

User's Manual

EasyMatch[®] On-Line SpectraTrend (OL ST)



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Safety Notes

For your safety when using your color measurement equipment, you should pay particular attention to the following types of statements in the hardware section of this User's Manual. Each description is shown in its representative typeface.

Notice: General safety instruction that should be observed at all times while operating the instrument.



CAUTION

The above symbol indicates that there may be a danger of electric shock from high voltage if the given instructions are not followed carefully.

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Introduction to EasyMatch On-Line SpectraTrend (OL ST)

What is EasyMatch OL ST?

EasyMatch OL ST is a comprehensive color quality control package designed for Microsoft Windows. The software allows you to control up to four online spectrophotometer systems per server computer by running separate instances of the client software, make color measurements, and display, print, and store results (both in spreadsheet format and graphically) using an unlimited number of networked client computers. The EasyMatch OL ST system may also be fully integrated with plant SPC systems, receiving process variables from the plant system and sending color data back to it.

Features

The sections below examine some of the most important concepts and features related to operation of EasyMatch OL ST.

Jobs

A job is a collection of all the data views (displays), measurements (standards and samples), product setups, events, alarms, seam breaks, and process variable inputs applicable to a particular run, product, or customer. Jobs are the 'documents' of EasyMatch OL ST, analogous to word processing documents containing text and its formatting or spreadsheet documents containing fields of data and formulas. If you wanted to transfer a job to another computer or another user who also has EasyMatch OL ST, the job file (with a .JSD file extension) would contain all the information needed to examine and/or reproduce your results.

Jobs may be created for many different reasons, such as to hold data for a certain customer or a specific run. Each operator may maintain his own job with his own preferences, or you can create separate jobs for different operations, such as measuring plastic pellets before extrusion and then the final extruded product. You can be creative in maintaining and organizing your job files.

Multiple jobs may be open and in use at the same time. Each job will be shown as a separate tab on your screen. You can switch easily between jobs by clicking the tab of the job you wish to see.

To open and use a new job, start a run. A new job file based on the default job template (see the next section) opens and is automatically filled with data from the run.

It is difficult to 'picture' a job file, but a screen capture of a job is provided below as an illustration.

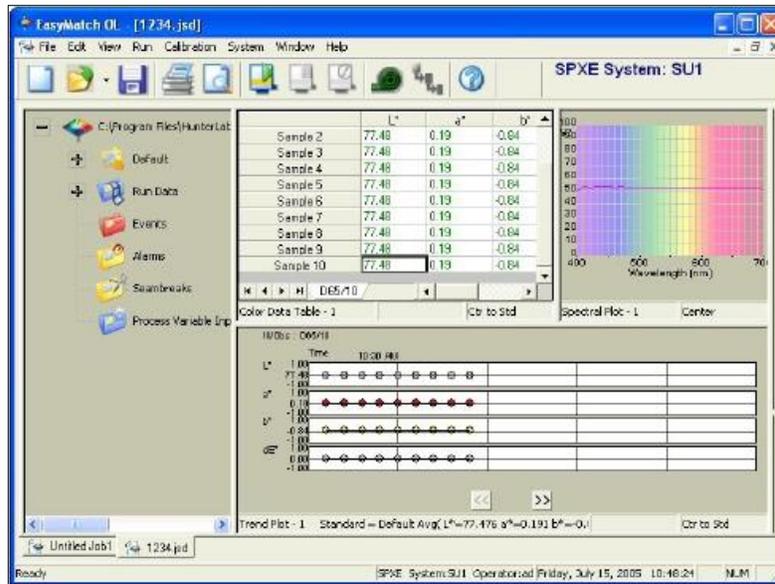


Figure 1. Main Measurement Screen

As you can see on the tab, this job is called '1234.jsd'. You can see that the job contains a standard and ten samples. The color data table is showing L*, a*, and b* for the standard and samples. The Spectral Plot is displaying spectral reflectance at 10 nm increments with the colored background, and the Trend Plot is displaying L*, a*, b*, and dE* using D65/10°. The Job Tree is being viewed. The location, size, and shape of each view are also saved as part of the job, along with the measurements and the properties of each view.

A second job, still untitled, is contained on the tab behind this one and you can switch to it simply by clicking the tab at the bottom of the screen.

Job Conventions

Although great flexibility has been incorporated into the concept of a job, there are some attributes that all jobs will share.

- A new job is automatically opened for each new run.
- Each individual job may contain all the information necessary to complete that job if the operator has included that data. All information imported from the database or read in through the instrument for use in that job will be saved with the job.
- When you recall a job, it will reappear looking exactly the same as when it was last closed.

Note: It is recommended that you back up your database, template, and job files periodically, particularly prior to upgrading or making other major changes to your system computer.

Job Templates

Job templates can be thought of as subsets of jobs. They contain some of the pieces of information contained in jobs, but not all of them. Templates are analogous to 'style lists' or 'style sheets' that are available in some word processing and desktop publishing programs

because they can be used to control the cosmetic appearance of a job. A template houses configuration information for the data views and screen, such as locations, sizes, shapes, and properties, but does not contain measurements.

A template is meant to be used as a starting point in creating a new job when the same views are used for many jobs. You can then ‘fill’ the template with measurements and configuration settings. A default template is installed with EasyMatch OL ST. This template provides a starting point for new jobs.

To set up a template, you will need to complete the following tasks:

- Open a new job.
- Configure the desired data views. This includes setting the location, size, shape, and properties of each view on the screen.
- Save the job as a template using **File > Save Job Template As** command. Templates should be saved in the C:\Program Files\HunterLab\EasyMatch OL ST Client\EasyMatch OL ST Data Files\Default Templates folder in order to be accessed as default templates when jobs are created. The extension for a template is .JTP.

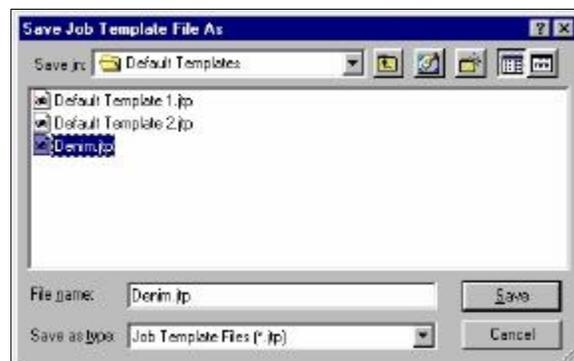


Figure 2. Save Job Template

Refer to other sections of this manual for more specific information on each of these tasks.

Whenever you want to use a particular template for creating new jobs, choose **System > Preferences** and select the desired template from the drop-down box below Default Job Template. Click **OK** and then restart EasyMatch OL ST to accept this change. The next time a new job is created, it will have the same appearance as the selected template.

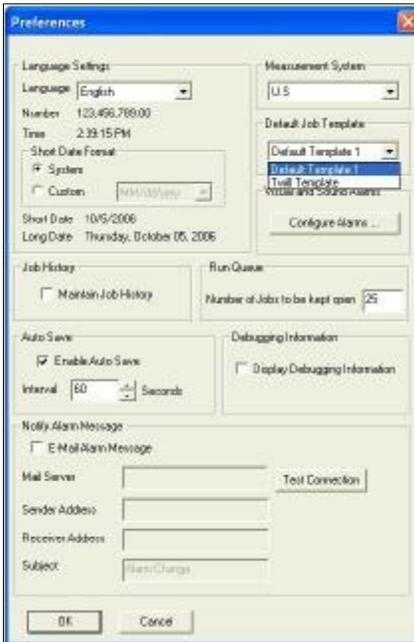


Figure 3. Preferences

The types of information a template may house are illustrated in the picture below.

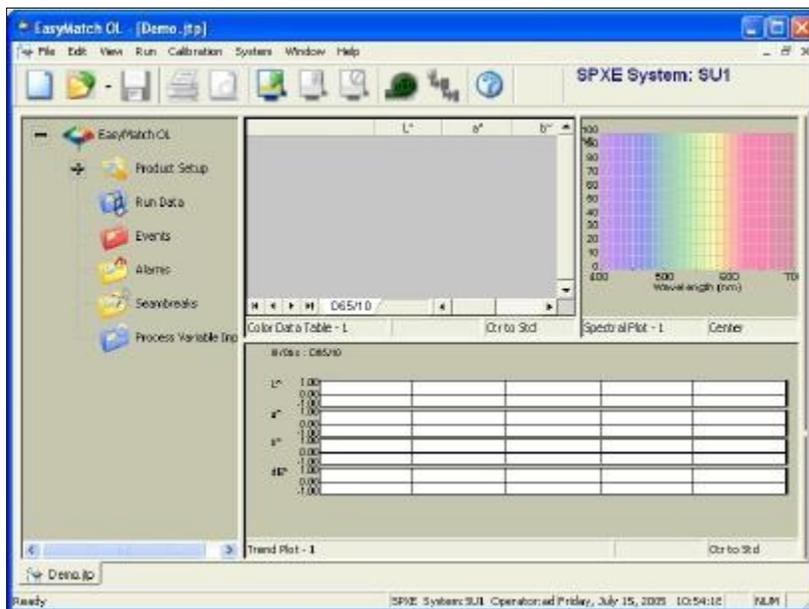


Figure 4. Job with Saved Template

Templates contain no standards or samples. The measurements would be added to the job as they are made. The screen configuration and options for each data view comprise the template and will be part of any job created using the template.

There are four menu options allowing you to utilize templates: **Open Job Template**, **Save Job Template**, **Save Job Template As**, and **Close Template**.

Note: It is recommended that you back up your database, job, and template files

periodically, particularly prior to upgrading or making other major changes to your system computer.

Job Tree

The Job Tree view includes branches that allow selection and display of the following items:

- The product setup that applies to the job, including the standard data
- Measurements from the run, including spectral data, events, alarms, seam breaks, and process variable inputs.

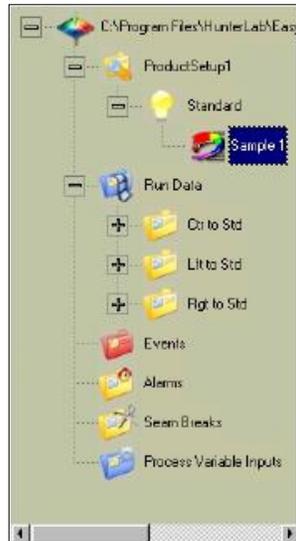


Figure 5. Job Tree

Note: The Job Tree is only visible when **Job Tree** is checked in the **View** menu. To select an item, click on it. The bullet points below describe the appearance of the Job Tree view for each type of selection.

- **Product setup:** When Product setup is selected, the Product Setup screen is shown to the right of the Job Tree view.

Product Setup : Product setup1				Illuminant : D65
Date : Tuesday, April 20, 2004				Observer : 10 Deg
Time : 10:37:45 AM				Scan Pattern : B
Standard Type : Numerical		Secondary Calibration : Every		
Trend Update (Time) : 5 Sec				
<hr/>				
Color Scale	L*	a*	b*	
Product Standard	38.00	3.00	3.00	
Actual Reading				
<hr/>				
Color Difference Scale	L*	a*	b*	
Tolerance				

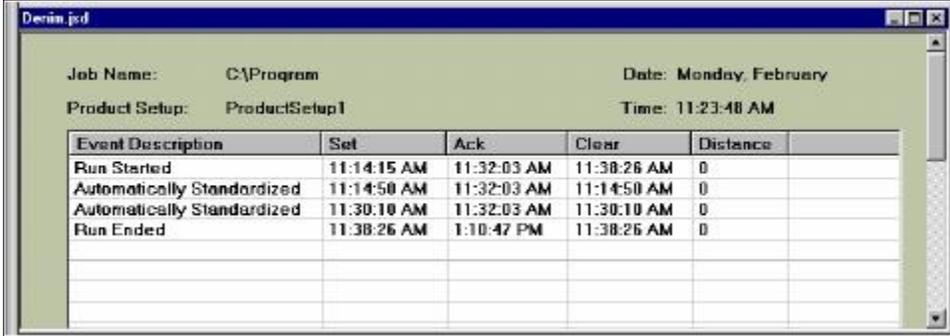
Figure 6. Product Setup Screen

- **Run Data:** When the Run Data item is opened by clicking on the plus (+) sign next to Run Data on the Job Tree, the center-to-standard, left-to-standard, and right-to-standard measurements made during this run are shown. Clicking on a measurement causes it to be displayed in the other data views in the job. Clicking the right mouse button on an individual measurement causes a pop-up menu to be displayed that allows the following options regarding that measurement:
- **Cut:** Transfers the selected item to the Windows clipboard from where it may later be pasted at the bottom of this job.
- **Copy** - Copies the selected item to the Windows clipboard from where it may later be pasted at the bottom of this job.
- **Paste** - Takes the item that is currently contained on the Windows clipboard and places it at the bottom of this job.
- **Properties** - Yields a dialog box on which you may view and/or edit the properties of the selected item .
- **Delete** - Allows you to permanently delete the currently selected item from the Job Tree and from the job. No copy of the item is kept on the Windows clipboard.



Figure 7. Run Data Properties

- **Events:** When Events is selected, the Event Log is shown to the right of the Job Tree view. The events that are recorded in the Event Log are as follows:
 - Start of a Run
 - Standardization
 - Out of Tolerance Measurement
 - System Error
 - End of a Run.



Event Description	Set	Ack	Clear	Distance
Run Started	11:14:15 AM	11:32:03 AM	11:38:26 AM	0
Automatically Standardized	11:14:50 AM	11:32:03 AM	11:14:50 AM	0
Automatically Standardized	11:30:10 AM	11:32:03 AM	11:30:10 AM	0
Run Ended	11:38:26 AM	1:10:47 PM	11:38:26 AM	0

Figure 8. Event Log

For each event, the type of event is recorded along with the time the event occurred, was acknowledged, and cleared. An event is acknowledged when the Event Log is viewed and cleared when the condition is no longer relevant, such as clearing the 'Run Started' event when the run is ended.

- **Alarms:** When selected, any alarms apply to the run are shown to the right of the Job tree view.



Alarm Description	Set	Ack	Clear	Distance
Left Limit Position Missed	11:15:06 AM	11:32:06 AM	11:15:32 AM	0

Figure 9. Alarm Log with Date/Time

For each alarm, the type of alarm is recorded along with the time the alarm occurred, was acknowledged, and cleared. An event is acknowledged when the Alarm Log is viewed and cleared when the condition is eliminated.

- **Seambreaks:** When selected, any seam breaks that occur during the run are shown to the right of the Job Tree view.

For each seam break, the type of break (off, on, or pulse) is recorded along with the time the break occurred and was acknowledged. A seam break is acknowledged when the Seam Break Log is viewed.

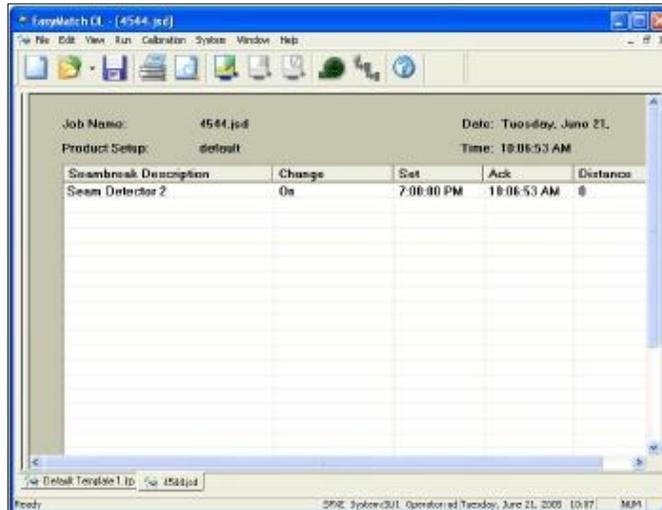


Figure 10. Seam Break Log

- **Process Variable Inputs:** When Process Variable Inputs is selected, a control chart for the process variable being input from a plant data system (optional) is displayed. See the description of the Control Chart view later in this chapter for more information.

When the right mouse button is clicked on an open area of the Job Tree view (an area other than a branch), further commands are available, as follows:

- **Search Item:** This command allows you to search for a specific standard or sample that is contained in the job.



Figure 11. Search for Standard or Sample

- **Collapse the tree:** This command closes all the branches of the job tree so that only the first level branch (the job name and file path) is visible.

Data Views

Each of the smaller panes shown on a job tab is a data view. Each data view displays unique information about the measurements made during your run. You may resize any data view to fill as much or as little of the screen as you like. To configure a data view, go to Views > Configure Views or change the view type and then right click on each portion of the screen. The types of data views that are available include and are described below:

- Job Tree
- Color Data Table
- Color Plot
- Control Chart

- Spectral Data Table
- Spectral Plot
- Statistics View
- Trend Plot

A right click on each view which allows a subset of functions to be shown:

Table 1. Display Types vs. Function

Function/Display Type	Color Data	Color Plot	Spectral Data	Spectral Plot	Trend Plot	Control Chart	Statistics
Configure	<input checked="" type="checkbox"/>						
Copy to Clipboard	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>				
Paste from Clipboard			<input checked="" type="checkbox"/>				
Show Background		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>			
Show Legend		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Configure	<input checked="" type="checkbox"/>						
Limits					<input checked="" type="checkbox"/>		
Print Preview	<input checked="" type="checkbox"/>						
Print This View	<input checked="" type="checkbox"/>						
Change View	<input checked="" type="checkbox"/>						
Delete View	<input checked="" type="checkbox"/>						
Split View Vertically	<input checked="" type="checkbox"/>						
Split View Horizontally	<input checked="" type="checkbox"/>						
Maximize	<input checked="" type="checkbox"/>						

- **Copy to Clipboard:** Before you initiate this command, click on one or more of the samples and standards shown in the spreadsheet. When **Copy to Clipboard** is then selected, the displayed data for the chosen samples and standards is copied to the Windows Clipboard. The copied data may then be pasted into another application (such as Microsoft Excel) using its **Paste** command.
- **Paste from Clipboard:** Before you initiate this command, you must click in one of the cells shown in the spreadsheet. When **Paste from Clipboard** is then selected, the data that was previously cut or copied to the Windows Clipboard will be placed in the spreadsheet beginning with this cell.

- **Print Preview:** This command previews the view when printed.
- **Print this View:** This command prints the view on one full page of paper.
- **Change View:** This command replaces the current view with another type of view (i.e., replace the Color Plot with a Spectral Plot).
- **Delete View:** This command removes the current view from the job display.
- **Split View Vertically and Add:** This command splits the current view into two and adds a new view so that the old view and the new view are displayed side by side.
- **Split View Horizontally and Add:** This command splits the current view into two and adds a new view so that the old view and the new view are displayed with one above the other.
- **Maximize this View:** This command causes the currently-selected view to be enlarged to the full size of the job.
- **Show Background:** Causes the colored background to be shown on the Color Plot. When unchecked, the background is white.
- **Show Legend:** Causes the legend (the list of which samples are currently displayed) to be shown to the left of the Color Plot. When unchecked, the legend is not shown.
- **Limits:** Allows you to set parameters regarding the scale and limits of the trend plot. Make your selections for each parameter. The range for each trace is the number of trace units that will be displayed around the standard for the trace. The control limit and warning limit are percentages of the tolerance for the trace where indicator lines will be shown (red for the control limit and purple for the warning limit).

Color Data Table

The Color Data Table view shows color scale, color difference, and index data for the measurements made during the run using the configured parameters. Click on this view to make it active. While this view is active, the following options are available by clicking the right mouse button:

	X	Y	Z	L*	a*	b*	dE*
Standard	31.76	29.91	9.22	61.58	-3.78	6.25	-
+Tolerances							
-Tolerances							
Sample 2	31.76	29.91	9.22	61.58	-3.78	6.25	0.00
Sample 3	32.76	29.68	10.56	61.38	0.52	0.01	7.57
Sample 4	37.83	34.21	11.13	65.13	0.77	4.13	6.15
Sample 5	36.00	30.81	9.94	62.35	7.00	4.37	10.97
Sample 6	32.43	28.79	12.55	60.60	2.77	-9.23	16.83
Sample 7	32.52	31.04	11.06	62.54	-5.29	-0.06	6.55
Sample 8	36.30	32.90	9.77	64.08	0.51	8.07	5.29
Sample 9	30.71	28.63	13.92	58.63	5.28	-17.59	25.66
Sample 10	38.66	35.80	10.92	66.36	-2.01	7.10	5.17
Sample 11	31.88	31.01	9.72	62.52	-7.39	5.59	3.79
Sample 12	40.49	35.21	11.03	65.91	5.43	5.06	10.18
Sample 13	28.16	29.16	12.53	60.52	-13.93	-6.60	16.00

Figure 12. Color Data Table

- Configure:** This command allows you to set various preferences pertaining to the Color Data Table view. Highlight each scale, difference, and index parameter to display, as well as the illuminant/observer combinations to view. The order in which you would like items displayed can be done by selecting the items for display in the order desired. The color scales will be shown first in the order chosen, then the differences, and the indices. The illuminant/observer tabs will also be shown in the order chosen.

The dialog box is titled "ColorData Table Configuration". It contains several sections for configuring the data table view:

- Selected Items(Col Position):** A list of items to be displayed, including "Time (A)", "Pass/Fail (B)", "CIELAB (C,D,E)", "dE* (F)", and "Height (G)". Buttons for "Up", "Down", and "Remove" are provided.
- Scales:** A dropdown menu set to "CIELAB".
- Differences:** A dropdown menu set to "dL*".
- Indices:** A dropdown menu set to "457nm Brightness".
- Additional Information:** A dropdown menu set to "Pass/Fail".
- Auxiliary Variables:** A dropdown menu set to "Height".
- Tolerances:** A checked checkbox.
- Illuminant/Observers:** A list of combinations including A/10, A/2, C/10, C/2, D50/10, D50/2, D55/10, D55/2, D65/10 (highlighted), D65/2, D75/10, D75/2, F02/10, F02/2, F07/10, F07/2, F11/10, and F11/2.
- Data Display Option:** A checkbox for "Display Latest Data First" (unchecked). Below it, radio buttons for "Range" (set to 0) and "Last" (set to 500).
- Data Orientation:** Radio buttons for "Row Major" (selected) and "Column Major".
- Precision:** A spinner box set to 2.
- Font Size:** A spinner box set to 8.
- TimeFormat:** Radio buttons for "12hr" (selected) and "24hr".

Buttons for "OK" and "Cancel" are at the bottom.

Figure 13. Color Data Table Configuration

Also check additional items you would like to display, such as pass/fail and the date of measurement. When the Pass/Fail column is included and tolerances are set, 'Pass' or 'Fail' is indicated for each sample for each illuminant/observer combination. If any one

tolerance parameter (i.e., dL^* or dE CMC) is exceeded under the illuminant/observer combination shown on the tab of interest, the Pass/Fail field reports 'Fail' for the sample as a whole. The parameter(s) that fails is reported in red.

Table 2. Color Data Table Parameters

Scales	Differences	Indices	Additional Info	Auxillary Variables
CIE Lch	dL^*, da^*, db^*, dE^*	457nm Brightness	Pass/Fail	Height
CIE Lab	dL^*, dC^*, dh^*, dE^*	Dominant WL	Lot#	Auxillary Variable 1
HunterLab	dL, da, db, dE, dC	Excitation Purity	Product ID	Auxillary Variable 2
XYZ	dL, dC, dh, dE^* CMC	WI E313	Roll ID	Auxillary Variable 3
Yxy	dL, dC, dh, dE CIE94	WI CIE	Extra ID	Auxillary Variable 4
Rdab	dL, dC, dh, dE DIN99	WI Ganz	Distance	X
RxRyRz	dL^*, da^*, db^*, dE^* 2000	Color Value SUM	Date	Y
	Metamerism Index	Color Value SWL	Event Labels	Z
	dX, dY, dZ	Color Value WSUM	Time	Voltage
	dE, dL FMCII	Tint CIE	Operator ID	Temperature
	$dRedGrn, dYelBlu$ FMCII	Tint E313		Avg. Measurement
	dx, dy	Tint Ganz		
	dR, da, db, dE, dC Rdab	YI		
	dRx, dRy, dRz	Y Brightness		
	555 Shade	YI E313		
	% Strength SUM	Bt		
	% Strength WSUM	Z%		
	ISO Grey Scale	a/b		
	ISO Grey Stain	b/a		
	% Strength SWL	a^*/b^*		
	dEf	b^*/a^*		

- **Tolerances** – check the tolerances box to display.
- **Data Display Option** – select to display the latest data first, the range and the last data.
- **Data Orientation** – choose between column or row orientation
- **Precision** – set the precision in places beyond the decimal place
- **Font** – select the font size
- **Time format** – Choose between 12 or 24 hour format.

