

User's Manual

Vista with Easy Match Essentials



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VISTA with Easy Match Essentials

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Safety Notes

For your safety when using the Vista, you should pay particular attention to the following types of statements in this User's Manual:

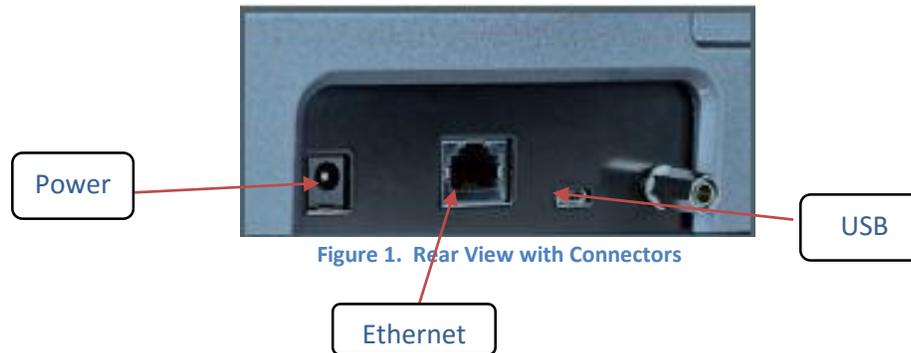
- General safety instruction that should be observed at all times while operating the instrument.
- Specific safety instruction critical to the type of instrument operation being explained in the area of the manual where the caution appears.
- Additional clarification of instructions, not safety-related.
- Use of this equipment in a manner not specified by the manufacturer may impair the protection afforded by the equipment.
- Danger of electric shock if liquids are spilled and fire if volatile or flammable liquids are spilled. Use care when measuring liquid samples.

CHAPTER ONE

Setting Up the Vista

Power jack

- The instrument is supplied with a 12 VDC (5A) power supply. The power supply is plugged into the back of the instrument as shown along with the Ethernet port and the USB port.



CAUTION

- Note: Use only the power cord included with this instrument or a replacement obtained from HunterLab. Be certain that the power cord is in good condition before connecting it.

Power Switch

- To turn the instrument on, press the rocker switch on the right side of the instrument.



Figure 2. Rocker Switch

Keyboard and Mouse

- The Vista works with the following keyboard and mouse:
 - L02-1017-434 Wireless keyboard and mouse kit.
- To use this accessory, turn the power off. Plug the keyboard into the USB port on the front of the instrument. Turn the power back on.

Front and Rear USB Connectors

- There are two USB connectors on the Vista. The one in the front is typically used for updating software, backing up the instrument, saving Jobs and Workspaces. The USB port on the back of the instrument is typically used to connect a printer or a computer to the Vista.



Figure 3. USB Port

Ethernet Port

- This port is used to connect the Vista to a network with the purpose of sending data (ASCII) to a server.

Updating the Essentials Software

- 1. First determine the version of software to upload on the Vista and download this version to a flash drive. Software upgrades are located here at support.hunterlab.com.
- 2. Turn on the Vista and place the flash drive in USB port on the front of the instrument (Figure 3).
- 3. Exit the software. Go to **JOBS> ABOUT** and tap the screen 6 times inside the box.

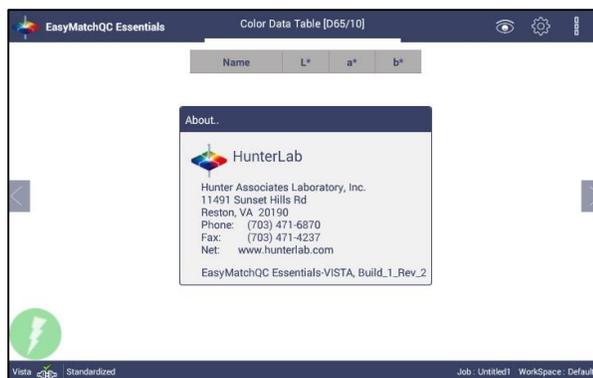


Figure 4. Tap here 6x

- 4. Once the Home Screen is displayed, go to Essentials Update. The software will be updated.



Figure 5. Select Essentials Update

- 5. To return to the operation of the Vista, click on Essentials.
- 6. Return to the **JOBS> ABOUT** screen to verify the software version.

CHAPTER TWO

Taking a Simple Measurement

What is HunterLab Vista & Essentials?

Vista is a transmittance-only color measuring instrument capable of measuring color and haze of transparent and translucent liquid, films, and plaques and transparent extruded or formed blanks. All samples will be measured by placing in the transmission compartment, either at the sphere port or receptor port. The size and nature of the sample will determine how the sample is presented and the type of sample handling device that is deployed. Sample handling will include cuvette, cells, and ampules for liquids and film holders for sheets and films.

Connecting the Sensor and Taking a Measurement

- After unpacking and setting up the instrument, turn on the power using the rocker switch on the lower right side.
- Once inside the software, the main measurement screen is displayed – Color Data Table (D65/10).



Figure 6. Measurement Screen

- The instrument is automatically connected and this connection is reported on the status bar. Next, the unit must be STANDARDIZED.
- Press the Workspace icon  and select Standardization. Select a mode and press 'Standardization' to initiate. The status will be reported in the lower left screen.



Figure 7. Standardization Parameters

- Main Measurement Screen. The Color Data Table view shows the configured Color Scale, Color Differences and Indices data for the Standard and Sample measurements in the job. The configured Tolerances can be applied to the Job and Pass/Fail results will also be displayed.
- To add a product standard, see Chapter Two: Tools. To change the color scale, etc., see Workspace: Color Scales. To add tolerances, see Workspace: Tolerances. To save these setups as a job or output, see Jobs: Data. To change the views, select Views under Workspace.

Name	Pass/Fail	L*	a*	b*	dL*	da*	db*
Standard		95.03	0.09	2.46			
+ Tolerance		2.18	0.74	0.79	2.18	0.74	0.79
- Tolerance		2.18	0.75	0.79	2.18	0.75	0.79
Sample 5	Fail	99.95	0.02	0.10	4.92	-0.06	-2.56
Sample 4	Fail	43.60	0.90	1.48	-51.44	0.82	-0.98
Sample 3	Pass	93.74	0.10	2.51	-1.30	0.01	0.05
Sample 2	Pass	95.04	0.09	2.46	0.01	0.00	0.00

Figure 8. Main Measurement Screen

- A long press on the Sample name will show a menu with the following options:
 - a) Set as Standard – to set the sample as Standard
 - b) Rename – to rename the sample
 - c) Delete – to delete the sample.



Figure 9. Changing, Renaming or Deleting a Sample

- A long press on the Standard name will show a menu with the following options:
 - a) Rename – to rename the standard,
 - b) Delete – to delete the standard. The deleted Standard is reverted back into the samples list with its original name.
 - c) Hitch – to Hitch the standard.



Figure 10. Long Press to Rename, Delete or Hitch

CHAPTER THREE

Navigating the Essentials Screen

The Easy Match Essentials Tools and Status features are shown below.

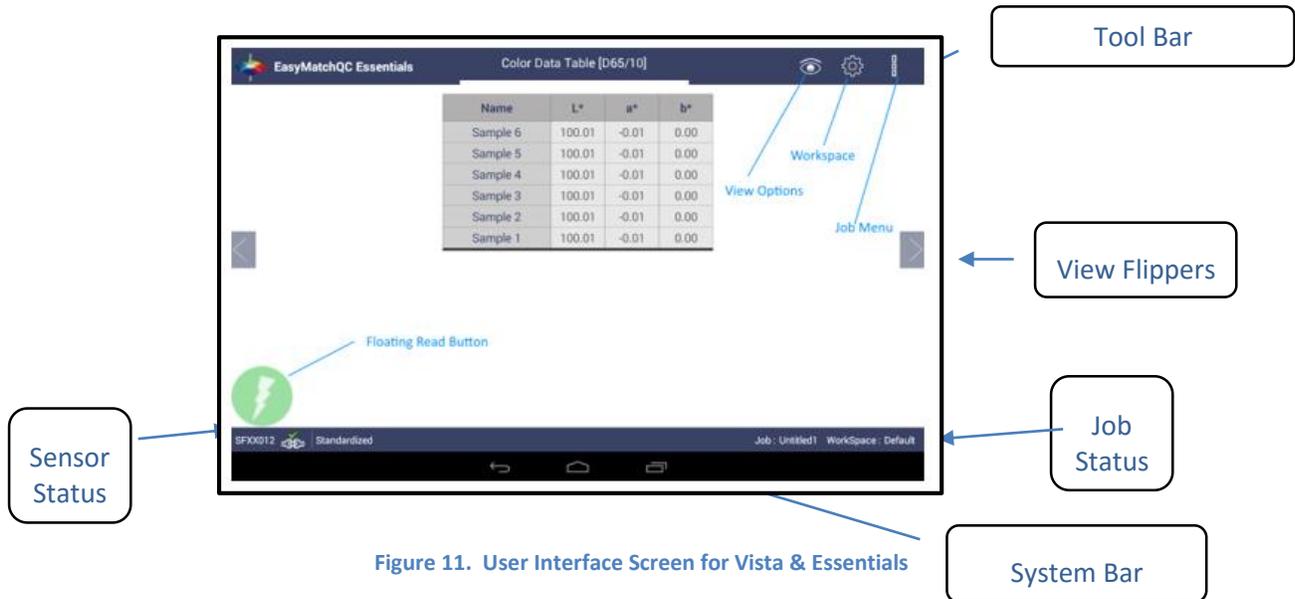


Figure 11. User Interface Screen for Vista & Essentials

Tools

Read



- Samples and Standards are read using this key.
- This tool can be moved around the screen by pressing and moving the icon.
- Assigning a Standard is done by pressing and holding the sample number and following the onboard instructions.

Tools: View Flippers



- Switching between Views can be accomplished by using the semi-transparent “Next” and “Prev” buttons placed at the side edges of the screen or by swiping left or right with two fingers on the screen.

Sensor Status:

- The Vista serial number is shown at the bottom left side of the System Bar and the current state of standardization is reported in the same area.

Jobs Status/Workspace Status:

- Job/Workspace Status is reported on the bottom right side of the System Bar.

Tools: View Options



- This menu shows the configuration options for the active view.

Tools: Workspace



- The Workspace menu provides color scales, illuminants, indices and difference selections and Read Options for measurements.

Tools : Jobs



- A job is a collection of all the data views (displays) and measurements (standards and samples) used for a particular task, product, or customer. Jobs are the “documents” of EasyMatch Essentials, analogous to word processing documents containing text and formatting.
- Jobs can be created for many different reasons, such as to hold data for a certain customer or a specific product line. Each operator may maintain their own job with preferences, or create separate jobs for different operations.

CHAPTER FOUR

Tool Bar: Jobs Function



Under the Job function, the following tasks can be accomplished:

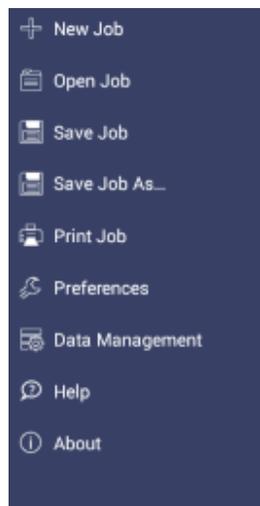


Figure 12. Job Menu

Jobs

- Jobs vs. Workspace: A job consists of standard and samples measured into a specific workspace. A workspace is a template with measurement conditions such as Color Scale, Index, illuminant, etc. There can be only one job open at a time. A new job will use the current loaded workspace settings. The user can change the settings and these changes are applied into the current job. The last loaded workspace settings are applied automatically when the user creates a new job. The main tool bar provides the options to create a new job, open an existing job and save a job.

Jobs: New

- Create a new empty Job. Select **New** Job and the current job is replaced with a blank screen.

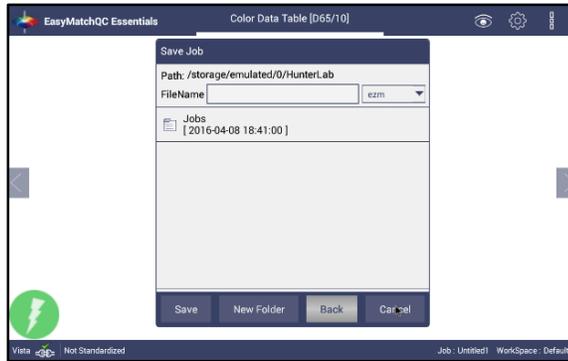


Figure 13. Creating A New Job

Jobs: Open

- **Open** a saved Job. A list of available jobs under the current path are displayed for selection. If the job that is needed exists in another folder, then it is an option to change the folder (New Folder). When the job to be opened is displayed select the appropriate button and press 'Open'.

