius.

C: INSERT FIBER-OPTIC CABLE INTO PROBE

Insert the free end of the Fiber-Optic Cable into the threaded fitting. Slide the retaining nut on the Cable end down over the threads and tighten until finger tight.

Fiber-Optic Cable Installation Considerations

- *In any permanent installation, consider tacking down the Fiber Optic cables to avoid cable movement.*
- *Place the Fiber Optic Cables out of “Harms Way”, if possible directing cables away from high traffic areas, where they might be jostled, dragged or tripped over.*
- *In exposed or unprotected spaces, try to avoid having long coils of extra cabling lying around. If a cable is far too long, obtain a shorter cable.*
- *If it is to be left in an exposed area, consider installing conduit for the Fiber Optic if there is the likelihood of abuse.*

STEP 5: Instrument Calibration

Calibration will align the Wavelength Scale values (along the bottom) to coincide with the Known Value peaks you see on-screen. You will identify (with your mouse) the exact wavelengths described by 5 or 6 of the on-screen peaks.

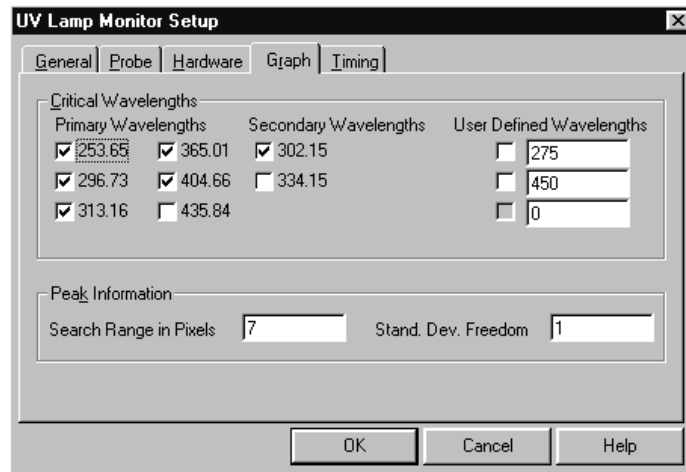
This discussion assumes that you have gained familiarity with various aspects of the Lamp Monitor Software, which all come together at this point. It assumes that....

- *You are able to perform a Scan and view data on the screen using a U.V. Lamp with known prominent peaks. You will need five (5) such peaks to calibrate the LM-9000 software.*
- *You have selected these peaks on the Graph tab of the System Setup menu from the Primary, Secondary and User Defined Wavelengths to be monitored.*
- *You have become familiar with the Scale Adjustment Slider, The Draw Peaks control on the View Menu and the various Monitor Lamps screen elements, pulldown Menus, and controls.*

Before you begin the actual Calibration, you will want to choose your Calibration Peaks based solely on the following criteria:

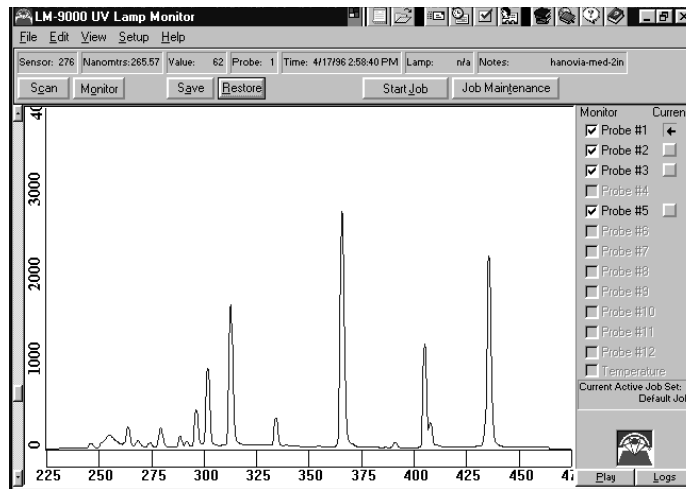
- *Calibration Peaks Do Not need to be the Wavelengths you wish to monitor, or even the one you want to assign as Critical Wavelength.*
- *You will need to see a minimum of 5 peaks on-screen to perform the calibration. There will be 6 peaks displayed in the Calibration Window, the same 6 Chosen Wavelengths established in System Setup on the Graph tab.*
- *You can see more than 5 peaks on-screen. Only 5 or 6 points will be needed to perform the calibration.*
- *You will be performing Calibration for each Probe in your system individually. Choosing the Calibration Peaks should be done with Common Output Characteristics in mind. Dissimilar lamps (such as Mercury vs. Metal Halide) may display very different peaks, yet all probes need to be calibrated. Your 6 Chosen Wavelengths may be changed for each probe calibrated, if necessary, but choosing the peaks in common to all will save you time and extra effort..*
- *There should be some low intensity “space” between your Calibration Peaks. They need to be prominent, high intensity spikes, without another peak right up close, next to it.*
- *Calibration Peaks must have a known Wavelength Value, or be easily determined based on another known peak (to the left or right of it).*

The following steps will be performed for each of the Installed Probes in your system.



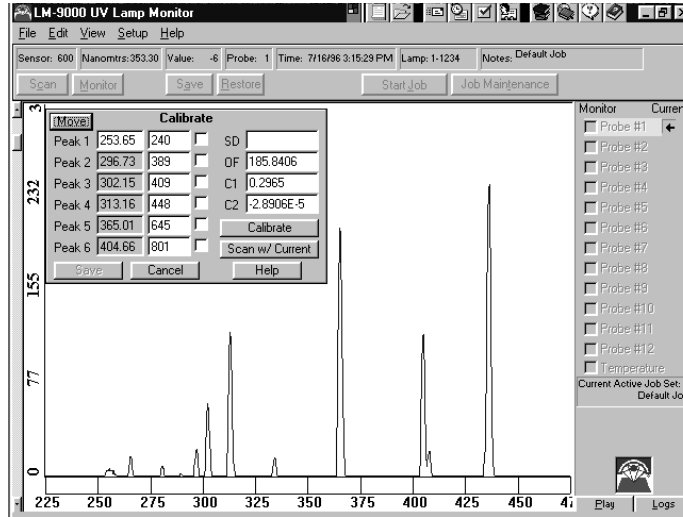
CALIBRATION STEP A:

From the **Main Menu**, select **System Setup**, click on the **Graph** tab, and make sure that the 5 or 6 **Calibration Peaks** are established as your **Chosen Wavelengths**. Chosen Wavelengths can be any combination of **Primary**, **Secondary** and **User Defined** wavelengths. There must be 6 wavelengths chosen, No More, No Less. These Chosen Wavelengths Can Be A Temporary Selection, Strictly For Calibration Purposes, and May Be Changed to Fit Your Application Requirements Later. Once your selections are complete, press the **OK** button and enter your **Setup Password** to effect the changes.



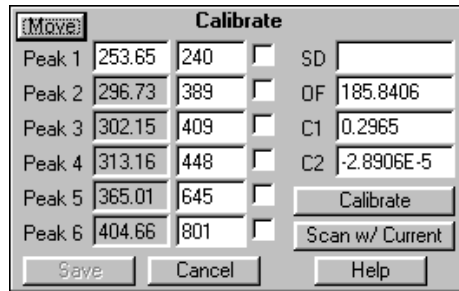
CALIBRATION STEP B:

From the **Main Menu**, select **Monitor Lamps**. Activate your U.V. Light source and take a Scan. Verify that you see at least 5 peaks.



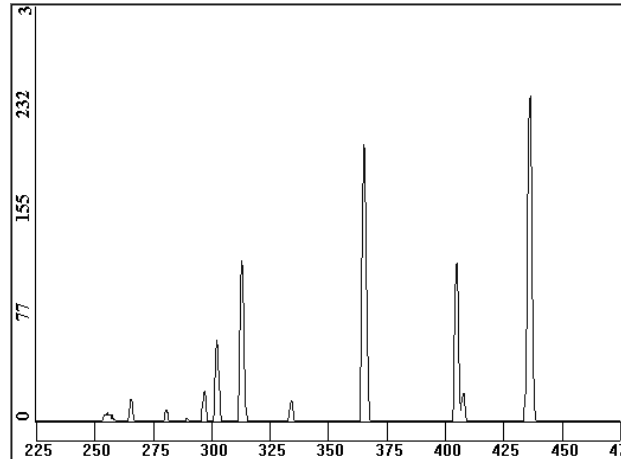
CALIBRATION STEP C:

Pull down the **Setup** Menu, select **Calibrate** to activate the Calibrate Lamps Window. Press the **Move** button if necessary to reposition the Calibrate Lamps Window to the left side if it obscures any peaks.



CALIBRATION STEP D:

Place the mouse cursor into the Wavelength box for a peak that has the highest certainty (is most obviously Known). Click The Mouse. The Wavelength Box for the selected peak should turn white, the others will turn gray. The mouse cursor will change to a "CrossHair" style pointer.

**CALIBRATION STEP E:**

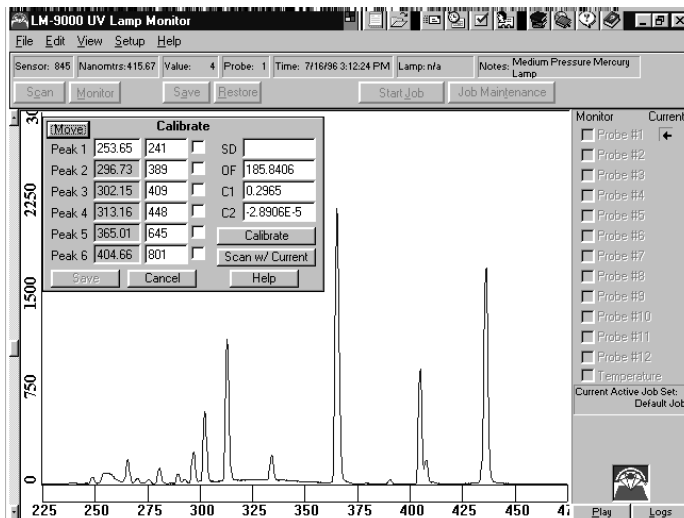
Place the "CrossHair" mouse cursor onto the apex of the peak at the corresponding position on the Energy Graph Display. Click the mouse. This wavelength should now be "checked" in the Calibrate Lamps Window.

CALIBRATION STEP F:

Repeat steps 5-d and 5-e for the rest of the 5 or 6 chosen peaks, in order of certainty, with lesser known peaks chosen last.

CALIBRATION STEP G:

Press the Calibrate Button. The system will recalculate Standard Deviation, Offset and Coefficients. If you have correlated the proper wavelengths with the correct screen position, the SD (standard deviation) field should contain a value less than or equal to 1.0. If not, you have correlated a wavelength with the wrong on-screen peak. Try selecting a different peak, and then repeat steps 5-d through 5-g



Important Note: During the preceding calibration, the six Chosen Wavelengths were probably not the best choices for performing the Calibration. These points were picked to exemplify and help eliminate a common misconception described in [Calibration Step A](#). ***The On-Screen Peaks Chosen For Performing Calibration Need Not Be Those Peaks Important To The Application.*** The peaks that were chosen were selected based on an application, not what was being displayed on-screen at the time of calibration.