Color Plot

The Color Plot displays a representation of color space with the standard as the center point of the plot and the samples plotted on the graph. In the example below, the ' a^* ' of the $L^*a^*b^*$ scale is plotted on the x axis and the ' b^* ' of $L^*a^*b^*$ is plotted on the y axis. The samples in the job are shown on the plot relative to the standard and each other. If tolerances have been set, the tolerance limits will be shown as a red box (for rectangular tolerances) or ellipse (for CMC) around the standard position. Placing the mouse over a particular point causes the sample ID, its pass or fail status, and its color values to be displayed.

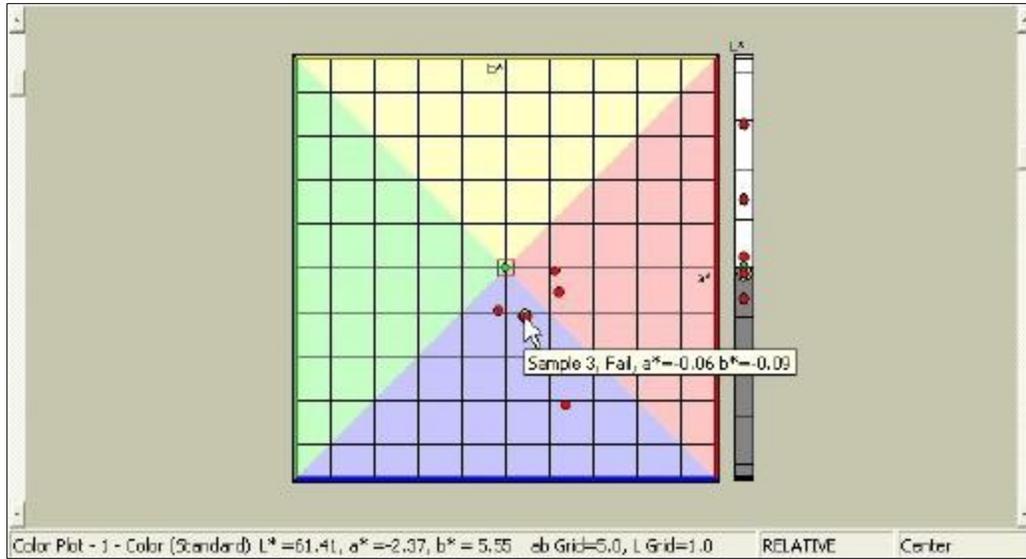


Figure 14. Color Plot Display

- **Configure:** Sets various preferences pertaining to the Color Plot view.

The 'Color Plot Configuration' dialog box contains the following settings:

- Illuminant/Observer:** D65/10
- Display Mode:** Absolute, Relative
- Scale and Tolerance:** Scale: CIELAB; Rectangular, Delta E*, Polar, Elliptical
- Show n Samples:** 6
- Automatic Range
- Hue and Chroma

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

Figure 15. Color Plot Configuration

Table 3. Color Plot Parameters

Rectangular Scales	Elliptical Scale	Illuminant/Obs
CIE Lch	CIE Lch	A/2
CIE Lab	CIE Lab	A/10
HunterLab	HunterLab	C/2
Rdab	Rdab	C/10
		D50/2
		D50/10
		D55/2
		D55/10
		D65/2
		D65/10
		D75/2
		D75/10
		F02/2
		F02/10
		F07/2
		F07/10
		F11/2
		F11/10
		TL84/2
		TL84/10
		ULT30/2
		ULT30/10
		ULT35/2
		ULT35/10

Make your selections for each parameter, including the illuminant, observer, and color scale for display, absolute vs. relative and the number of data points (up to 500) to show.

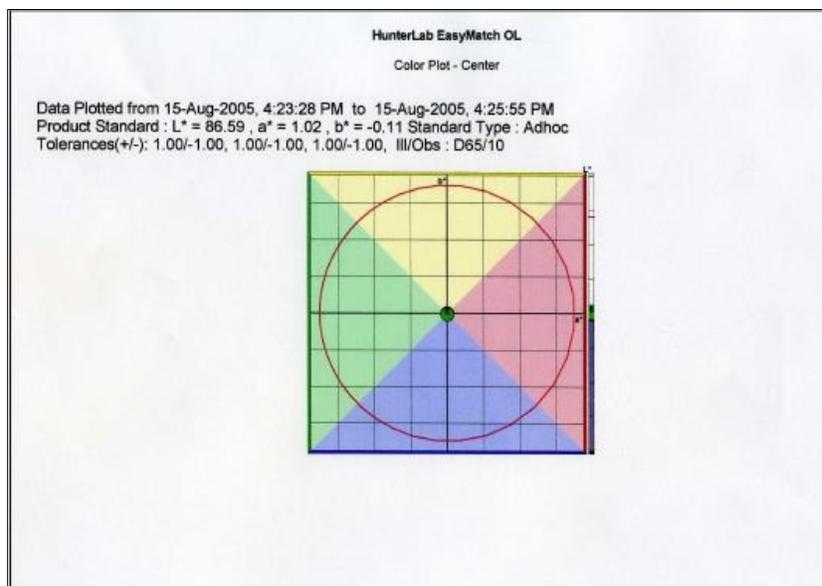


Figure 16. Print Color Plot

Control Chart

The Control Chart allows you to track and chart up to four parameters of a run. These parameters may be obtained from the color measurement system (such as L*, a*, or b*), imported from another computer system through the network (such as temperature or pH), or manually entered. An example of this view is shown below.

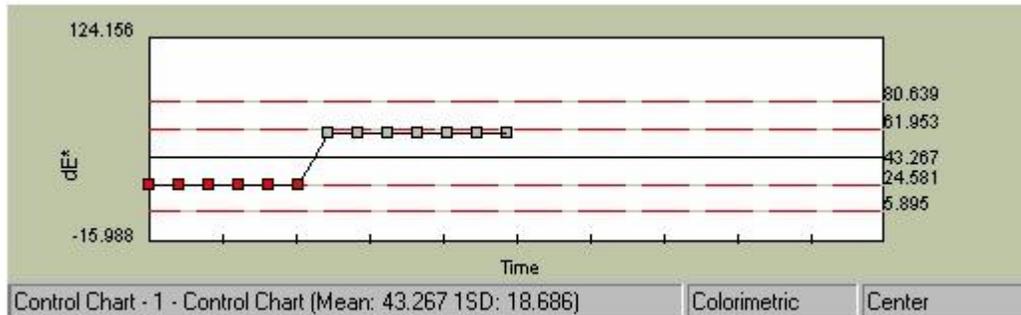


Figure 17. Control Chart

- **Configure:** Sets various preferences pertaining to the Control Chart view.

Configuration

Type
 DDE Colorimetric Data Manual

DDE Details
 X-Axis Label: Time
 Y-Axis Label: L*
 DDE Name: Temperature
 Server Name-Topic Name-Variable Name

X-Axis Label
 Show Actual Time
 Time Format
 12 Hr 24 Hr

Colorimetric Details
 Trace 1 L* Trace 3 L*
 Trace 2 L* Trace 4 L*

Control and Warning Limits
 Calculated User Defined Limits
 Traces: Trace 4
 Standard Deviation: 10.000 Upper Warning Limit: 190.000
 Reference Limit: 100.000 Lower Warning Limit: 120.000
 Autocalculate Reference Limit Standard Deviation: 30.000
 Autocalculate Standard Deviation Reference Limit: 150.000
 1 Standard Deviation 2 Standard Deviations 3 Standard Deviations
 Upper Warning Limit Lower Warning Limit

Illuminant/Observer: D65/10 Enable Offline Mode
 Precision: 3 Measurements Per Display: 20

OK Cancel

Figure 18. Control Chart Configuration

Make your selections for each parameter. Different parameters will be available depending on whether your data type is DDE, Colorimetric Data, or Manual. For DDE,

indicate the label for your parameter of interest (y-axis) and the label for the x-axis, which is the unit of measure from EasyMatch OL ST's run, such as time or length. Also type the DDE name in the format indicated beneath the DDE Name box. For Colorimetric Data, indicate which run parameter(s) (such as L*, a*, or b*) you would like to display and the illuminant/observer combination. You may check Enable Offline Mode to display an unlimited number of measurements (up to the total number in the run) on the Control Chart when the run is complete. For manually-entered data, indicate the label for your parameter of interest (y-axis) and the label for the x-axis, which is the unit of measure from EasyMatch OL ST's run, such as time or length. For all types of data, you may choose to display the time in either the 12-hour (i.e., 1:00 p.m.) or the 24-hour (i.e., 13:00) format and indicate control and warning limits.

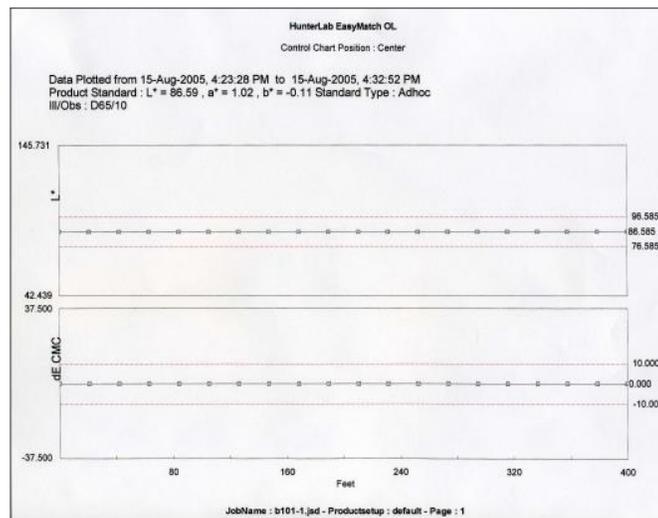


Figure 19. Printing the Control Chart.

Spectral Data Table

The Spectral Data Table displays percent reflectance for each selected measurement at the wavelengths being measured. An example of this view is shown below.

Wavelength (nm)	Sample 35	Sample 36	Sample 37	Sample 38	Sample 39	Sample 40	Sample 41	Sample 42	Sample 43	Sample 44	Sample 45
400	6.31	6.60	6.59	6.59	6.59	6.60	6.59	6.60	6.61	6.61	6.59
410	7.20	7.52	7.52	7.53	7.52	7.54	7.51	7.52	7.54	7.53	7.52
420	7.45	7.78	7.78	7.78	7.78	7.79	7.77	7.78	7.80	7.78	7.78
430	7.36	7.69	7.70	7.70	7.69	7.70	7.69	7.69	7.72	7.70	7.69
440	7.01	7.35	7.36	7.36	7.36	7.36	7.36	7.35	7.39	7.36	7.35
450	6.68	7.01	7.01	7.02	7.01	7.02	7.01	7.01	7.04	7.02	7.01
460	6.34	6.67	6.67	6.68	6.67	6.69	6.67	6.67	6.70	6.68	6.67
470	6.01	6.34	6.34	6.35	6.34	6.35	6.33	6.34	6.37	6.35	6.34
480	5.64	5.97	5.97	5.98	5.97	5.99	5.97	5.97	6.00	5.98	5.97
490	5.46	5.81	5.81	5.82	5.80	5.82	5.80	5.81	5.84	5.82	5.80
500	5.28	5.60	5.60	5.61	5.60	5.61	5.60	5.60	5.63	5.61	5.60
510	4.93	5.24	5.25	5.25	5.24	5.26	5.24	5.25	5.27	5.26	5.24
520	4.61	4.92	4.92	4.93	4.92	4.93	4.91	4.92	4.95	4.93	4.91
530	4.38	4.67	4.68	4.69	4.68	4.69	4.67	4.68	4.70	4.69	4.67
540	4.21	4.49	4.50	4.51	4.50	4.51	4.49	4.50	4.52	4.51	4.49
550	4.09	4.37	4.37	4.38	4.36	4.38	4.36	4.37	4.39	4.38	4.36
560	3.95	4.22	4.23	4.24	4.23	4.24	4.22	4.23	4.25	4.23	4.22

Figure 20. Spectral Data Table

Click on this view to make it active. While this view is active, the following options are available by clicking the right mouse button:

- **Configure:** Sets various preferences pertaining to the Spectral Data Table view. Make

your selections for each parameter, including the wavelength range and digit precision.

Spectral Data Table Configuration

Data Display Option

Range

Last Samples

Reverse Rows and Columns

Use Scientific Notation

Font Size: Digit Precision:

Wavelength Range

Begin

End

Figure 21. Spectral Data Configuration

HunterLab EasyMatch OL (11111)
Spectral Data Table - Center

Wavelength (nm)	400	410	420	430	440	450	460
Sample 2	9.59	33.61	39.99	41.48	19.59	24.37	12.99
Sample 3	36.59	20.61	14.99	17.48	35.59	43.37	23.99
Sample 4	30.59	49.61	28.99	16.48	23.59	38.37	43.99
Sample 5	13.59	37.61	27.99	25.48	25.59	20.37	12.99
Sample 6	38.59	44.61	24.99	39.48	51.59	24.37	34.99
Sample 7	32.59	48.61	25.99	30.48	19.59	30.37	25.99
Sample 8	39.59	26.61	41.99	45.48	49.59	18.37	13.99
Sample 9	14.59	42.61	43.99	51.48	53.59	49.37	11.99
Sample 10	48.59	37.61	46.99	13.48	48.59	43.37	14.99
Sample 11	45.59	28.61	12.99	24.48	40.59	28.37	16.99
Sample 12	12.59	25.61	49.99	53.48	43.59	25.37	12.99
Sample 13	19.59	43.61	19.99	31.48	25.59	53.37	41.99
Sample 14	15.59	35.61	51.99	33.48	38.59	41.37	24.99
Sample 15	34.59	15.61	19.99	52.48	37.59	24.37	45.99
Sample 16	17.59	28.61	11.99	34.48	40.59	12.37	47.99
Sample 17	13.59	47.61	34.99	38.48	38.59	23.37	20.99
Sample 18	31.59	40.61	46.99	19.48	48.59	41.37	39.99

Figure 22. Spectral Data Printout

Spectral Plot

The Spectral Plot shows a plot of wavelength versus reflectance for the entire scanning range of the spectrophotometer.

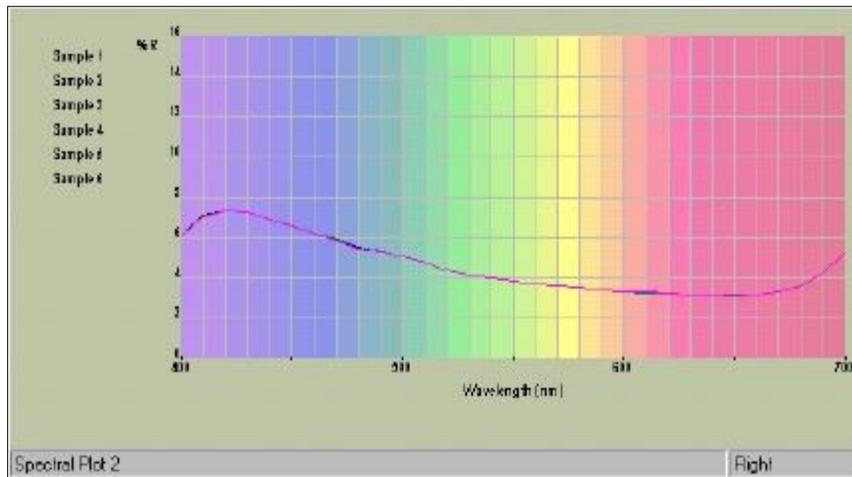
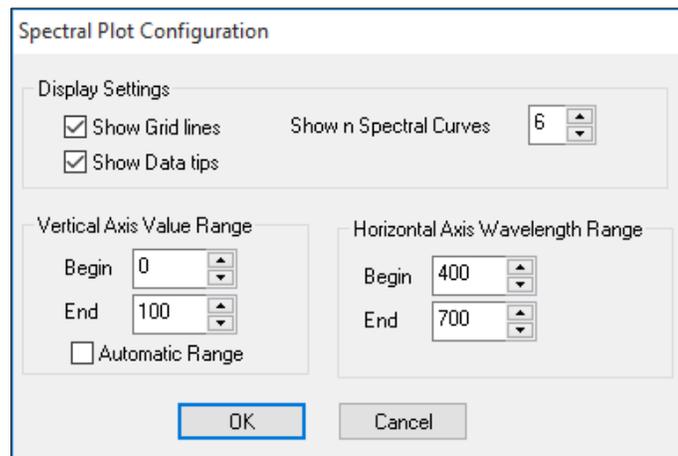


Figure 23. Spectral Plot View

- **Configure:** Sets various preferences pertaining to the Spectral Plot view. Make your selections for each parameter, including the wavelength and vertical axis value ranges.



The figure shows the "Spectral Plot Configuration" dialog box. It has a title bar "Spectral Plot Configuration". Under "Display Settings", there are two checked checkboxes: "Show Grid lines" and "Show Data tips". To the right, "Show n Spectral Curves" is set to 6. Under "Vertical Axis Value Range", "Begin" is 0, "End" is 100, and "Automatic Range" is unchecked. Under "Horizontal Axis Wavelength Range", "Begin" is 400 and "End" is 700. At the bottom, there are "OK" and "Cancel" buttons.

Figure 24. Spectral Plot Configuration

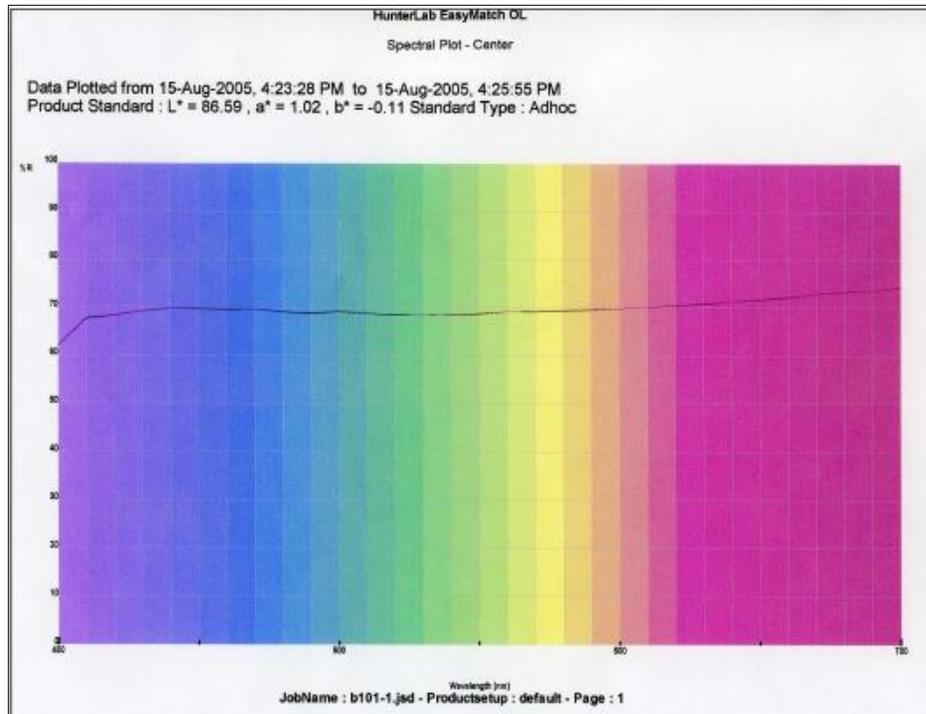


Figure 25. Spectral Plot Printout

Statistics View

The Statistics view allows you to view average, standard deviation, and minimum and maximum information for a run. An example is shown below.

Sl.No	Roll ID	Time Stamp	Avg(L*)	Avg(a*)	Avg(b*)	Avg(Delta E*)	StdDev (L*)	StdDev (a*)	
1	Roll	Tuesday, April 20, 2004	43.27	2.79	4.60	0.00	18.69	2.4	
Total Avg(L*)			43.27	Total StdDev (L*)			18.69		
Total Avg(a*)			2.79	Total StdDev (a*)			2.49		
Total Avg(b*)			4.60	Total StdDev (b*)			15.41		
Total Avg(Delta E*)			0.00	Total StdDev (Delta E*)			0.00		

Statistical View - 1 Center

Figure 26. Statistics View

- **Configure:** Allows you to set various preferences pertaining to the Statistics view. Make your selections for each parameter, including the color scale and index.

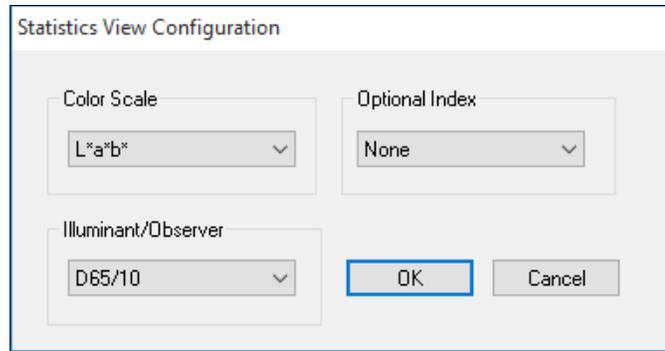


Figure 27. Statistics View Configuration

Table 4. Parameters for Statistics

Color Scales	Indices	Illuminant/Obs
XYZ	None	A/2
HunterLab	Y Total	A/10
Yxy	YI E313	C/2
L*C*H*	Bt	C/10
Rdab	Z%	D50/2
DW EP Y	dE*	D50/10
L*C*H* CMC	dE*CMC	D55/2
FMC2	dC*	D55/10
	dE	D65/2
	YI	D65/10
	WI	D75/2
	dE FMC2	D75/10
		F02/2
		F02/10
		F07/2
		F07/10
		F11/2
		F11/10
		TL84/2
		TL84/10
		ULT30/2
		ULT30/10
		ULT35/2
		ULT35/10

StNo	Ref ID	Time Stamp	Avg(L*)	Avg(a*)	Avg(b*)	AvgDelta E*	StdDev (L*)	StdDev (a*)	StdDev (b*)
1	Ref Tuesday, April 20, 2004	04:27	2.79	4.60	0.00	18.69	2.49	13.41	

Figure 28. Statistics Print Output

Trend Plot

The Trend Plot displays the trend of the data for each run relative to the current standard.

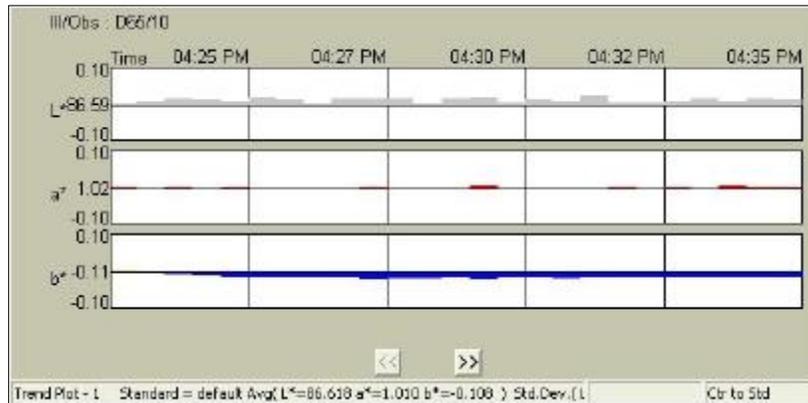


Figure 29. Line Trend Plot

In these examples, 'default' is the name of the standard. Three separate graphs are shown, each with timed readings displayed. The top graph shows the change in lightness/darkness, or L*. The standard is plotted as the center line of this graph. Samples that are lighter than the standard are shown above this line in white, and samples that are darker are shown below the line in black. The L* value can be estimated based on the scale given to the left of the graph.

Click on any sample on the Trend Plot to view the sample's ID, color value, and time of reading.

Click on this view to make it active. While this view is active, the following options are available by clicking the right mouse button:

- **Configure:** This command allows you to set various preferences pertaining to the Trend Plot view. Make your selections for each parameter, including the color scale, fourth trace, and illuminant/observer combination. In the Display area, you may choose number

of measurements per display, autorange, and to display a vertical line, a point or columns. You may also choose to show on the x-axis the actual time, the time elapsed since the beginning of the run, or, if distance-based measurements are being made, the distance elapsed since the beginning of the run.