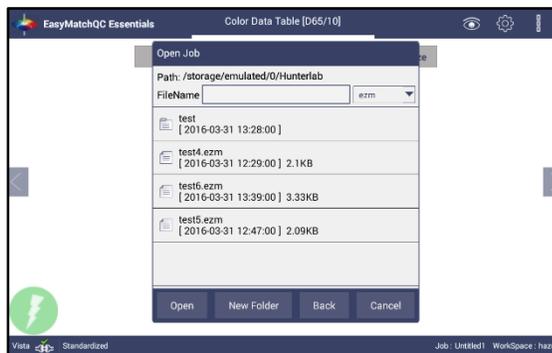


Figure 14. Open A Job

Jobs: Save & Save As

- **Save** the Job under the desired name. To save a job, select the folder, name the job and save the Job contents into a file. These files have an '.ezm' extension.

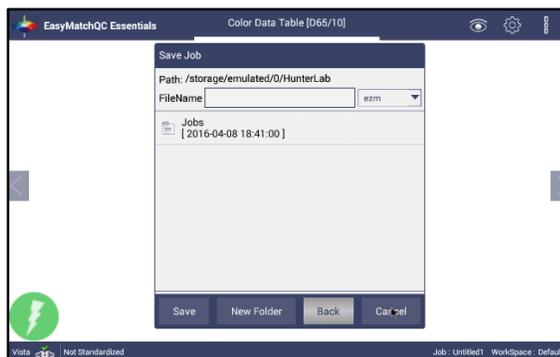


Figure 15. Save A Job

Jobs: Print

- **Print** an open Job using the parameters set up under Preferences.

Jobs: Preferences

- This menu item shows a dialog box with two pages **General** & **Print** as shown below, where the **General** page contains the options to configure.
 - Load the last used workspace and job.
 - Set the Standardization interval.
 - Set the screen brightness.
 - Configure Ethernet for data output.

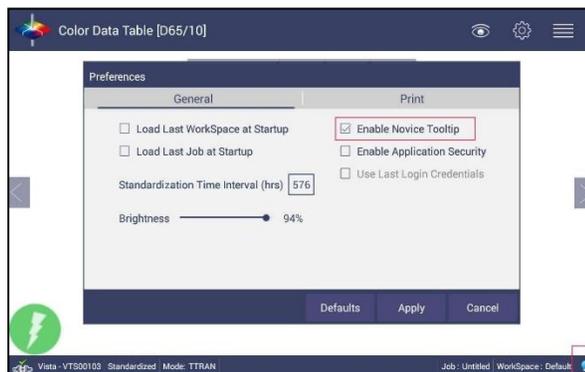


Figure 16. Jobs> Preferences> General Page

- **Enable Novice Tooltips** by checking on the box. Once enabled, on screen tips can be displayed for 3 seconds. To display again, roll over the 'lightbulb icon' on the lower right part of the screen.

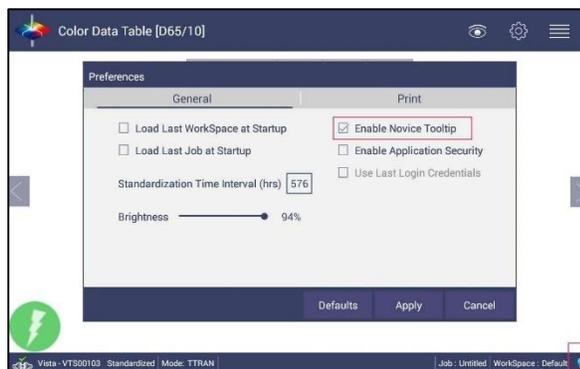


Figure 17. Novice Tool tip



Figure 18. Example of Novice Tool Tip

- **Enable Application Security.** When this is selected, the application will show the login dialog at the application startup. Valid login credentials are required to proceed further. On successful login, the user name will be shown in the status bar. If 'Use Last Login Credentials' is checked, the user will be automatically logged in on subsequent startups.

- The **Print** page allows the user to configure
 - The *Readings* to print
 - The option to *Preview* before print.
 - Print report *Title* and *Logo*
 - Orientation of the report (*Portrait* or *Landscape*) orientation.
 - To save changes, press **APPLY**.

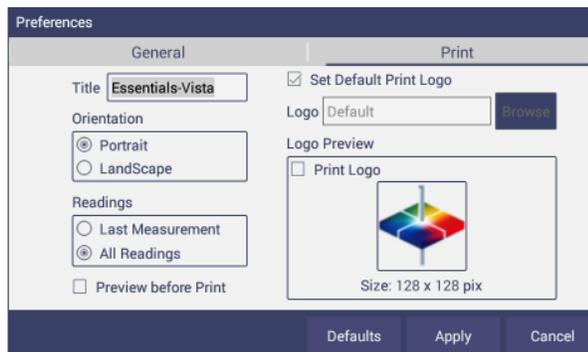


Figure 19. Job> Preferences> Configure Print Page

Jobs: Data Management

- The data contains the standards and sample measurements saved in a Job and database along with the sensor information. The saved measurements are also associated with a respective Workspace and Job.
- The **Data Management** contains the features to Recall, Import, Export or Email a Job and Backup/Restore.

- *Recall* the measurements from the database.
- *Export* the Job, Standard and Workspace to a USB flash drive.
- *Import* a Job, Standard and Workspace from a USB flash drive.
- *Email* the selected Job(s).
- *Backup* the Job Files and Database into a USB Flash drive.
- *Restore* the Job files and Database from a USB Flash drive.

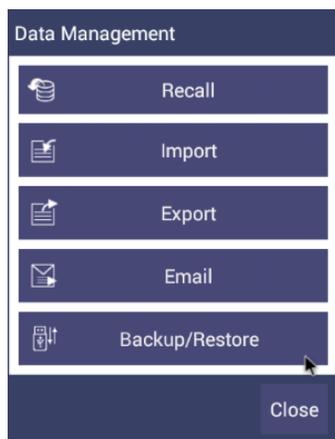


Figure 20. Data Management Menu

○ Jobs: Data Management : Recall

- **Recall measurements that have been stored to a job:**

The database contains the standards and sample measurements saved in a Job along with the sensor information. The saved measurements are also associated to respective Workspace and Job.

This feature enables the user to recall the Standard(s)/Sample(s) stored in the Database into the current running Job.

Click **Recall** option in Data Management, a dialog will be displayed where the user can recall the measurements from the database by **Selecting the Type:**

- **Show Standards associated to a Category**

When this option is selected, the standards list is filled with the standards associated with the selected Category (i.e. like Pale Ale) from the **Select Standard Category** list. All of the samples matching are filled into the sample list. To narrow the list, the user can select the samples only associated with the selected standard.

- **Show all the measurements in selected Job**

When this option is selected, the standards list is filled with the standards contained in the selected Job from the **Select Job** drop down list. All of the samples are filled into the sample list. To narrow the list, the user can select the samples only associated with the selected standard.

- **Show the Standards/Samples in the Current Workspace**

When this option is selected, the standards list is filled with the standards associated with the current workspace. All of the samples are filled into the sample list. To narrow the list, the user can select the samples only associated with the selected standard.

- **Show the Imported Standards**

When this option is selected, the standards list is only filled with the standards imported into the database.

After selecting the measurements click **Recall** to recall them into the active Job.

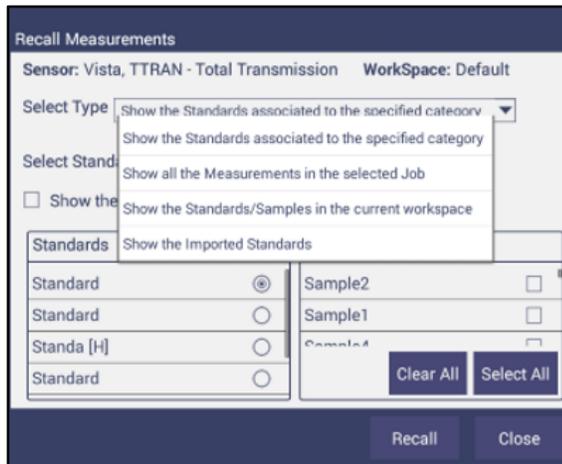


Figure 21. Recall Measurements

- Jobs: Data Management: **Import** This feature allows the user to import the below data from a USB flash drive into the instrument.
 - Job file
 - Standard
 - Workspace

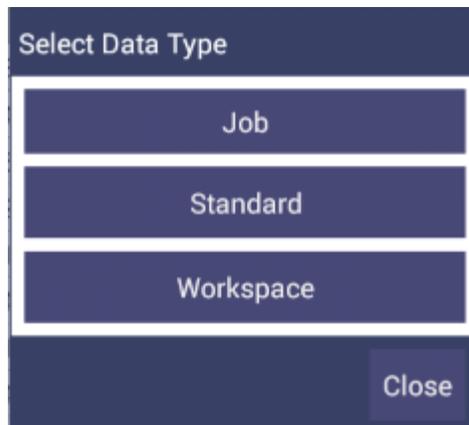


Figure 22. Import Data Type

- **Import Job**

This option allows the user to browse and select a Job file (.ezm) from the USB flash drive and import into the instrument. If a file name already exists, then the name will be incremented numerically.

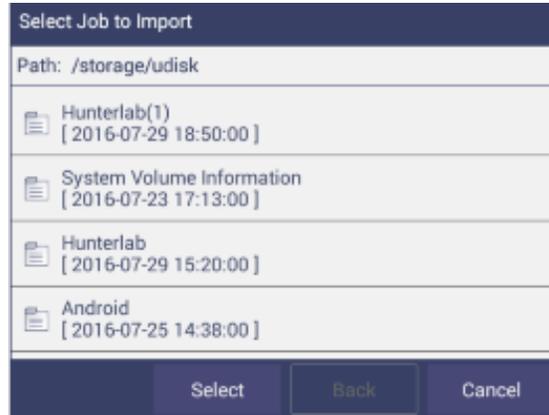


Figure 23. Import Job

- **Import Standard**

This option allows the user to browse and select a Standard file (extension .std) from the USB flash drive and import into the database. If required, the Standard Name can be changed.



Figure 24. Import Standard

- **Import Workspace**

This option allows the user to browse and select a Workspace file (extension .wsp) from the USB flash drive and import into the database. If the workspace already exists, then the user is prompted to specify a different name.

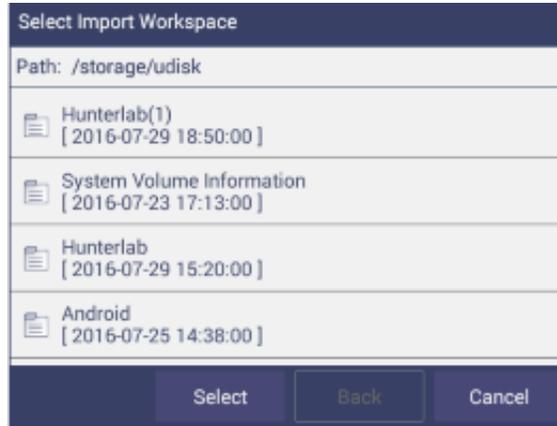


Figure 25. Import Workspace

To use the above functions, a USB flash drive must be present in the port.

- Jobs: Data Management: **Export**. Data can be exported to a CSV file on a flash drive for use in Excel or other database program. This feature allows the user to export the below data from instrument into a USB flash drive:

- Job file
- Standard
- Workspace

- **Export Jobs:** This option allows the user to browse and select an existing Job file (.ezm) or the current active Job data and copy into a USB flash drive either in **CSV** or **EZM** file format. While exporting into EZM format, the current active Workspace settings can be applied. The color data can be saved in a **CSV** file.

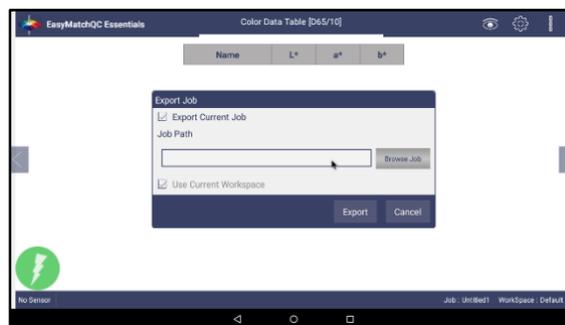


Figure 26. Export Current Job

- **Export Standard**

This option allows the user to browse and select an existing Standard in the database and copy into the USB flash drive as a file (.std).