The LM-9000™ Instrument needs the highest intensity data for best results in performing calibration. After Calibration, assign the Critical Wavelength and Chosen Points to give the most information specific to your application.

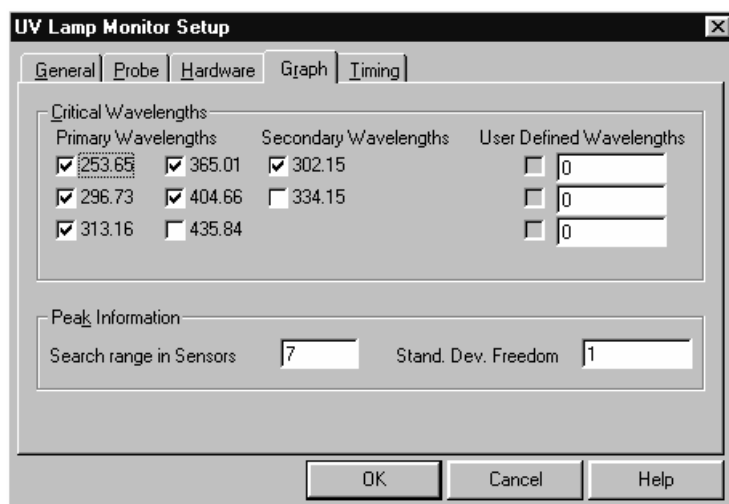
In general, picking the highest intensity peaks, and doing them in order of intensity (and certainty of corresponding wavelength) is the recommended procedure. Your results would have been improved by making the following changes:

- 1) **Peak 1 (253.65nm)** is a very low intensity peak, and in this case, should not be used for calibration purposes, even though this wavelength may be the **Critical Wavelength** to your application.

2) **Peak 2** (296.73nm) and **Peak 3** (302.15nm) are quite close together. It is often more desirable to select distinct peaks which stand apart from other peaks, particularly peaks of similar intensity. **Peak 3** (302.15), being the higher of the two, should be used; Peak 2 should not.

3) There is a high intensity peak to the **right of Peak 6** (404.66nm) at about the 435.84nm position. This Wavelength should have been included (for calibration purposes only, it could be removed later) on the System Setup..... Graph Tab.

4) Since the newly added peak at **(435.84nm)** is the second highest intensity peak on-screen, this should be the second point selected for the calibration after **(365.01nm)**, and followed by **(404.66nm)**, **(313.16nm)**, and **(302.15nm)** respectively. Only 5 points are needed to perform Calibration, and of all the points available to use, these are the 5 best choices.



Change the selected Wavelengths for Calibration on the System Setup Graph tab by removing the check mark next to (253.65nm) and (296.73nm) under Primary Wavelengths.

Add a check mark next to (435.84nm), Press the OK button and enter the System Setup Password.

Perform Calibration Step A through Calibration Step G again. The SD field should be below 1 and the correspondence between on-screen scale, location of Peaks, and mouse movement should be higher

CALIBRATION STEP H:

Pull down the View Menu, select Draw Peaks and activate it. In the Calibrate Lamps Window, Press the Scan w/Current button. The system will take a new

scan, which should display the on-screen peaks precisely where the Draw Peaks "T" bar Drop Lines are displayed. If not, repeat steps 5-d through 5-h until the Drop Lines, the On-Screen Peaks, and the Wavelength indicators line up properly.

NOTE: *if you feel you have made a mess of things, you are not seeing portions of the **Energy Display Graph**, or the display is simply not making sense, reinstall the original **Offset**, and **Coef1 & Coef2** values manually. Simply position the mouse cursor at the beginning of the OF, C1 and C2 boxes and type over the values there with those which were recorded (by hand) on **Page 1** of the LM-9000ä Documentation. These values were determined by Con-Trol-Cure Technicians prior to shipment. Once the values are set, repeat steps 5-g and 5-h.*

The selected Probe is now calibrated. If you want to change the Chosen Wavelengths to Better Fit Your Application Requirements, you should do so now. Choosing your Critical Wavelength(s) can also be done at this point.

Additional Notes

Other Areas where some setup (Data Entry) may be required:

Add / Edit / Delete Lamp Description

Add / Edit / Delete Job Description

Restore Individual Scans

Restore Individual Jobs

When comparing two or more lamps, even when using the same LM-9000 instrument, differences in any of the following may introduce unwanted variables.

- *Length of Fiber Optic cables.*
- *Inherent Differences between Fiber Optic Cables of the same length and specifications.*
- *Distance of the Probe to the Lamp.*
- *Position and movement of Fiber Optic cables.*
- *Extra (unused) length in long runs of Fiber Optic Cable.*
- *Number and radius of Bends in the Fiber Optic Cable.*
- *Position of the Probe with respect to the Lamp.*
- *Incident angle of the Probe with respect to the Lamp.*
- *Insertion Depth of the Fiber Optic Connector into the Probe.*
- *Insertion Depth of the Fiber Optic Connector into the Lamp Monitor Instrument.*
- *Angular Rotation of the Fiber Optic Connectors connector into both the Lamp Monitor Instrument and the Probe.*

In situations where the comparison between 2 or more lamps of the same specification is desired, and especially when these lamps are in different machines, all of these variables need to be eliminated, or at least made equal, before truly valid data can be obtained.

Example: Using different length Fiber Optic Cables when attempting to compare similar specification Lamps may result in different values at specific wavelengths.

RS-232 & TEMPERATURE PROBE OPTIONS

Installation Instructions

THE RS-232 OPTION MODULE INSTALLATION:

The **RS-232 Option Module** connects to the LM-9000™ system via the DB-25 connection (on the rear of the Option Module cabinet) and a standard **Serial Cable**, either [DB-25 to DB-25] or [DB-9 to DB-25]. Select the appropriate cable for your system and your choice of Available Com Port.

Check your system resources for an Available Com Port (Com 1 through Com 4) and attach the proper serial cable to the chosen Com port.

Windows 3.1:

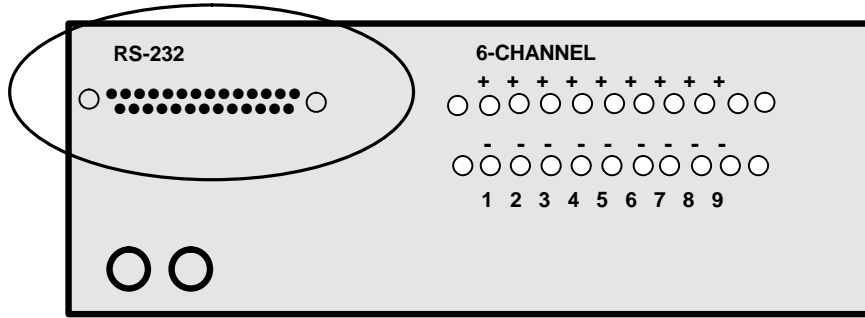
- From Program Manager Select **File....Run**
- Type **MSD** and press <Enter>
- Select <**Com Ports**> to Examine resource usage of associated serial ports.
- Select <**Device Drivers**> to Examine resource usage of special drivers indicating another device may use that port (such as a mouse).

Windows '95:

- Click the <**Start**> button, select **Settings...Control Panel**
- Double Click the **System Icon**
- Select **Device Manager**
- Click on <**Ports**>
- Click on <**Com Ports**> one at a time
- Select **Resources Tab**, to examine any resource conflicts of IRQ's
- Select **Drivers Tab**, to examine any special drivers associated with this Com Port indicating another device using it (such as a mouse).

It is suggested that the Com Port be free and open to the exclusive use of the LM-9000™ RS-232 Option Module. Avoid any and all conflicts.

RS-232 OPTION MODULE REAR PANEL CONNECTIONS

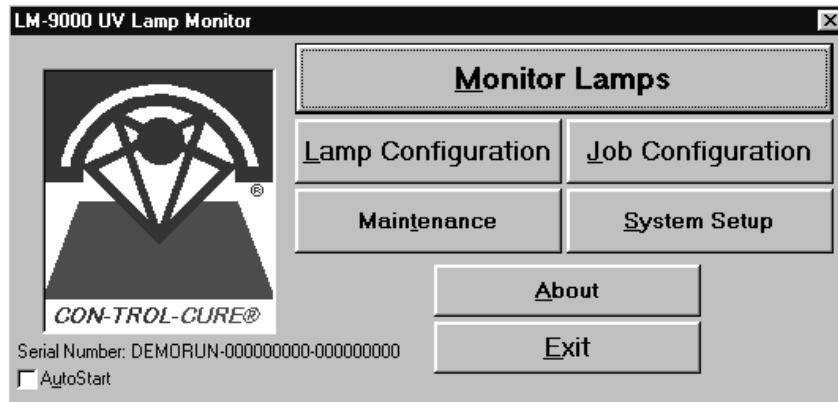


Connect the RS-232 Option Module via the DB-25 connector located on the rear panel of the cabinet.

Connect to line current and Push the Power On Button located on the front panel of the cabinet. Button should glow to indicate activity.

NOTE: *When Adding Temperature Data Acquisition To An Existing System*

If adding Temperature Data Acquisition to an existing System, a new **Serial Number** will have been provided which **MUST** be entered in order to activate the new configuration..

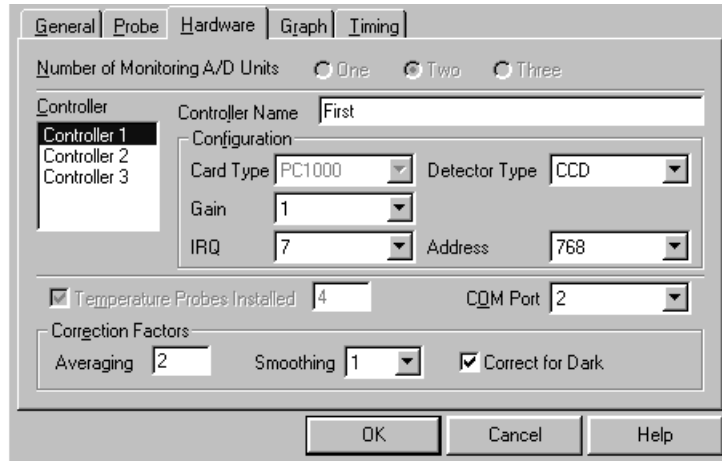


Run the LM-9000™ Lamp Monitor Software, choose System Setup from the Main Menu, and select the General Tab.

Adding Temperature Data Acquisition To An Existing System (continued...)