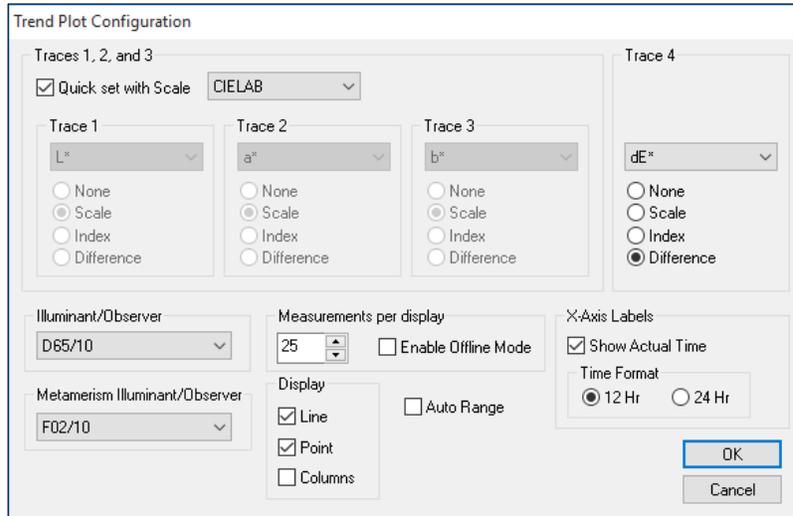


Figure 30. Trend Plot Configuration

Table 5. Parameters for Trend Plot

Quick Set Scales	Differences	Indices	Illuminant/Obs
CIE Lch	dL*,da*,db*, dE*	457nm Brightness	A/2
CIE Lab	dL*,dC*,dh*, dE*	Dominant WL	A/10
HunterLab	dL, da, db, dE, dC	Excitation Purity	C/2
XYZ	dL, dC, dh, dE* CMC	WI E313	C/10
Yxy	dL, dC, dh, dE CIE94	WI CIE	D50/2
Rdab	dL, dC, dh, dE DIN99	WI Ganz	D50/10
RxRyRz	dL*,da*,db*, dE*2000	Color Value SUM	D55/2
	Metamerism Index	Color Value SWL	D55/10
	dX, dY, dZ	Color Value WSUM	D65/2
	dE, dL FMCII	Tint CIE	D65/10
	dRedGrn, dYelBlu FMCII	Tint E313	D75/2
	dx, dy	Tint Ganz	D75/10
	dR, da, db, dE, dC Rdab	YI	F02/2
	dRx, dRy, dRz	Y Brightness	F02/10
	555 Shade	YI E313	F07/2
	% Strength SUM	Bt	F07/10
	% Strength WSUM	Z%	F11/2
	ISO Grey Scale	a/b	F11/10
	ISO Grey Stain	b/a	TL84/2
	% Strength SWL	a*/b*	TL84/10
	dEf	b*/a*	ULT30/2
			ULT30/10
			ULT35/2
			ULT35/10

EasyMatch OL ST

Trend Plot Limits

Current Standard: lesson1

Trace 1	Trace 2	Trace 3	Trace 4
L*	a*	b*	dE*
Tolerance +/- 1.00/1.00	Tolerance +/- 1.00/1.00	Tolerance +/- 1.00/1.00	Tolerance +/- 1.00
Range +/- 2	Range +/- 2	Range +/- 2	Range +/- 3
Control Limit %: 0	Control Limit %: 0	Control Limit %: 0	Control Limit %: 75
Warning Limit %: 0	Warning Limit %: 0	Warning Limit %: 0	Warning Limit %: 0

Enter 0% in any Control or Warning Limit to exclude the line from the trace.
 Control Limits are shown with a red dashed line.
 Warning Limits are shown with a purple dashed line.

Figure 31. Trend Plot Limits

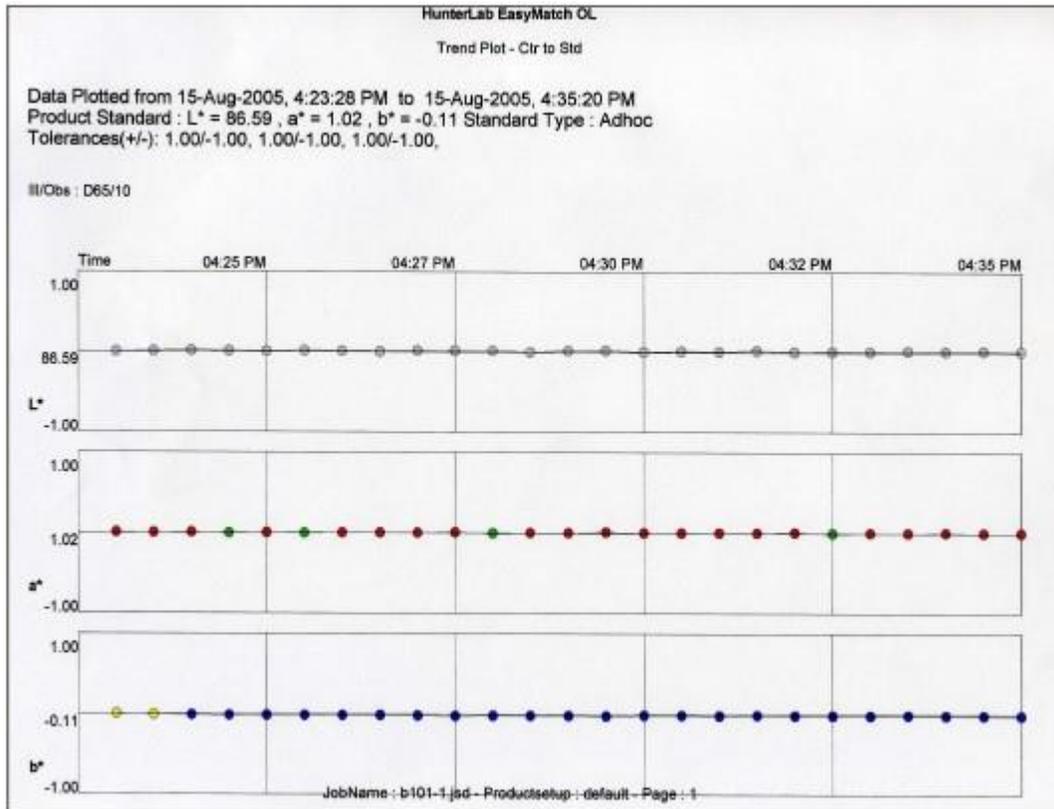


Figure 32. Trend Plot Printout

Database

The database is a permanent repository of all spectral data and ID information for standards and samples. All measurements are automatically saved to this SQL Server or Microsoft Access type database as they are made, provided a database is defined in the System Configuration. When tolerances are assigned to standards, the tolerances can also be saved to the database with the standard. See the **System Menu** for information on configuring the database and the **File Menu** for information on saving data to the database and recalling data from the database.

Note: It is recommended that you back up your database, template, and job files periodically, particularly prior to upgrading or making other major changes to your system computer.

Toolbar Buttons

The toolbar at the top of the screen provides quick access to many functions in EasyMatch OL ST via its buttons. All functions incorporated into the toolbar may also be accessed through the drop-down menus. The buttons on the toolbar are shown below in order from left to right on the toolbar, along with a brief explanation of each button's function.

	Opens a new job based on the default template.
	Yields a dialog box that allows you to open an existing job or template.
	Saves the current job or template.
	Prints the current job to the Windows default printer.
	Provides a preview of how the job will appear when printed.
	Starts a run, opening a new job using the default template.
	Pauses the run.
	Stops the run.
	Starts a new roll after yielding a prompt allowing entry of the lot number, roll IDs, plus product and extra IDs if desired.
	Yields the Run Queue dialog box. (Run Queue must be checked in the System Setup for this button to appear.)
	Opens the HTML help file..
	This button appears only when an alarm condition is activated. Alarms are configured using Preferences in the System Menu

Networking

The networking capabilities of EasyMatch OL ST allow you to operate multiple sensors and instances of the client software using one computer and to use that computer as a server to talk with other client computers.

By now you should have installed both the server and client applications required for networking. If you have not, refer to the EasyMatch OL ST Installation Guide for instructions. Once both applications are installed, your server computer will interact with the support unit to control your sensor or sensors and will restrict active access to each system to one client computer at a time. Your client computers will be allowed to control the instrument and to access the measurement data through a DCOM interaction to the server.

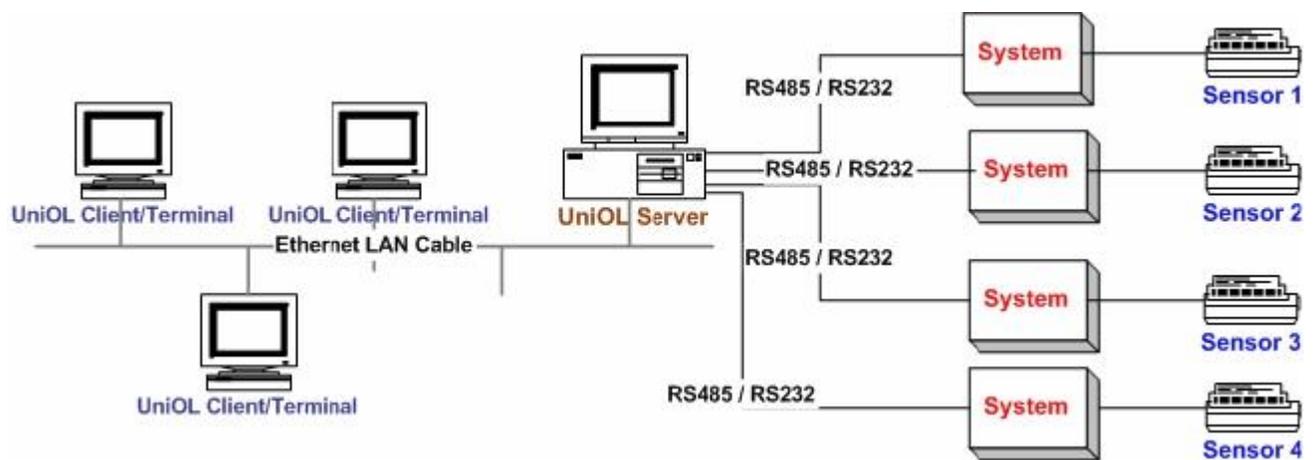


Figure 33. Network Configuration

Lessons

This chapter provides lessons that walk you step-by-step through some common procedures in EasyMatch OL ST. These lessons have you configure screens and product setups and use sample data which may not apply to your particular situation. However, by working through the lessons you should end up with knowledge of how the software operates. Then you can substitute your own samples and displays for the examples.

- Lesson 1 describes creating a product setup.
- Lesson 2 describes setting up a job template, including choosing and configuring data views.
- Lesson 3 describes starting, examining, and ending a run.

Lesson 1: Creating a Product Setup

Suppose you wish to configure a product setup called 'Lesson 1' for displaying basic information about your product. The information you require is listed below.

- CIE L*a*b* and dE* data for the standard and samples using the D65 illuminant and 10° observer for measurements averaged over 15 seconds
- Tolerances associated with the standard.

The steps required for creating this product setup are described below.

1. Select **Product Setup** from the **Run** menu. The following screen will appear.

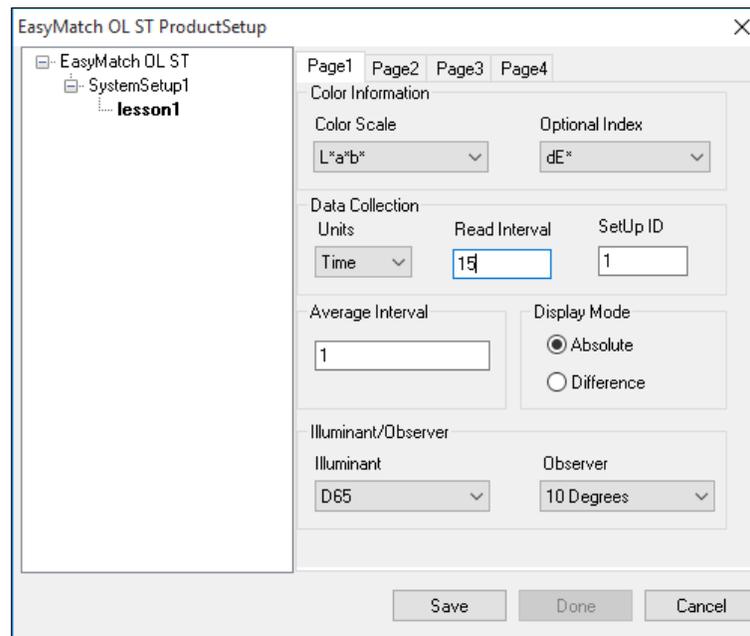


Figure 34. Product Setup

2. Right-click on your system name (Default in the example shown above) and choose **New**

Product Setup from the menu that appears. A new setup is added below any existing setups.

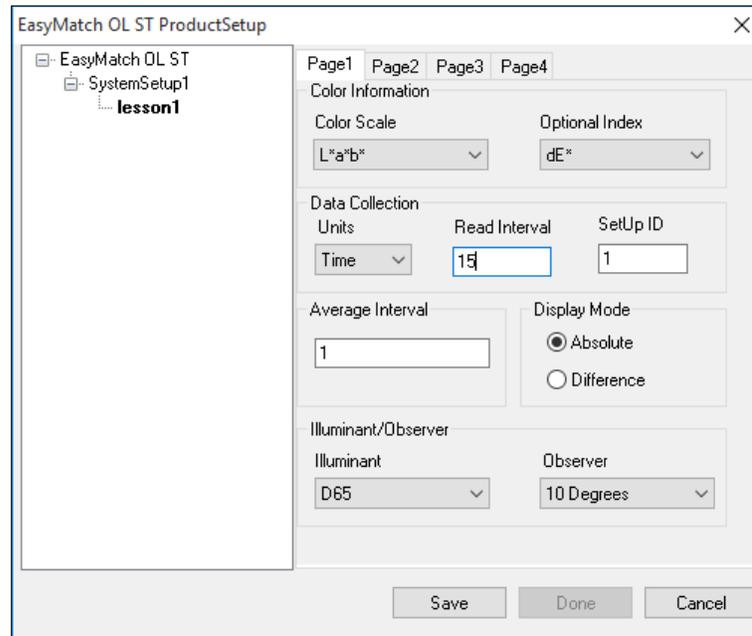


Figure 35. Product Setup1

3. Right click on the added setup and choose **Rename** from the menu that appears. Type 'Lesson 1' and then click the mouse elsewhere on the screen to accept the new setup name.
4. Right click on Lesson 1 and choose **Select** from the menu that appears. The name 'Lesson 1' will now appear in boldface type.
5. On Page 1, choose the following parameters from the drop-down lists:

Color Scale	L*a*b*
Optional Index	dE*
Data Collection Units	Time
Frequency	15 seconds
Secondary Calibration	Every 30 minutes
Illuminant	D65
Observer	10 degrees

6. Click the Page 2 tab. On Page 2, choose Physical from the Standard drop-down list.

EasyMatch OL ST ProductSetup

Page1 Page2 Page3 Page4

Product Standard, Tolerances and Corrections

Physical << Read Standard

AdHoc Averaging

5 Samples CMC Auto-Tolerance

	L*	a*	b*
Product Standard	0	0	0
Offset Correction	0	0	0
Tolerances			
+	1	1	1
-	1	1	1
Warning Limits			
+	0.5	0.5	0.5
-	0.5	0.5	0.5

Save Done Cancel

Figure 36. Page 2, Physical

- Page 2 shows Tolerances, warning limits and an extra parameter that can be dE^* or any other index value desired.
- Click the **Read Standard** button. Place the standard in position and continue. The standard measurement appears under $L^*a^*b^*$.

EasyMatch OL ST ProductSetup

Page1 Page2 Page3 Page4

Product Standard, Tolerances and Corrections

Physical << Read Standard

AdHoc Averaging

5 Samples CMC Auto-Tolerance

	L*	a*	b*
Product Standard	44.340	42.090	22.560
Offset Correction	0.000	0.000	0.000
Tolerances			
+	1	1	1
-	1	1	1
Warning Limits			
+	0.5	0.5	0.5
-	0.5	0.5	0.5

Save Done Cancel

Figure 37. Read Position

- Then, enter the following tolerances:

Parameter	Tolerance
L* Upper	0.5
L* Lower	0.5
a* Upper	0.5
a* Lower	0.5
b* Upper	0.5
b* Lower	0.5
dE* Upper	1
dE* Lower	1

10. For warning limits, enter 75 percent of the tolerance.
11. Click the Page 3 tab. On Page 3, choose the following parameters from the drop-down lists. All other parameters may be left as-is.

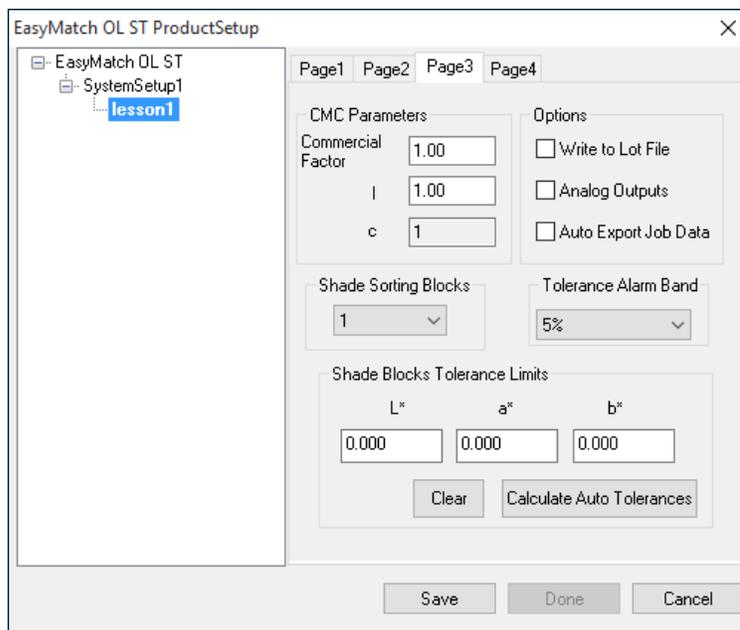


Figure 38. Page 3, Shade Shorting

12. Click the Page 4 tab. Page 4 is available to enter measurement parameters such as belt distance, and sample height.

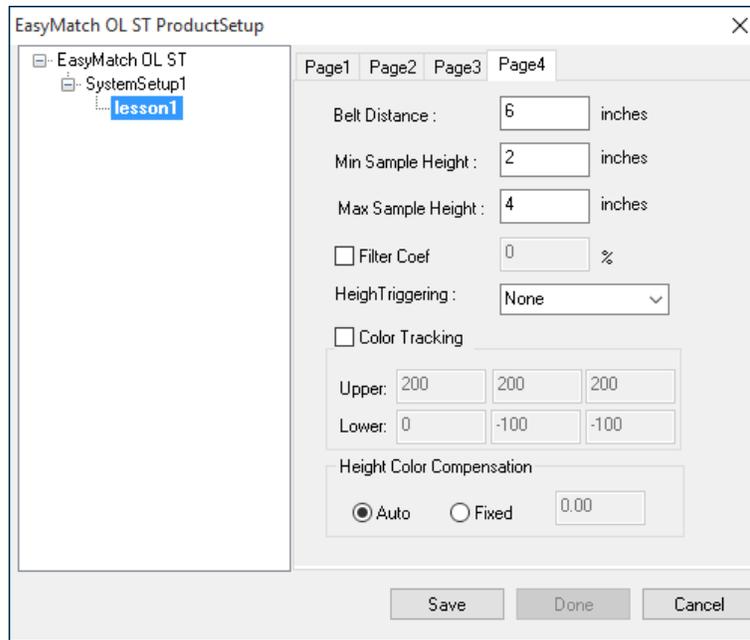


Figure 39. Enter a Title

13. Click **Save** and then **Done**. The Product Setup is sent to the support unit.

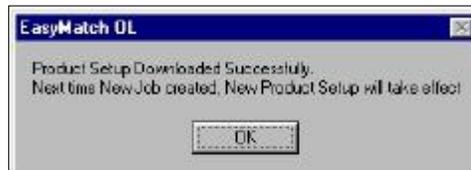


Figure 40. Download Product Setup

14. Select **New Job** from the **File** menu. A new job will open using the Lesson 1 product setup. You will note this name at the top of the Job Tree.



Figure 41. Job Tree for Lesson 1

15. Click Lesson 1 in the Job Tree to view the product setup **parameters**.

Lesson 2: Setting Up a Job Template

Suppose you wish to configure a job template called 'Lesson 2' for displaying data from your run. The information you require is listed below.

- The Job Tree
 - A Color Data Table displaying CIELAB, dE^* , and Y brightness using D65/10 and C/2, and the date and operator for center-to-standard measurements
 - An absolute Color Plot using D65/10 for center measurements
 - A Trend Plot for dL^* , da^* , db^* , and dE^* using D65/10 for center-to-standard measurements.
1. Choose **New Job** from the **File** menu. A new job based on the current default template is opened.
 2. Open the **View** menu and confirm that **Job Tree** is checked. If it is not, select it.
 3. **Right-click** on the view just to the right of the Job Tree and at the top of the screen. Select **Change View** from the menu that appears and then **Color Data Table**. The view will be changed to the Color Data Table.
 4. **Right-click** the Color Data Table display and choose **Configure** from the menu that appears. The Color Data Table Configuration screen is shown.

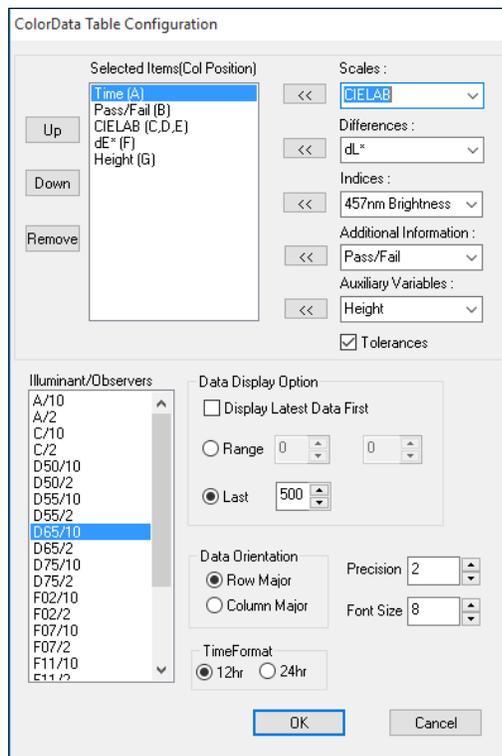


Figure 42. Color Data Table Configuration

5. **Scroll** through the Scales, Illuminant/Observers, Differences, and Indices boxes. Click on any selected (highlighted) items to deselect them. Also deselect (uncheck) any checked items under Additional Information.
6. Click the following items in the Scales, Illuminant/Observers, Differences, and Indices boxes to select them and more:

Scales:	CIELAB
Illuminant/Observers:	D65/10 then C/2
Differences:	dE*
Indices:	Y brightness
Additional Information:	Date and Operator ID
Data Orientation	Row Major
Digit Precision:	2
Font Size:	8

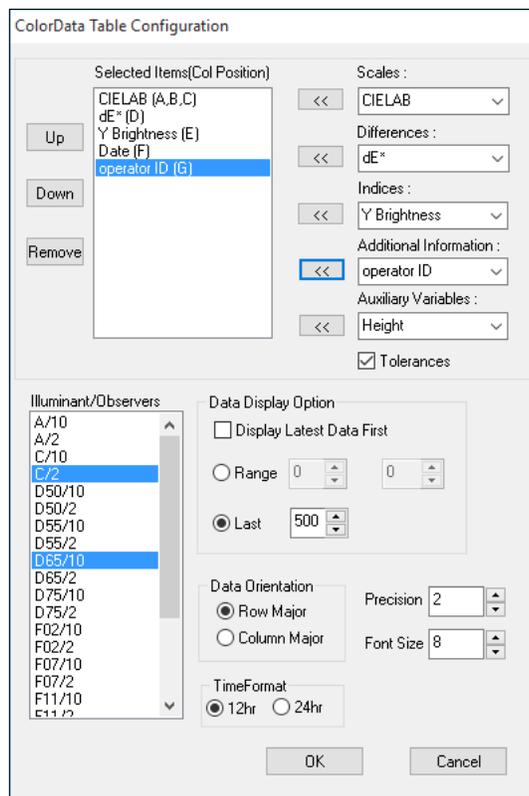


Figure 43. Select Configuration

7. Click **OK** to accept the configuration
8. **Right click** the data view to the right of the Color Data Table at the top of the screen. Select Change View from the menu that appears and then Color Plot. The view will be changed to the Color Plot.
9. **Right click** the Color Plot view and choose Configure from the menu that appears. The Color Plot Configuration screen is shown.