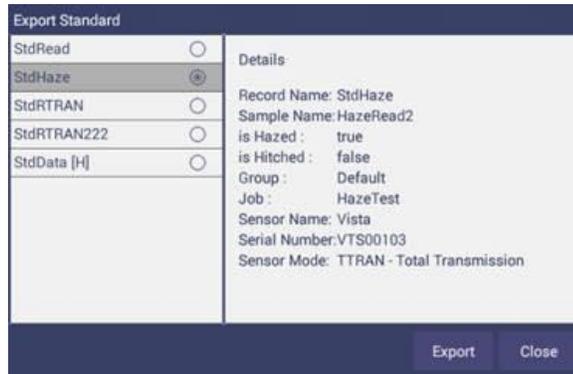


Figure 27. Export Standard

- **Export Workspace**

This option allows the user to browse and select an existing Workspace in the database and copy into the USB flash drive as a file (.wsp). To use the above functions, a USB flash drive must be present in the port.

- Jobs: Data Management: **Email A Job** . Saved data can be emailed if there is an active internet connection. When **Mail Job** option is clicked, the following screen is shown prompting the user to browse and select a user and enter the recipient mail address.

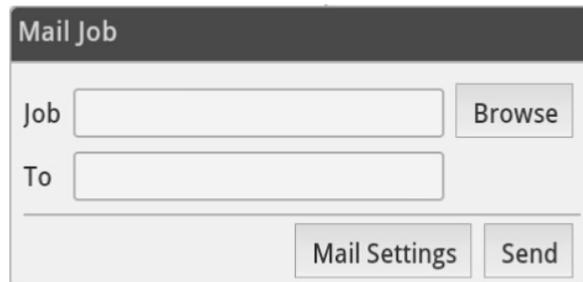


Figure 28. Enter an Address to Email a Job

- **Mail Settings**

Click **Mail Settings** button to configure the SMTP mail server configuration (Port, Server) as shown below. The mail settings configuration is mandatory in order to enable the mail job feature in the application. When done, press **Send**.

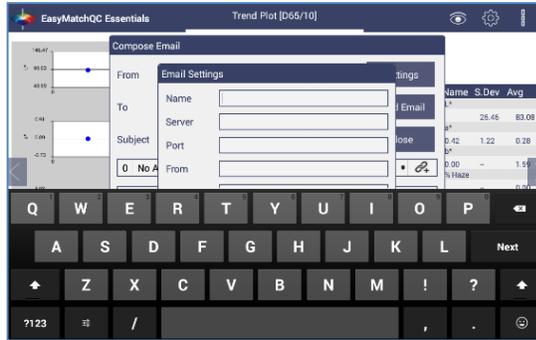


Figure 29. Enter SMTP Mail Server Information

- Jobs: Data Management: **Backup/Restore**. The **Backup** function will copy the entire Vista database to a selected folder on a thumb drive. **Restore** enables the user to copy the entire contents of a thumb drive and upload to the Vista.

Jobs: Help

To access the onboard manual, use Jobs: Help. **Novice Help** can also be enabled under Preferences> General.

Jobs: About

The **About** menu provides information about HunterLab and the current software version.



Figure 30. Job> About the Software

From this menu, the software can be closed by tapping on the screen 6 times. Closing the Essentials software, returns you to the **Home** screen where you can set the **Time/Date** or return to the Essentials software.

CHAPTER FIVE

Tool Bar: Workspace



Under the Workspace Function, the following tasks can be accomplished:

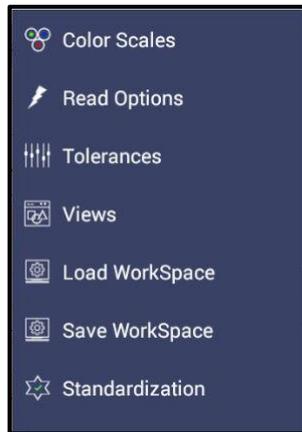


Figure 31. Workspace Parameters

Workspace: ColorScales

- Color Scales provides four screens in which the **Scales**, **Indices**, **Differences** and **Illuminant/Observer (Ill/Obs)** can be configured. Once selected, Tolerances and View options can be configured.

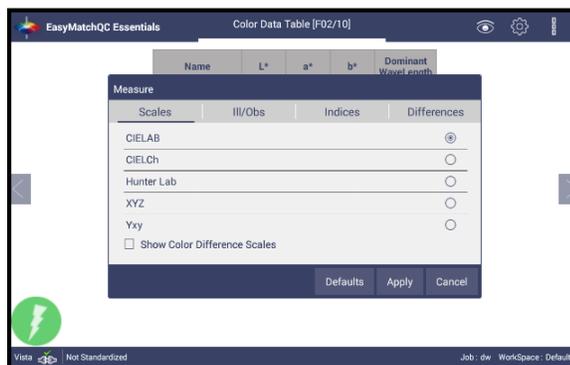


Figure 32. Color Measurement Scales

- This screen shows the five scales available for measurement. Select the absolute scale (3 parameters) and color difference scales (3 parameters) if needed. Press **Apply** and begin to read your samples.
- The Illuminant/Observer screen displays combination selections for these parameters. To see all of the choices, you can scroll through the selections by pulling up the screen.

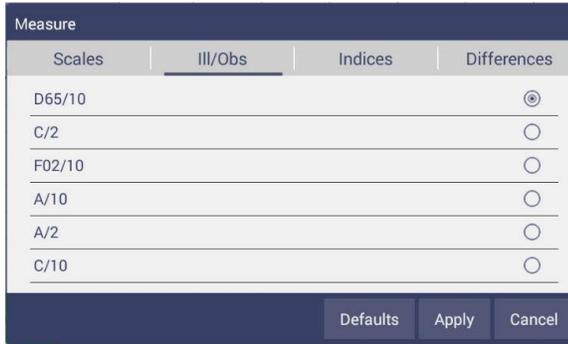


Figure 33. Illuminant/Observer Configuration

- To select indices, check the corresponding box on the right side. Multiple selections are available. To see more choices, the screen can be scrolled.

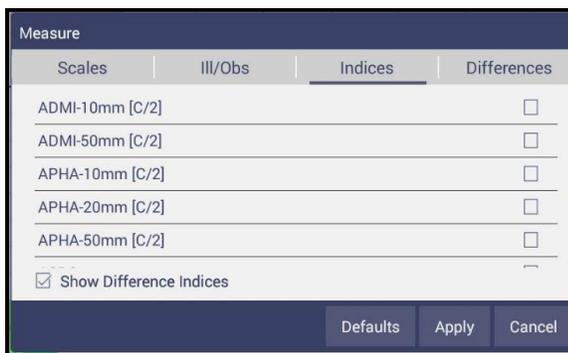


Figure 34. Index Configuration

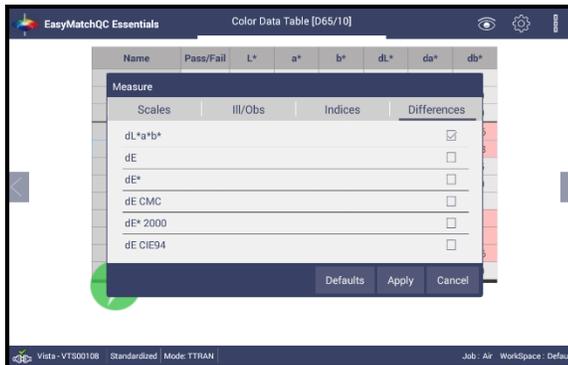


Figure 35. Color Measurement Differences

Table 1. Overview of Color Measurement Parameters for
EZ View, Color Data Table, Trend Plot & Color Plot

Illuminant	Observer	Scales	Differences	Indices	View Options
D65	2/10	CIE Lab	dL*a*b*	ADMI	Pass/Fail ¹
C	2/10	CIE LCh	dL*C*h*	APHA/PtCo/Hazen	Tolerances
F02	2/10	Hunter Lab	dXYZ	Saybolt	Time ³
D50	2/10	XYZ ¹	dLab	Gardner	Date ³
D55	2/10	Yxy ¹	dYxy	Haze	
D75	2/10		dE	Y Transmittance	Trace Range 1 ²
F07	2/10		dE CMC	EBC	Trace Range 2 ²
F11	2/10		dE* 2000	ASBC & Turbidity	Trace Range 3 ²
TL84	2/10		dE*	ADMI	Trace Range 4 ²
ULT 30	2/10			ASTM D1500	Auto Range ²
ULT 35	2/10			YI D1925	Display: Line ²
	2/10			YI E313, WI E313	Display: Point ²
				USP, JP	Zoom
				EP Y, GY, R, BY, B	Average ²
				EPOP	Std. Deviation ²
				NTU	Meas per Display ²

¹Not Available on Color Plot, ²Trend Plot Only, ³Color Data Table Only

Workspace: Read Options

- Shows a dialog box to configure options like **Averaging, Auto Save, Auto Read, Prompt for Standard Category and Read Haze**. The Read command performs the operation based on the configured options.

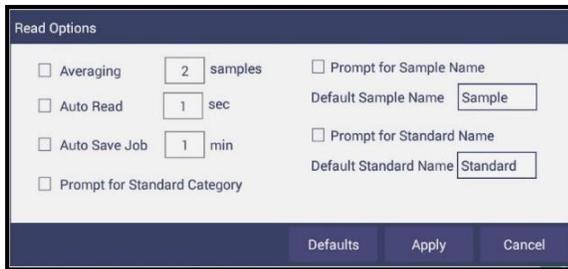


Figure 36. Read Options

- **Average**

Select the number of readings to average to produce the final measurement. The total number of readings to be averaged can be no less than two. Close the screen

and press Read  to initiate Readings.

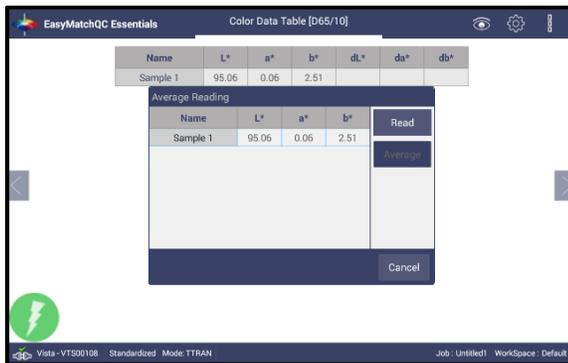


Figure 37. Reading and Averaging

Once the Read button is pressed, the instrument will display a unique dialog box to Read and Average the readings. The second reading is taken using the dialog box button, **Read**. Once all of the readings are taken, press **Average** to obtain the results.

- **Auto Read**

This feature performs measurements continuously. In **Auto Read** mode, measurements are initiated and stopped using the **Read** Button. The minimum value of the Read interval is 1 second and it will read as fast as it can update. When in Auto Read mode, the Read Button is enhanced with a checkmark.



Figure 38. AutoRead

To stop the Auto Read, press the **Read** button.

- **Auto Save Job**

This selection will automatically save a job. Once this feature is selected, a dialog box will be displayed to name the job.

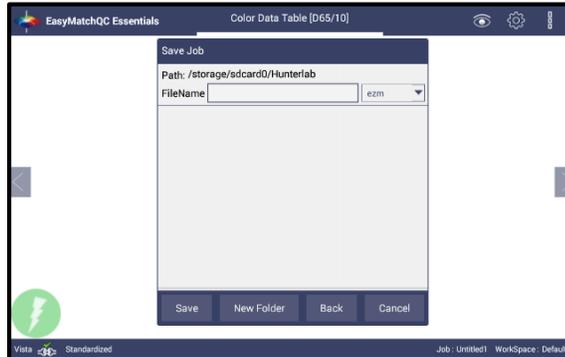


Figure 39. Auto Save Job

- **Prompt for Standard Category**

When this option is selected, the user will be prompted to enter the category name to which the standard can be assigned.

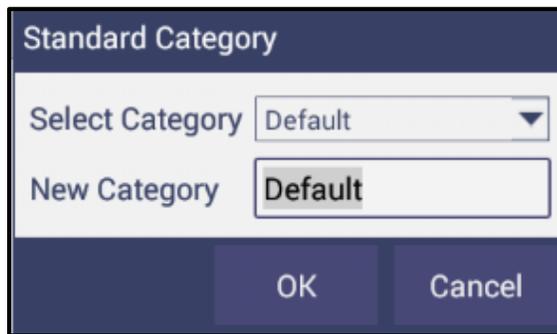


Figure 40. Prompt for Standard Category

A category is a product type (i.e. Pale Ale) to which multiple standards can be associated. This can also be used to **Recall** a group of standards.

- **Index Bias Correction**

This option allows the user to input a custom slope and intercept correction for indices. The user can select any Index from the list of applicable indices and input the desired **Gain and Bias** values. After selecting the required Indices, select the **Apply** button to save the selected Indices values and update the Views accordingly. The Bias-corrected Indices will be marked with * (eg: APHA *10mm) in the respective view display.