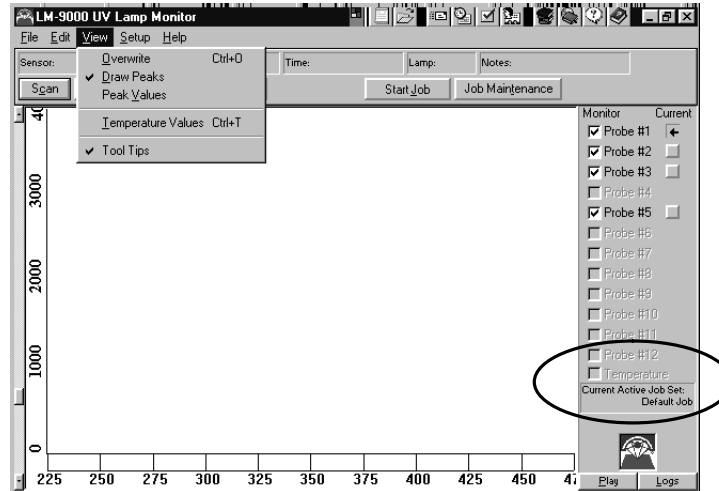
Press the Change Serial Number Button and enter your New Serial Number. This will automatically configure the LM-9000™ Lamp Monitor System to enable Temperature Data Acquisition for the number of temperature probes purchased.

Press the OK button to accept Setup changes, and enter your Setup Password to record them; Press the Cancel button to abandon Setup without making any changes.

RS-232 OPTION MODULE INSTALLATION (continued....)

Choose System Setup from the Main Menu and select the Hardware Tab. The Temperature Probes Installed Box Should Now be checked, and the Number of Temperature Probes box should indicate the purchased configuration.

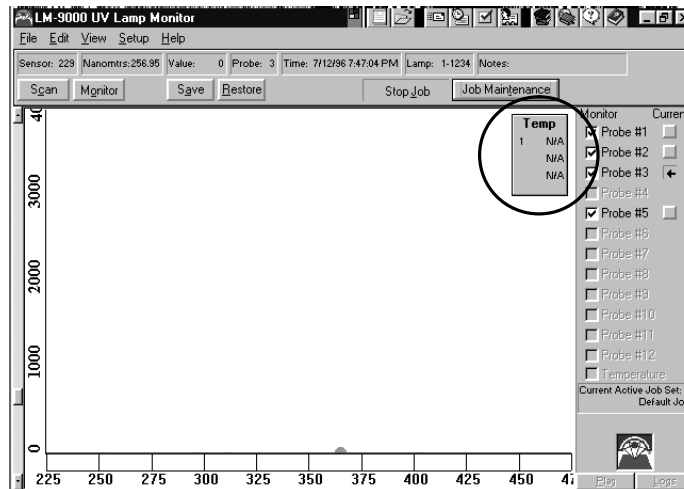
In the Com Port list box, Press the Down Arrow key to select the Com Port assignment matching the chosen Com Port. Press the OK button to accept Setup changes, and enter your Setup Password to record them; Press the Cancel button to abandon Setup without making any changes.



Choose Monitor Lamps from the Main Menu. If setup was successful, the Temperature Check Box in the Action Control Center will be highlighted (active), and you will be able to check the box to activate temperature data acquisition once temperature Transmitters and probes are attached.

NOTE: If an error box appears indicating a “time-out” While Writing Temperature Information”, then one of the following is the cause:

- 1) *The Power Switch on the RS-232 Option Module is not on.*
- 2) *The Serial Cable is not attached.*
- 3) *The Serial Cable is not a Standard Serial Cable. Modem (or null-modem) cables, or custom wired Serial cables SHOULD NOT BE USED.*
- 4) *The Com Port on the Computer is Not The One Set in the Lamp Monitor Software. See System Setup...Hardware Tab.*
- 5) *Selected Com Port on the Computer is not the Com Port you think it is. Try A Different Com Port Setting. See System Setup.....Hardware Tab.*



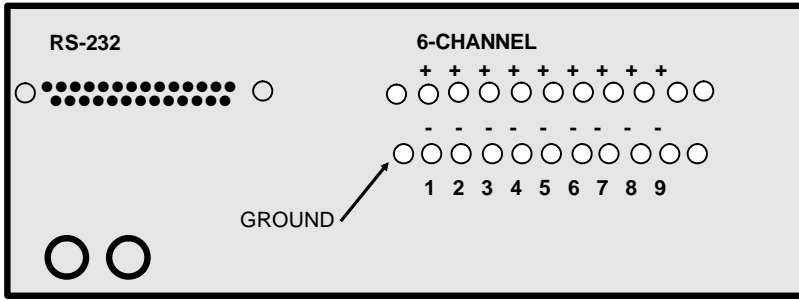
To view On-Screen the temperature values obtained from the Temperature Probes (once installed), Click on the View Menu and select (check) Temperature Values. The Temperature Display Box will display in the upper right corner of the Energy Display Graph.

TEMPERATURE PROBE INSTALLATION:

Remote Temperature Transmitters and Temperature Probes (ThermoCouple) can be mounted at the application, to measure application temperatures from - 0°C to 500°C.

Twisted Pair Cable attaches the Remote Temperature Transmitters to The RS-232 Option Module at the Terminal Block on the Rear of the Option Module Cabinet. This cabling can be any length.

The pairs are usually color coded in some fashion to maintain consistency of polarity: light and **dark** of a color, striped and **solid**, with writing and **without**, etc. Polarity must be maintained throughout installation.



On the RS-232 Option Module, a **Grounding Post** is provided on the **Left Side** of the **Minus (-) Terminal Block** (bottom row). Attach one color (or one pair of colors) to the Grounding Post and secure with the nut provided.

Install Remote Temperature Transmitters at the Application

Remote Temperature Transmitter should be mounted on the application such that it is not exposed to:

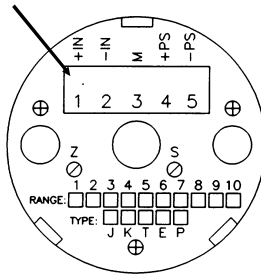
Temperatures Greater than 185°F (85°C)

Temperatures Lower than -40°F (-40°C).

Transmitter Produces standard 4 to 20 mA dc proportional to the attached ThermoCouple millivolt input.

2 Meter ThermoCouple Length provides wide latitude for installation, keeping the Transmitter away from direct exposure to temperatures at the probe.

1	+ Thermocouple
2	- Thermocouple
3	N/C
4	+ Power/Signal Output
5	- Power/Signal Output



Attach ThermoCouple to Temperature Transmitter

Stripped wire is Plus (+) Plain wire is Minus (-)

Connect Stripped wire to +IN.

Connect Plain wire to -IN.

Attach Ground Wire to Stainless Steel Jacketing on the probe, connected to the RS-232 Option Module Ground

NOTE: *Stainless Steel Jacketing **MUST** be grounded to Grounding Post on RS-232 Option Module.*

Place Temperature Probe into desired position.

Connect Twisted Pair Cable to Temperature Probe

Choose a unique pair of wires from within the Twisted Pair Cable. Make note of wire pair, polarity and location for later reference or in case wire splicing becomes necessary.

NOTE: *splices in a wire pair should not impact temperature readings, though you should attempt to keep the number of splices to a minimum.*

Connect chosen Plus (+) wire to +PS, connect chosen Minus (-) wire to -PS.

Connect Twisted Pair Cable To RS-232 Option Module

Add Temperature Transmitter connections starting from the Left side of the Terminal Blocks, Connect the Plus (+) strand of a pair to the Plus (+) terminal block (Top Row) and the Minus (-) second strand of the pair to the Minus (-) terminal block (Bottom Row).

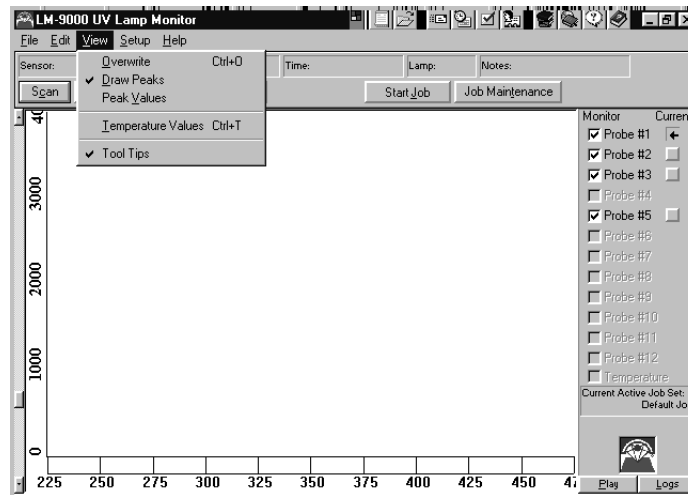
Repeat as necessary for all purchased temperature probes, installing pairs from the left side to the right side of the Terminal Blocks.

TESTING THE INSTALLATION:

Run The LM-9000's Lamp Monitor Software.

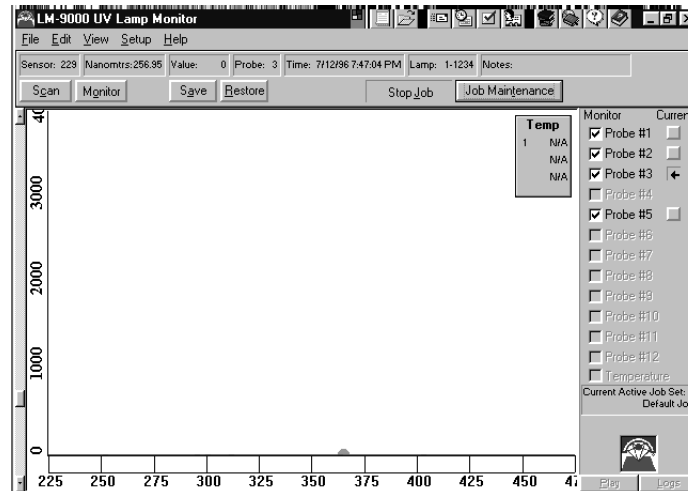
From the Main Menu:

Select Monitor Lamps



In the Action Control Center, Activate (check) the Temperature Box.

On the Windows Menu click on View, select Temperature Values. The Temperature Bar Display will appear in the Upper Right Corner of the Energy Display Graph.

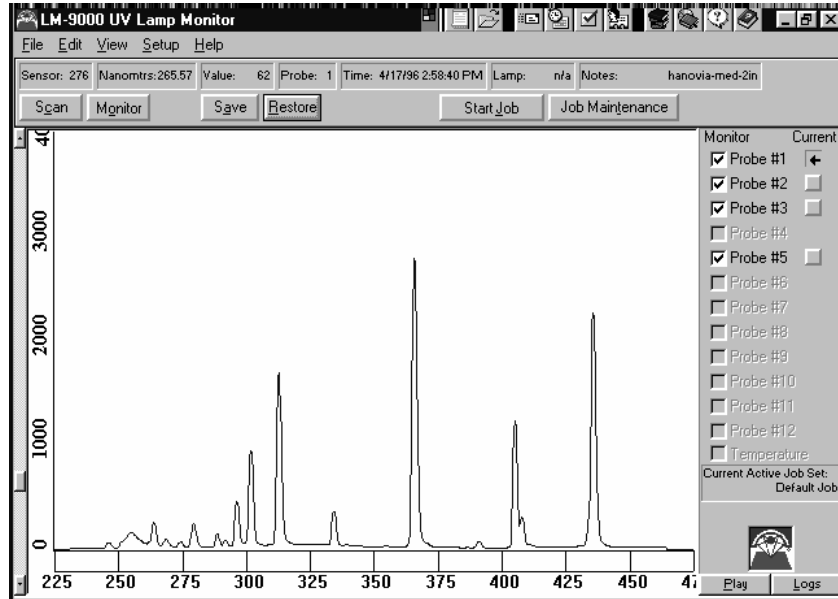


Temperature Values are ranked numerically, following connection order on the RS-232 Option Module Terminal Blocks.