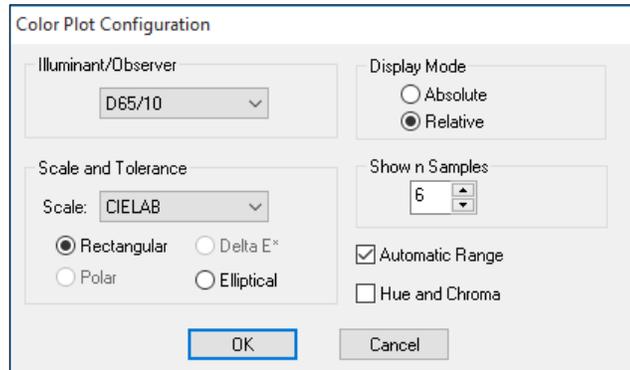


Figure 44. Color Plot Configuration

10. Make the following selections on the Color Plot Configuration screen:

- Illuminant/Observer: D65/10
- Display Mode: Absolute
- Scales and Tolerances: CIELAB, Rectangular
- Show Number Of Samples: 20
- Automatic Range: Checked
- Hue and Chroma: Unchecked

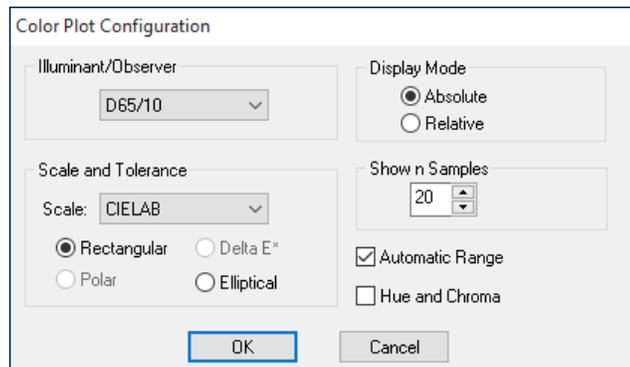


Figure 45. Color Plot Configuration2

11. Click **OK** to accept the configuration.
12. **Right click** the Color Plot and select (check) both Show Background and Show Legend.
13. **Right click** the data view across the bottom of the screen. Select Change View and then Trend Plot from the menu that appears. The view will be changed to the Trend Plot.
14. **Right click** the Trend Plot and select **Configure**. The Trend Plot Configuration Screen appears.

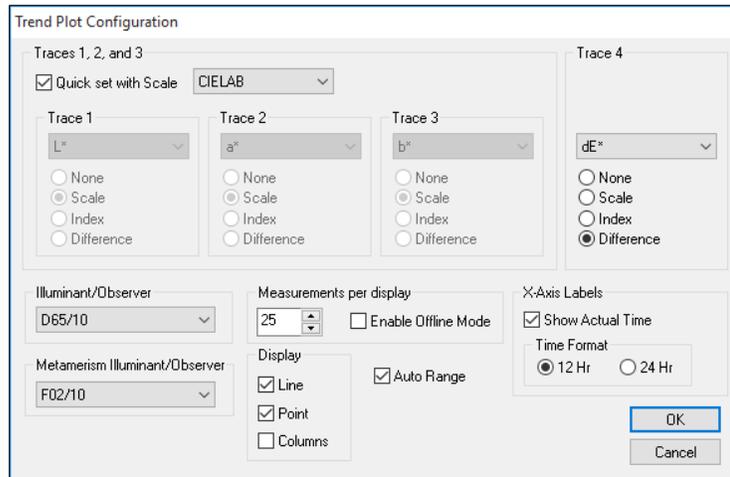


Figure 46. Trend Plot Configuration

15. Make the following selections on the Trend Plot Configuration screen:

Quick set with Scale:	Unchecked
Trace 1:	Difference, dL*
Trace 2:	Difference, da*
Trace 3:	Difference, db*
Trace 4:	Difference, dE*
Illuminant/Observer:	D65/10
Measurements per display:	25
Illuminant/Observer:	F02/10
Display:	Columns, Auto Range
X-Axis Labels:	Show Actual Time checked, 12 Hr Time Format

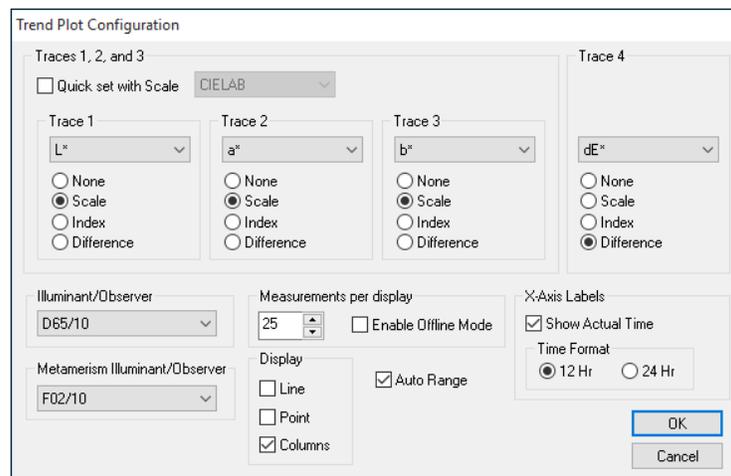


Figure 47. Trend Plot Configuration2

16. Click **OK** to accept the configuration.

17. **Right click** the Trend Plot view and select **Limits**. The Trend Plot Limits screen appears.

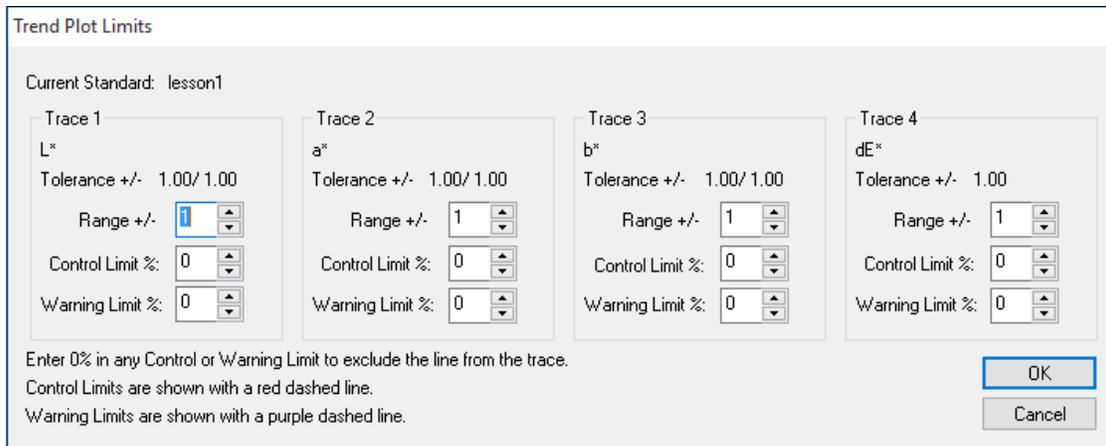


Figure 48. Setting Trend Plot Limits

18. On the Trend Plot Limits screen, make the following selections:

- Trace 1 Range: 2
- Trace 2 Range: 2
- Trace 3 Range: 2
- Trace 4 Range: 3
- Trace 4 Control Limit: 75%

19. Click **OK** to accept the limits.

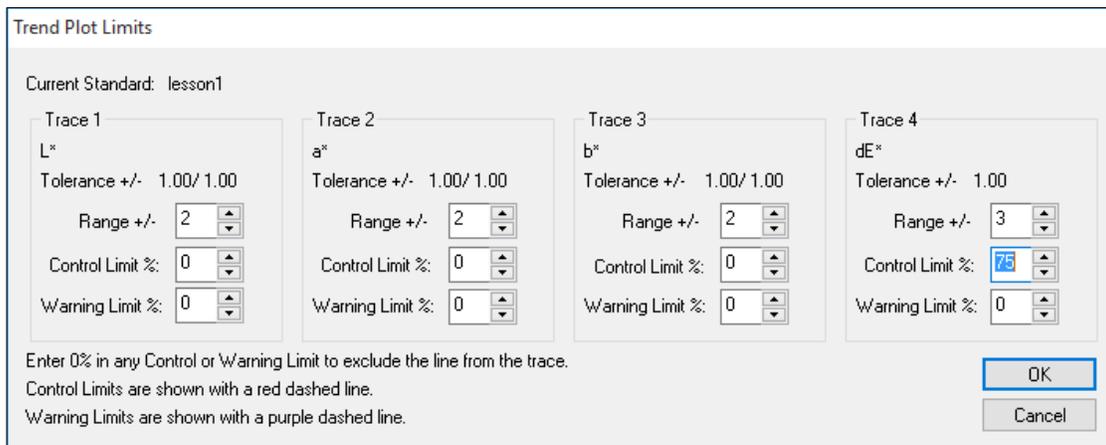


Figure 49. Continued Selection of Trend Plot Limits

20. If any extra displays are shown on your screen, **right click** on each one and choose Delete View from the menu that appears.

21. Back on the template screen, select **File Menu > Save Job Template As** from the File menu. Choose to name the template 'Lesson 2' and save it in the Default Templates subfolder to EasyMatch OL ST Client.

22. Move your mouse over the right edge of the Job Tree until a double-headed arrow appears.

23. Click and drag the mouse to the left to decrease the size of the Job Tree slightly, then release the mouse button.

24. Move the side, top, and bottom edges of the other displays until each is the desired size for maximum visibility.
25. Select **File Menu > Save Job Template**. The template will be saved again.
26. **Close** the open job.
27. Choose **System Menu > Preferences**. The Preferences screen appears.
28. Select Lesson 2 for the Default Template and click **OK**.
29. As prompted, close, then reopen EasyMatch OL ST.

Lesson 3: Starting, Examining, and Ending a Run

1. Click the **Start Run** button on the toolbar.
2. A new job opens based on the Lesson 2 template. Choose to name the job 'Lesson 3.'
3. Allow the sensor to take measurements for a few minutes.
4. Observe your EasyMatch OL ST screen as it fills with data. Note the parameters you chose to display and how they appear in the various view.

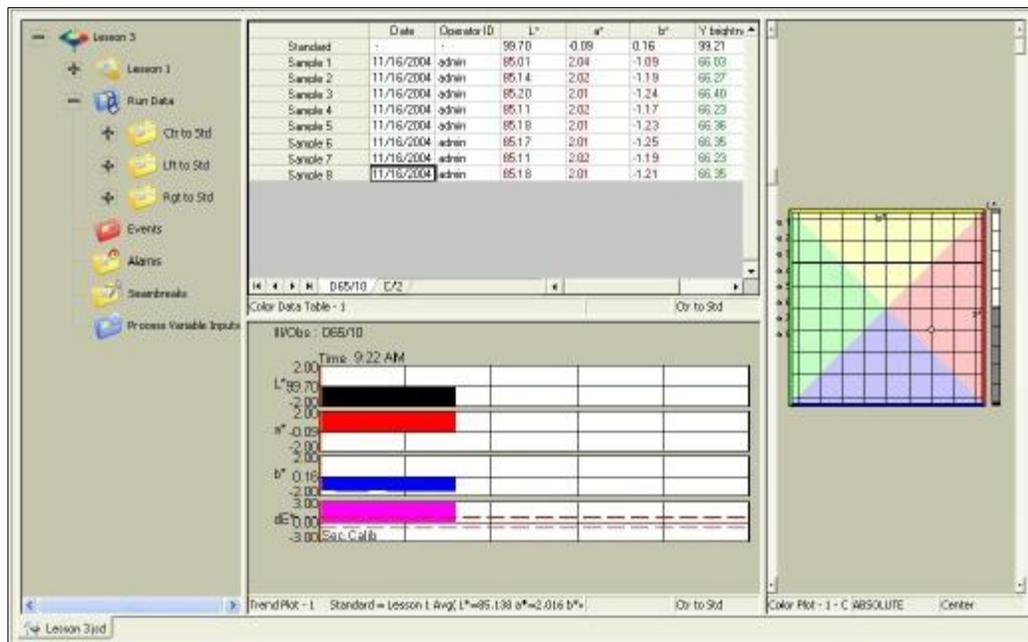


Figure 50. Observing a Run

5. Click the **Stop Run** button on the toolbar to end the run.

The File Menu

From the **File Menu** you can open, save, and close jobs, as well as control the printer, e-mail jobs, and exit EasyMatch OL ST. The functions available through the **File Menu** are described in the remainder of this chapter.

File/New Job

Select **File Menu > New Job** command opens a new job based on the default template that was chosen in **System > Preferences**. This new job is presented on a new, untitled tab as shown below. The keyboard shortcut for this command is **Ctrl + N**.

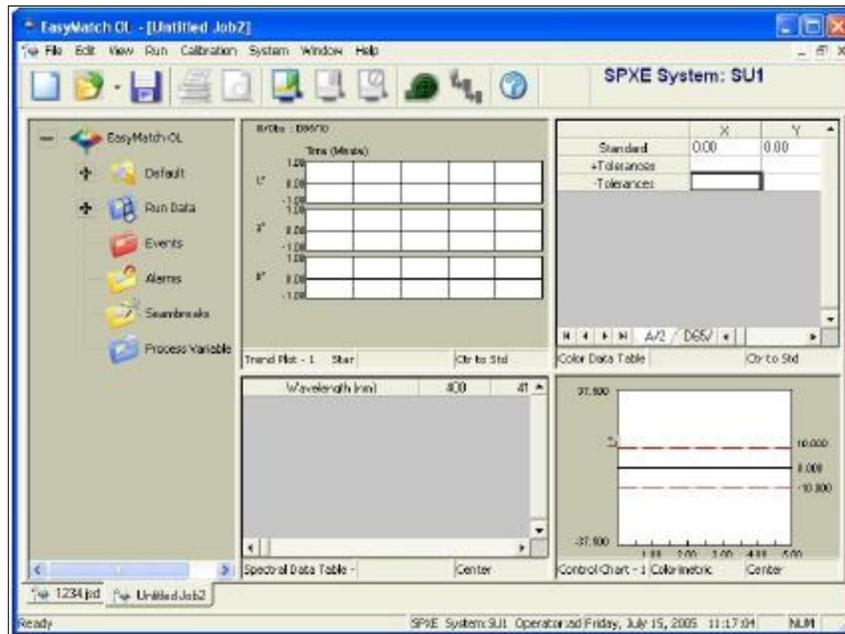


Figure 51. New Untitled Job

File/Open Job

The **File Menu > Open Job** command allows you to open a pre-existing job that has been saved to your computer or network. The keyboard shortcut for this command is **Ctrl + O**.

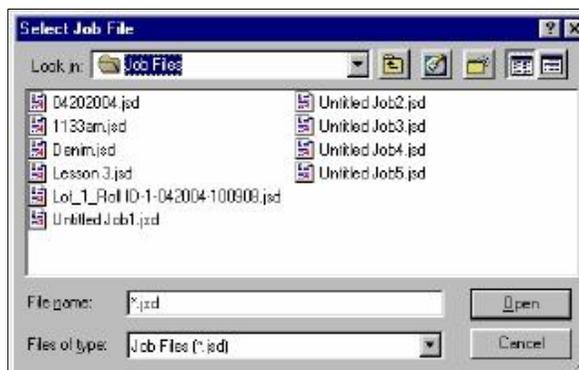


Figure 52. Open Job File

When the Select Job File dialog box appears, locate the job you wish to open from any drive or folder accessible by your computer. Highlight the job name and then click **Open**. The job is opened into EasyMatch OL ST.

File/Open Job Template

The **File > Open Job Template** command allows you to select a template to open and modify or use as the basis of a new job.

When the Select Job Template File dialog box appears, locate the template you wish to open from any drive or folder accessible by your computer. Highlight the template name and then click **Open**. The template is opened into EasyMatch OL ST.

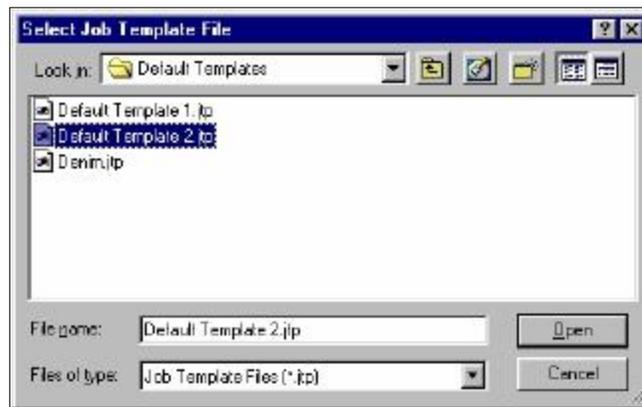
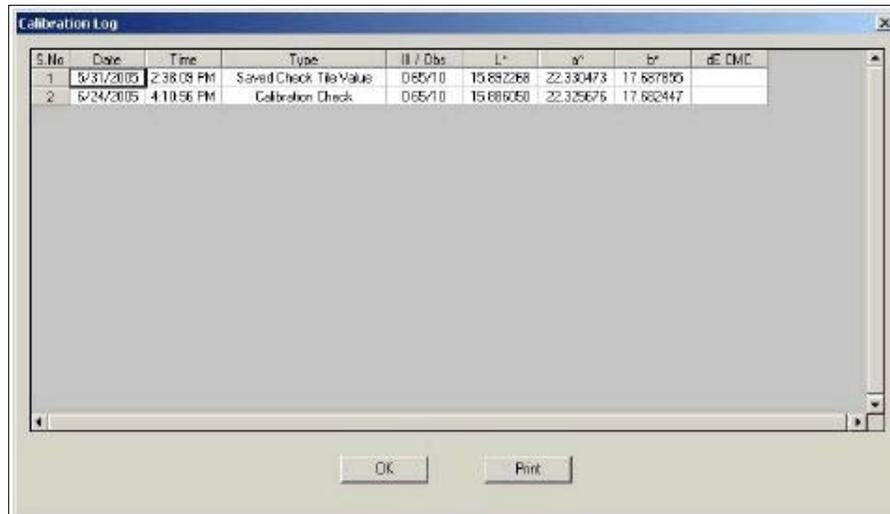


Figure 53. Select Job Template

File/Open Calibration File

The **File > Open Calibration File** command causes the calibration log for the current system to be displayed. Rows of the 'Saved Check Tile Value' type track the use of the **Read and Save Check Tile** command in the **Calibration Menu**. Rows of the 'Calibration Check' type track the use of the **Secondary Calibration and Check Tile** command in the **Calibration** menu.



S.No	Date	Time	Type	II / Obs	L+	a'	br	dE DMC
1	6/31/2005	2:38:09 PM	Saved Check Tile Value	0.65/10	15.682268	22.330473	17.687805	
2	6/24/2005	4:10:56 PM	Calibration Check	0.65/10	15.686250	22.325676	17.682447	

Figure 54. Open Calibration Log

File/Open Job From Database

The **File Menu > Open Job From Database** command (which is only available if you configured a database using **System > System Configuration > Data Storage**) allows you to open any job that was previously saved to the database. A search feature is available by which you can search for specific jobs based on the date they were created.



Figure 55. Open Job from Database

Initially, all the jobs that were saved to the database are shown. You may highlight any job and click **Open**. If you wish to narrow down the jobs shown by date, click **Advanced**.

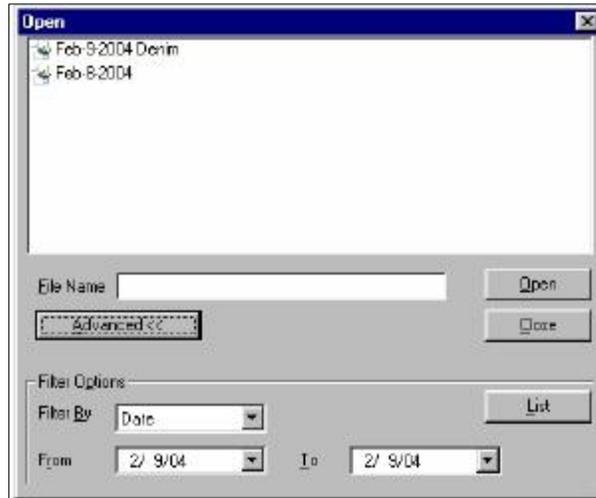


Figure 56. Filter by Date

You may click in either of the date areas to choose the desired start or end date from a calendar. Then click **List** to display only the list of jobs within the date range.

File/Delete Job From Database

The **File Menu > Delete Job From Database** command (which is only available if you configured a database using **System/System Configuration/Data Storage**) allows you to delete any job that was previously saved to the database. A search feature is available by which you can search for specific jobs based on the date they were created.



Figure 57. Search based on Date

Initially, all the jobs that were saved to the database are shown. You may highlight any job and click **Delete** to delete it. If you wish to narrow down the jobs shown by date, click **Advanced**.

You may click in either of the date areas to desired start or end date from a calendar. Then click **List** to display only the list of jobs within the date range.

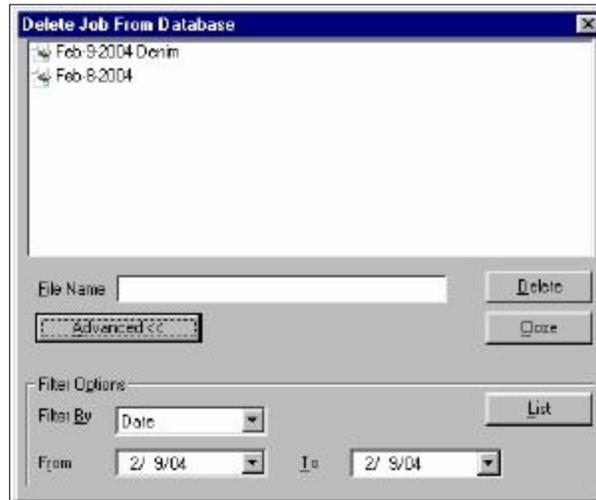


Figure 58. Delete Job from Database

File/Save Job

The **File > Save Job** command saves the current job, including its measurements, screen configuration, print out setup, tolerances, and naming conventions. If the job has been saved previously, it will automatically be saved under the same name. Otherwise, you will be prompted to enter a name. The keyboard shortcut for this command is **Ctrl + S**.

You will be automatically prompted to save the job at the beginning and end of a run, as well as when EasyMatch OL ST is exited.

File/Save Job As

The **File > Save Job As** command allows you to save the current job under a new name or to name a previously untitled job. The complete job, including its measurements, screen configuration, print out setup, tolerances, and naming conventions, is saved.

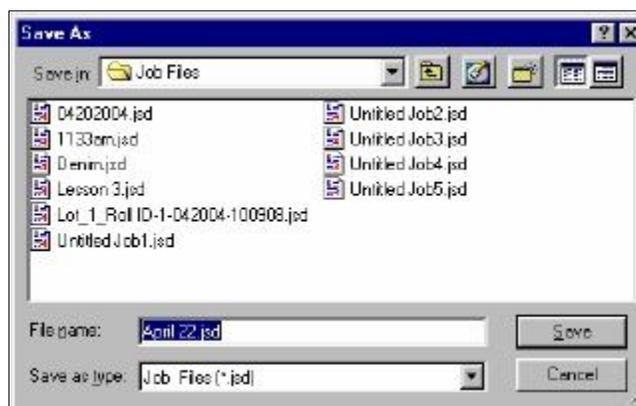


Figure 59. Save Job As

When the Save As dialog box appears, locate the drive and folder where you wish to save the job (any that are accessible by your computer). Type the desired job name into the File name box and

then click **Save**. (Long file names and spaces are acceptable.) The job is saved.

File/Save Job Template

The **File Menu > Save Job Template** command saves the screen configuration of the current job as a new template, which you may name.

When the Save Job Template File dialog box appears, locate the drive and folder where you wish to save the template (any that are accessible by your computer). Type the desired name into the File name box and then click **Save**. (Long file names and spaces are acceptable.) The template is saved.

File/Save Job Template As

The **File > Save Job Template As** command allows you to save the job template currently in use under a new name.



Figure 60. Save Job Template As

When the Save Job Template File As dialog box appears, locate the drive and folder where you wish to save the template (any that are accessible by your computer). Type the desired template name into the File name box and then click **Save**. (Long file names and spaces are acceptable.) The template is saved using the new name.

Note: You may select the template you wish to use by default using the **Preferences** command in the **System** menu.

File/Save Job to Database

The **File > Save Job to Database** command (which is only available if you configured a database using **System/System Configuration/Data Storage**) saves the current job to the database. In the Save As dialog box, you may indicate a file name for the job and then click **Save** to save the job to the database.



Figure 61. Save Job to Database

File/Close Job

The **File > Close Job** command saves the current job using its pre-established name and then closes the job. If the job is untitled, it prompts for a job name and then saves the job using its new name before closing the job.

File/Convert

The **File > Convert** command allows you to convert MultiSensor Software product setups and archives for use in EasyMatch OL ST.