To calculate the slope and bias correction, read a series of samples around the target values of interest. Three methods can be used to provide corrected values:

1. **One standard data point:** In this case, the single data point is compared to the expected value. The Gain remains at 1.0 and the Bias is corrected:

$$\text{Bias} = \text{Expected Value} - \text{Measured Value}$$
2. **Two data points:** In this case, the two readings are compared to the expected values.

$$\text{Bias Correction} = \text{Expected Value 1} - (\text{Measured Value 1} * \text{Gain})$$

$$\text{Gain Correction} = (\text{Expected Value 1} - \text{Expected Value 2}) / (\text{Measured Value 1} - \text{Measured Value 2})$$
3. **Linear regression:** Create a $y = mx + b$ relationship comparing actual readings to target values, where target values is on the Y-axis and actual readings are on the x-axis. Enter the slope correction under Gain and the intercept correction under Bias.

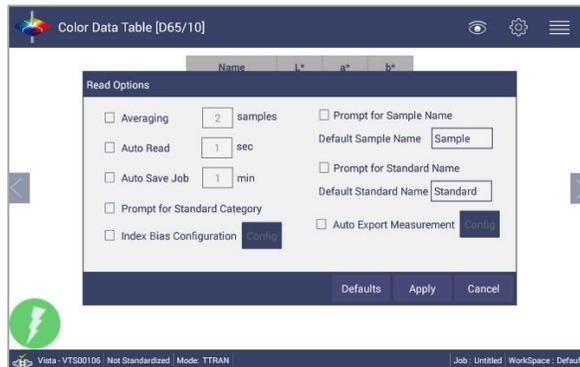


Figure 41. Slope & Bias Correction

Index Bias Correction		
Index	Gain	Bias
<input type="checkbox"/> ADMI-10mm [C/2]	1.0	0.0
<input type="checkbox"/> APHA-10mm [C/2]	1.0	0.0
<input type="checkbox"/> APHA-10mm Macro [C/2]	1.0	0.0
<input type="checkbox"/> APHA-10mm Semi [C/2]	1.0	0.0
<input type="checkbox"/> APHA-10mm Micro [C/2]	1.0	0.0
<input type="checkbox"/> APHA-20mm [C/2]	1.0	0.0
<input type="checkbox"/> APHA-24mm Vial [C/2]	1.0	0.0
<input type="checkbox"/> APHA-50mm [C/2]	1.0	0.0

Apply Close

Figure 42. Input Gain & Bias

- **Prompt for Sample/Standard Name**

Select this feature to input the Sample (or Standard) name manually during the measurement cycle so that the Sample measurement will be inserted with the specified name. If this option is not selected, the Samples will be inserted with the specified default sample name suffixed with the auto incremented index number. Press **Apply** when done.

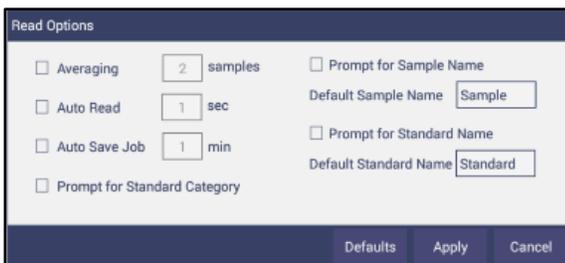


Figure 43. Prompt for Sample (Standard) Name

Workspace: Tolerances

- This command can be used to specify the **Tolerances**, for which are selected in View Options dialog box.

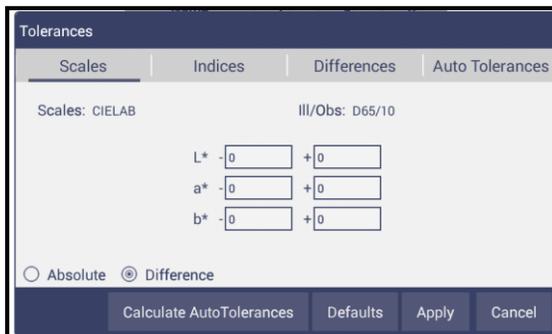


Figure 44. Tolerances Configuration

- **Tolerances** can be entered manually for a selected scale, index and difference, or can be auto-calculated using **Auto Tolerance**. Tolerances will be displayed on the measurement screen if enabled under the *View Options* for the Color Data and the Color Plot Screens. **Pass/Fail** based on these tolerances can be used on the EZ View Screen.

Tolerances

Scales: CIELAB III/Obs: D65/10

L* -2.182 +2.182

a* -0.746 +0.743

b* -0.790 +0.790

Absolute Difference

Calculate AutoTolerances Defaults Apply Cancel

Figure 45. Tolerances for Scales

Tolerances

Index: None III/Obs: D65/10

-0 +0

Absolute Difference

Calculate AutoTolerances Defaults Apply Cancel

Figure 46. Indices Tolerance Configuration

Tolerances

Differences: None III/Obs: D65/10

-0 +0

Absolute Difference

Calculate AutoTolerances Defaults Apply Cancel

Figure 47. Difference Tolerance Configuration

- **Auto Tolerances** are calculated for CMC by considering the values as I:C – 2:1 with auto correction factor = 0.75 and commercial factor = 1. However, these ratios can be modified as needed.

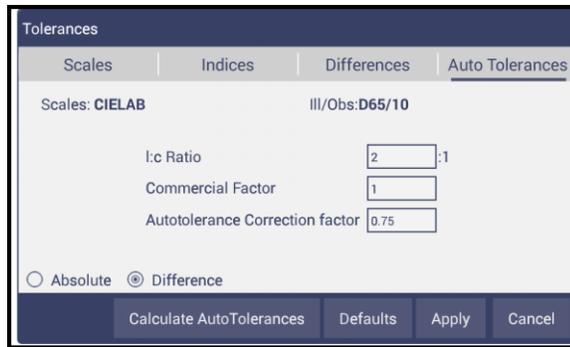


Figure 48. Auto Tolerance Configuration

- Once the tolerance parameters are selected, press **Apply** and then **Calculate Auto Tolerances**. The calculated tolerances are displayed under the Auto Tolerance tab. If Auto Tolerances are selected, the user cannot manually enter tolerances.

Workspace: Views

- **Views:** This option can be used to select the views to be presented in the application. Simply check on the box of the screen needed. Press **Apply** to save one or all of the screens. The default screen is the Color Data Table. To navigate between screens once the selections have been applied, use the View Flippers on the left and right of the screen.

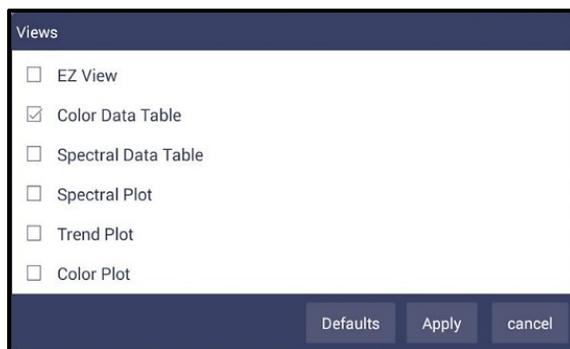


Figure 49. Workspace Views

Workspace: Load Workspace

- **Workspace** – A workspace is a collection of user preferred parameters as a template. When a user exits Easy Match Essentials and returns, the last used Workspace will be loaded if the user has selected that option in Jobs: Preferences.
- **Jobs** vs. workspace: A job consists of standard and samples measured into a specific workspace. There can be only one job open at a time. A new job will use the current loaded workspace settings. The user can change the settings and these changes are

applied into the current job. The last loaded workspace settings are applied automatically when the user creates a new job. The main tool bar provides the options to **Create** a new job, **Open** an existing job and **Save** a job.

- **Load Workspace:** When the user selects this button, any previously saved workspace can be loaded from the database. The newly loaded workspace settings will be applied to the job and all existing measurements within the job are adjusted accordingly.

Workspace: Save Workspace

- The current workspace parameters are saved into a database with a user specified name. Saved workspaces can be moved up to the 'Switch To' area if desired by dragging and dropping. If no workspaces have been saved, then only default will be present.



Figure 50. Save Workspace

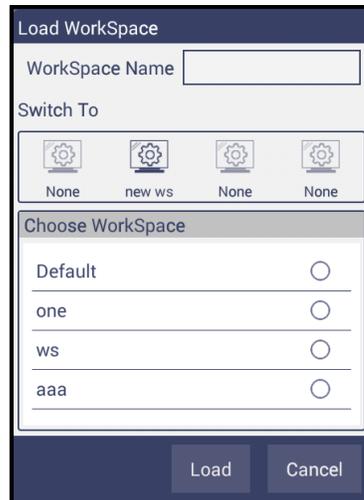


Figure 51. Load Workspace

- Note: When a user exits Easy Match Essentials and returns, the last used Workspace will be loaded when the option **“Load Last Workspace at Startup”** is selected in **Job> Preferences** dialog.

Workspace: Standardization

- Perform a Standardization. From the *Workspace* menu select **Standardization** and then choose **Total or Regular Transmittance** for measurement. For **HAZE**, select **TTRAN** and check the option “Include Haze”. Place the samples against the sphere port (**TTRAN**).
- Press **Standardization**, the instrument will initiate a standardization and report the status in the system status bar on lower left screen.
- The **Time interval** for the re-Standardization can be entered under **Jobs> Preferences**.

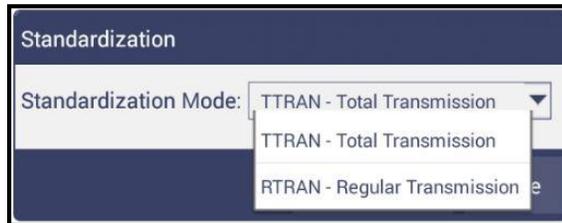


Figure 52. Standardize

Workspace: User Manager

- Security can be enabled on the Vista to ensure that operators cannot modify/delete folders or files and limit their functionality. An administrator is identified to set up the users/groups with selected privileges.
- To begin enabling security, go to **Jobs> Preferences** and enable security on the right side. Then the user is prompted to set up an Administrator account. The default password is 'hl#123'.

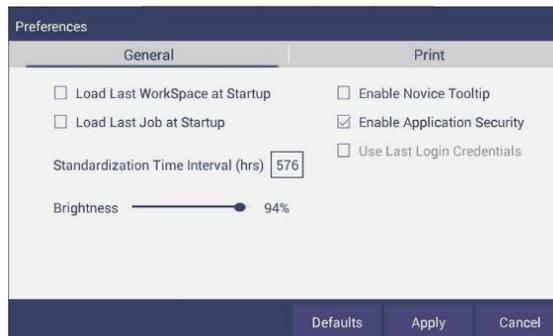


Figure 53. Enabling Security

The screenshot shows a dialog box titled "Configure - Administrator Account". It contains three input fields: "User Nname" with the text "Administrator", "Password" with six dots, and "Confirm Password" with six dots. A "Finish" button is located in the bottom right corner.

Figure 54. Configure Administrator Account

- Once the Administrator has been established, Groups and Users can be assigned accounts with limited privileges as shown below.

The screenshot shows a "User Manager" dialog box with two tabs: "Group" and "User". The "Group" tab is active. On the left is a sidebar with buttons: "Create", "Privileges", "Delete", and "Reset Password". The main area contains fields for "Group Name", "Type" (set to "Administrative"), and "Description". "Create" and "Close" buttons are at the bottom right.

Figure 55. Create a Group

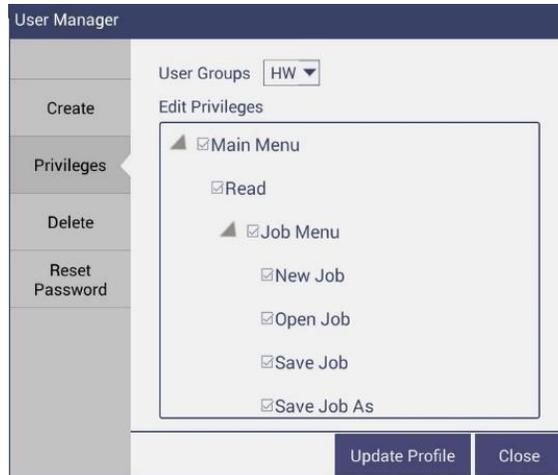


Figure 56. User Privileges

- When each user logs into the Vista, they must enter a name and password. For convenience, the user can check the box under **Jobs > Preferences > General** to use the 'last login credentials'.