NOTE: The extra Temperature line (1 greater than the number of temperature probes purchased with this configuration) is reserved for the LM-9000™ Speed Monitor Option Module, currently under development.)



LM-9000 Lamp Monitor Software
File Maintenance And Reporting Guide
Using Microsoft® Access®

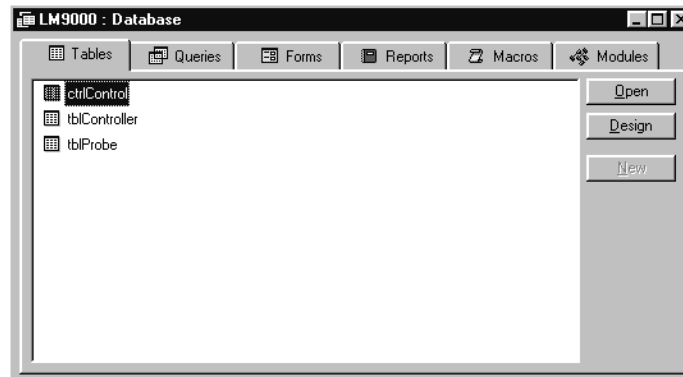


INTRODUCTION

The LM-9000ä Lamp Monitor System maintains all saved data in two Microsoft Access databases

FILENAME: LM9000.MDB

Contains All System Control Records, Hardware Setup Information, and Individual Probe Setup Information.



System Values

Table: ctrlControl

PC Interface Controller Board Setup Information

Table: tblController

Individual Probe Setup Information

Table: tblProbe

FILENAME: LM9_DATA.MDB

Contains The Saved DataSets From Scans, Monitoring, Baselines and Jobs.



Define Various System Events and Alerts

Table: *tblEventTypes*

Single Scan Data Storage Critical Values

Table: *tblProbeData*

Single Scan DataSet All Values & Sensors

Table: *tblProbeDataDetail*

Lamp Configuration Data & notes

Table: *tblLamp*

Lamp Baseline Table Critical Values

Table: *tblLampData*

Lamp Baseline DataSet All Values & Sensors

Table: *tblLampDataDetail*

Job Configuration Information

Table: *tblJob*

Job Event Storage (Date, Time, Severity)

Table: *tblJobSet*

Job Baseline Storage Critical Values

Table: *tblJobSetData*

Job Scan DataSet All Values & Sensors

Table: *tblJobSetDataDetail*

MICROSOFT ACCESS GENERAL FILE ORGANIZATION

.MDB Files Contain all associated tables, queries, forms, reports, macros and modules into one file called a Database.

TABLES



In the LM9000.MDB database, for example, there are 3 tables.

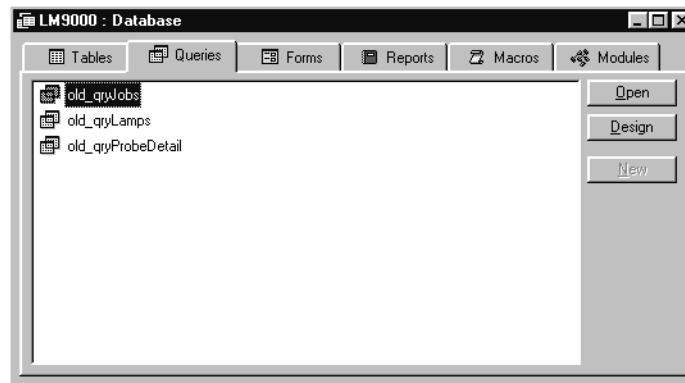
One table is called ctrlControl.

This table contains various records that define system parameters, constants, and messages.

NOTE: *the Values in this file Should Never Be Changed.*

Microsoft Access File Organization...Continued.

QUERIES



In the LM9000.MDB file there are Three Queries Defined:

old_qryJobs

old_qryLamps

old_qryProbeDetail

Queries provide a means of combining data from two or more related tables into a temporary record set with data from both.

They also provide a method of selecting records with specific criteria in common, such as all records belonging to a specific Job (old_qryJobs).

Microsoft Access File Organization, Forms...Continued.

FORMS



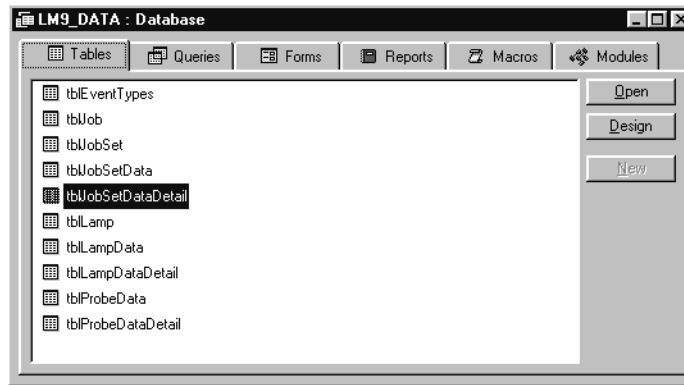
In the LM9000.MDB file, there is One Form Defined:

old_frmDetail.

Forms provide a means of interacting with the data, by entering new data, editing existing records, or just browsing through a table.

Forms contain windows into the data tables, data controls that customize the way data is presented, and validation rules for specifying allowable ranges of values

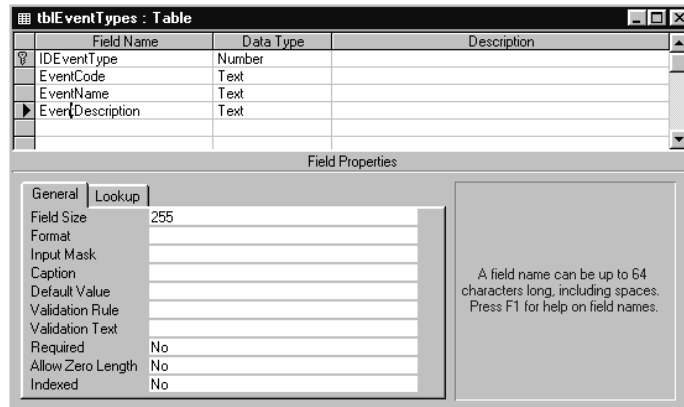
OVERVIEW OF THE LM9_DATA.MDB FILE LAYOUT



The LM9_DATA.MDB database contains a table called tblEventTypes which holds the names and descriptions of Events and Alerts.

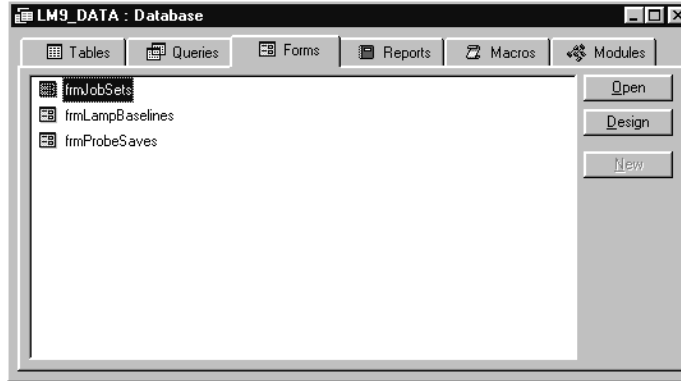
IDEvent	EventCode	EventName	EventDescription
1	JOB_START	Job Start	Start of Job Set
2	JOB_END	Job End	End of Job Set
3	RED_ALERT_ON	Red Alert On	Lamp intensity dropped below Red Alert value
4	RED_ALERT_OFF	Red Alert Off	Lamp intensity rose above Red Alert value
5	YELLOW_ALERT_C	Yellow Alert On	Lamp intensity dropped below Yellow Alert value
6	YELLOW_ALERT_C	Yellow Alert Off	Lamp intensity rose above Yellow Alert value
0			

This is the Structure of the tblEventTypes Table, showing the individual records (6 of them), their Codes, Names and Descriptions.

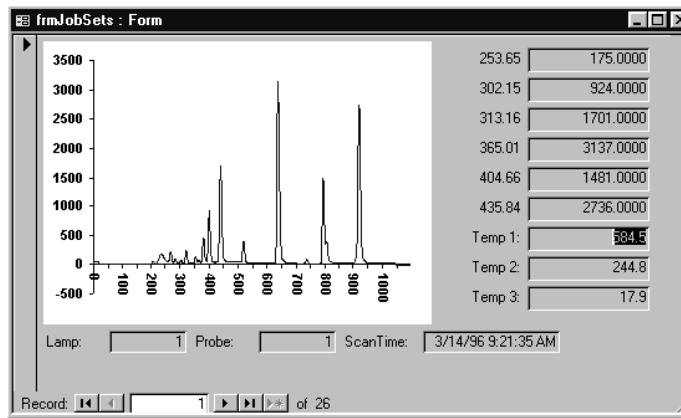


This is the Structure of a single field in the tblEventTypes table in the LM9_DATA database. It shows the different properties of the EventDescription field. This field can hold up to 255 characters, and acts as a note.

Overview...Continued.



There are three defined Forms in the LM9_DATA.MDB database file. Each Form provides a view into the database in a meaningful fashion.



The Form frmJobSets displays a single Job DataSet (# 1 of 26 on file), the Energy Display Graph, the Critical Values Associated with that DataSet, and the Lamp, Probe, Date & Time this “snapshot” was taken.

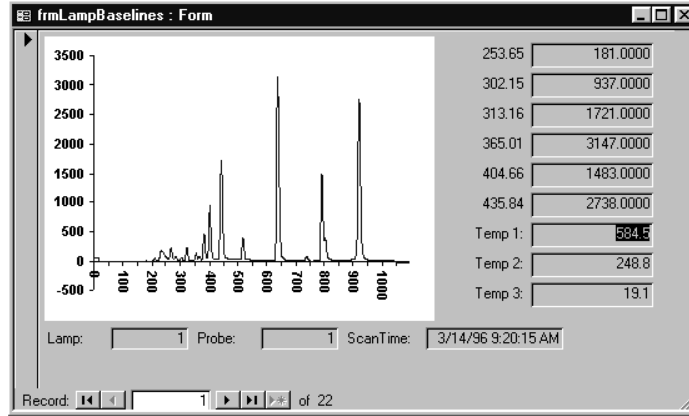
Individual tables are linked to other tables by values in common. As an example, the Graph on the frmJobSets form is built from data in two files:

The tblJobSetData (Job Events) Table has one entry for each event that occurs during a job (i.e. start, yellow alert on, yellow alert off, and end)

The tblJobSetDataDetail (Job DataSets) Table contains the 1100 record sets representing individual sensor output at the time the event occurred.