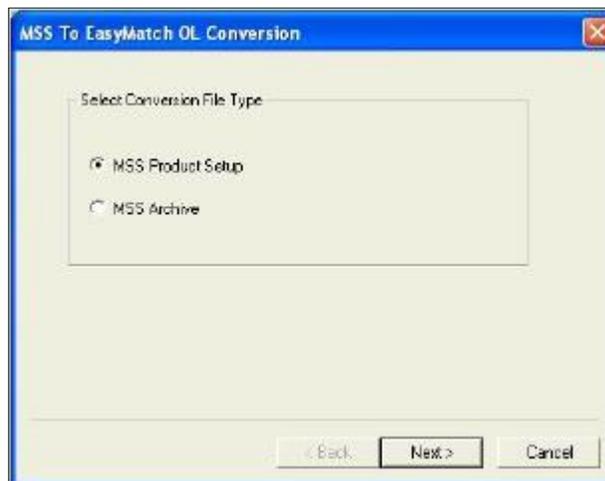


Figure 62. Convert from MSS

Indicate whether you wish to convert product setups or archives and click **Next** to continue to the next screen.



Figure 63. Select Files to Convert

Click **Add Files** to locate and indicate the files you wish to convert. Click **Next** once all desired setups are shown in the Select Files to Convert box. The file(s) will be converted and the new files placed in the same folder where the MultiSensor product setup was stored. Click **Finish** to close the conversion box.

File/Export

Select this function to export the current Job or a saved job to an Excel or ASCII format.

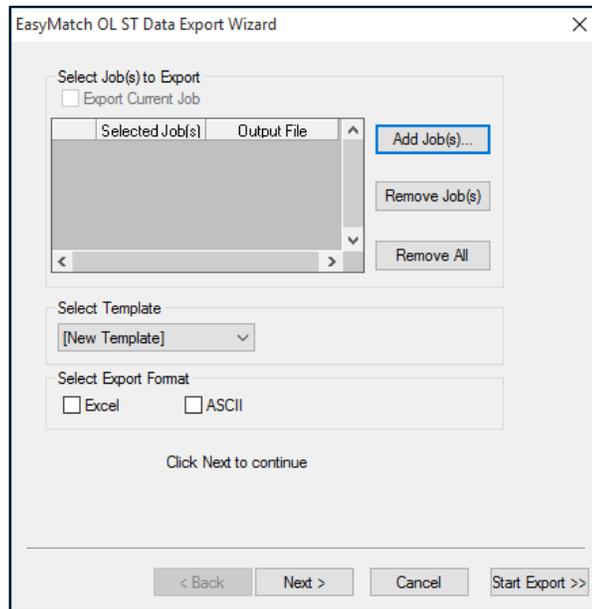


Figure 64. File Export

File/Disable Auto Export Job Data

This function permits the disabling of the AutoExport capability. A check is displayed on the File menu to indicate

File/History

The **History** command in the **File** menu allows you to maintain and view the history of your EasyMatch OL ST system and its runs. Two subcommands are available and are described below.

Generate History Details

Job histories are not maintained until after you check 'Maintain Job History' in the **Preferences** available through the **System** menu. The **Generate History Details** command allows you to add to your history runs that were completed before the feature was turned on. When it is selected the following screen appears:

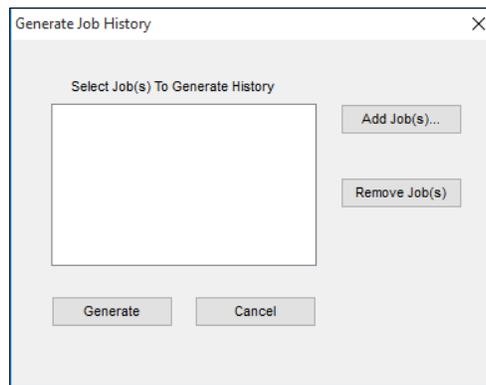


Figure 65. Generate Job History

Click **Add Job(s)** to select a job or jobs for which you would like to generate a history. The following screen appears on which you can select the job(s).

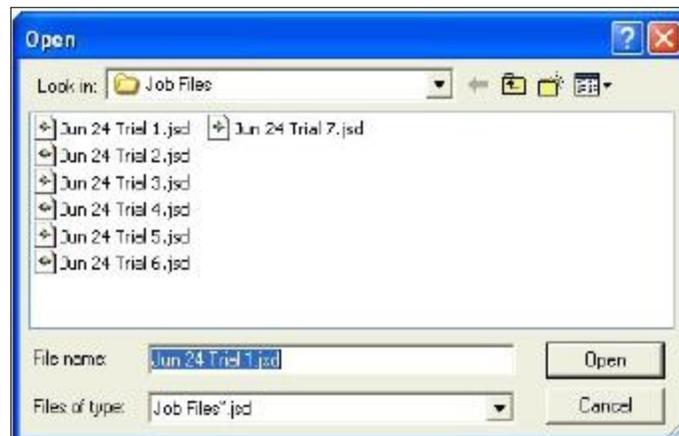


Figure 66. Add Job to History

Once the jobs are selected and you click **OK**, the jobs are added to the list.

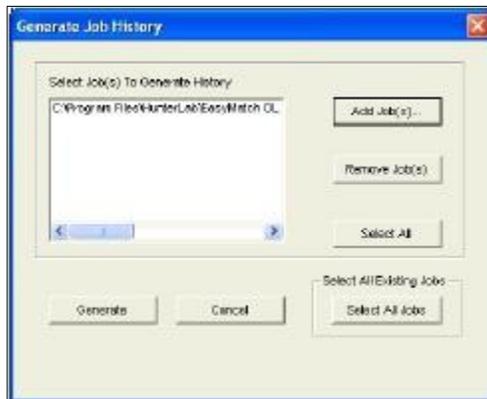


Figure 67. Generate Job History

Highlight the jobs for which you wish to generate a history in the list, then click the **Generate** button. The history is created.



Figure 68. History Generation Completed

View History

When the **View History** command is selected, the EasyMatch OL ST Job History screen appears, listing all runs/jobs that have been stored to the history, either automatically due to the System **Preferences** or manually using the **Generate History Details** command.

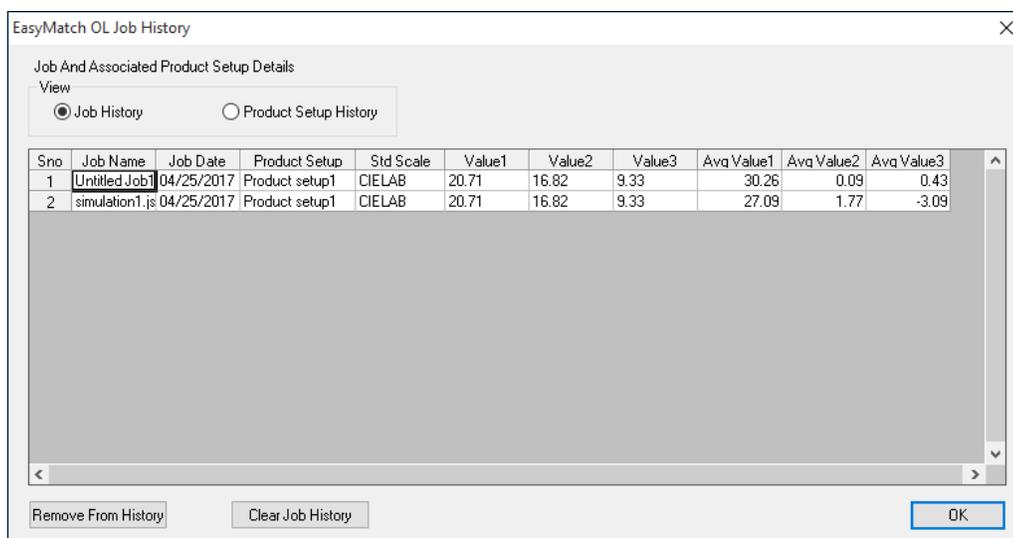


Figure 69. View History

The table may be sorted by clicking on any of the column headers to sort based on that parameter. Values 1 through 3 display the product standard color values used during the run and Avg Value 1-3 display the average color scale values for the run. The table may describe

data for jobs as shown above or for product setups as shown below. For product setups, the average values reported are for the jobs selected for history generation that have been processed using each setup. The total number of jobs for which this average is calculated is displayed in the # of Jobs column.

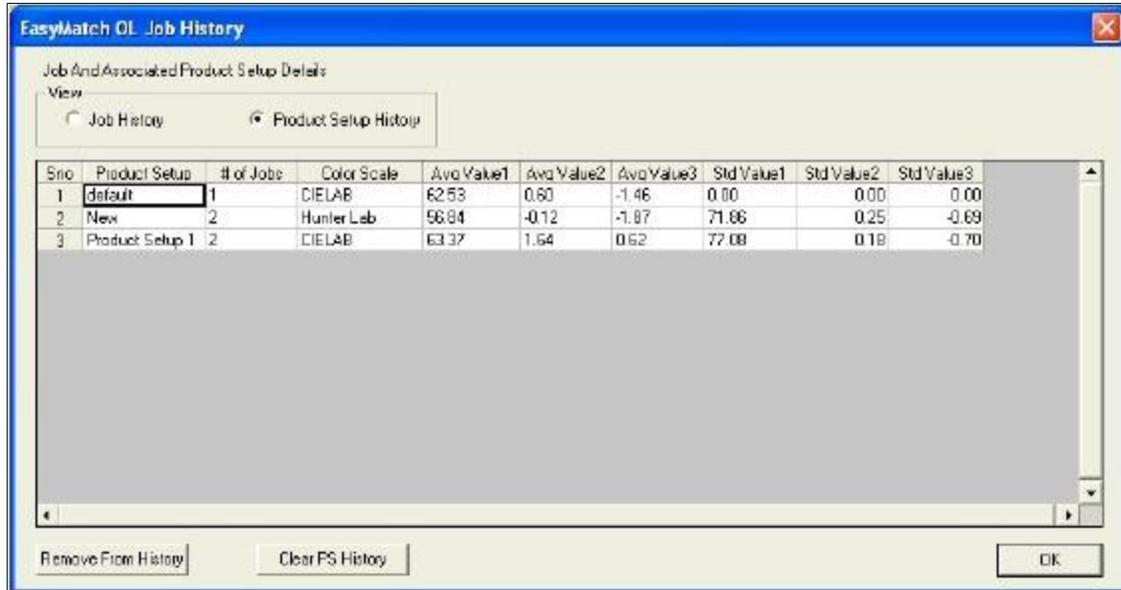


Figure 70. Clear Job from History

Jobs or product setups may be removed from the history by highlighting them and clicking **Remove From History**. All jobs or product setups may be cleared from the history by clicking the **Clear History** button.

File/Print Out Setup

The **File Menu > Print Out Setup** command allows you to configure the headers and footers that will be applied to all of your printouts of this job, as well as to set up a print job if you wish to use that feature. You may configure a different print out setup for each job.

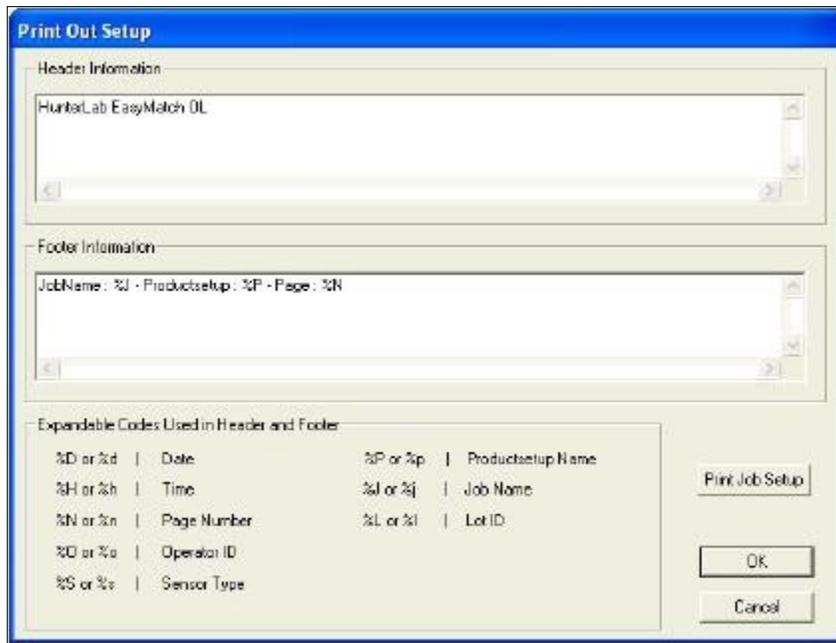


Figure 71. File Print Setup

You may type any information in the Header Information and Footer Information boxes that you wish to have displayed on every page of your printouts. Type any of the codes listed at the bottom of the screen in order to have that information automatically inserted. For example, type '%t' to have the time of printing shown on the printout. Click **Print Job Setup** to configure a print job, which allows you to automatically print a job report at the end of a roll or run.

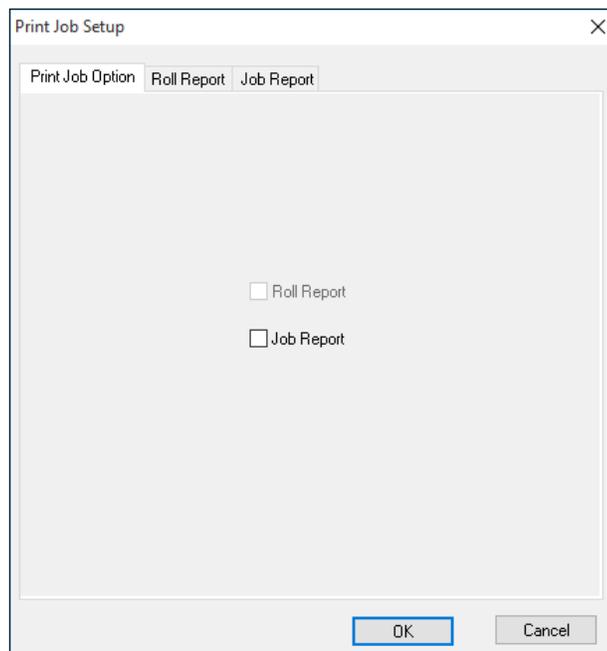


Figure 72. Printout Setup

On the **Print Job Option** tab, check the appropriate box(es) to indicate a job reports.

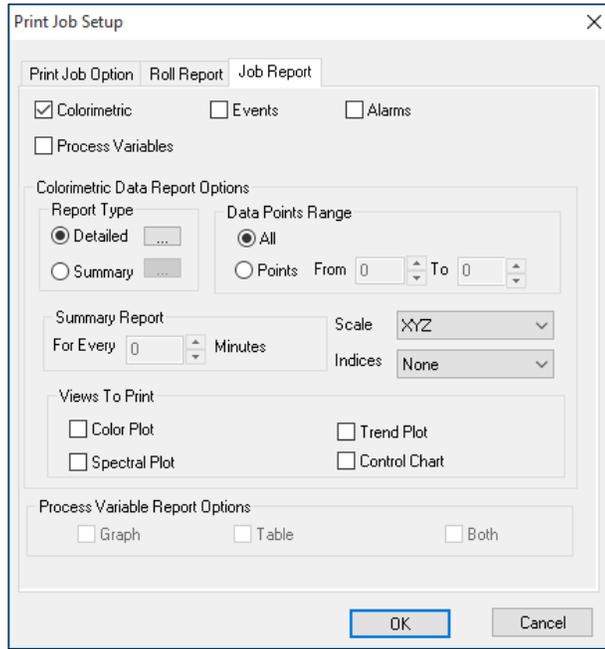


Figure 73. Job Report

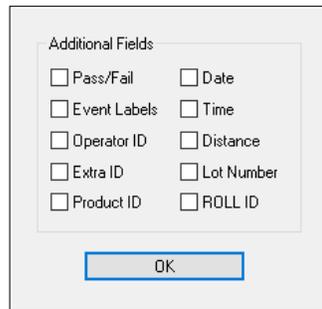


Figure 74. Additional Fields



Figure 75. Summary

On the Job Report tab (which will only be available if you checked Job Report on the Print Job Option tab), indicate the information you would like to have included in your print job for jobs.

On either tab, you may click the ‘... ’ button next to either Detailed or Summary to add fields to the detailed or summary report type. Click the ‘... ’ button next to Trend Plot to configure the limits for the printed Trend Plot. If the system is a traversing system, limits may be specified for the left, center, and right positions.

If you configure the print job as desired and then save it with the default template, the configured report(s) will be printed automatically at the end of each run.

File/Print Preview Job

The **File > Print Preview Job** command allows you to view your configured print job on-screen as it will appear when printed. This command will not be available until after you have made selections on the Print Job Setup screen shown in the previous section.

File/Print Job

The **File > Print Job** command initiates printing of the print job that was configured using the **Print Out Setup** command. This command will not be available until after you have made selections on the Print Job Setup screen shown in the Print Out Setup section. The job is printed to the Windows default printer. The keyboard shortcut for this command is **Ctrl + P**.

File/Printer Setup

The **File > Printer Setup** command causes the Windows Print Setup dialog box to be displayed so you can configure your printer parameters without printing anything. Click **OK** when your configuration is complete.

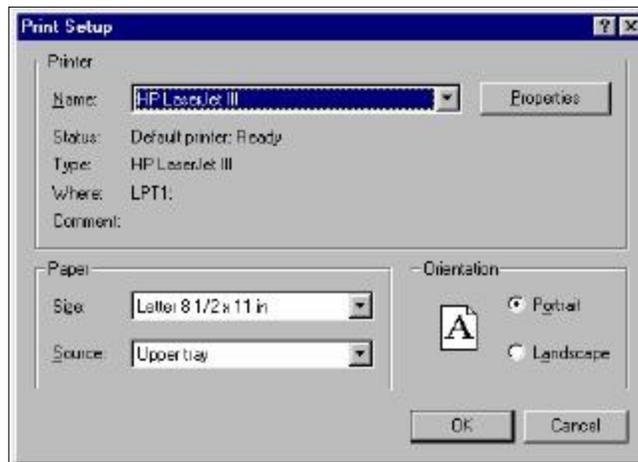


Figure 76. Print Setup

File/E-Mail This Job

The **File > E-Mail This Job** command opens a new e-mail and attaches the current job to that e-mail. This command appears in the File menu only if an e-mail program is installed and available on your computer. Compose and send your e-mail as you normally would using your e-mail program.

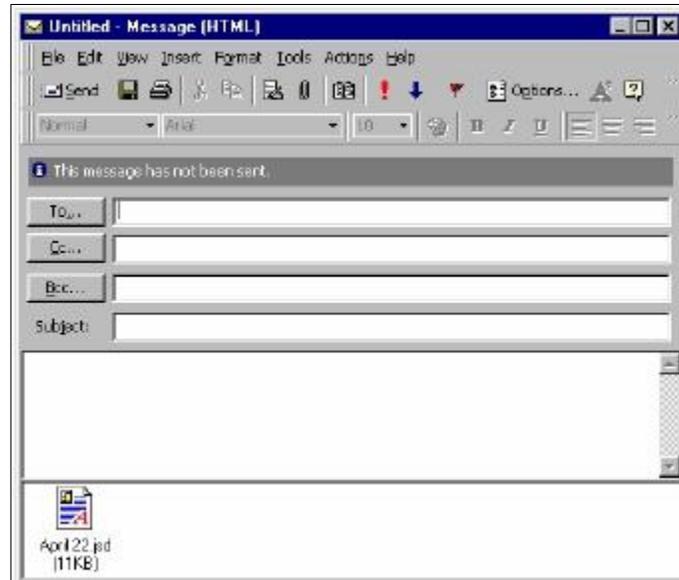


Figure 77. Attach a Job to an Email

File/Most Recently Opened Jobs

The most recently opened jobs area of the **File Menu** lists the four most recently opened jobs. You may select the name of any of these jobs to open it quickly and easily.

File/Log Off

The **File > Log Off** command logs the current user out of EasyMatch OL ST and returns to the EasyMatch OL ST splash screen so that the next user may log on. If the current job has not yet been saved, you will be prompted to save it before log off occurs.



Figure 78. Confirmation of Log Off

Note: User accounts are configured in System/System Configuration//User Manager. If a run is in progress, this command becomes Change User, which allows one user to log off and another to log on without interrupting the run.

File/Exit

The **File > Exit** command allows you exit EasyMatch OL ST. If the current job has not yet been saved, you will be prompted to save it before exit occurs.

The Edit Menu

From the **Edit Menu** you can cut or copy the samples and standards highlighted in the Job Tree to the Windows clipboard. Likewise, you can paste measurements from the Windows clipboard into the job. The functions available through this menu are described in the remainder of this chapter.

Edit/Cut

Select **Edit > Cut** to highlight the measurement in the Job Tree for removal and upload to the Windows clipboard. The measurement can then be pasted to the bottom of a branch in this job's Job Tree, if desired. The keyboard shortcut for this command is **Ctrl + X**.

Note: *If you cut measurement(s) and then don't paste them elsewhere, they will be permanently deleted.*

Edit/Copy

The **Copy** command in the **Edit Menu** allows the measurement highlighted in the Job Tree to be copied to the Windows clipboard. The measurement can then be pasted to the bottom of a branch in this job's Job Tree, if desired. The keyboard shortcut for this command is **Ctrl + C**.

Edit/Paste

The **Paste** command in the **Edit Menu** allows you to paste a measurement from this job at the bottom of a Job Tree branch in this job. Before you select **Paste**, select the Job Tree branch where you would like to place the measurement. Then, when you select **Paste**, the measurement from the clipboard is placed at the bottom of the branch. The keyboard shortcut for this command is **Ctrl + V**.

The View Menu

The View Menu allows you to turn on or off display of the toolbar, status bar, and Job Tree on your EasyMatch OL ST screen. It also allows you to configure each of the data views contained in the current job. The functions available through this menu are described in the remainder of this chapter.

View > Toolbar

Select **View > Toolbar** command to choose whether or not to display the toolbar beneath the menu bar at the top of your EasyMatch OL ST screen. When a check appears next to **Toolbar**, the toolbar is displayed. When no check appears, the toolbar is not displayed.

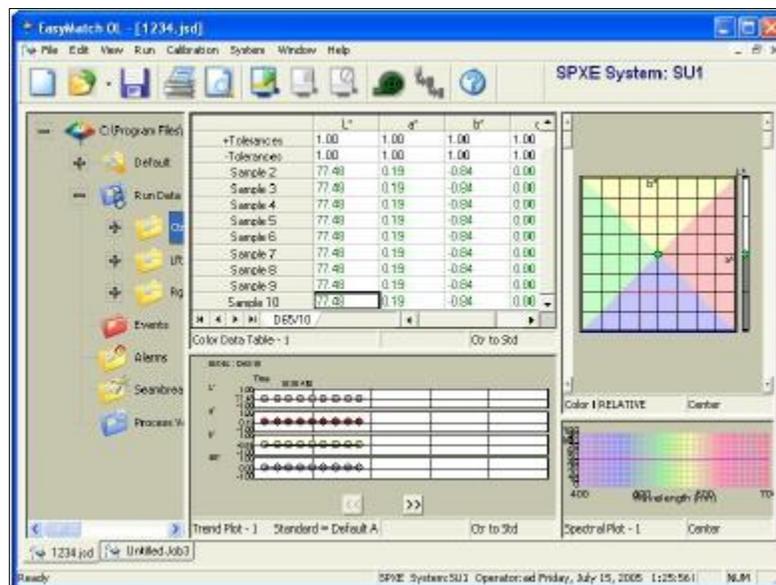


Figure 79. Toolbar is Displayed

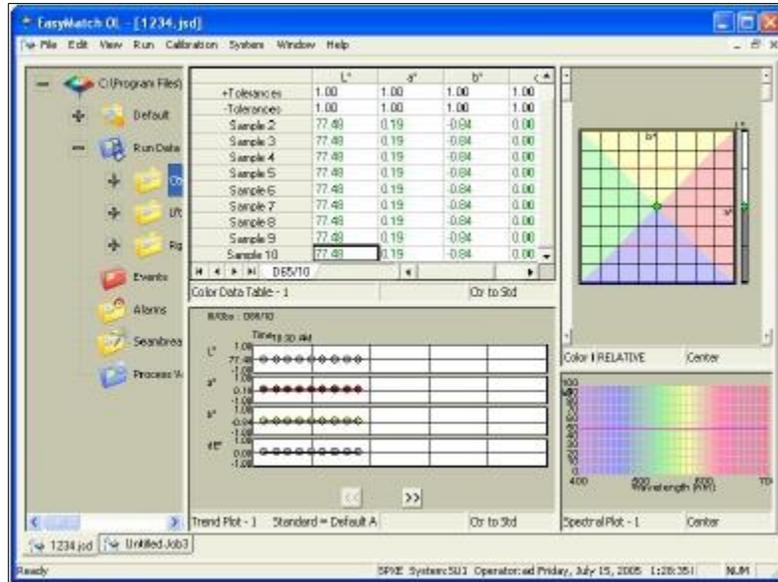


Figure 80. Toolbar is Hidden

View > Status Bar

View > Status Bar command allows you to choose whether or not to display the status bar at the bottom of your EasyMatch OL ST screen. When a check appears next to **Status Bar**, the bar is displayed. When no check appears, the status bar is not displayed.