Figure 57. Login Credentials

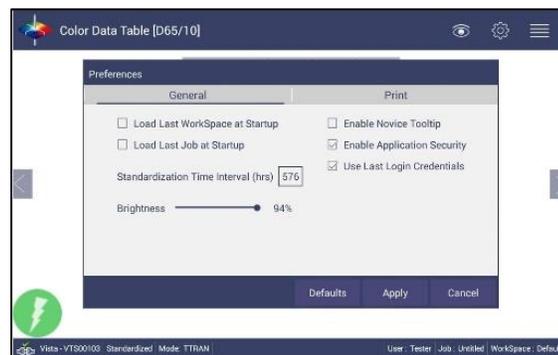


Figure 58. Enable Last Login Credentials

- If needed, the administrative user can delete groups / users and reset passwords of all Groups & Users.

CHAPTER SIX

Options (Views)



Views: EZ View

- This view provides a simple display of **Standard** vs. **Sample** and **Pass/Fail** results.

	Sample 10
L*	97.03
a*	-0.06
b*	0.62

Figure 59. EZ View Display

- **View Options** includes the selection of **Pass/Fail**.

Views: Color Data Table

- The **Color Data Table** view shows **Color Scale**, **Color Difference**, and **Index** data for the **Standards** and **Samples** in the job.

Name	Pass/Fail	L*	a*	b*	dL*	da*	db*
Standard		95.03	0.09	2.46			
+Tolerance		2.18	0.74	0.79	2.18	0.74	0.79
-Tolerance		2.18	0.75	0.79	2.18	0.75	0.79
Sample 5	Fail	99.95	0.02	-0.10	4.92	-0.06	-2.56
Sample 4	Fail	43.60	0.90	1.48	-51.44	0.82	-0.98
Sample 3	Pass	93.74	0.10	2.51	-1.30	0.01	0.05
Sample 2	Pass	95.04	0.09	2.46	0.01	0.00	0.00

Figure 60. Color Data Display

- Options such as **Tolerances**, **Pass/Fail**, **Date and Time**, **Data Order** and **Tolerances** can be selected using the **View Options**.

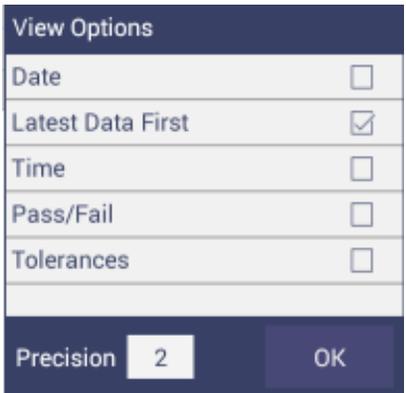


Figure 61. Color Data Screen: View Options

- A long press on the 'Sample' can enable the user to make the sample into a Standard, change the name or delete the reading.

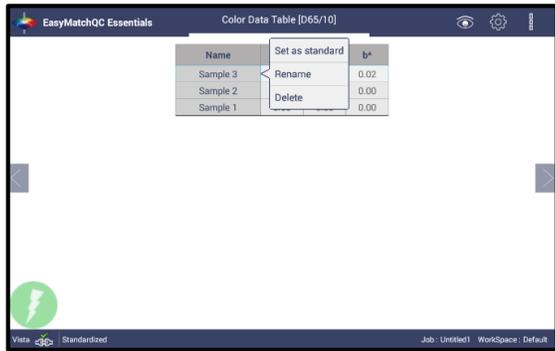


Figure 62. Changing a Sample into a Standard

- To delete a Sample (or Standard), select delete and then confirm the action.

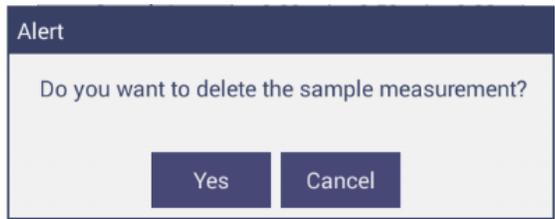


Figure 63. Delete the Sample Measurement

Views: Spectral Data Table

- The **Spectral Data Table** displays percent transmittance or absorbance values for each selected measurement at the wavelengths being measured.

WaveLength(nm)	400	410	420	430	440	450	460	470	480	490	500	510
Sample 10	89.24	90.06	91.26	91.38	91.48	91.61	91.76	91.99	92.00	92.16	92.29	92.31
Sample 9	71.65	81.96	90.12	91.11	91.41	91.58	91.71	91.86	91.85	92.00	92.11	92.13
Sample 8	71.58	81.88	90.03	91.03	91.33	91.49	91.63	91.78	91.77	91.91	92.02	92.05
Sample 7	58.52	75.39	89.30	91.10	91.56	91.73	91.84	91.92	91.86	92.00	92.08	92.08
Sample 6	31.02	58.10	85.90	90.14	91.11	91.42	91.56	91.52	91.43	91.58	91.63	91.62
Sample 5	24.27	52.11	83.37	88.47	89.64	90.04	90.24	90.20	90.12	90.30	90.37	90.39
Sample 4	23.05	43.07	63.82	67.06	67.72	68.25	68.74	69.26	69.55	70.03	70.47	70.75
Sample 3	51.94	67.06	79.70	81.36	81.69	82.01	82.31	82.66	82.79	83.09	83.34	83.44
Sample 2	66.98	76.58	84.30	85.23	85.46	85.71	85.96	86.27	86.34	86.60	86.81	86.92
Sample 1	88.37	89.13	90.38	90.46	90.54	90.71	90.87	91.12	91.11	91.30	91.44	91.48

Figure 64. Spectral Data Table

Figure 65. Spectral Data Table Options

Views: Spectral Plot

- This view provides a plot of wavelength vs. spectral measurement parameter.

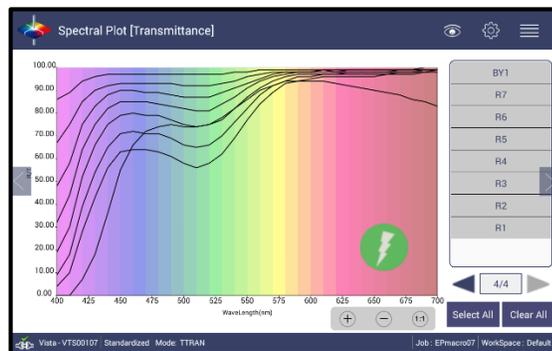


Figure 66. Spectral Plot View

- Press **Clear All** to remove all the samples to display. Press **Select All** to enable display of all samples. To select an individual sample, click on the respective Sample in the list located on the right edge of the screen.
- Uncheck the option **Show Background**, to display the plot with white background color.
- Check **Auto Range** option to scale the contents to fit into plot.

- **Note:** The Samples List is paginated. Click the left and right arrow buttons below the samples list to navigate between pages.

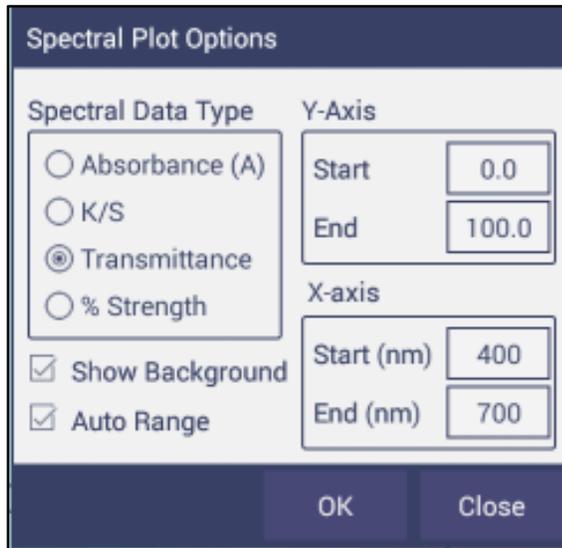


Figure 67. Spectral Plot Options

Views: Trend Plot

- This tool can be used to study the trends in production and identify color variations. There are four parameters of color measurement (three scale values and optional indice) which can be represented in four traces. If a sample point is selected in one of the four traces, it is highlighted in blue. The name is shown at the bottom right hand corner of the View. The **Average** and **Standard Deviation** can be shown as per the view configuration settings.

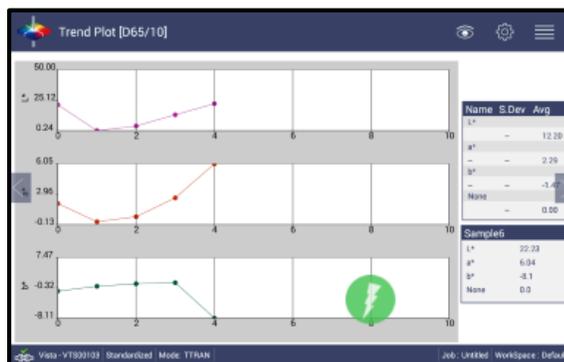


Figure 68. Trend Plot

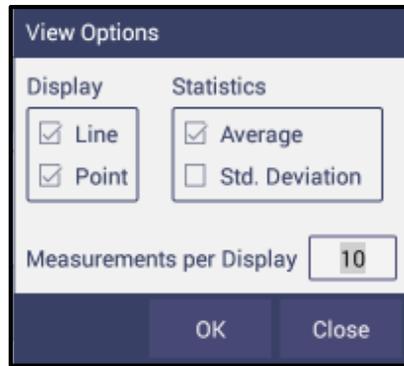


Figure 69. Trend Plot Options

View Options for the **Trend Plot** includes the type of display, the statistics and the number of readings per display. Continuing with the View Options/Traces, this dialog box sets the ranges for the traces or allows selection of **Auto Range**. Trace 1 to 3 uses the current Color Measurement Scale and Trace 4 will allow for measurement of differences or an indice. The user can select which Traces to view and set control limits as a percent.

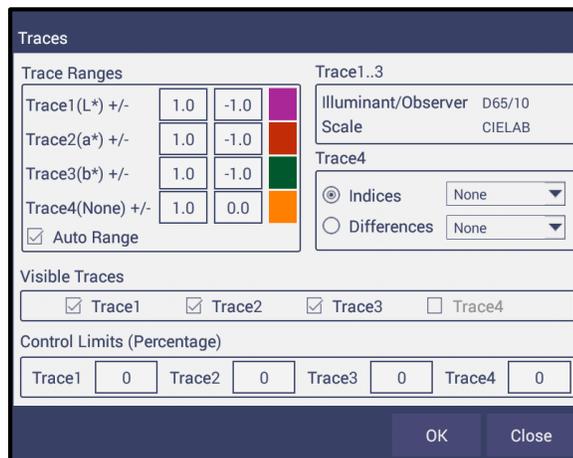


Figure 70. Trend Plot Traces

Views: Color Plot

- This shows the sample location in two-dimensional Color Space with respect to the standard for difference measurements or the samples in absolute measurement. For differences, the standard is the center point of the plot and the samples are plotted separately on the graph.
- All of the displayed samples are listed in a list box on the right of the screen. The color plot can be zoomed and all of the data points can be viewed in detail.
- The tolerance plot is available in rectangular and elliptical when tolerances are applied. The **Pass/Fail** sample points are shown in green and red when in difference mode, respectively. In Absolute Mode, they shown in green.



Figure 71. Color Plot View

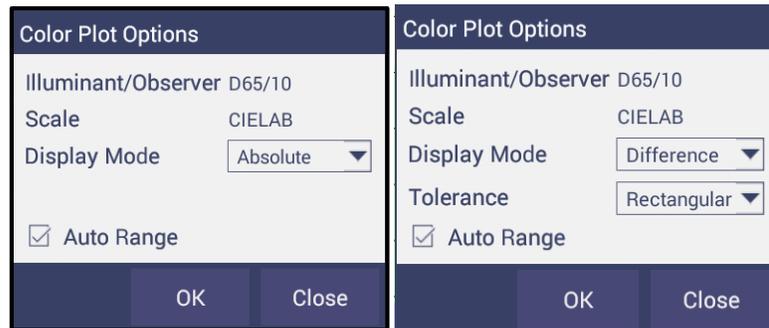


Figure 72. Color Plot Options

CHAPTER SEVEN

Special Measurements

Autoexporting Data through a Direct Connection between Vista and a Computer

- **Materials Needed**
 - (a) Vista Firmware needed: 1.01.0014 and above
 - (b) Hardware needed: Ethernet cable, Crossover adapter, Ethernet to RS-232 Connector, RS-232 to USB (optional)



Figure 73- Ethernet Cable



Figure 74- Crossover Adapter



Figure 75- Ethernet to RS-232 converter for Connection via Serial port



Figure 76- RS-232 to USB converter for connection via USB port

- **Configure Ethernet to RS-232**
 - (a) Set up Ethernet to RS-232 adaptor with static IP address and Port Number. In this example, adapter was configured with IP address of 192.168.0.100 and port 10001.
- **Connect Vista to Computer:**
 - (a) Plug Ethernet cable (Figure 1) into RJ-45 Ethernet connection at rear of Vista. Plug other end of cable into Crossover Adapter (Figure 2).