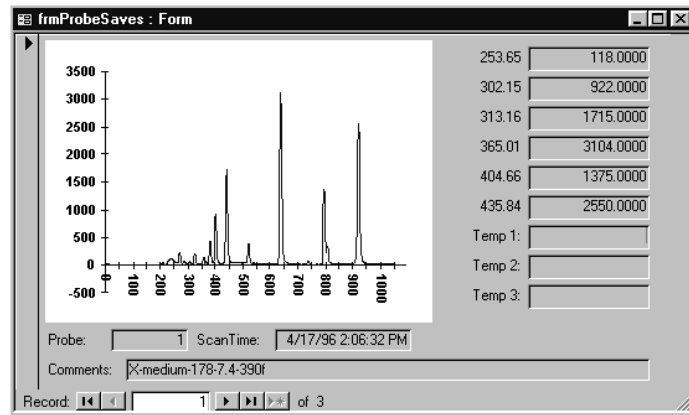
The detail file is related (or linked) to the Job Data file on the IDJobSet Field.

Overview (forms)...Continued.



The frmLampBaselines Form provides much the same view, only using Lamp Baseline Data instead.

NOTE: You can scan through the 22 DataSets in this table by pressing the arrow keys in the lower left of the screen. All values will change accordingly.



The frmProbeSaves allows viewing of individual Scan Saves, with the comments for that particular press of the Save button on the Monitor Lamps Screen.

IMPORTING AND EXPORTING DATA

Data can be exported from Microsoft Access to other Applications, such as spreadsheets, word processors, presentation graphics packages and other databases.

During the course of a **Job**, a **Red Alert** occurred, causing production to cease until the problem was corrected.

The **1100 records** that were saved upon the alert are located in the **LM9_Data.MDB** file, in **tblJobSetDataDetail** table.



IMPORTING TO A PLAIN ASCII TEXT FILE:

Step 1:

Using Access, open the **LM9_Data.MDB** file, select the **tblJobSetDataDetail** table.

IDJobSetData	ScanPixel	ScanValue
1	0	0
1	1	0
1	2	57
1	3	58
1	4	55
1	5	59
1	6	56
1	7	59
1	8	56
1	9	58
1	10	55
1	11	59
1	12	56
1	13	58
1	14	56
1	15	58
1	16	-1
1	17	-1
1	18	-1
1	19	-1

Step 2:

Scan down through the table until you **locate the first record** of the DataSet, and either **double click** on that record or press **<Shift-DnArrow>** to highlight that record.

IDJobSetData	ScanPixel	ScanValue
12	1097	-1
12	1098	-1
12	1099	-1
13	0	0
13	1	0
13	2	56
13	3	58
13	4	55
13	5	57
13	6	56
13	7	58
13	8	55
13	9	59
13	10	55
13	11	59
13	12	56
13	13	58
13	14	55
13	15	58
13	16	-1

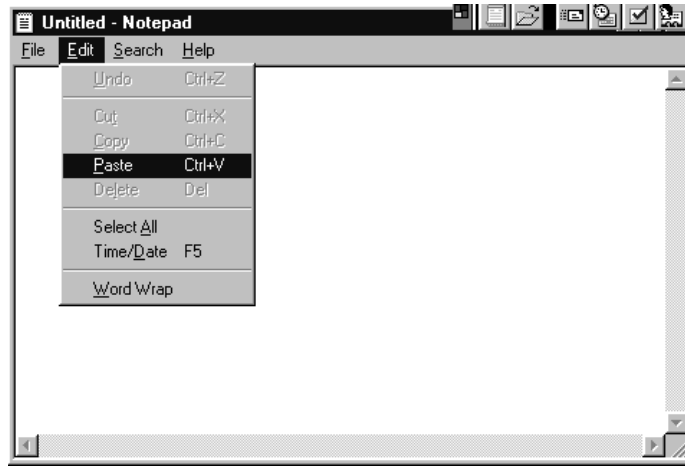
Holding down the <Shift> key press **<PgDn>** to highlight the next screen of data records, continuing until you see a **ScanPixel field** with a value of **1099** (the last record in the set).

IDJobSetData	ScanPixel	ScanValue
13	1083	-9
13	1084	-9
13	1085	-9
13	1086	-9
13	1087	-9
13	1088	-9
13	1089	-9
13	1090	-9
13	1091	-9
13	1092	-9
13	1093	-9
13	1094	-9
13	1095	-9
13	1096	-9
13	1097	-9
13	1098	-9
13	1099	9
14	0	0
14	1	0
14	2	19

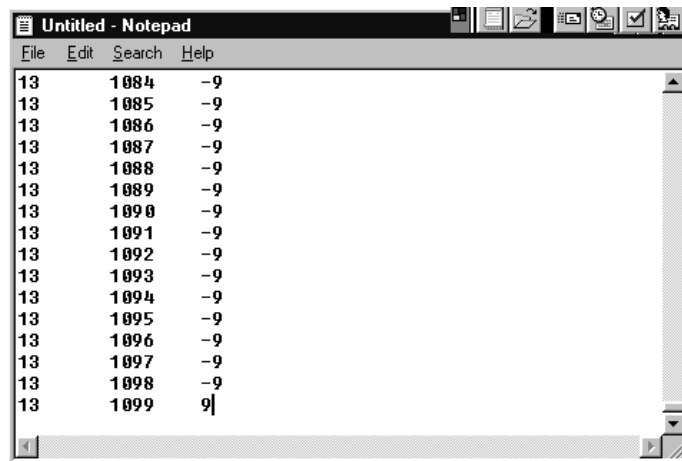
Still holding down the <Shift> key press the **<DnArrow>** key until all records in the set are highlighted.

Step 3:

Pull Down the **Edit Menu**, and select **C**opy. This will save the **1100 records** to the **Windows Clipboard**.

**Step 4:**

Open a new window for, or select the window with, the application you want to import data into. For example, the **Windows Notepad**.

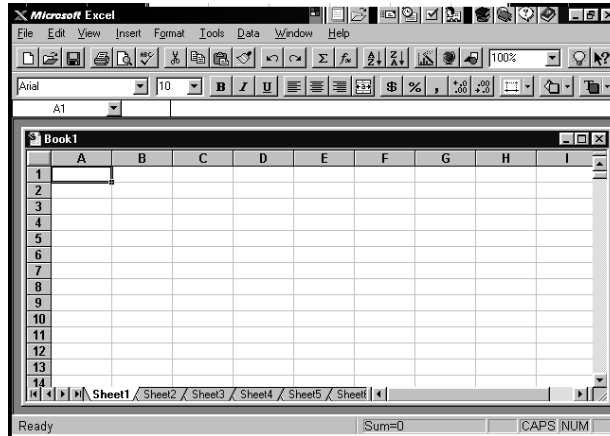


Step 5:

Again, Pull Down the **Edit Menu**, and select **Paste**. this will copy the **1100 records** from the **Windows Clipboard** onto the new **Notepad Document**. Save this document and you have a standard **ASCII Text File** with all the pertinent data.

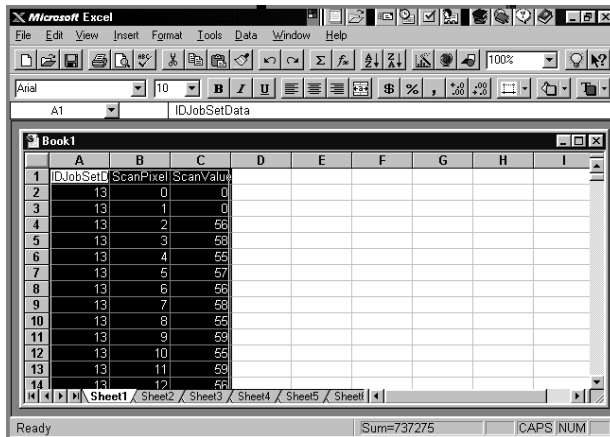
EXCEL INSTRUCTIONS:

*Steps 1, 2 & 3 from above (for acquiring data records) is exactly the same here. Starting with **Step 4** the only differences would be in using **Excel** instead of **Notepad**:*



Step 4:

Open a new window for, or select the window with, the Excel spreadsheet you want to import data into.



Step 5:

Pull Down the **Edit Menu** in Excel, and select **Paste**. This will copy the **1100 records** from the **Windows Clipboard** into cells on the spreadsheet. Save this document and you have an Excel Spreadsheet File with all the pertinent data.

Graphs and Charts can be made, or your LM-9000's data can be incorporated into a Book with other related data.

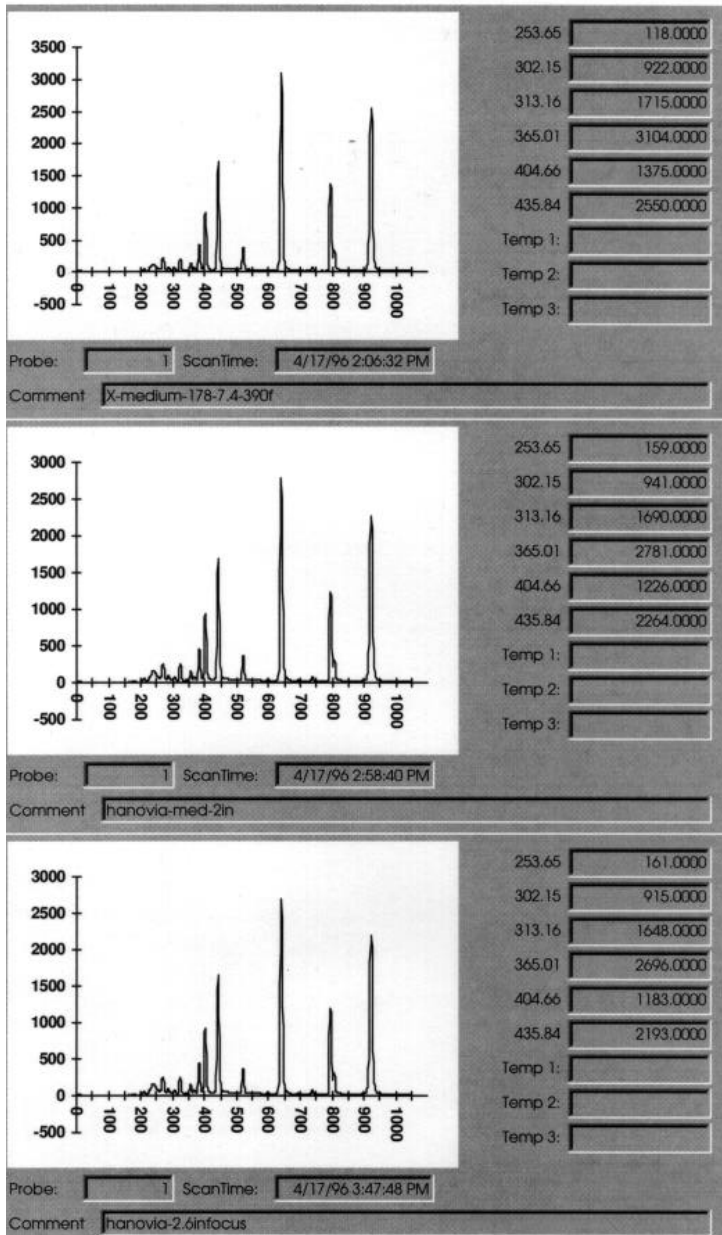
Presentations can be assembled with software such as Harvard Graphics, or Microsoft PowerPoint.