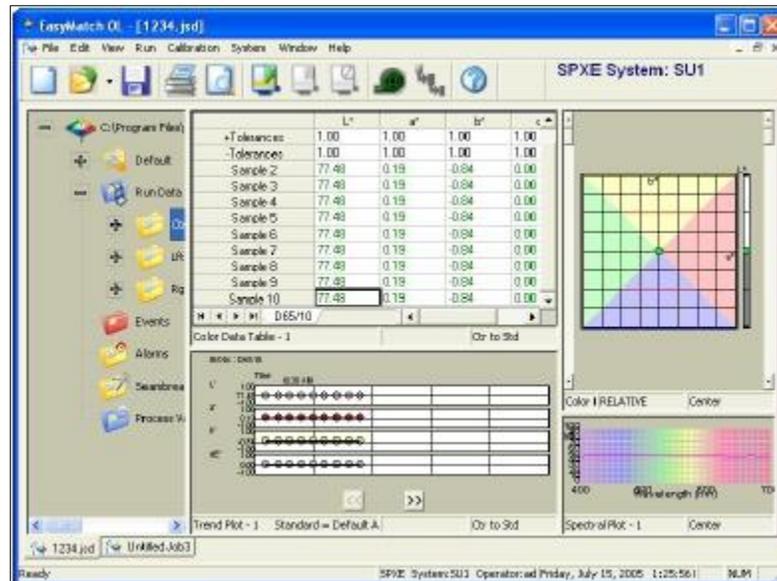


Figure 81. Display of Status Bar

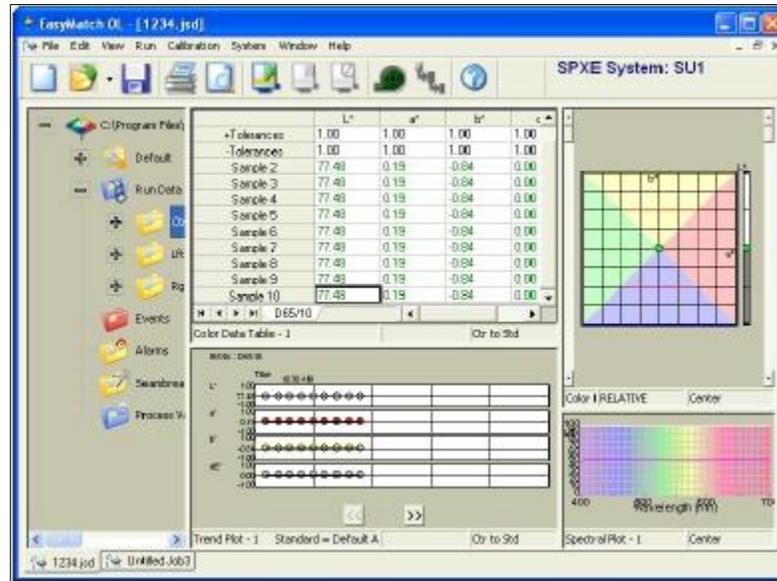


Figure 82. Status Bar Hidden

View > Job Tree

View > Job Tree command allows you to choose whether or not to display the Job Tree at the left of your EasyMatch OL ST screen. When a check appears next to **Job Tree**, the Job Tree is displayed. When no check appears, the Job Tree is not displayed.

Note: Some software functions require use of the Job Tree.

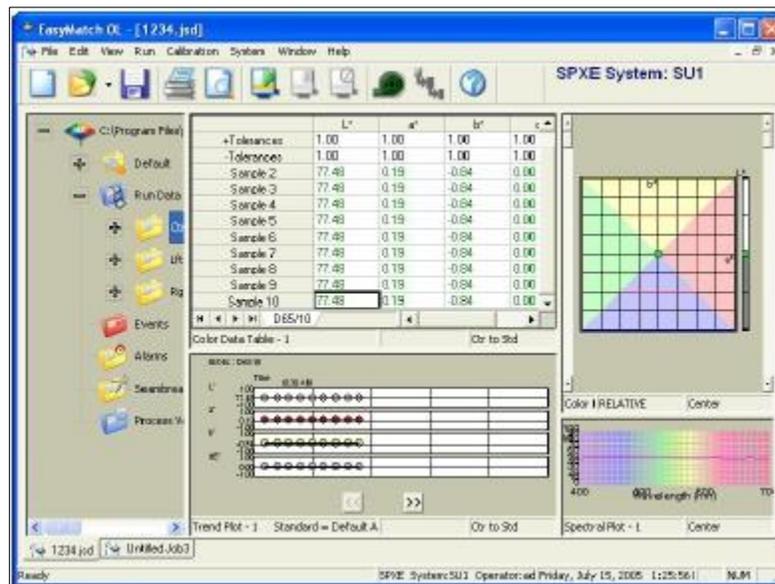


Figure 83. Job Tree Displayed

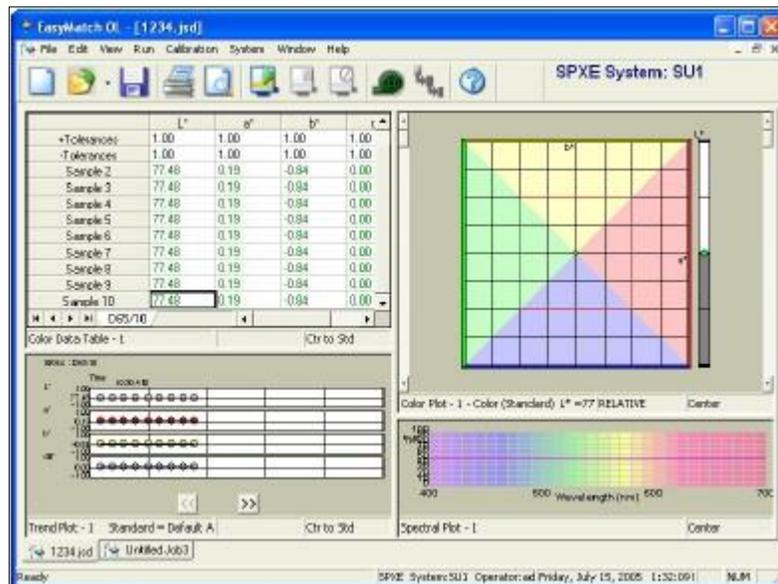


Figure 84. Job Tree Hidden

View > Configure Views

The **View > Configure Views** command brings up a submenu from which you must select the view you wish to configure for this job. All the data view types include:

- Color Data Table
- Color Plot
- Control Chart
- Spectral Data Table
- Spectral Plot
- Statistics View
- Trend Plot

Once you choose a data view, you receive the same Configuration dialog box as is obtained using the right-mouse click menu's **Configure** command for a specific data view. This configuration is described in detail in the Introduction to EasyMatch On-Line ST > Features Section.

The Run Menu

From the **Run Menu** you may begin, pause, and end a run, as well as set up the run queue and configure the parameters that will apply to the run. You may also make off-line sample measurements. The functions available through the **Run Menu** are described in the remainder of this chapter.

Run > Begin Run

The **Run > Begin Run** command downloads the current product setup, opens a job, and starts a run based on the product setup. The job used for the run may be an existing job (click **Yes** on the screen shown below and choose the job you wish to use) or a new job based on the default template (Click **No** on the screen shown below and name the new job.)



Figure 85. Append to Existing Job

Run > Pause Run

The **Run > Pause Run** command pauses the current run in case you need to adjust the product or the sensor. The **Pause Run** command must be given again in order to continue the run.

Run > End Run

The **Run > End Run** command ends the current run.

Run > Run Queue

The **Run > Run Queue** command is available only if Use Run Queue is checked on the Run Options tab of the System Setup. When Run Queue is available and selected, the following screen appears:

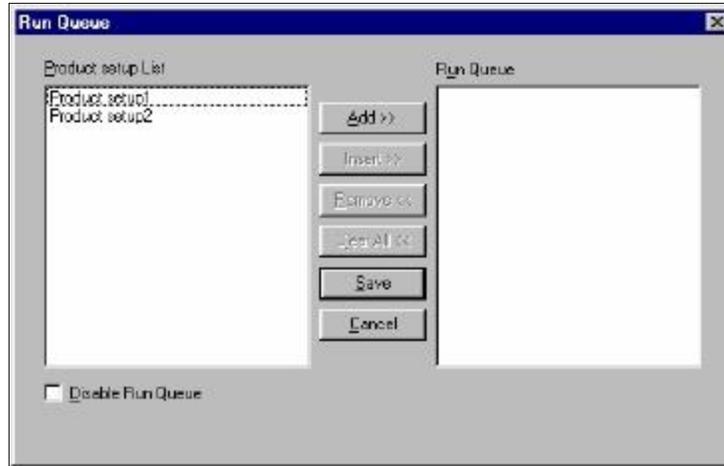


Figure 86. Select Product Setup

The **Run Queue** allows you to complete runs using several product setups in succession by initiating a run only once. On the Run Queue screen, **click the first product setup** you would like to use in the box on the left, then click **Add** to place it in the run queue. Add other product setups in order until your run queue is as desired. To remove a setup from the queue, click on it in the box on the right and then click **Remove**. Click **Clear All** to remove all setups from the queue. Click **Save** when the run queue is as desired. To disable use of the run queue without removing product setups that may be used in a queue in the future, simply check the Disable Run Queue box.

In the sample Run Queue shown below, when **Run > Begin Run** is selected, Product setup2 will be completed first. Then, when the product or seam detectors are triggered, the system proceeds with Product setup1.

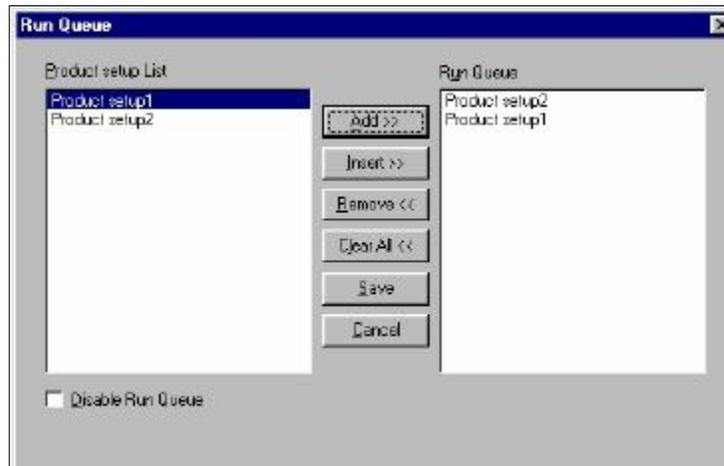


Figure 87. Run Queue

Run > Product Setup

The **Run > Product Setup** command opens a dialog box containing four pages on which you can create and configure all your product setups for all your sensors that are connected to EasyMatch OL ST. Click the tab with the page number desired to move to that page.

You may maintain as many product setups as you like. To edit a setup, click on its name in the tree view to the left of the screen. To create a new setup, right click on the appropriate system name and choose **New Product Setup** from the pop-up menu. The new setup will appear under the selected system and will employ the default product setup parameters until you change them. You can also use this right mouse menu to export all of your setups (see the description of the **Export** command below) or sort your setups by name, date of creation, or date of saving.

You may also right click on a specific product setup name to obtain a pop-up menu offering the following choices:

- **Select:** This command causes the selected product setup label to be bolded in the tree view and places its product setup configuration in the right half of the screen. Then, any modifications made to the product setup configuration are applied to this product setup.
- **Rename:** This command allows you to rename the selected product setup.
- **Delete:** This command allows you to delete the selected product setup.
- **Copy:** This command allows you to copy the selected product setup to the Windows clipboard. It may later be pasted to apply to another system using the **Paste New Product Setup** command that appears when the system name is clicked with the right mouse button.
- **Export:** This command allows you to attach the selected product setup to a system setup and to save the product setup and system setup so that they will not be lost on changing data storage methods (from database to file system or vice versa). You will need to choose the system setup from the list provided.

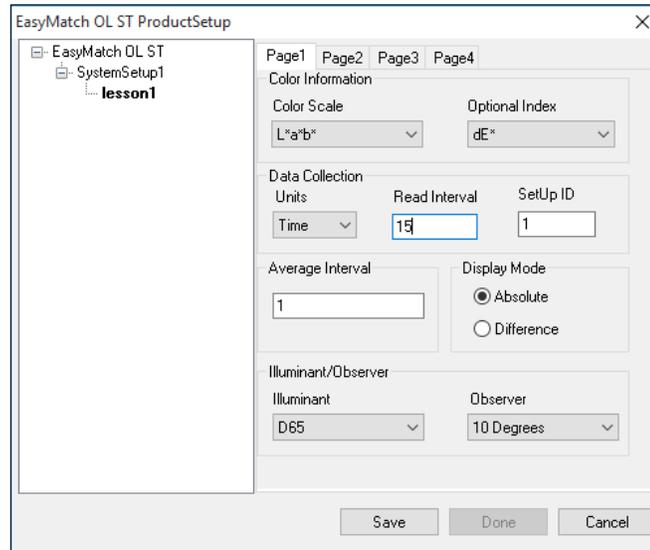


Figure 88. Product Setup Tab 1

Page 1: Color Scale

Choose a color scale for the display of data on the Current Setup screen. The color scale choices are Color scales available include XYZ, Hunter Lab, CIE L*a*b*, Yxy, and L*C*H*

Page 1: Optional Index

An optional Index may be selected from the list to display on the front panel along with the color measurement values.

Table 6. Product Setup Parameters

Color Scales	Available Indices	Illuminants
XYZ	None	A
Hunter Lab	YI E313	C
L*a*b*	Y	D50
L*C*H*	Bt	D55
L*C*H* (CMC)	Z%	D65
Yxy	dE*	D75
	dE CMC	F02
	dC*	F07
	dE	F11
	YI	
	WI	
	Height	
	FMCI	

Page 1: Data Collection Units

For Units, choose Time or Piece for the data collection measurement unit. The Frequency is the interval at which new data points are displayed on your screen. Each new data point is

the average of the color measured throughout each unit measured. For **Time**, input the seconds desired. For **Piece**, the system collects data when the product is sensed and continues until the product is no longer sensed. Average data in units selected is transmitted for all the readings taken. The maximum speed at which the sensor can measure in **Piece** mode is 1 piece per second. This mode is appropriate for individually-measured products such as cookies or crackers.

Page 1: Product Setup ID

A Setup Id may be any number between one and 250. The last Product Setup that is downloaded is used during a RUN. .

Page 1: Display Modes

The available data display modes are **Absolute** and **Difference**. **Absolute** provides values as measured by the sensor. These values are relative to the standard white tile supplied with the system, which in turn is traceable to measurements made by N.I.S.T. of similar material. **Difference** provides values calculated based on the difference between a product standard's values and the product sample's values.

Page 1: Illuminant/Observer

Select the illuminant and observer to be used when making color scale and index calculations. The available illuminant choices are A, C, D50, D55, D65, D75, F02, F07, and F11. 2° and 10° are available for the observer.

Figure 89. Product Setup Tab 2

Page 2: Product Standard, Tolerances, and Corrections

Choose one of four product standard types. The choices are Numeric, Physical, Transfer, and Adhoc.

Choose Numeric

when an actual product specimen does not exist for measurement, but the target color values are known from previous measurements. For the numeric standard, enter the assigned color values in the Product Standard field.

Page 3: Shade Blocks in Tolerance Band

Indicate how many shade blocks should be contained in each trace of the tolerance band.

Choose Physical

when an actual product specimen is available that represents the target color to which samples will be compared on a regular basis. A physical standard is measured and stored in the product setup for as long as desired. For the physical standard, place the specimen in position and measure it by clicking **Read Standard**. For the transfer standard, place the specimen in the tile holder or on the line under the sensor, measure it using the **Read Standard** button. The measured values are then shown on the Product Standard line.

Choose Ad Hoc

to use the first measurement value as the standard.

Choose Hitch

when you wish to alter the readings made on the SpectraTrend HT to better correlate to another color measurement instrument. A specific standard with known color values from the other (reference) instrument will then be read with the SpectraTrend HT and that reading manually adjusted within the product setup to match the reference instrument. The modified standard is stored in the product setup for as long as desired.

Offset Correction

You may also enter an offset correction value for each color scale parameter. The value is then added algebraically to the measured color scale values and the result is displayed. Offset values may be used to force the values read by the system to agree with values read on another instrument. Offsets may be used to compensate for all sources of disagreement, including changes in the product between readings and instrumental differences.

For offset correction to be used most effectively, the measurements used as the basis for deriving offset values must be done carefully, using good procedures and techniques. Attention should be given to consistent sample presentation, calibration, and operating conditions of both instruments, consistent sample conditioning, consistent time delay between observing on-line measurements and measuring a sample of the product in the lab, and any other factors which may affect the measurements.

Note: Offset correction is not imposed on the color scale values on the Sample Measurement screen.

Page 2: Tolerances

Indicate next to 'CMC Auto-Tolerance' whether you wish tolerances to be calculated automatically (checked) or you wish to enter your own tolerances (unchecked). You may enter numerical values for the upper and lower tolerances to be applied to each dimension of the color scale unless autotolerancing has been selected. The tolerances are the absolute value of the difference between the product standard value and measured value that is required to trigger an alarm condition.

Note: The tolerances set using the *Tolerances* command in the *System* menu take precedence over those set here. If you would like to use these product setup tolerances instead of the system tolerances, set the system tolerances to zero.

Page 2: Warning Limits

Warning limits are typically 75% of the tolerance values and provide a system warning that the tolerances may be exceeded. To disable this function, enter a zero in each box.

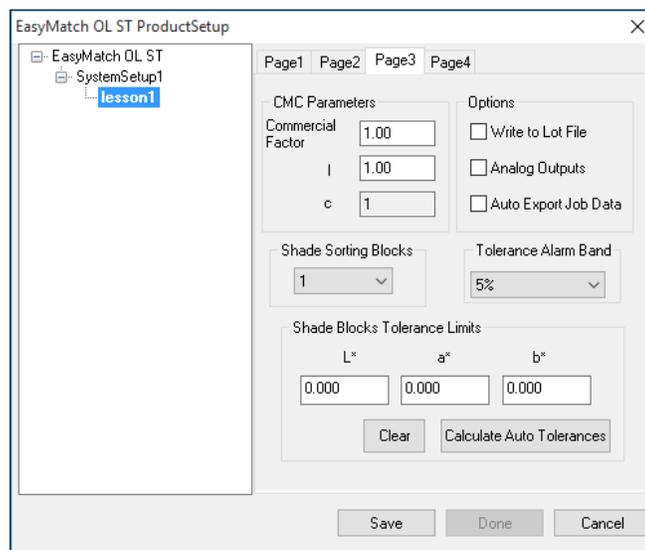


Figure 90. Product Setup Tab 3

Page 3: CMC parameters

Note that this applies only if the color index chosen is dE CMC. Shade Sorting Blocks and Tolerance Band is not used with this equipment and may be ignored.

Enter the Commercial Factor, l and c values and the number of Shade Sorting Blocks with their tolerance limits. One is the default value used to represent one unit of just perceptible difference, but this value may be adjusted to tighten or loosen the tolerance, as desired. Enter a lightness-to-chroma ratio (l:c). 2:1 is the default value used for CMC calculations in the textile industry. Also enter an Auto Tolerance Correction Factor. 0.75 is

the default value used to estimate the percentage of the tolerance box that is taken up by the CMC ellipsoid (excluding the 25% of the box volume that does not overlap with the ellipsoid). This value may be adjusted to tighten or loosen the tolerance, as desired. (A value of 1 would estimate the entire volume of the tolerance box, including those areas outside the CMC ellipsoid.) These are the parameters that will be used in computing a single number tolerance.

Page 3: Tolerance Alarm Band

Select a percent of tolerance for the tolerance alarm deadband which prevents the tolerance alarm from toggling on and off. Once the tolerance threshold is crossed, subsequent difference values have to change by the amount of the deadband to change the alarm condition. The choices are 5, 10, 15, 20, or 25 percent of tolerance.

Page 3: Output Data

To export data or output to a lot file or alarm system, use the option check boxes.

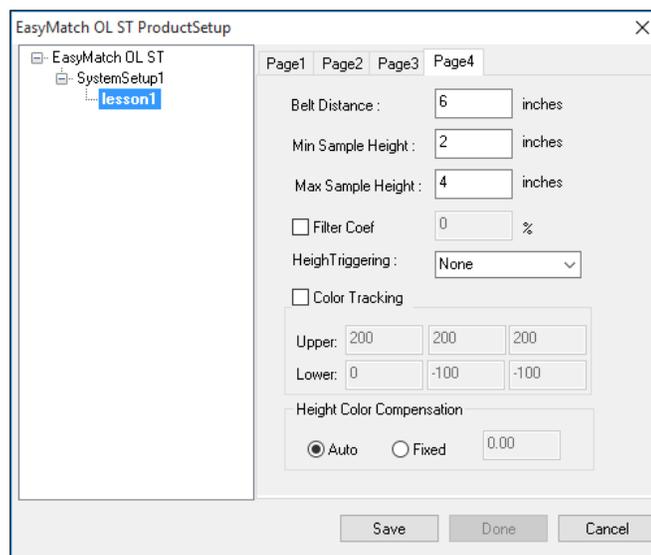


Figure 91. Product Setup Tab 4

Page 4: Belt Distance

Belt distance is defined as the distance from the front surface of the sensor window to the selected background (conveyor) position in the height units selected. However, since the SpectraTrend HT measures height by detecting the angle of the light reflected to the sensor, height is not measured “absolutely,” and all heights are relative. Therefore, the background distance cannot be determined with a ruler. Instead, perform the background height determination procedure using the Distance Sensor in the Diagnostic Menu and enter the value obtained as this parameter in the setup. The default background distance is four inches (100 mm).

Page 4: Min Height Trigger

The Min Height distance is defined as a distance measured from the Belt Distance in the

height units selected such that any product or background located beyond the Min Height distance will not be included in measurements. However, since the SpectraTrend HT measures height by detecting the angle of the light reflected to the sensor, height is not measured “absolutely,” and all heights are relative. Instead, perform the Min Height determination procedure using the Distance Sensor in the Diagnostic Menu and enter the value obtained as this parameter in the setup. The default value is 0 inches (0 mm). As a general rule, the Min Height distance can be set to half of the height of the product.

Page 4: Max Height Trigger

The Max Height distance is defined as a distance measured from the Belt Distance in the height units selected such that any product or background located beyond the Max Height distance will not be included in measurements. However, since the SpectraTrend HT measures height by detecting the angle of the light reflected to the sensor, height is not measured “absolutely,” and all heights are relative. Instead, perform the Max Height determination procedure using the Distance Sensor in the Diagnostic Menu and enter the value obtained as this parameter in the setup.

Page 4: Height Triggering

Height Trigger can be set to None, Height Triggering or External Triggering. When the Height Trigger is set to Height Trigger the sensor will only flash when the sample is within in the selected range for Min and Max Height. If the sensor is outside this range, the sensor will not flash, and no readings are taken. When the Height Trigger is set to **None**, the sensor will flash regardless of the Min/Max Height settings. Height triggering is most useful in **Piece** mode, as the sensor will begin measurements when the leading edge is detected.

Run > Sample Measurement

The **Run > Sample Measurement** command opens a screen from which you may make manual measurements using the sensor when the sensor is not involved in a run. Absolute values may be obtained or differences from a specified standard may be viewed.

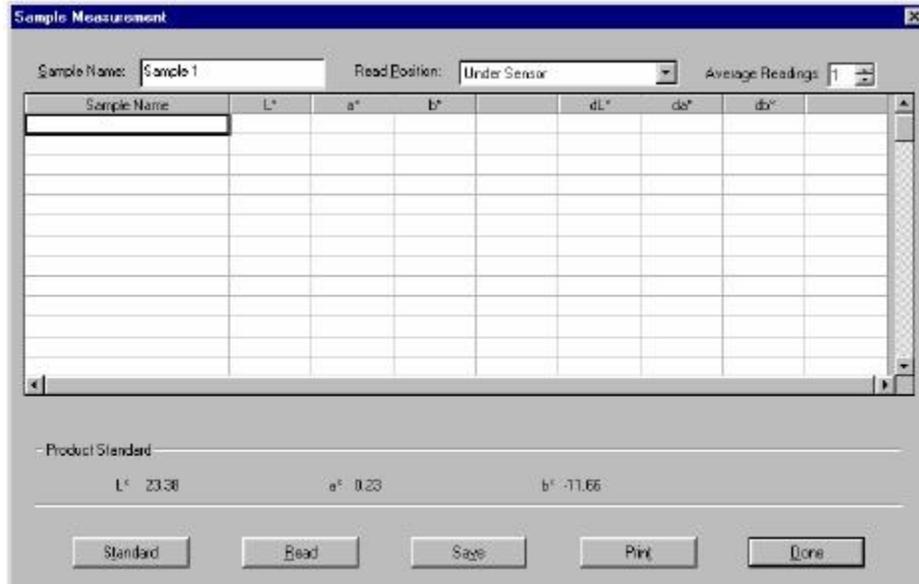


Figure 92. Sample Measurement

Use the mouse to place the cursor in the Sample Name box and type in an identifier for the first sample measurement. Additional measurements will automatically increment if you included a number in the name. Move to the drop-down box next to Read Position and make your choice for where the sensor should be when reading. Read positions available are Under Sensor, Right Tile, Right Limit, Right Edge, Right Center, Left Center, Left Edge, Left Limit, Center, Left Tile, Position 1, Position 2, Position 3, and Position 4. The Position terms refer to placement in the automatic tile holder. Next, move to Average Readings and select the number of readings to average per measurement.