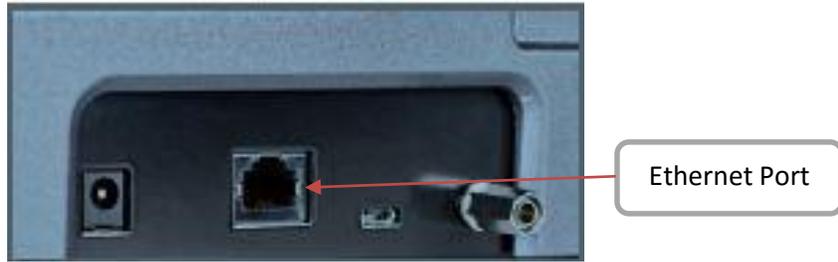


Figure 77. Rear View of Vista

- (b) Plug other end of the Crossover Adapter into Ethernet port of Ethernet to RS-232 adaptor (Figure 3).
- (c) Plug Ethernet to RS-232 adaptor into serial port of computer (if D-9 serial port is present) or into RS-232 to USB converter for connection to USB port. Plug power into Ethernet to RS-232 adaptor.

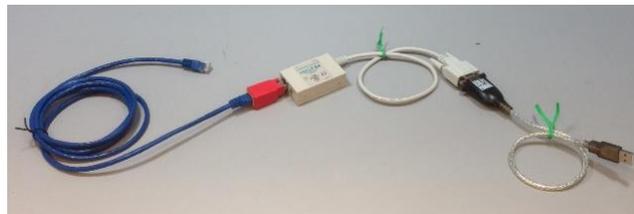


Figure 78. Cable Configuration for Direct Computer Connection

- **Configure the Vista:** (Note: Requires Essentials Rev 14 or higher)
 - (a) Configure the Ethernet port of Vista. Select **Jobs Menu > Preferences** and Select **Config Ethernet**. Enter a valid IP address for the Ethernet port. In this example, the following parameters are selected.

IP Address:	192.168.0.110
Subnet Mask:	255.255.255.0
Gateway:	192.168.0.1
Preferred DNS:	192.168.0.1
Alternate DNS:	192.168.0.1



Figure 79. Configuration Parameters for Ethernet

- (b) Press **Apply** on the Ethernet Configuration and then **Apply** on the Preferences Page to complete.
- (c) Go to **Read Options** and select **Auto Export Measurement** using a check and select **Configure**.

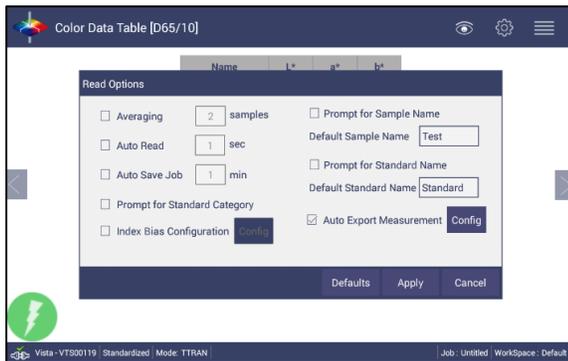


Figure 80. Read Options> Auto Export Measurements

- (d) For a direct connection between Vista and data collection computer, set up the Vista as a Client.
- (e) Set the IP Address to match the settings of the Ethernet to RS-232 converter, in this case 192.168.0.100 and the Port as 10001. Press **Apply** and then press **Apply** on the Read Options screen to continue.

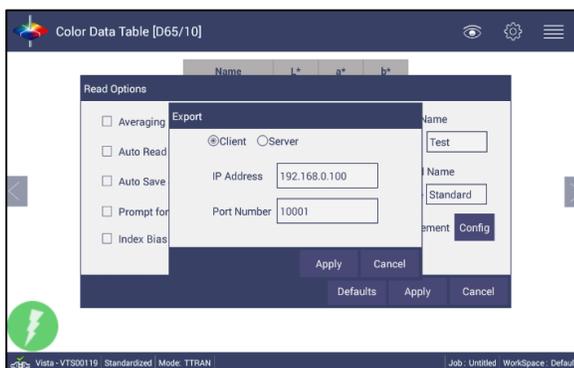


Figure 81. Read Options Export

- (f) Vista is now ready to send data.
- **Configure the Computer:**
 - (a) Connection configurations differ depending on data collection software. In this example, Hyper-terminal is use to demonstrate connectivity.
 - (b) The data collection computer will be set up as a Server.
 - (c) Connect as follows:
 - ii. Select the Comm port that represents the USB or Serial port connection.
 - iii. Define the Connection:
 - Bits per second: 9600
 - Data Bits: 8
 - Parity: None
 - Stop Bits: 1
 - Flow Control: None
- **Send Data from the Vista:**
 - (a) **Configure the Color Data Table** with the color scale and parameters to be transmitted.
 - i. **Standardize** the instrument.
 - ii. **Select Color Scales, Indices & Illuminant/Obs** (Workspace> Color Scales)
 - iii. Hit **Read** Button, data will be transferred to the computer.

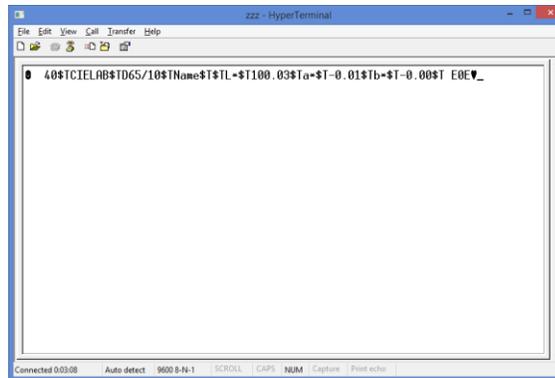


Figure 82. Data Output

The data string is shown as follows:

```
<STX><PACKET SIZE>$T<SCALE-LABEL>$T<ill/Obs>$T<LABEL NAME1>
<$T><VALUE1> $T<LABEL NAME2><$T><VALUE2><$T><LABEL NAME3>
$T<VALUE3>$T <LABEL NAME N><$T> <VALUE N>$T<CHKSUM><ETX>
```

Where, <STX> is the Start of Text (value =0x02)

<ETX> is the End of Text (value =0x03)

\$T is the default delimiter.

<SCALE-LABEL> is the Scale Label (e.g. CIELAB)

<ill/Obs> is the ill/Obs name (e.g. D65/10)

<PACKET SIZE> is the Total size (HEX String) of the Packet excluding the <STX> and <ETX>

<LABEL NAME> is the label name (e.g. L*, a*, b*, dE* etc.)

<VALUE> is the value for the preceding Label Name

<CHKSUM> is the Checksum (HEX String) - the sum of all the ASCII values in the total packet play load starting from <PACKET-SIZE> and till <CHKSUM>.

Autoexporting Data through an Ethernet Connection

- **Materials Needed**

- (a) Vista Firmware needed: 1.01.0014 and above
- (b) Hardware needed: Ethernet cable plugged into the back of the Vista and the other end to a network hub. Note that the computer must be connected to the same network as the Vista.



Figure 83. Ethernet Cable

- **Configure the Vista:**

- (a) Set up the Vista as the Server. Go to **Read Options** and select **Auto Export** Measurement using a check and select Configure. Choose Vista as Server and put Port number as 11111.

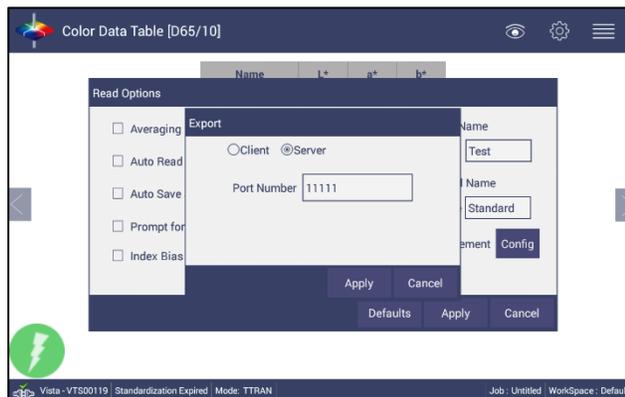


Figure 84. Auto Export Measurement

- (b) To define the data export, go to **Jobs> Preferences** and Select '**Config Ethernet**'. IP Address: the IP address of the Vista can be determined from the on-board Diagnostics program.

Subnet Mask: 255.255.255.0
Gateway: 192.168.0.1
Preferred DNS: 192.168.0.1
Alternate DNS: 192.168.0.1

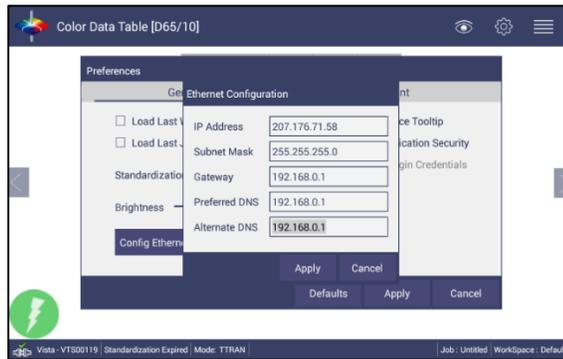


Figure 85. Jobs> Preferences> Ethernet Configuration

- (c) Press **Apply** on the Ethernet Configuration and then **Apply** on the Preferences Page to complete.
(d) The Vista is now ready to send data.

○ **Configure the Computer Using HyperTerminal Software**

- (a) Go to the computer and open HyperTerminal.
(b) Make a new connection:
i. Enter a name for the connection

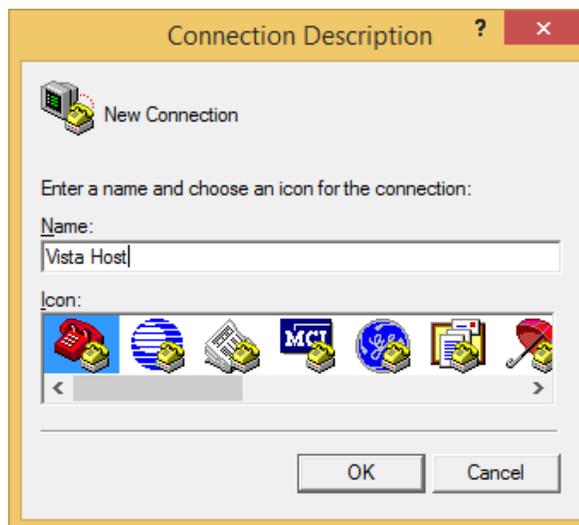


Figure 86. Setup for HyperTerminal

The data string is shown as follows:

```
<STX><PACKET SIZE>$T<SCALE-LABEL>$T<ill/Obs>$T<LABEL  
NAME1><$T><VALUE1> $T<LABEL NAME2><$T><VALUE2><$T><LABEL  
NAME3>$T<VALUE3>$T . <LABEL NAME N><$T> <VALUE  
N>$T<CHKSUM><ETX>
```

Where, <STX> is the Start of Text (value =0x02)

<ETX> is the End of Text (value =0x03)

\$T is the default delimiter.

<SCALE-LABEL> is the Scale Label (e.g. CIELAB)

<ill/Obs> is the ill/Obs name (e.g. D65/10)

<PACKET SIZE> is the Total size (HEX String) of the Packet excluding the <STX> and <ETX>

<LABEL NAME> is the label name (e.g. L*, a*, b*, dE* etc.)

<VALUE> is the value for the preceding Label Name

<CHKSUM> is the Checksum (HEX String) - the sum of all the ASCII values in the total packet play load starting from <PACKET-SIZE> and till <CHKSUM>.

Haze Measurements

- First select **Haze measurements** from the Color Data Screen, using **Workspace: Color Scales/Indices**.
- Select **Standardization: TTRAN** and check the box beside **Haze**.



Figure 89. Standardization for Haze

- Install the sample holder needed to measure your samples against the sphere port for TTRAN.
- **Read** samples using the button on the measurement screen.

Hitch Standard

- Once a standard is named, it can be changed to a “Hitch” standard. **Hitch Standardization** is a process by which two or more instruments of similar design can be made to read the same color values on a group of specimens. This process is very

useful in expanding the communications of color around the world or between vendor and customer.