Whole or partial tables can be exported to other databases such as dBase V, Clipper, Visual Foxpro, Enterprise or Power Builder, DB2, etc. using much the same methods.

The individual applications themselves may differ in the way the data is presented. Sometimes different vendors perform the same tasks but call them different things, or perform them slightly differently. But, the data derived from the LM-9000's Lamp Monitor System can be extracted and used in meaningful ways with a minimum of effort.

This was merely an overview of the capabilities of Microsoft Access using our data as a familiar basis. For a more in-depth discussion of its functions and ease of use, please refer to one of the many fine tutorial books from Microsoft Press or the third party (aftermarket) vendors.

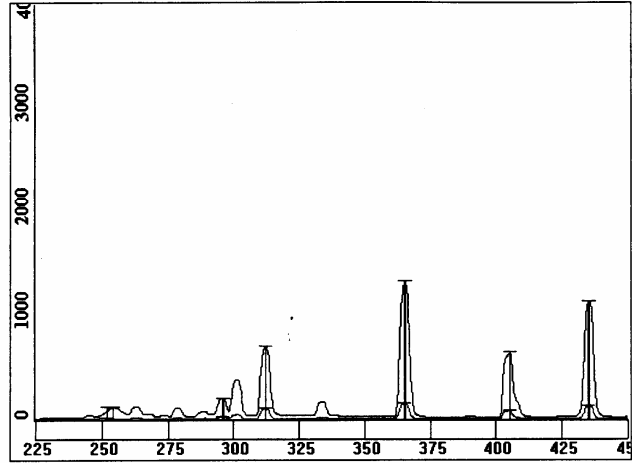
PRINTED PAGE EXAMPLES



PRINTED PAGE EXAMPLES



LM-9000 UV Lamp Monitor



Probe: 3 Lamp: 1-1234 Scan Time: 1/31/96 1:03:30 PM

Peak	Lamp Baseline	Job Baseline	Current	Lamp Percent	Job Percent
253.65	190	112	112	59%	100%
296.73	287	193	193	67%	100%
313.16	1009	696	696	69%	100%
365.01	1872	1319	1319	70%	100%
404.66	927	637	637	69%	100%
435.84	1618	1119	1119	69%	100%

GLOSSARY

ACTION CONTROL CENTER

(See Pages 57-58)

On the Monitor Lamps Screen: The vertical gray box, right of the Energy Display Graph, which displays the list of active (checked) Probes to Monitor, indicates which Probe is Currently being Scanned, whether or not (checked) Temperature Data is being collected, and which Job newly acquired data will be logged to. Always Displays Current Status.

ALERT STATUS LEVEL

(See Pages 21-23, 38, 65)

On the Probe Tab of System Setup: Percentage of Original Value (Job or Lamp baseline) at which to trigger a Yellow or Red Alert. Yellow % Alert Status Level Must Be Higher Than Red % Alert Status Level.

AUTO-CALIBRATION

(See Page 32)

During a scan, the 6 Chosen Wavelengths (Primary, Secondary & User Defined) are displayed (Draw Peaks ON) by searching a number of sensors to the left and to the right of sensor associated with each particular wavelength to find the Highest Peak in the range. The number of sensors searched is user defined on the Graph Tab of System Setup (Search Range in Sensors).

AUTO START

(See Page 9)

On the Main Menu screen (lower left corner): Check Box which, when checked, enables the Automatic Monitoring of Lamps after 60 seconds of system inactivity. After 45 seconds, a countdown timer will display showing time until AutoStart. Pressing any key will disable this iteration, removing the check mark will disable the feature.

AVERAGING

(See Page 30)

On System Setup....Hardware Tab: one of three Correction Factors, Averaging refers to the number of scans taken at each sensor and averaged before a value is displayed or saved. Lower value increases response time, higher value increases accuracy of the data obtained. These values are usually preset and should not be changed.

BASE ADDRESS

(See Page 27-28)

On System Setup.... Hardware Tab: When installing the LM-9000 Instrument, the PC Interface Controller Card's DIP Switches must be set to valid, unique combinations of Interrupt Request Level (IRQ) and location in system memory (Base Address).

BASELINE

{of a Lamp or a Job}

(See Page 50, 56)

On Monitor Lamps Screen.....Setup Menu: Establishes current Energy Display Graph information as the initial state of a Lamp or Job. A Lamp Baseline is performed upon installation of a new lamp to provide ongoing intensity-at-critical-wavelength status as the lamp ages. A Job Baseline is performed at the beginning of a Job to provide lamp status during the course of running the particular job.

CALIBRATE LAMPS

(See Page 49, 59-63)

On Monitor Lamps Screen.....Setup Menu: Defines the relationship between the Peak Wavelengths and the individual sensors. Establishes a closer correspondence between mouse movement along the Energy Display Graph, "At-A-Glance" Toolbar windows, the horizontal Wavelength axis, the Peak Drop Lines, and View Peaks display box values.

CALIBRATION

(See Pages 85-92)

On Monitor Lamps Screen.....Setup Menu: Process of performing a Calibration is described in detail in the Installation Notes: pages 85-92.

CALIBRATION FACTOR

(See Page 20)

On System Setup.....Probe Menu: Calculation Constant which controls correspondence between input light signal and output digital information. Should Be Set To 1.

CCD

(See Page 27)

On System Setup.....Hardware Tab: Type of detector used in the LM-9000 Instrument; an array of sensors which collect analog light intensities at the various wavelengths and output proportional digital values. The CCD array in the LM-9000 Instrument contains 1100 distinct sensors.

COEFFICIENT 1 (C1) & COEFFICIENT 2 (C2)

(See Pages 18-19, 61, 85-92)

On System Setup.....Probe Tab: Initially these: Calculation and Calibration Constants are provided with each PC Interface Controller Board and with each Additional Probe Board installed into a system. You will find the initial configuration values for Coefficient 1 & 2 on the inside cover of the User Documentation for each probe attached to the system.

On the Monitor Lamps Screen.....Setup Menu.....Calibrate: the calibration process performs fine tuning of these values to tailor the probe to the light source.

COM PORT

(See Page 29, 48, 57, 95-98)

On System Setup.....Hardware tab: Communications Port on the back of the LM-9000 computer system, used for Temperature Data Acquisition.

If the configuration purchased includes the RS-232 Option Module and Temperature Probes, communication with the individual Temperature Probes is accomplished through use of one system Com Port, which must be specified to the Lamp Monitor Software.

CONFIGURATION AREA

(See Page 26-28)

On System Setup.....Hardware Tab: Central region of the screen containing Card Type, Detector type, Gain, IRQ and Base Address Information for each PC Interface Controller Board installed in the System.

CORRECT FOR DARK

(See Page 30)

On System Setup.....Hardware Tab: Probe Self-Calibration aid which keeps a small number of unused sensors dark for comparison. Check box indicates enabled or disabled status: Should Always Be Enabled during Lamp Monitor Operation.

CRITICAL WAVELENGTH

(See Pages 31, 44-47, 49, 54, 59-63)

On System Setup.....Graph Tab: User Assigned wavelength, of the Six (6) Chosen Wavelengths, to trigger Yellow and Red Alerts. Indicated on the Energy Display Graph with a small green half-circle at the horizontal (wavelength) axis, and stored with Scans, Lamp Baselines and Job Sets.

DATA SETS

(See Page 36-38)

Collection of individual data records, in various tables which comprise a Scan, a series of scans, a Lamp Baseline, or a JobSet. DataSets can be named (JobName) or comments assigned to them (Scan or Monitor) for later retrieval and examination.

DEMO RUN

(See Pages 9, 15, 79-80)

On LM-9000's Main Menu (Lower Left Corner): Special Serial Number which invokes the Demonstration Mode of the Lamp Monitor Software. No New Data May Be Acquired While In "Demo Mode". Allows examination of software package features, and display of previously saved data.

DRAW PEAKS

(See Page 31, 45-47)

On Monitor Lamps Screen.....View Menu: the Draw Peaks toggle displays (when checked) red “T”-bar Drop Lines at the 6 Chosen Wavelengths. See also View Peaks.

DROP LINES

(See Page 31, 45-47)

On Monitor Lamps Screen.....View Menu: Activated by the Draw Peaks toggle, red “T”-bar indicators at the 6 Chosen Wavelengths. The Horizontal portion of the “T” shows the peak intensity, the Vertical portion shows the Wavelength.

ENERGY DISPLAY CURVE

(See Pages 39-41)

On Monitor Lamps Screen: the line comprised of points plotted as Wavelength vs. Intensity on the Energy Display Graph. This may be “live” data currently being collected or a Restored DataSet displayed on-screen.

ENERGY DISPLAY GRAPH

(See Pages 39-41)

On Monitor Lamps Screen: the main screen area with “X” Wavelength Axis, “Y” Intensity Axis, Scale Adjustment Slider, and usually the plot of an Energy Display Curve. “T”-bar Drop Lines, the Peak Values Box, Temperature Display Bar and Calibrate Lamps Box can also be displayed in the Energy Display Graph area.

EVENT

(See Pages 21-23, 56, 65)

On System Setup.....Probe Tab: Special occurrences in the course of monitoring a lamp. Events of primary concern are Yellow and Red Alert Events which trigger an automatic save of all data when Critical Wavelength Intensity falls below user specified percentages of original value. Job Start & End, Yellow Alert On & Off, and Red Alert On & Off are all Events.

FILE MAINTENANCE

(See Pages 10-12, 103-116)

On the LM-9000's Main Menu: Refers to directly manipulating the Data files created by the LM-9000's Lamp Monitor Software.

NOTE: All file maintenance functions are accessible within Microsoft Access™. See the File Maintenance and Reporting Guide (pg. 103-118) for examples of Data Conversion between applications to perform spreadsheet or database analysis, generate presentations, charts, and graphs, and inclusion of LM-9000™ Data into reports.

Built-in Archiving and File Management features currently under development.

GAIN

(See Page 27)

On System Setup.....Hardware Tab: a factor of signal strength relative to the type of detector employed on the PC Interface Controller Card. Reserved for future use of detector systems currently under development.

GENERAL TAB

(See Pages 15-16)

On System Setup: Location of Company & Machine Specific Information, Serial Number and Password Entry.

GRAPH TAB

(See Pages 31-33, 85-92)

On System Setup: Location of Critical Wavelengths, Search Range & Standard Deviation Freedom entry. The 6 Chosen Wavelengths are selected from 6 Primary, 2 Secondary and 3 User Defined Wavelengths on this entry screen.