The buttons at the bottom of the Sample Measurement screen perform as follows:

Standard

Click the **Standard** button to choose the standard to which measurements will be compared. The standard can be the same one used in the current product setup, a hand-entered standard, or it can be read from the sensor directly from the Sample Measurement screen.

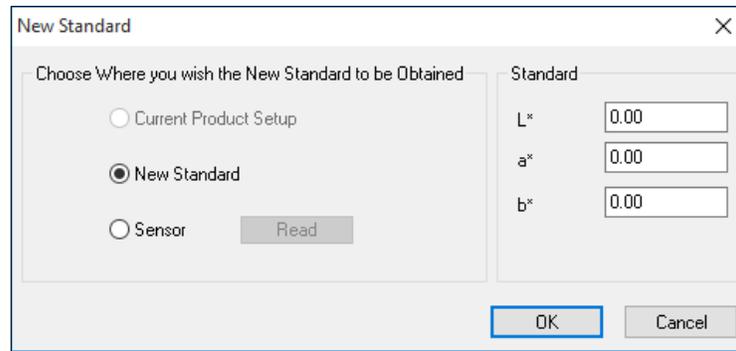


Figure 93. Select Standard

Read

Click ***Read*** to take a measurement at the read position and display it on the screen. The color scale and other display parameters shown on this screen are as configured for the current product setup.

Save

Click ***Save*** to save the data currently shown on the Sample Measurement screen to an ASCII text file. You will be prompted to enter a file name and location.

Print

Click ***Print*** to print all the readings displayed on the screen.

Done

Click ***Done*** when you have completed your off-line measurements.

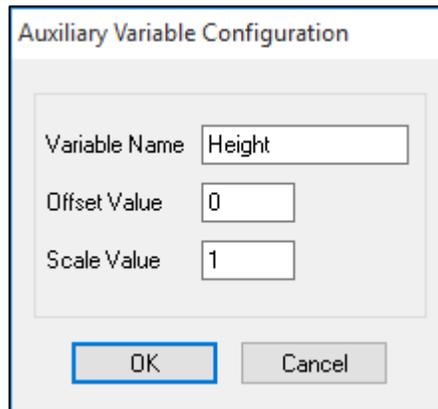
Run > Tests

The ***Tests*** command in the ***Run*** menu applies to SpectraProbe S/8 glass systems and is not active in Version 1.06 of the software.

The Tasks Menu

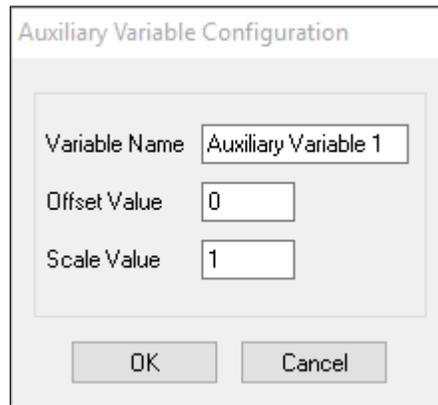
Auxiliary Variable

As part of the Color Data Table Parameters, you can choose Auxiliary Variables of height, Variable 1, 2, 3, 4, X, Y, Z, Voltage and Temperature. To configure these parameters, use the Tasks Menu and input a name, offset value and scale value.



The screenshot shows a dialog box titled "Auxiliary Variable Configuration". It contains three input fields: "Variable Name" with the value "Height", "Offset Value" with the value "0", and "Scale Value" with the value "1". At the bottom, there are two buttons: "OK" and "Cancel".

Figure 94. Auxiliary Variable of Height



The screenshot shows a dialog box titled "Auxiliary Variable Configuration". It contains three input fields: "Variable Name" with the value "Auxiliary Variable 1", "Offset Value" with the value "0", and "Scale Value" with the value "1". At the bottom, there are two buttons: "OK" and "Cancel".

Figure 95. Auxiliary Variable 1

The Calibration Menu

Standardization must be performed periodically to maintain color measurement accuracy. It is the means of correcting the system for any changes that occur to the system over time, such as lamp aging. Thus, system performance depends on good standardization procedures, consistently followed.

It is extremely important that the standards used for standardization be treated carefully. They must be clean and in good condition if standardization is to be successful. If there is any doubt about the standards being clean, please clean them as described in the manual for your instrument.

Two levels of standardization are provided: primary and secondary. Primary calibration is performed in the off-line mode by manually presenting the black and white instrument standards to the sensor while the sensor is off-line. The green calibration check tile test may also be performed at this time. Primary standardization may be done infrequently (weekly), but it must be done regularly.

The frequency with which standardization must be done depends on the operating conditions, including temperature conditions at the sensor and the rate at which dirt and contaminants build up on the sensor. Standardization must be performed at intervals that are short compared to the time required for significant color measurement changes to occur. These changes may be evaluated by simply reading one or more of the instrument standards and observing the changes in those readings over time.

Immediately after standardization, the white standard tile should read within ± 0.03 units of its factory-read values in XYZ. You might want to use the Sample Measurement screen to check this. Generally, when the white tile readings differ from the factory-read values by more than ± 0.05 units XYZ, calibration should be performed.

Typically, secondary calibration every four hours and primary calibration every week is appropriate.

Note: When using an automatic tile holder, keep hands, samples, and equipment out of the way of the tile holder drawer and z-axis. Both of these parts must be allowed to move freely or damage may result. The terms 'calibration' and 'standardization' are used interchangeably in this manual.

From the **Calibration Menu** you can perform primary and secondary standardizations and UV filter calibration, as well as set the check tile values and perform a check tile test. The functions available through the **Calibration Menu** are described in the remainder of this chapter.

Calibration/Primary

The **Primary** command in the **Calibration** menu initiates primary standardization using the white tile and black glass in the clip-on holder and the secondary white tile in the automatic tile holder (if present). Follow the on-screen prompts to complete this standardization.

Note: If Auto Primary Calib was checked on the Calibration tab in your System Setup and your primary tiles were placed in the tile holder, then primary calibration can proceed without prompting.

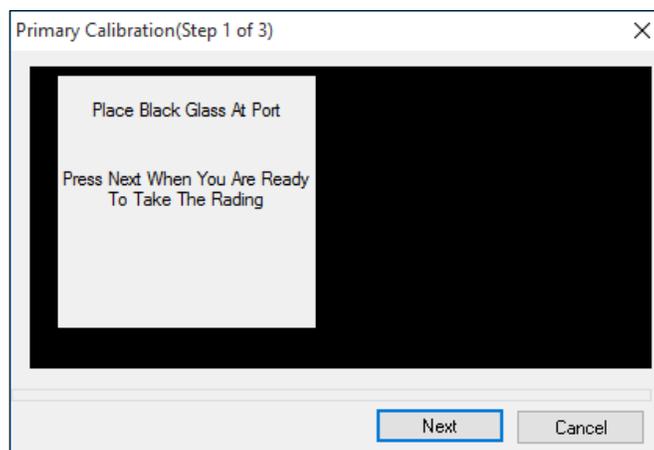


Figure 96. Primary Calibration

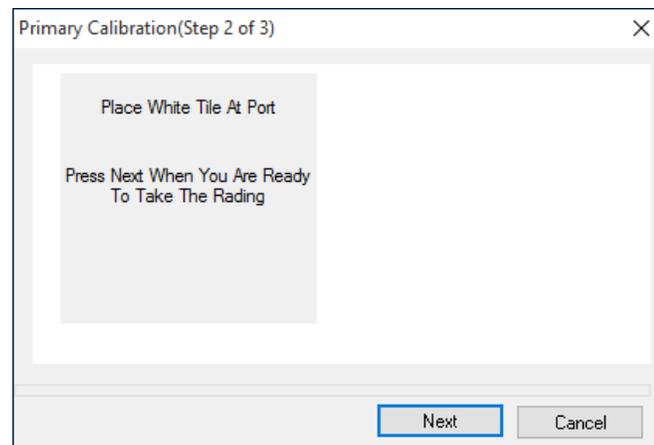


Figure 97. Prompt for White Tile

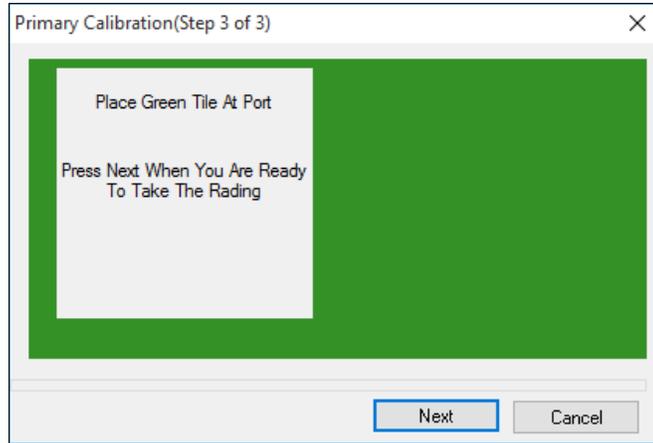


Figure 98. Read Green Tile

If you enabled the calibration check on the Calibration tab in your System Setup, then the green tile is also read and its values saved during this process.

When calibration is complete, click **Finish** to close the Primary Calibration screen.

The System Menu

From the **System Menu** you can set your preferences for EasyMatch OL ST as a whole and perform system diagnostics. The functions available through the **System Menu** are described in the remainder of this chapter.

System/Installation

The **System > Installation** command allows each system attached to your server to be named and configured.

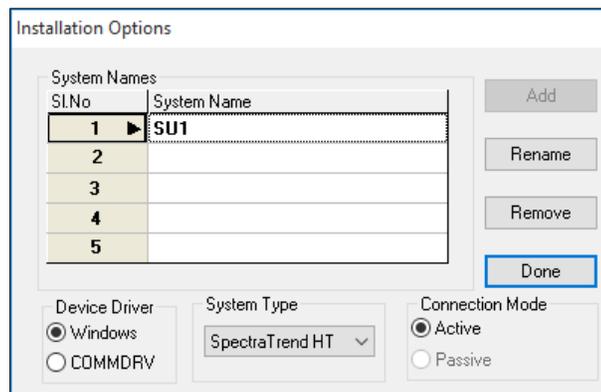


Figure 99. Installation Options

Note: The Active connection mode allows this machine to start and end runs, calibrate the system, and run diagnostics. The Passive connection mode allows this machine to view runs already in progress only.

Select an empty row in the spreadsheet and click to **Add** and name a new system. Select an existing system and click to **Rename** or to **Remove**. Choose your device driver (Windows is appropriate for most users) and System type as appropriate, then click **Done**. If only one system is installed, the following prompt will be shown.



Figure 100. Confirming the Default Network

Click **Yes** to continue. If more than one system is installed, the first on the list will be set as the default system automatically; however, any system may be set as the default by answering the prompt that appears appropriately.

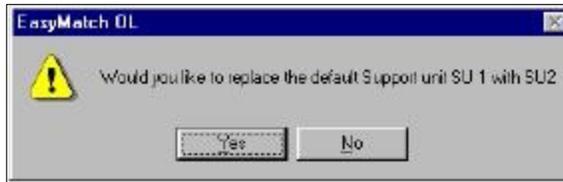


Figure 101. Replacing the Default Network

When a new system is added, you are also given the opportunity to create a shortcut on your Windows desktop that allows you to start EasyMatch OL ST with the new system as the default. Answer **Yes** to the question below to create the shortcut.

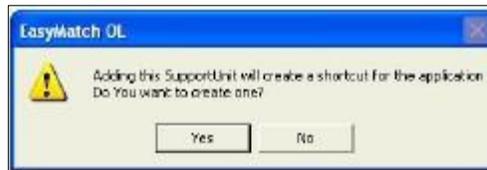


Figure 102. Create a Shortcut

Double-click the new shortcut to open the software connected to the new system.



Figure 103. Shortcut Icon

System/System Configuration

The **System > System Configuration** command yields a submenu that allows you to choose to modify the system setup, configure user accounts and privileges, and configure data storage. These settings apply globally to your use of EasyMatch OL ST, no matter what job is being employed.

System Setup

The various tabs on the SystemSetup screen allow you to configure settings for each system connected to this server that will apply every time that system is used. Click the tab desired to move to that page.

You may maintain as many system setups as you have systems. To edit a setup, click on its name in the tree view to the left of the screen. To create a new setup, right click on EasyMatch OL ST and choose **New SystemSetup** from the pop-up menu. The new setup will appear under EasyMatch OL ST and will employ the default system setup parameters until you change them. By right-clicking on EasyMatch OL ST, you may also choose to export (save) all of your system setups so that they will not be lost on changing data storage methods (from database to file system or vice versa).

You may also right click on a specific system setup name to obtain a pop-up menu offering the following choices:

- **Select:** This command causes the selected system setup label to be bolded in the tree view and places its system setup configuration in the right half of the screen.

Then, any modifications made to the system setup configuration are applied to this system setup.

- **Rename:** This command allows you to rename the selected system setup.
- **Delete:** This command allows you to delete the selected system setup.
- **Export:** This command allows you to save the system setup so that it will not be lost on changing data storage methods (from database to file system or vice versa).

System Setup Parameters

Following are descriptions of the parameters on the system setup screens.

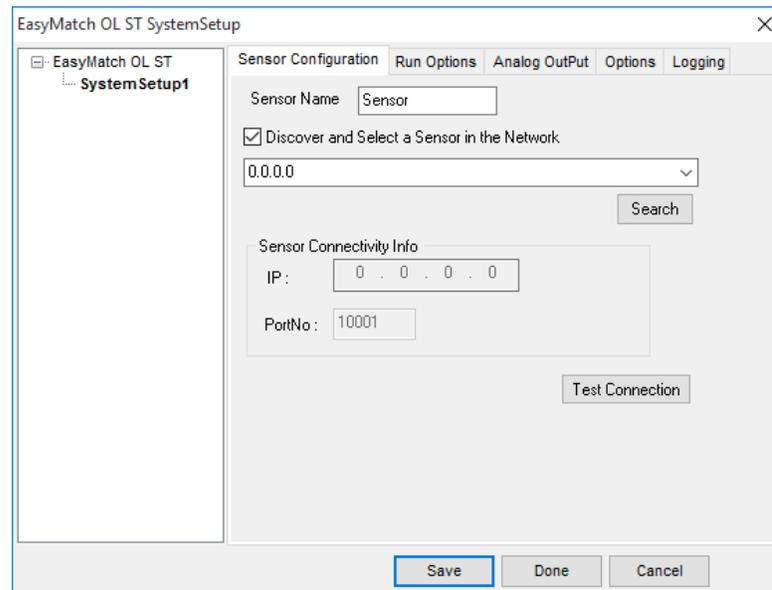


Figure 104. Sensor Configuration

Sensor Configuration:

- **Sensor Name:** Enter the name you wish to use for the sensor. You may wish to use it to indicate the serial number or location in the plant.
- **Device Name:** Select the serial port that the computer is using to communicate with the support unit.
- **Network ID:** Select the network ID (from 0 to 3) for this system. The network ID must also be set in the support unit using shunts, as described below.

Each support unit on the RS-485 network must have a unique ID (0, 1, 2, or 3). The network ID is set using three jumper pins on connector J1 (LPT1) on the embedded PC board. The three sets of jumper pins are located next to the programming pair (pins 25 and 26) on the board. They are referred to as ID1, ID2, and ID3:

Name	Pins
------	------

ID1	23 and 24
ID2	21 and 22
ID3	19 and 20

The jumpers are set as follows:

ID Value	ID1	ID2	ID3
0	OFF	OFF	OFF
1	ON	OFF	OFF
2	OFF	ON	OFF
3	ON	ON	OFF

Note: The ID value is set as a binary number with ID1 and the least significant bit. If only one support unit is on the network, then these jumper pins should be left off to assign an ID of zero.

Run Options

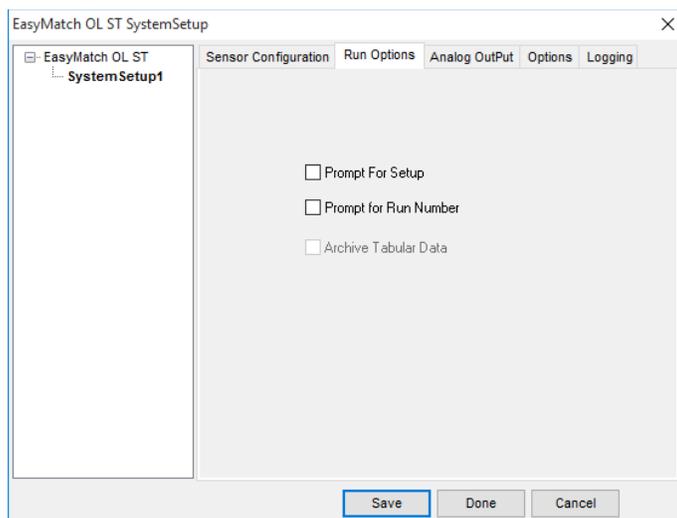


Figure 105. Run Options

- **Prompt for Setup:** Check this box to receive a prompt for the Product Setup to use when a run is started.
- **Prompt for Run Number:** Check this box to receive a prompt for the number of the lot or roll when a run is started.

Analog Output

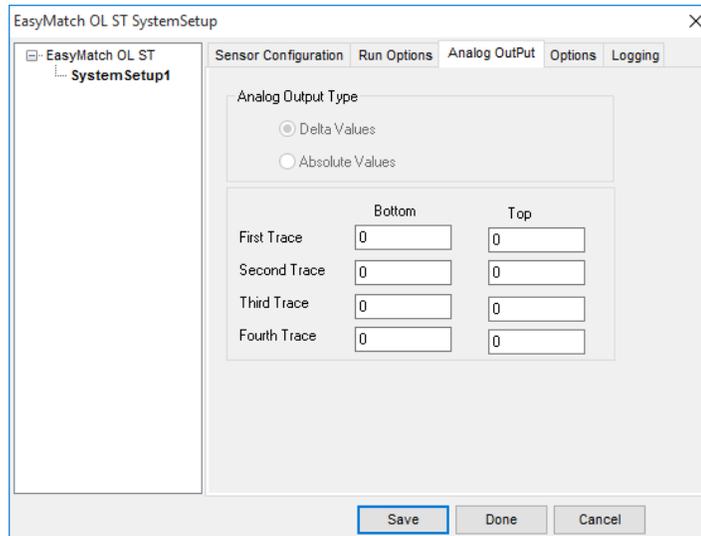


Figure 106. Analog Output

- **Analog Output Type:** This tab is only available if Analog Outputs was checked on the Options tab. Select whether you wish the analog outputs to relay absolute or delta (difference) values from the standard.
- **Bottom/Top:** Enter the values you wish to use for zero and full scale for each trace.

Options

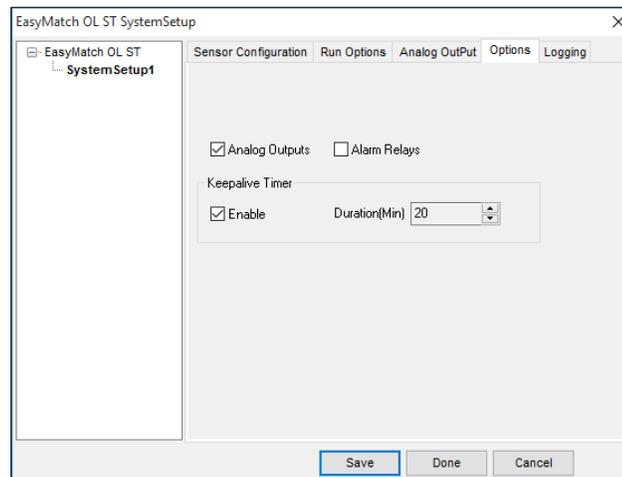


Figure 107. Seam Detector Setup

- **Analog Outputs:** Check this box if you purchased and wish to use the analog output option.
- **Alarm Relays:** Check this box if you wish to use the alarm relay option.
- **Keepalive Timer:** Check this box if you wish to enable the 'keepalive' feature

whereby, should EasyMatch OL ST crash or freeze during a run, the support unit will also cease running after a specified amount of time elapses. Choose the amount of time after which the support unit should stop in the Duration area.

Logging

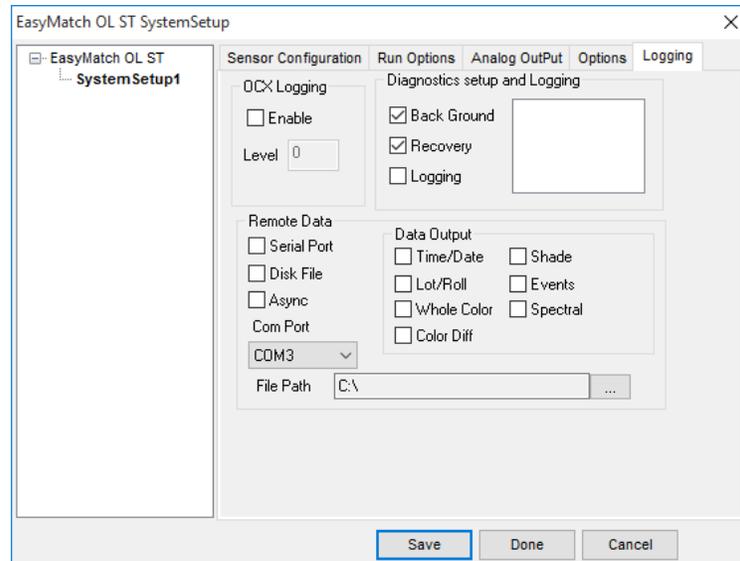


Figure 108. Logging

- **OCX Logging:** Check Enable and enter the level of debugging you wish to employ if you want to use the OCX logging feature. This will normally be done only under the guidance of your HunterLab Applications Specialist.
- **Diagnostics setup and Logging:** Check Back Ground to perform background diagnostics on the support unit. This item should normally be checked. Check Recovery to cause the support unit to automatically attempt to recover from certain diagnostic faults. This item should normally be checked.
- **Check Logging** to log certain messages (including check tile information) from the support unit to **SPXE_LOG.TXT** in the folder where the software is installed. Once this box is checked, you may select the type(s) of messages to log from the list that appears in the box to the right of this area.
- **Remote Data:** Check Serial Port to send the data out a serial port to a remote computer or Disk File to export the data to an ASCII text file on any drive accessible by this computer. You may specify a COM port for the serial output or the drive and folder for the storage of the ASCII file.

Check Async if you would like the remote data sent asynchronously (without being polled). If Async is not checked, the data will be sent synchronously (polled).
- **Data Output:** Check the types of data you wish to send to the remote computer or disk file as selected in the Remote Data area of this screen. Click **Save** and then **Done** when system setup is complete. The setup will be downloaded to the system.

System/Diagnostics

This version of EasyMatch OL ST does not support diagnostics.

System/Preferences

The **Preferences** command in the **System** menu allows you to set preferences which will globally apply to your use of EasyMatch OL ST on this computer.

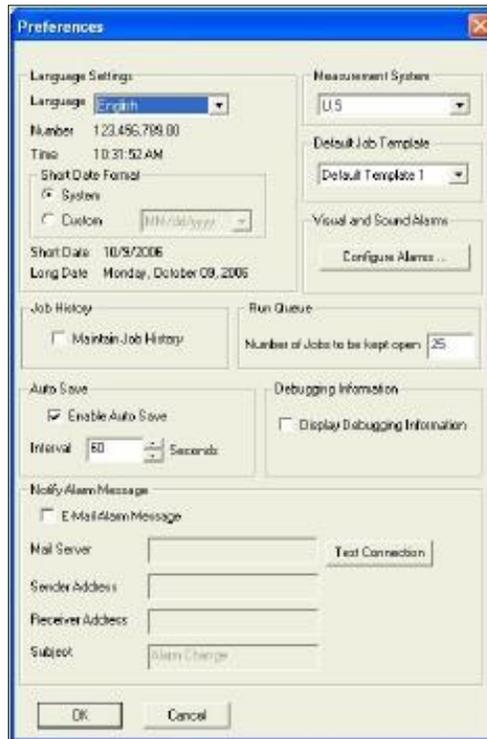


Figure 109. Global Preferences

In the Language Settings area, select the language in which EasyMatch OL ST should appear. Available languages are English, Simplified Chinese, French, Spanish, Italian, Japanese, and German. In the Measurement System area, select whether you wish to use U.S. (English) or Metric length units.