- The process of Hitch Standardization (also known as transfer standardization) involves assigning one instrument to be the reference, or master, unit and mathematically adjusting the secondary, or slave, unit(s) to read the “same” values. In this way, two or more instruments can be hitched together. Hitching a secondary unit to a reference instrument requires that a specimen be read on both units and the values compared and adjusted accordingly. This specimen, known as the hitch standard, is first read on the reference instrument and its values recorded as spectral data or colorimetric (tristimulus) data. The hitch standard is then physically moved to the secondary instrument where it is reread and the values from the reference unit are input into the secondary instrument’s processor.



Figure 90. Hitch Standardization

Tips & Tricks: Assigning a Standard

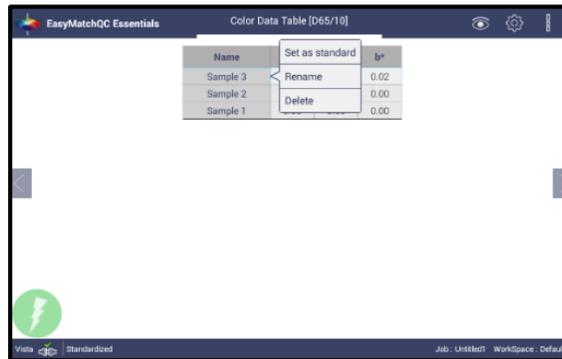


Figure 91. Assigning a Standard

- To create a standard, select the **Set as Standard** option. The system will then ask, “are you sure you want to set this sample as standard?”. If yes, then the sample is renamed as Standard.
 - To rename the sample or standard, use the **Rename** function.
 - To delete the sample or standard, use the **Delete** function.
-

Tips & Tricks: Exiting the Software

- To exit the software, go to Jobs: About. From within the About screen, you can tap the screen six times.



Figure 92. Exiting Essentials

- Once in the Home screen, you can change the Date/Time Settings or return to Essentials.

Tips & Tricks: Recover Unsaved Measurement Data

- In the case where the application is closed unexpectedly, the data is temporarily stored in a table along with the Job details. When the application restarts, a prompt allows the user to recover the data.



Figure 93. Recover Data

- If the user answers 'YES', all measurements are recovered into a new job or appended to a saved job.

Protecting the Sphere Port with a Cover Glass

- The purpose of this is to protect the sphere from chemical vapors. Inside the Transmission Compartment, locate the 3 screws on the cover plate near the sphere. Remove the screws, cover plate (1) and the rubber ring (2). Insert the cover glass (3), being careful not to leave fingerprints. Replace cover plate and ring and secure with the screws.

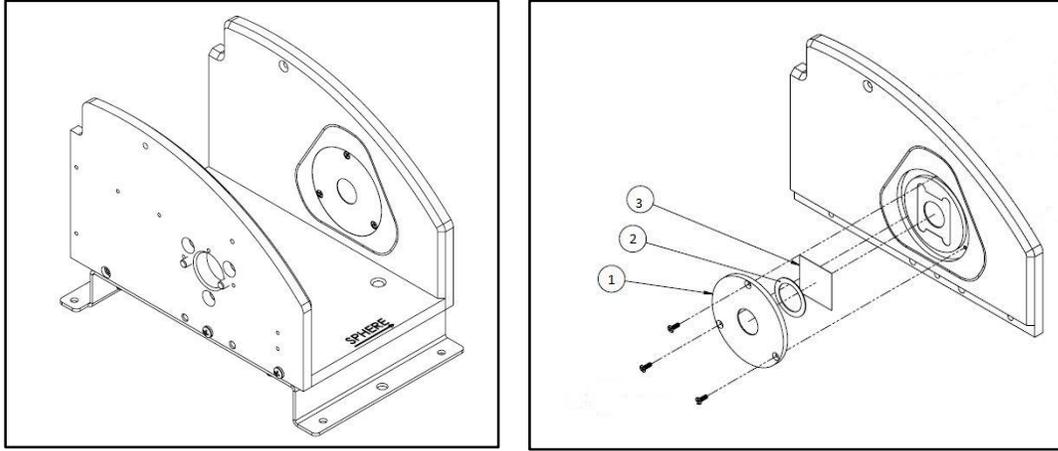


Figure 94. Inserting a Protective Cover Glass

CHAPTER EIGHT

Specifications

The specifications and characteristics of the instrument are given in this chapter. For best performance, the instrument should be placed where there is ample work space with medium or subdued illumination and no drafts. The operating conditions (temperature and humidity ranges) are given in the Operating Conditions section below.

Operating Conditions

Note: Do not leave Vista in an area where temperature or humidity extremes are possible.

Storage Temperature (3weeks)	-21°C to 66°C (-5°F to 150°F)
Operating Temperature	10°C to 40°C (50°F to 104°F)
Performance Temperature	21-28°C (70-82°F)
Noncondensing Humidity	10% to 90%
Standard Accessories	USB flash drive, Certificate of Traceability, Didymium Filter

Physical Characteristics

Weight	6.35kg (14lbs)
Dimensions (Height x width x length)	177.8mm x 485.8mm x 228.6mm (7in x 19.13in x 9.0in)
Sample Compartment Height with Door closed	82.55mm (3.25in)
Communications Interface	1- USB Micro OTG to printer 2- Wireless mouse and keyboard 3- Ethernet RJ45 for Save, Print and Email capability
Standards Conformance	CIE 15:2004, ISO 7724/1, ASTM E1164, DIN 5033, Teil 7 and JIS Z 8722 Condition E, G
Safety Compliance	CE, IEC 61326-1
System Power	100-240 VAC/1.5A, 47-63 Hz

Conditions of Illumination and Viewing

Light Source	Full spectrum LED array
Dual Beam Spectrophotometer	256 element diode array and high resolution, concave holographic grating
Geometry	Tt/0° or Td/0° per ASTM
Sphere	76mm (3in) Spectralon™
Port Size/Measured Area	18.5 mm (0.73 in) illuminated/9.8mm (0.39in) measured
Transmittance Modes	Total (TRAN), Regular (RTRAN), Haze
Transmittance Compartment (H x W x D)	108.0mm x 101.6mm x 187.3mm (4.25in x 4.0in x 7.38in); Cover can be removed for large samples

Instrument Performance

Spectral Data	Range: 400-700 nm Reporting Interval (nm): 10 nm
Spectral Resolution	<0.3 nm
Spectral Repeatability	Standard deviation within 0.1 %
Measurement Pathlength	Up to 100mm
Photometric Range	0-150%
Measurement Interval	<3 seconds
Measurement Speed (at 23°C)	≤2.5 seconds; 4 flashes
Inter-instrument Agreement	$\Delta E^* \leq 0.15$ CIE L*a*b* (Avg) on Transmittance Filter Set; $\Delta E^* \leq 0.25$ CIE L*a*b* (Max) on Transmittance Filter Set
Colorimetric Repeatability	$\Delta E^* \leq 0.025$ on air w/30 readings

Measurement

Data Views	Color Data, Spectral Plot, EZ View, Tristimulus Color Plot, Trend Plot
Illuminants	C, D65, F2, A, D50, D55, D75, F07, F11, TL84, ULT30, ULT35
Observers	2° and 10°
Color Scales	CIE L*a*b*, Hunter Lab, CIE Yxy, CIE XYZ and differences
Color Difference Indices	ΔE^* , ΔE , ΔE CMC (l:c), ΔE^*2000
Indices and Metrics	APHA/PtCo/Hazen, Saybolt, Gardner, YI E313 Yellowness, YI D1925, ADMI, EBC, ASBC, CIE Y Transmittance, USP, EP, JP, NTU, EP Opalescence
Other	Hitch Standardization Haze
Data Storage	250 spectral or tristimulus with Pass/Fail Tolerances as Working, Physical, Numeric and Hitch
Languages	Chinese, English, French, German, Italian, Japanese, Spanish

Regulatory Notice



HunterLab
ISO 9001 Certified

Declaration of Conformity

EU / EMC Directive:	2014/30/EU
Standard to which Conformity is Declared:	IEC 61326-1: 2012 / EN: 2013
Manufacturer:	Hunter Associates Laboratory, Inc. 11491 Sunset Hills Rd, Reston, VA, USA
European Representative: Representative's Address:	Christian Jansen Griesbraeustrasse 11, 82418 Murnau, Germany
Type of Equipment:	Transmission Spectrophotometer
Model No.:	Vista

*I, the undersigned, hereby declare that the equipment specified above
conforms to the Directive(s) and Standard(s) above*

Place: Reston, VA, USA

Signature 

Date: May 25, 2016

Full Name Tim Barrett

Position Systems Engineer

CHAPTER NINE

Features, Accessories & Maintenance

Vista Maintenance & Safety

The Vista is engineered to be virtually maintenance free. This section outlines the few parts of the sensor that are to be maintained in order for the instrument to function properly.

- **Cleaning the Vista**

The Vista is NOT waterproof, but the exterior of the case may be wiped with a damp cloth.

- **Cleaning the inside of the Vista**

Lift up the light cover to access the transmittance compartment. The inside may be cleaned with a lens brush or with a small amount of soapy water on a lint-free cloth or towel. Note: Do not spray directly into the instrument chamber.

- **Haze Standard Care**

The Assigned % Haze for this standard is a combination of the surface and internal scattering properties of this material. To maintain the surface properties, it is important that the surfaces of this standard are not damaged during normal usage. If the surface is contaminated, a cotton cloth moistened with isopropyl alcohol, or a laboratory glass cleaner such as Sparkleen can be used to gently wipe the surface. After wiping allow to dry for a minimum of 60 minutes.

- **Didymium Standard Care**

Check the filter for fingerprints, dust, and other contaminants. If necessary, gently clean the didymium filter with a cotton cloth moistened with Sparkleen. After wiping allow the filter to dry for at least one hour.

- **Power Required**

Voltage: 100-240 VAC, 1.5A, 47/63 Hz

Single Phase

180 VA maximum

Fuse: 1.4A, SB

Installation Category (Over Voltage): II

- **Safety**

- Do not view the instrument LED's directly as it may be damaging to the eyes.
- Do not submerge the instrument in water.
- Do not take the instrument apart as there are 'no user serviceable parts' in the instrument.
- Do not disassemble the instrument and attempt to clean the optical components. Do not open the instrument or remove any covers except using the instructions given in this User's Manual or under the direction of HunterLab Technical Support.

Verifying Vista Performance

Testing the Vista for Colorimetric Repeatability:

- The Repeatability Test assesses how consistently the instrument can measure color. Some set up is required and a normal instrument standardization. Then, twenty readings of air are taken. A table of the difference between the current reading and the first reading (Standard) is shown after every measurement. By entering the tolerance, a Pass/Fail assessment is shown.

When all readings have been made, the final test result is shown.

1) Setup:

- To set up a repeatability test, use the Color Data Table – **Workspace> Data View> Color Data**
- Select Workspace> Color Scales – select **Color Scale: CIELab**
Workspace>Color Scales> **Illuminant: D65/10**
Workspace>Color Scales> **Differences: dE***

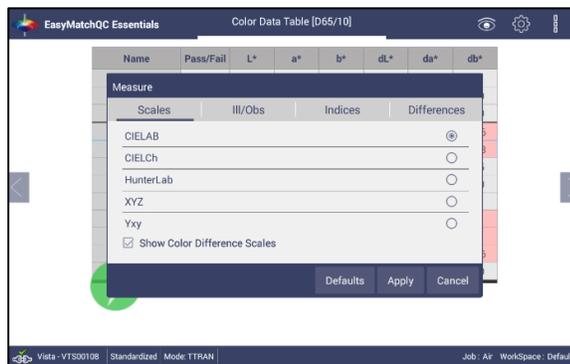


Figure 95. Set up for Colorimetric Repeatability

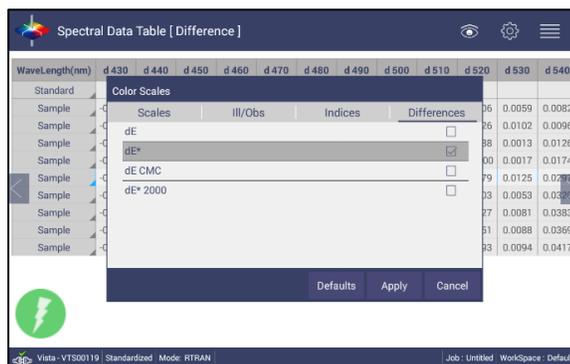


Figure 96. Setup for dE*

- View Options> Select Pass/Fail & Tolerances**



Figure 97. Read Options to select Pass/Fail and Tolerances

- d. **Workspace > Tolerances > Differences** – Enter the dE* tolerance of 0.025 for difference.