HARDWARE TAB

(See Pages 24-30, 80)

On System Setup: Location of PC Interface Controller Board Information including Card & Detector Type, IRQ & Base Address Settings, Temperature Probe Information and correction factors.

HISTORICAL LAMP DATA

(See Page 68-69)

On Lamp Configuration.....Lamp Data Control Buttons: Lamp Serial Number, Model, Manufacturer, Installation Date, Machine / Location and number of Starts and accumulated Hours can be displayed for all lamps in the Database by pressing the <first>, <previous>, <next> and <last> buttons of the Lamp Data Control area.

INTERFACE BOARDS (CARDS)

(See Pages 24-30, 74-79, 81)

Generic term for PC compatible, ISA standard circuit boards added to a computer to add functionality. Within the LM-9000™ Lamp Monitor System: PC Interface Controller Boards (and Additional Probe Boards) provide analog to digital conversion of the incoming Light Signal.

First - contains Probe 1.

Up to 3 Additional Probe Boards can be attached to the First Controller (assigned as probes 2,3 & 4).

Second - contains Probe 5.

Up to 3 Additional Probe Boards can be attached to the Second Controller (assigned as probes 6, 7, & 8).

Third - contains Probe 9.

Up to 3 Additional Probe Boards can be attached to the Third Controller (assigned as probes 10, 11, & 12).

IRQ LEVEL

(See Pages 28, 74-77, 81)

On System Setup.....Hardware Tab: Interrupt Request Level setting that allows the Computer to process real-time events detected by connected Interface Boards. The LM-9000™ Lamp Monitor System utilizes one unique IRQ setting for each PC Interface Controller Board (First, Second and Third) installed. Additional Probe Boards do not occupy an IRQ of their own, but use the one assigned by the PC Interface Controller Board they are attached to.

JOB

(See Pages 56-57, 64-67)

Generally pertains to a production run of a product, which must be periodically re-run with the same production environment. In the LM-9000ä Lamp Monitor System, a Job is a series of related scans, with Machine setup information operator notes, and Yellow & Red Alert values . Events and the Yellow & Red Alerts will trigger the automatic saving of data for later review.

JOB BASELINE

(See Page 56, 64-67)

On Monitor Lamps Screen.....Action Buttons Toolbar: Pressing the Start Job button always performs a new Job Baseline to record current lamp intensities. The Peak Status Box will show Lamp Baseline, Job Baseline and Current values, calculating Percent Gain (or loss) from either Lamp or Job starting values.

On Job Configuration.....Baseline Area: Yellow & Red Alert levels can be based either on the Lamp Baseline (original lamp intensities) or the Job Baseline (current lamp intensities).

JOB CONFIGURATION

(See Pages 64-67)

On LM-9000ä Main Menu: Location of all Job related Data Entry and History by Job Name. Information includes Job Name, Machines and Inks used, operator settings and notes, Yellow & Red Alert percentages and whether triggers are based on the Lamp Baseline or the Job baseline (Start of Job).

JOB EVENTS

(See Page 56, 58, 64-67)

On Monitor Lamps Screen.....Action Buttons Toolbar: Pressing the Start Job button (Job Start & Stop), Yellow Alerts (On & Off), and Red Alerts (On & Off) generate complete Saves of data including Critical Wavelengths, Temperatures (if active), and all 1100 sensor values.

On Monitor Lamps Screen.....Restore.....Job Sets:

JOB HISTORY

(See Page 38, 56, 58)

On Monitor Lamps Screen.....Action Control Center: Pressing the Play button at the bottom activates the Job History window, a list of Job Records for selection and display. Previously created Job records can be selected for display by probe, lamp, date & time, or event (if any)

JOB SAVES

(See Page 34, 38, 56-58, 64-67)

On Monitor Lamps Screen.....Action Buttons Toolbar: After defining a Job and Setting it as Current (in Job Configuration), pressing the Start Job button on the Monitor Lamps Screen will begin logging data to the selected job. On the interval set on System Setup..... Timing Tab, only critical wavelength and temperature information will be saved. Upon any Event (Yellow or Red Alert, Job Start or Stop) a complete save of all data will be performed

JOB SETS

(See Pages 56-58, 64-67)

On LM-9000's Main Menu.....Job Configuration: A Job header record with information including Job Name, Machines & Inks/Coatings used, Job Alert percentages; a Job Data record with Critical Wavelength values, Temperature values (if installed), and a complete set of individual sensor value records for all wavelengths comprise a Job Set.

JOB START/END

(See Page 34, 38, 56-58, 64-67)

On Monitor Lamps Screen.....Action Buttons Toolbar: Pressing the Start Job Button performs a complete Job Set Save, begins automatic timed storage of Critical Job Information, and logs all Yellow or Red Alert Events. Pressing the Start Job button again stops the Job, "pops up" the button, and performs a final complete Job Set Save.

LAMP BASELINE

(See Page 50)

On Monitor Lamps Screen.....Setup Menu: Original or Present Lamp Intensity levels (its Energy Display Curve) is saved to a special "Baseline" record when the Baseline Lamp/Probe command is selected. Peak Status Box displays, and Yellow & Red Alert percentages, reflect this original Baseline value.

LAMP CALIBRATION

(See Page 49, 59-63, 85-92)

The process of defining the correspondence of Wavelength Values across the Energy Display Graph with the individual sensors within the LM-9000 Instrument.

This also insures a closer correspondence between mouse movement and the readout in the Sensor Window of the "At-A-Glance" Toolbar, and between the Wavelength Axis indicators and the Draw Peaks "Drop Lines".

Any time a new lamp is installed, or the physical installation is changed, a new Lamp Calibration should be performed.

LAMP CONFIGURATION

(See Pages 68-69, 56, 36-38)

On the LM-9000 Main Menu: Location of all Lamp related Data Entry and History. Information includes Lamp Serial Number, Make, Model Manufacturer, Installation Date, and Machine Location.

LAMP HOURS ACCUMULATION

(See Pages 68-69, 35)

If left running all the time, the LM-9000 Lamp Monitor System can display Accumulated Lamp Hours and Number of Starts for each active lamp based on a minimum intensity value on System Setup.....Timing Tab.

LAMP RECORD

(See Pages 68-69)

On the LM-9000's Main Menu.....Lamp Configuration: Each Lamp is given a record in the database which carries all information entered in Lamp Configuration. These records can be reviewed to inspect Accumulated Hours and Starts for particular lamps, or when it is time to order replacements.

LM-9000™ PC INTERFACE CONTROLLER BOARDS

(See Pages 24-30, 74-79, 81)

See also Interface Boards description.

PC compatible, ISA standard Circuit Board which converts the Analog Light Signal (from the Fiber Optic Cable connected to the UV Light Source) to a proportional digital signal for processing. A First, Second and Third PC Interface Controller Board may be attached to a single Computer System. 3 Additional Probe cards can be attached to each PC Interface Controller Board.

MENU BAR

(See Pages 42-51)

On Monitor Lamps Screen: Standard term for the top level command menus within an application, usually accessed on the horizontal line just below the Application Title. Choosing an item on the Menu Bar opens a Menu of Commands related to that function. With the LM-9000's Lamp Monitor Software, these top-level command menus are <File>, <Edit>, <View>, <Setup>, and <Help>.

MINIMUM LAMP INTENSITY

(See Page 35, 68-69)

On System Setup....Timing Tab: If left running all the time, the LM-9000's Lamp Monitor System can detect lamp state, and display Accumulated Lamp Hours and Number of Starts for each active lamp, based on a user defined minimum intensity value. Light Intensities lower than this value indicate the lamp is "OFF", higher than this value indicates "On".

MONITORING

(See Page 55)

On Monitor Lamps Screen....Action Buttons Toolbar: When the Monitor button is pressed in, Scans are performed repeatedly for all active probes. The display is updated, though data is not saved automatically (see Job Configuration & Start Job for timed automatic saves).

MONITOR LAMPS

(See Page 9, 39-58, 55)

On the LM-9000's Main Menu: Pressing the Monitor Lamps Button opens the principal application screen where all UV Lamp Data Acquisition takes place. The Energy Display Graphs, Daily Operations screens, System Status and Review functions are all accessed from this screen.

OFFSET

(See Pages 18-19, 61, 85-92)

On System Setup.....Probe Tab: Initially these Calculation and Calibration Constants are provided with each PC Interface Controller Board and with each Additional Probe Board installed into a system. You will find the initial configuration values for Offset(s) on the inside cover of the User Documentation for each probe attached to the system.

On the Monitor Lamps Screen.....Setup Menu....Calibrate: the calibration process performs fine tuning of these values to tailor the probe to the light source.

OVERWRITE DISPLAY

(See Pages 44-45)

On Monitor Lamps Screen.....View Menu: When Checked, the screen is NOT cleared between successive Scan Displays, allowing subtle changes to become more and more visible (thicker or taller lines, gaps, or blotches). Use also when attempting to compare Historical Data Sets, or an old Data Set with a current scan. See Also: Monitor Lamps Screen.....Edit....Clear Screen.

PC1000 (& PC2000)

(See Page 26, 79-81)

On System Setup.....Hardware Tab.....Card Type: description of the PC Interface Controller Board installed. this value will be automatically set by proper entry of the Authorized Serial Number.

NOTE: PC1000 is the Default Setting for Desktop LM-9000 ä Lamp Monitor Systems. PC2000 is reserved for future use. New sensor advances or new hardware based features are incorporated into our systems as they become available.

PCMCIA

(See Page 26)

On System Setup.....Hardware Tab.....Card Type: Acronym for the Personal Computer Memory Card International Association, which standardized the physical and logical connections for adding memory and communications cards into portable computers. Laptop LM-9000 ä Lamp Monitor Systems use a PCMCIA Analog-to-Digital Converter Card to connect the LM-9000 ä Instrument to the portable computer.

PCMCIA-NI

(See Page 26)

On System Setup.....Hardware Tab.....Card Type: for Laptop LM-9000 ä Lamp Monitor Systems using the National Instruments (NI) A-to-D converter card to connect the LM-9000 ä Instrument to the Computer.

PCMCIA-CB

(See Page 26)

On System Setup.....Hardware Tab.....Card Type: for Laptop LM-9000 ä Lamp Monitor Systems using the Computer Boards (CB) A-to-D converter card to connect the LM-9000 ä Instrument to the Computer.

PEAK STATUS BOX

(See Page 31, 46-47)

On Monitor Lamps Screen.....View Menu.....View Peaks: choosing the View peaks command displays a box in the upper right (or left) corner of the Energy Display Graph, with Baseline & Current values for the 6 Chosen Wavelengths.

PERCENTAGE OF ORIGINAL VALUE

(See Pages 21-23, 65)

On System Setup.....Probe Tab: Each probe can have a Critical Wavelength assigned which will trigger Alerts if Lamp Intensity level falls below the user defined Yellow and Red values, given as a percentage of original Lamp Baseline or Job Baseline, and Yellow % value must be higher than Red %.