In the Default Job Template area, select the template you wish to use by default in creating new jobs. Templates that are stored in the C:\Program Files\HunterLab\EasyMatch OL ST Client\EasyMatch OL ST Data Files\Default Templates folder will appear in the drop-down list.

In the Short Date Format area choose to use the current Windows system format or click the radio button next to 'Custom' to select another date format.

In the Job History area, check the box if you wish to save your jobs to the system history.

In the Auto Save area, check Enable Auto Save to periodically save open jobs automatically and enter the interval at which you would like the saves to occur.

In the Run Queue area, enter the maximum number of jobs you would like to keep open as the system works through your queue.

In the Visual and Sound Alarms area, click the **Configure Alarms** button to enable and configure any alarms you wish to use. The following screen appears on which you can set visible and/or audible alarms. Click **OK** to exit this screen.

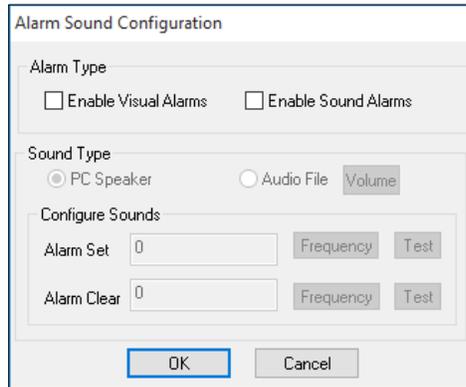


Figure 110. Alarm Sound Configuration

In the Run Queue area indicate the number of jobs (runs) to keep open on your EasyMatch OL ST screen while the queue of runs is in progress. Be aware that the larger the number of jobs open, the slower your system may refresh and display new data.

Click **OK** to accept the changes and exit the Preferences screen.

System/Tolerances

System > Tolerances command allows you to set tolerances that will be assigned to new standards in this job by default. You may set tolerances for as many color scales, indices, and differences for as many illuminant and observer combinations as you wish.

Note: The tolerances set here take precedence over those set using the *Product Setup* command in the *Run* menu. If you would like to use the product setup tolerances instead of these system tolerances, set the system tolerances to zero.

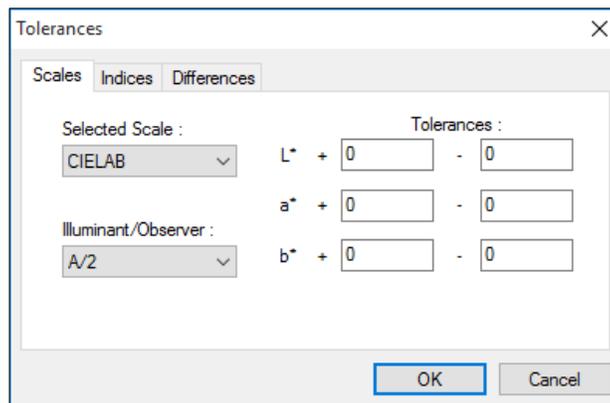


Figure 111. Global Tolerances Setup

On the Scales tab, set all tolerances you wish to assign based on color scales. Choose the color scale from the Selected Scale drop-down box and the illuminant/observer combination from the Illuminant/Observer drop-down box. Then enter the upper and lower tolerance limits for each of the three components of the color scale for this illuminant/observer combination. Then enter tolerances for all other scales and illuminant/observer combinations desired by choosing each one individually and typing the tolerance values.

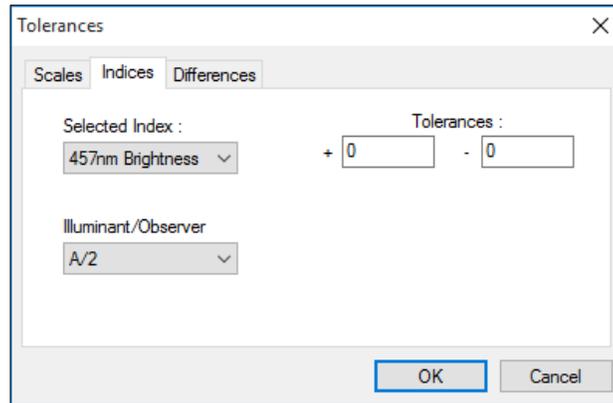


Figure 112. Tolerances for Indices

On the Indices tab, set all tolerances you wish to assign based on indices. Choose the index from the Selected Index drop-down box and the illuminant/observer combination from the Illuminant/Observer drop-down box. Then enter the upper and lower tolerance limits for the index for this illuminant/observer combination. Then enter tolerances for all other indices and illuminant/observer combinations desired by choosing each one individually and typing the tolerance values.

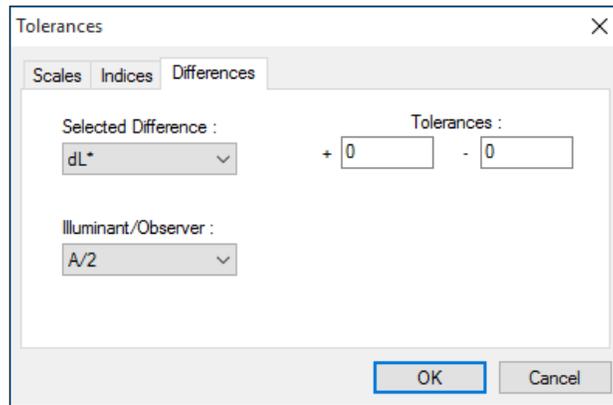


Figure 113. Global Tolerances for Differences

On the Differences tab, set all tolerances you wish to assign based on color differences. Choose the difference from the Selected Difference drop-down box and the illuminant/observer combination from the Illuminant/Observer drop-down box. Then enter the upper and lower tolerance limits for the difference for this illuminant/observer combination. Then enter tolerances for all other differences and illuminant/observer combinations desired by choosing each one individually and typing the tolerance values. Click **OK** to accept the default tolerances and close the Tolerances screen.

System/Naming Conventions

System > Naming Conventions command allows you to establish naming conventions that will be used by default when standards and samples are read into this job, though an ID may be manually entered at any time.



Figure 114. Global Naming Setup

On the Roll ID tab, enter the ID you would like to automatically assign for measurements made on a particular roll. You may type text, as well as click **Insert Number** to automatically increment roll numbers, **Insert Date** to automatically append the reading date, and **Insert Time** to automatically append the reading time.

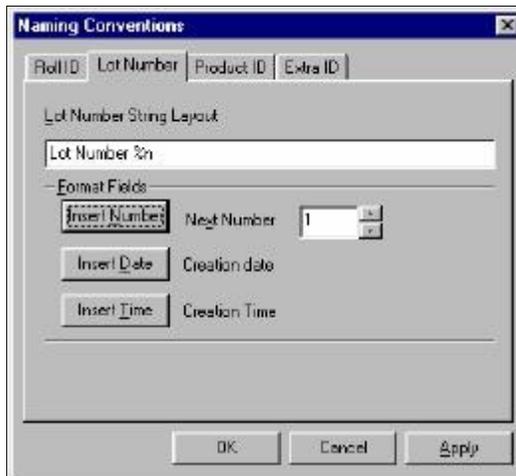


Figure 115. Global Lot Number

On the Lot Number tab, enter the ID you would like to automatically assign for measurements made in a particular lot. You may type text, as well as click **Insert Number** to automatically increment lot numbers, **Insert Date** to automatically append the reading date, and **Insert Time** to automatically append the reading time.



Figure 116. Global Product ID

On the Product ID tab, type any Product ID you would like to automatically assign to your measurements, then click **Add Selection** to make it available for use. Under Additional Settings, check the Limit the Product ID to one of the following box if you would like to limit yourself to using product IDs that have already been added to the drop-down list or the product ID that is currently displayed. If the box remains unchecked, you may assign a product ID by typing it or selecting it from the drop-down box.



Figure 117. Global Custom ID

On the Extra ID tab, type any Extra ID you would like to automatically assign to your measurements, then click **Add Selection** to make it available for use. Under Additional Settings, check the Limit the Extra ID to one of the following box if you would like to limit yourself to using extra IDs that have already been added to the drop-down list or the extra ID that is currently displayed. If the box remains unchecked, you may assign an extra ID by typing it or selecting it from the drop-down box.

Click **Apply** and then **OK** to apply the naming conventions and exit the Naming Conventions screen.

The Window Menu

From the **Window Menu** you can arrange the data views on the screen or open a new window. The functions available through the **Window Menu** are described in the remainder of this chapter.

Window/New Window

Window > New Window command allows you to open a second window for the current job on your EasyMatch OL ST screen. This allows you to create additional displays for the job, if you wish, without running out of room on the screen.

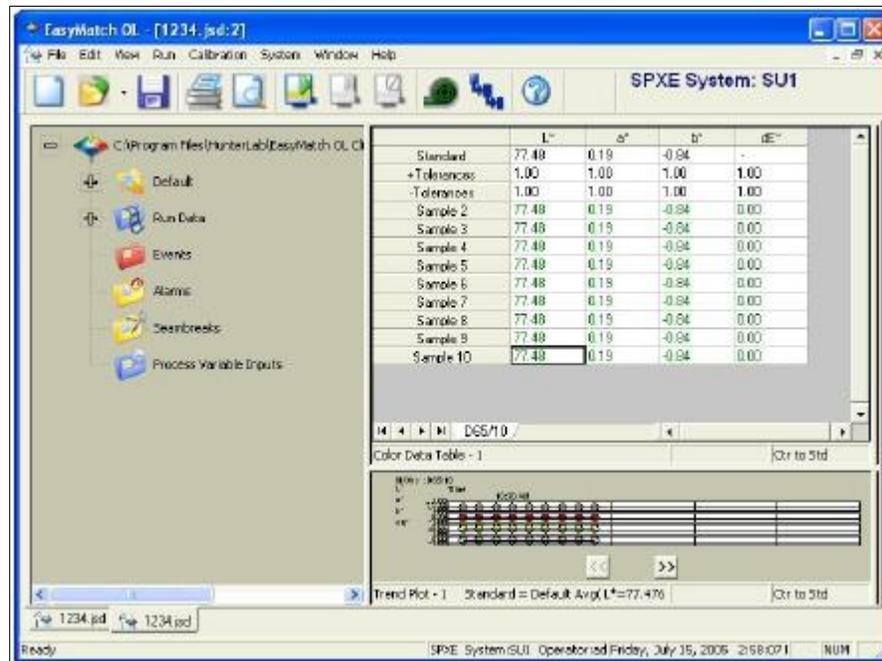


Figure 118. New Window

Window/Cascade

The **Cascade** command in the **Window** menu moves all of the current jobs so that they are cascaded one on top of the other and only the title bar of each job is visible. You may click on any of the title bars to show that job as the top job. Pressing **Ctrl** and **Tab** simultaneously toggles each job to the top in turn.

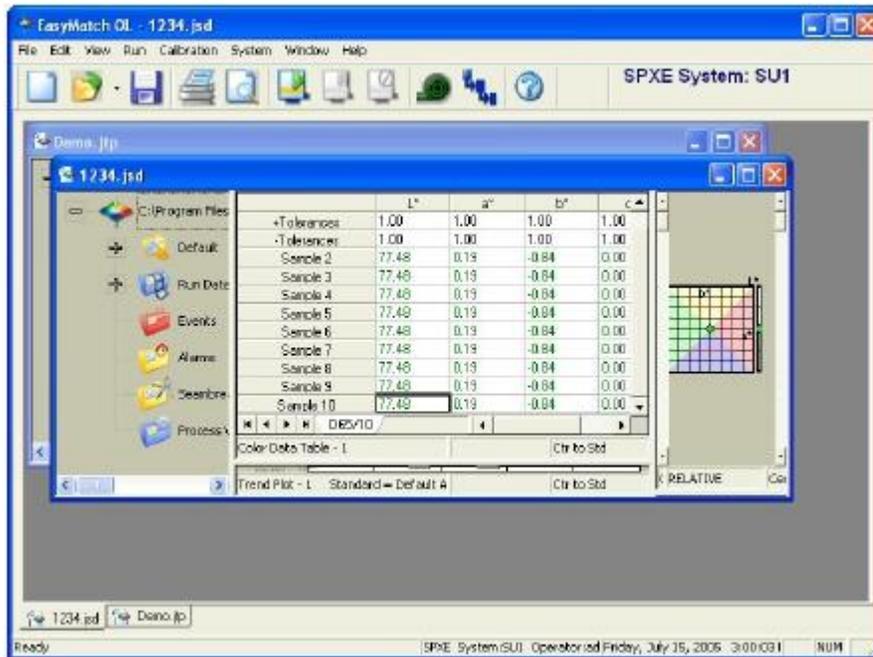


Figure 119. Window Cascade

Window/Tile

The **Window > Tile** command moves all of the current jobs so that they are displayed on the screen with one on top of the other. The sizes of the jobs are adjusted so that they fit on the screen. The currently selected job is always placed in the upper portion of the screen area.

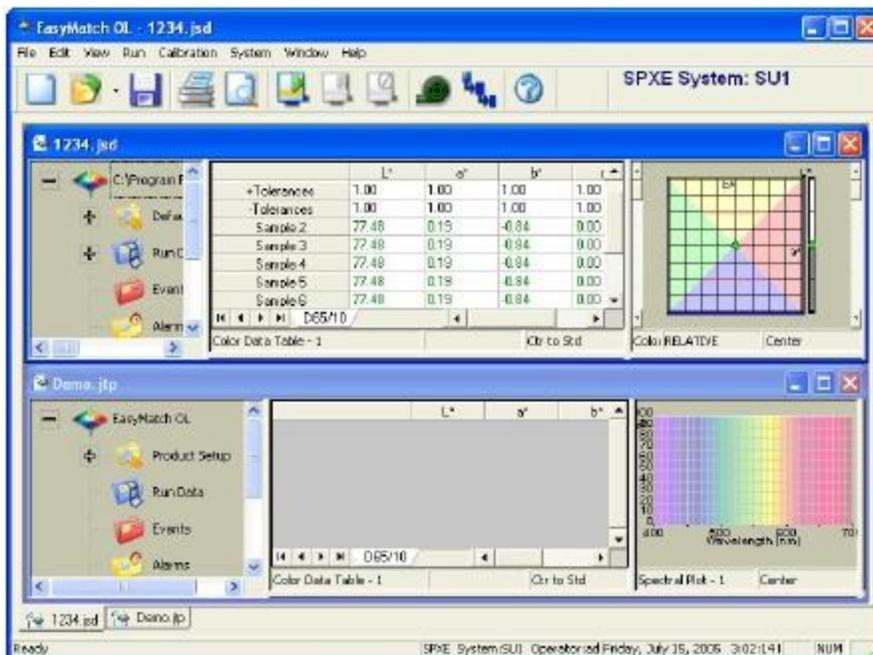


Figure 120. Tiled Windows

Window/Arrange Icons

The **Window > Arrange Icons** command applies only when job files are minimized, aligns the minimized jobs neatly in a row across the bottom of the screen.

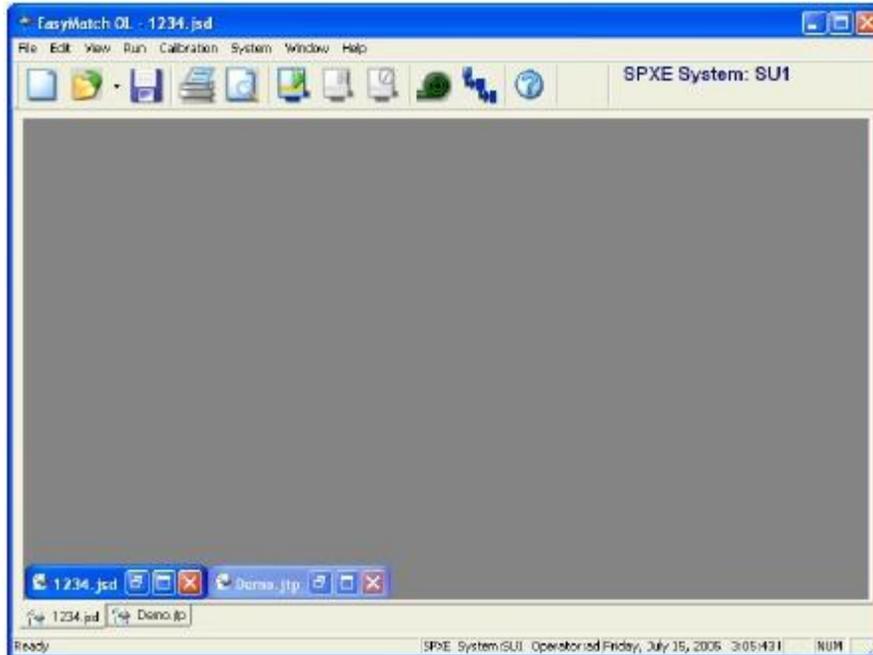


Figure 121. Arrange Job Names

Window/List of Open Jobs

You can make any job active by selecting it from the **Window** menu. A check will appear next to that job in the **Window** menu, the title bar of the active job will be highlighted, and the job will come to the front.

The Help Menu

From the **Help Menu** you can view the EasyMatch OL ST help file, travel to HunterLab's web site, and see information about your version of the program. The functions available through the **Help Menu** are described in the remainder of this chapter.

Help/Index/Topics

The **Help > Index/Topics** command opens the EasyMatch OL ST help file in which you can locate information on how to operate your instrument and software by searching for keywords, using the index, or using the table of contents. In order to use the help file, you must have a web browser (such as Internet Explorer or Netscape Navigator) installed on your computer.

Note: *If you are running Windows XP with Service Pack 2 installed and are viewing the help file using Microsoft Internet Explorer, you will need to allow blocked content in order to view the help correctly.*

Help/HunterLab on the Web

The **Help > HunterLab on the Web** command opens your web browser and takes you to the HunterLab web site in case you need to get information on color measurement, instruments, or technical assistance.

Help/About EasyMatch OL ST

The **Help > About** EasyMatch OL ST command brings up the About EasyMatch OL ST box specifying the version of EasyMatch OL ST being run and giving copyright information.

Keyboard Shortcuts

Function keys have been assigned to some frequently used items and can be used to speed operation.

New Job	Ctrl + N
Open Job	Ctrl + O
Save Job	Ctrl + S
Print Job	Ctrl + P
Cut	Ctrl + X
Copy	Ctrl + C
Paste	Ctrl + V

In addition, the EasyMatch OL ST menus may be opened using **Alt** + the first letter of the menu name and then the desired menu command may be selected by typing the underlined letter in the name of the command. These shortcuts are outlined below.

Open File Menu	Alt + F
Open Edit Menu	Alt + E
Open View Menu	Alt + V
Open Run Menu	Alt + R
Open Calibration Menu	Alt + C
Open System Menu	Alt + S
Open Window Menu	Alt + W
Open Help Menu	Alt + H

Commands from an Open File Menu:

New Job	N
Open Job	O
Open Job Template	T
Open Calibration File	I
Open Job From Database	D
Save Job	S
Save Job As	A
Save Job Template As	E
Save Job to Database	B
Print Out Setup	R
Print Preview Job	V
Print Job	P
Printer Setup	U
E-Mail This Job	M
Open This Job	1-4
Log Off	L
Exit	X

Commands from an Open Edit Menu:

Cut	T
Copy	C
Paste	P

Commands from an Open View Menu:

Toolbar	T
Status Bar	S
Job Tree	J
Configure Views	C Color Data Table O Trend Plot T Color Plot C Spectral Data Table P Spectral Plot S Control Chart O

Commands from an Open Run Menu:

Begin Run	B
Pause Run	U
End Run	E
Run Queue	Q
Product Setup	P
Sample Measurement	S
Tests	T

Commands from an Open Calibration Menu:

Primary	P
Secondary	S
Secondary Calibration and Check Tile	C
Read and Save Check Tile	R
UV Filter	U

Commands from an Open System Menu:

Installation	I
System Configuration	S
	System Setup S
	User Manager U
	Data Storage D
Diagnostics	D
Preferences	P
Tolerances	T
Naming Conventions	N

Commands from an Open Window Menu:

New Window	N
Cascade	C
Tile	T
Arrange Icons	A
Bring this Job to the Front	1-4

Creating and Configuring a SQL Database

This section describes how to create and configure a SQL database for use with EasyMatch OL ST. A working knowledge of SQL Server is recommended for performing these steps. Installation of EasyMatch OL ST should be performed first, as described in the EasyMatch OL ST Installation Guide.

- On the computer where SQL Server is installed, open Enterprise Manager.
- In the tree view on the left side of the screen, click '+' until 'Databases' is shown.
- Right click on Databases and choose **New Database** from the menu that appears.
- Name the database as desired ('EZMOL' is used in the examples shown), then click **OK**.



Figure 122. Database Properties

- In the tree view on the left side of the screen, open the Databases branch and right-click the database you just created.
- Select **New** and then **Database User** from the menu that appears.
- Create a new login for this database using the user name and password desired. This user must be allowed all available permissions, as must the 'public' user.

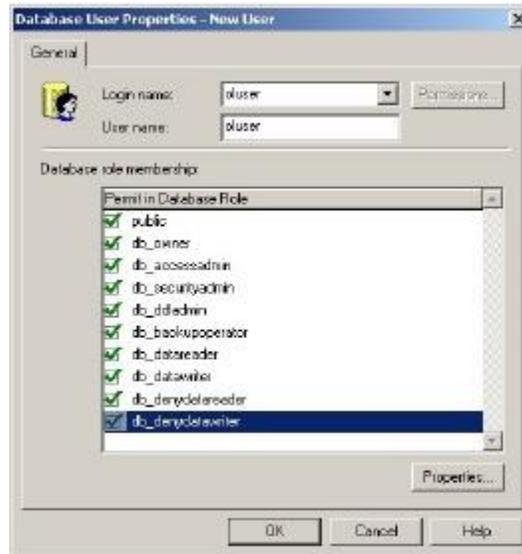


Figure 123. New Login

- Close Enterprise Manager. Open Query Analyzer.
- On the Connect to SQL Server window that appears, choose to Connect using SQL Server authentication and enter the newly created user name and password. Then click **OK**. Query Analyzer opens.
- Confirm that the database you just created is shown as selected in the drop-down box at the top of the screen.



Figure 124. Database Name

- Select **Open** from the File menu and choose to open **the C:\Program Files\HunterLab\EasyMatch OL ST Client\Database Script\EasyMatch OL ST DB Script.sql** script file. This is the location of the file if you installed EasyMatch OL ST to the default folder. If you installed elsewhere, you will find the Database Script subfolder in your installation folder.
- Select **Query > Execute**. The needed tables will be added to the database.
- Close Query Analyzer.
- On the client computer, open EasyMatch OL ST.
- Open the System menu, System Configuration, and then Data Storage. The Data Storage screen appears.

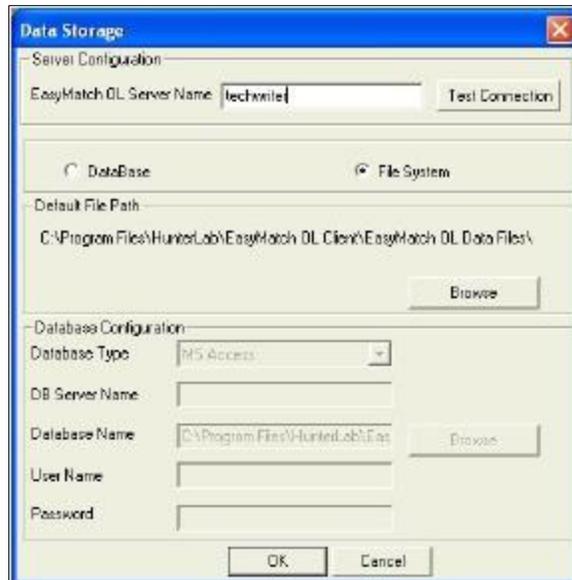


Figure 125. Data Storage

- Click the radio button next to DataBase, then select MS SQL Server as the Database Type.

Note: If you were previously using the File System rather than the DataBase, you will first want to use the **Export All** command on the **SystemSetup** and **ProductSetup** screens to export your system setups and product setups so they will be available for use with the database.

- Enter the server and database name for the database you just created, then the user name and password for the new user you created. Click **OK**.
- Restart EasyMatch OL ST and the SQL database is ready for use.

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