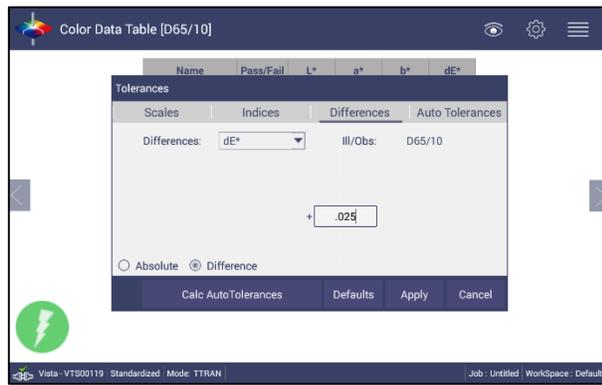


Figure 98. Enter Tolerance for dE*

- e. Save the Workspace as 'Repeatability Test' for later comparison.
- 2) Standardization: **Workspace > Standardization**. Remove all samples from the instrument and standardize in **TTRAN** on air.



Figure 99. Standardize in TTRAN

- 3) Establishing a Standard: Read the first sample and make this into a Standard.
 Note: A long press on the sample name will provide a selection to make this a Standard.

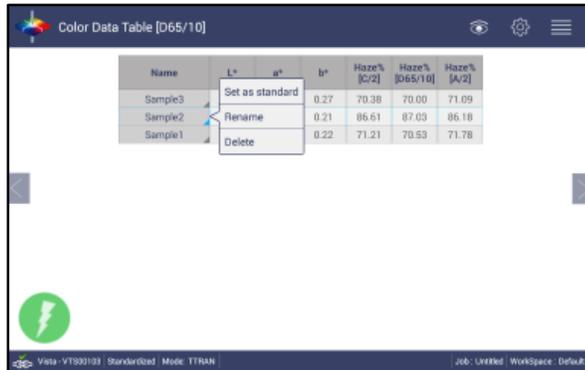


Figure 100. Setting a Sample as Standard

- 4) Readings: Take 30 samples readings on air and review the Pass/Fail information.



Figure 101. Reviewing 30 Readings

- 5) Save the Data: Save the results under **Jobs> Save>** Repeatability Test_date.

Reading the Didymium Filter on the Vista.

- The wavelength test allows you to assess readings of the didymium filter that is provided with the instrument. This checks for wavelength accuracy of the instrument and should be done on a regular basis (i.e., weekly or bi-weekly) as part of your routine instrument performance check.
 - a. Setup: To set up a didymium filter test, use the Color Data and Spectral Data Views
 - i. **Workspace> Data View> Spectral Data & Spectral Plot**
 - ii. Select **Workspace> Color Scales** – select **XYZ**
 - iii. From the **Spectral Data Screen>** Select Views Options. Select **430nm** as the beginning wavelength and **570nm** as the end wavelength. Select difference.

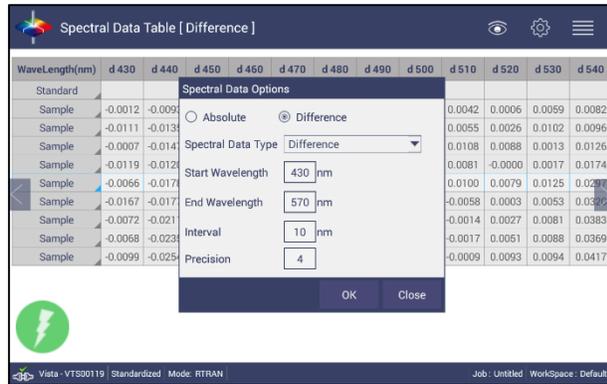


Figure 102. Select Spectral Range

iv. Save the Workspace as 'Didymium Filter' for later comparison.

b. Standardization: Remove all samples from the instrument and **Standardize** in **RTRAN** on air.

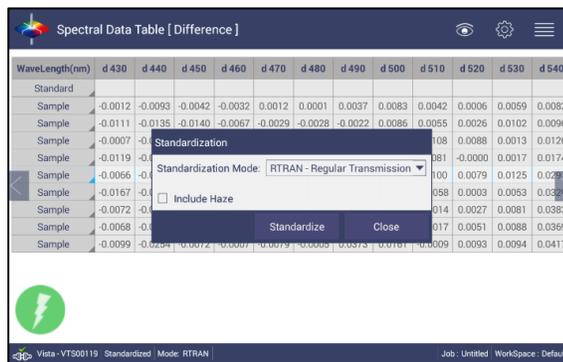


Figure 103. Standardize in RTRAN

- i. Place the didymium filter at the lens side of the instrument. Note: The didymium filter should be clean and free of finger prints.
- ii. Standard: From the Color Data Screen> Read the first sample and assign this sample as a standard by holding a press over the sample name.
- iii. Readings: From the Spectral Data Screen, Read the filter 20 times sequentially.

WaveLength(nm)	d 430	d 440	d 450	d 460	d 470	d 480	d 490	d 500	d 510	d 520	d 530	d 540
Standard												
Sample10	-0.0022	0.0144	0.0177	0.0054	0.0050	-0.0058	-0.0331	-0.0036	0.0014	-0.0090	-0.0149	-0.0443
Sample9	0.0060	0.0097	0.0126	0.0048	0.0101	-0.0015	-0.0362	-0.0123	-0.0058	-0.0125	-0.0195	-0.0519
Sample8	0.0063	0.0107	0.0061	-0.0014	0.0090	0.0011	-0.0282	0.0016	0.0113	0.0004	-0.0080	-0.0366
Sample7	0.0044	0.0096	0.0103	-0.0015	0.0088	-0.0042	-0.0350	-0.0151	0.0004	-0.0061	-0.0160	-0.0406
Sample6	0.0076	0.0120	0.0116	0.0010	0.0089	-0.0050	-0.0289	-0.0084	0.0010	-0.0028	-0.0185	-0.0407
Sample5	0.0058	0.0180	0.0087	0.0020	0.0085	0.0011	-0.0295	-0.0049	0.0066	-0.0042	-0.0096	-0.0325
Sample4	0.0021	0.0107	0.0133	-0.0089	0.0060	-0.0093	-0.0321	-0.0136	-0.0072	-0.0124	-0.0172	-0.0447
Sample3	0.0076	0.0067	0.0000	-0.0034	0.0121	-0.0002	-0.0226	0.0081	0.0043	-0.0020	-0.0173	-0.0256
Sample2	0.0020	0.0028	0.0108	-0.0024	0.0049	-0.0044	-0.0171	0.0024	0.0014	0.0036	-0.0085	-0.0243

Figure 104. Difference Spectral Data

- iv. Review the d%T Data at 430nm and 570nm and make sure that the difference does not vary beyond $d\%T@430nm \leq 1.25$ and $d\%T 570nm \leq 2.65$
- v. Save the results under **Jobs> Save> Didymium Test_date**.

CHAPTER TEN

Instrument Replacement, Repair, Problems, and Questions

The following HunterLab policies are described in this chapter:

- Warranty
- Shipping claims
- Returns/service
- Technical assistance.

Warranty

HunterLab warrants that all instruments it manufactures will be free from defects in material and workmanship under normal use and service. Our obligation under this warranty is limited to repairing or replacing any parts which our examination discloses to have been factory defective when returned to us by prepaid transportation. The time limit on this warranty is one year from date of shipment of new instruments and two months from the date of shipment of repaired instruments.

HunterLab warranty does not cover expendable items such as lamps, fuses, batteries, and diskettes. The warranty is void if the user has made unauthorized repairs, performed improper installation, or has incorrectly used the instrument.

Shipping Claims

All materials are sold F.O.B. from Reston, Virginia (unless otherwise specified) and HunterLab responsibility ends upon delivery to the first carrier. All claims for loss or damage must be rendered by the consignee against the carrier within fifteen days of receipt of goods. A copy of this notice must also be forwarded to HunterLab within five days of its receipt.

○ **Breakage or Damage**

According to the contract terms and conditions of the carrier, the responsibility of the shipper ends at the time and place of shipment. The carrier then assumes full responsibility. Perform the following procedures in the case that your instrument arrives broken or damaged.

▪ **Freight or Express**

1. Notify your local carrier.
2. Hold the damaged goods with their container and packaging for inspection by the examining agent. Do not return any goods to HunterLab prior to inspection by and authorization of the carrier.
3. File a claim against the carrier. Substantiate this claim with the examining agent's report. A certified copy of our invoice is available upon request. The original B/L is attached to our original invoice. If the shipment is prepaid, write for a receipted transportation bill.

4. Advise HunterLab regarding replacement.
- **Parcel Post Shipment**
 1. Notify HunterLab at once in writing, giving details of the loss or damage. This information is required for filing a claim.
 2. Hold the damaged goods with their container and packaging for possible inspection by postal authorities.
 3. Advise HunterLab regarding replacement.
 - **United Parcel Service**
 1. Contact your local UPS office regarding damage and insurance claims. Each UPS office has a different method of handling these occurrences and yours will advise you of its procedures.
 2. Retain the container and packaging.
 3. Notify HunterLab at once for replacement.

Shortage

- Perform the following procedure if your order appears to be missing items.
 - Check the packing list notations. The apparent shortage may be a backordered item and may be marked as an intentional short-ship.
 - Re-inspect the container and packing material, particularly to locate smaller items.
 - Ascertain that the item was not removed by unauthorized personnel prior to complete unpacking and checking.
 - Notify HunterLab immediately of the shortage in writing.

Incorrect Shipment

- Perform the following procedure if material received does not correspond with your order.
 1. Notify HunterLab immediately, referencing your order number and item.
 2. Hold incorrect items until return shipping instructions are received.

Returns for Repair

A service request order (SRO) number is required before any items can be returned to HunterLab. Contact HunterLab's Order Processing Department to obtain an SRO for damaged or incorrect parts, or Technical Support to obtain an SRO to return and instrument for service.

Do not return any damaged or incorrect items until all shipping instructions are received.

HunterLab offers complete repair services for all instruments it manufactures. Call HunterLab for the service facility nearest your location. If your equipment is not functioning properly, contact HunterLab Technical Support for maintenance or repair instructions. Many times, this on-the-spot diagnosis is all that is required.

If repair is required, the instrument may be returned to a HunterLab service facility. For schedule and terms for repairs, call HunterLab Technical Support. Please read the next section, "When You Need Assistance," prior to contacting HunterLab.

Customers are responsible for incoming and outgoing freight charges for instrument returned to HunterLab for all repairs, including warranty repairs.

- **Packing and Shipping Instruments for Repair**

Please regard the following instructions when packing your instrument to return it to HunterLab for repair. **Please save the original packing to use if needed.** These instructions do not replace the recommended professional packaging for your instrument, but may assist in eliminating the need for a shipment claim due to faulty packaging. Purchasing freight insurance does not guarantee a successful damaged shipment claim if the carrier determines the instrument was not packaged properly.

- All instrument tiles, black glass, power supply, power cords, and cables for the instrument should be included in your shipment. **Your repair estimate will be delayed if the instrument tiles are shipped separately later.**
- Cover the measurement port. **Do not use duct tape.** “Painter’s tape” is preferred, as it will not leave residue on the instrument.
- Place the instrument inside original box. Styrofoam peanuts should not be used as packing material for instruments, as they can suspend items weighing only up to 5 pounds. Observe the information listed on the bottom of most cartons with regard to burst strength and gross weight limits. Single wall cardboard cartons should not be used. (A proper packing carton with packing material may be purchased from HunterLab, if desired.)
- Insure the shipment.
- Provide an itemized packing list of all contents of the shipment.
- Label the carton(s) as follows:

HunterLab
Attn: SRO # _____
11491 Sunset Hills Road
Reston, VA 20190
U.S.A.

When You Need Assistance

When you have a problem with an instrument or software, or need technical advice concerning a specific application, you may want to consult the **support.hunterlab.com** webpage. If you need to contact HunterLab for assistance, please have the following information available:

- The type of sensor for which you need assistance (Vista).
- The serial number of the instrument (found on the back of the unit).
- The type of processor or software you are using to access the sensor output (such as EasyMatch QC), the version of the software, the operating system, and the brand and type of computer, if applicable.
- The specific nature of the problem, including the exact error message received or the number of units the sensor reads “off” from the standard tiles.
- The steps performed prior to the start of the problem.

- Steps already performed to reconcile the problem and/or results of any diagnostic tests.
- The type of product being measured.
- Environmental conditions under which the instrument is normally used (temperature, humidity, dust, fumes, etc.)
- Whether the instrument has recently been moved or the computer reconfigured.
- The name(s) of any HunterLab personnel with whom you have previously discussed the problem.

The mailing address for HunterLab headquarters is given below. Customers outside the United States should contact their HunterLab distributor for initial assistance.

Hunter Associates Laboratory, Inc.
11491 Sunset Hills Road
Reston, Virginia 20190
U.S.A.

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