PHYSICAL SENSOR NUMBER

(See Pages 52-53, 85-92)

On the "At-A-Glance" Toolbar: The Sensor window displays the physical sensor number corresponding to both Wavelength and mouse movement anywhere inside the Energy Display Graph area. To find the Sensor number or Wavelength for any point on the Energy Display Curve, simply place the mouse cursor on the point. Calibration helps define the one-to-one relationship between mouse movement and Wavelength.

PRINT GRAPH

(See Page 42, 118)

On Monitor Lamps Screen.....File Menu: Prints the Energy Display Graph currently On-Screen, with a Peak Information Table showing baseline values and percentages of original. Older data may be printed by Restoring the appropriate DataSet and choosing File...Print Graph.

PROBE

(See Page 17, 24-25, 37-38, 53, 57, 71, 85, 93)

On System Setup.....Probe Tab: Up to 12 individual Fiber Optic cables can be attached to the LM-9000 Lamp Monitor System (dependent upon configuration purchased) which then lead to installation points within the UV Light producing machinery. These Optical Probes can be placed anywhere in the UV Light path, and are available in a variety of styles and functionality.

PROBE LIST BOX

(See Page 17, 37-38, 57, 71)

On System Setup.....Probe Tab: Selection list of individual probes attached to the LM-9000 Lamp Monitor System, indicates whether selected probe is attached, and if so, which Lamp, what Calibration Constants, and the Critical Wavelength assigned to it.

PROBE PORTS

(See Page 24-25, 53, 57, 71, 85, 93)

On System Setup.....Hardware Tab: Up to 3 PC Interface Controller Boards can be installed in the LM-9000 Lamp Monitor System, each of which can have up to 3 Additional Probe Boards attached. Each of these 12 circuit boards provide one physical input for a Fiber Optic Connection Cable.

RED %

(See Pages 21-23, 65)

On System Setup.....Probe Tab: Each installed Probe can be assigned a Critical Wavelength, from the 6 Chosen Wavelengths, which will be monitored for Intensity Values dropping below User Defined Yellow Alert and Red Alert levels (percentage of Original Intensity value). The lower, and hence more serious, level is the Red Alert Percentage. See also Yellow %.

RED ALERT

(See Pages 21-23, 38, 54, 65)

On Monitor Lamps Screen, Background Color: When Intensity level of the user-defined Critical Wavelength falls below the user-defined Red Percentage of Original Value, the background of the Energy Display Graph will turn red, the probe number indicator in the Action Control Center will turn red, and a complete save of all data will be performed. See also Yellow Alert.

RED ON/OFF

(21-23, 38, 54, 65)

On Monitor Lamps Screen.....Action Buttons Toolbar.....Restore DataSets: Once Intensity levels at the Critical Wavelength have dropped below the user-defined percentage of Original Value, the Red Alert On event occurs (See Red Alert above). Once Intensity levels at the Critical Wavelength climb back above the user-defined percentage, the Red Alert Off event occurs, also causing a complete save of all data. See also Yellow Alert On/Off.

RELATIVE INTENSITY

(See Pages 40-41)

On Monitor Lamps Screen.....Energy Display Graph: the “Y” axis (vertical) indicates increasing UV Intensity at all individual wavelengths. In the range of 0 to 4000, the values displayed are an index into comparative intensity level.

RELATIVE INTENSITY SCALE

(See Pages 40-41)

On Monitor Lamps Screen.....Energy Display Graph: the “Y” axis (vertical) displays a relative intensity index for each particular wavelength displayed. Ranging from 0 to 4000, this viewing range is adjustable via the Scale Adjustment Slider control just left of the “Y” axis.

RESTORE

(See Pages 36-38, 55-56, 58)

On Monitor Lamps Screen.....Action Buttons Toolbar: pressing this button displays the Restore DataSets Window, allowing selection of previously saved DataSets (Scans, Lamp Baselines, and Job Sets) to be displayed again on-screen. See also Play & Logs Buttons in the Action Control Center.

SAVE

(See Pages 36-38, 55-56, 58)

On Monitor Lamps Screen.....Action Buttons Toolbar: pressing this button while results of a Scan (or Monitor) are showing on the Energy Display Graph will cause storage to disk of a complete set of data for later retrieval. Each such save can have comments attached to make identification easier, along with the date and time automatically included.

NOTE: *To save a DataSet obtained during Monitoring, first stop Monitoring (press the Monitor Button again) and then press the Save button.*

SAVE JOB SCANS

(See Page 34, 56)

On System Setup.....Timing Tab: the Job Data Saving Interval is user-defined, allowing automatic storage to disk of at least the 6 Chosen Wavelengths, the Critical Wavelength, and any temperature data (if enabled). If an Event occurs, a complete data save is performed.

SCALE ADJUSTMENT SLIDER

description

On Monitor Lamps Screen.....Energy Display Graph: just left of the “Y” axis (vertical), this control allows the user to the range of display of the relative intensity index. Ranging from 0 to 4000 max.(Slider all the way Down), this viewing range is adjustable down to 0 to 100 (Slider all the way Up)

SCAN

(See Pages (36-38, 55)

On Monitor Lamps Screen.....Action Buttons Toolbar: pressing this button causes the sampling of a complete set of data for the selected probe (see the Action Control Center). The Energy Display Graph will show the updated information immediately.

SCAN SAVES

(See Pages 36-38, 55-56, 58)

On Monitor Lamps Screen.....Action Buttons ToolbarRestore: Under the Saved DataSets header of the Restore DataSet Selection Window, all saved DataSets obtained by pressing the Save Button are displayed with Probe Number, Date & Time of the Save, and any comments attached at the time of the save..

SENSOR TABLES

(See Page 49, 60, 85-92)

On Monitor Lamps Screen.....Setup Menu.....Calibrate: The Calibration process defines the correlation between physical sensors on the LM-9000 Instrument to Wavelengths showing on the Energy Display Graph. To accomplish this calibration, the user fills in the Sensor Table by moving the mouse cursor to at least 5 of the 6 Chosen Wavelengths, and clicking the mouse to write in the Cursor positioning value.

SERIAL NUMBER

(See Page 7-9, 15, 79-80)

On Process Status Indicator, LM-9000 Main Menu, and System Setup.....General tab: The Con-Trol-Cure[®] Authorized alpha-numeric sequence serves to identify the LM-9000 Lamp Monitor Software, and automatically configures key System Setup parameters. The special "DEMORUN" serial number restricts software function to displaying only previously saved data.

SIGNAL STRENGTH

(See Page 41, 83-84)

On Monitor Lamps Screen.....Energy Graph Display: the overall intensity value of light traveling from the UV light source through the Fiber-Optic cable, into the LM-9000 Instrument. In instances where too much or too little signal is coming into the instrument, the Scale Adjustment Slider can increase or decrease the displayed range to enhance the display. In instances where there is still too much signal, attenuating probes can be purchased.

SMOOTHING

(See Page 30)

On System Setup.....Hardware Tab: controls display of energy display curve as a continuous line. One of three Correction factors, these values are usually preset and should not be changed.

TEMPERATURE BAR DISPLAY

(See Page 48, 57, 98-99, 102)

On Monitor Lamps Screen.....View Menu: choosing the Temperature Values command displays the Temperature Bar at the upper right corner of the Energy Display Graph. Temperature probes are listed numerically according to connection to the RS-232 Option Module, with value to the right of the Temperature Probe Number. Values given in ° Celsius.

TEMPERATURE PROBES

(See Page 29, 48, 99-102)

On System Setup.....Hardware Tab: 2 meter (max. length) thermocouple connected to Remote Temperature Transmitters, then to the RS-232 Option Module and the LM-9000 ä Lamp Monitor System. Thermocouple is installed in lamp or product areas to display and store temperature values along with Wavelength-Intensity data.

TIMING TAB

(See Pages 34-35)

On System Setup: location of Lamp Hours Accumulation interval, Job Data Saving Interval, and Minimum Lamp Intensity values. Controls timing of automatic Job Saves, and Lamp State Information (on or off, startups, etc.)

TYPICAL VALUES

(See Pages 18-20,27, 34-35, 61, 92)

On System Setup....Probe Tab & Hardware Tab: Several of the calculation constants and operational parameters have values which can be adjusted for application specific, or instrument calibration reasons. Typical values, or ranges, have been given (where applicable) throughout this manual, to act as starting points if original values have been changed. Probe specific Offset and Coefficients are recorded on the Inside Front Cover

Typical Values Continued:

On Monitor Lamps Screen.....Setup....Calibrate Lamps: Several of the operational constants required for proper functioning of the instrument can be fine tuned through Calibration procedures. Typical values are good starting places, as are values written into the inside front cover (for each probe installed).

VIEW MENU

(See Pages 44-48)

On Monitor Lamps Screen.....Menu Bar: location of commands governing the Energy Display Graph appearance and content. Overwriting of subsequent Energy Display Curves, "T"-bar Drop Line display, Peak Status Box display, Temperature Bar display and ToolTip style help for screen functions are all available on this menu.

WAVELENGTH

See Pages (31-32, 45-47, 49, 59, 63, 85-92)

On System Setup.....Graph Tab: distance, measured in nanometers, in the direction of the progression of a light wave from any given point to the same point on the next phase. The Energy Display Graph shows UV Light Intensity values vs. Wavelength from 200nm to 450nm. The user can select six (6) Chosen Wavelengths for special attention, and one of the 6 for Yellow & Red Alert Indication. No More and No Less than 6 values must be chosen from among three groups of values:

Primary Wavelengths - 6 values of known peaks common to all UV Lamps which are coded into the LM-9000 Lamp Monitor Software. These can be enabled or disabled individually.

Secondary Wavelengths - 2 additional known peaks common to many UV lamps which may be of greater interest in the user's application. These values are coded into the Lamp Monitor Software, can be used in place of Primary wavelengths, and are individually activated.

Alternate Wavelengths - 3 Entirely user-defined values, to be used in place of either Primary or Secondary wavelengths, and can be activated individually also.

YELLOW %

(See Pages 21-23, 65)

On System Setup.....Probe Tab: Each installed Probe can be assigned a Critical Wavelength, from the 6 Chosen Wavelengths, which will be monitored for Intensity Values dropping below User Defined Yellow Alert and Red Alert levels (percentage of Original Intensity value). The higher, and hence less serious, level is the Yellow Alert Percentage. See also Red %.

YELLOW ALERT

(See Pages 21-23, 38, 54, 65)

On Monitor Lamps Screen, Background Color: When Intensity level of the user-defined Critical Wavelength falls below the user-defined Yellow Percentage of Original Value, the background of the Energy Display Graph will turn yellow, the probe number indicator in the Action Control Center will turn yellow, and a complete save of all data will be performed. See also Red Alert.

YELLOW ON/OFF

(21-23, 38, 54, 65)

On Monitor Lamps Screen.....Action Buttons Toolbar.....Restore DataSets: Once Intensity levels at the Critical Wavelength have dropped below the user-defined percentage of Original Value, the Yellow Alert On event occurs (See Yellow Alert above). Once Intensity levels at the Critical Wavelength climb back above the user-defined percentage, the Yellow Alert Off event occurs, also causing a complete save of all data. See also Red Alert On/Off.