

# User's Manual

## Vista® with EasyMatch® Essentials



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## VISTA with EasyMatch Essentials

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### Safety Notes

For your safety when using the Vista, you should pay 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 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.
- Unit is for indoor use only and not suitable for wet location.



- UV Light hazard, avoid looking directly at light.

# 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.



Figure 1. Rear View with Connectors

### 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 in the micro USB adaptor to the rear of the instrument and then attach the nano-receiver for the keyboard into the USB port. Install the batteries into the keyboard/mouse and 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 saving jobs and workspaces, backing up the instrument and updating software. The USB port on the back of the instrument is typically used to connect a printer or a keyboard to the Vista.



Figure 3. USB Port

## Ethernet Port

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

## Updating the Essentials Software

- First determine the version of software to upload on the Vista and download this version to a flash drive. Software upgrades are located at [support.hunterlab.com](http://support.hunterlab.com).
- Turn on the Vista and place the flash drive in USB port on the front of the instrument (Figure 3).
- Exit the software. Go to **Jobs> About** and tap the screen 6 times inside the box.

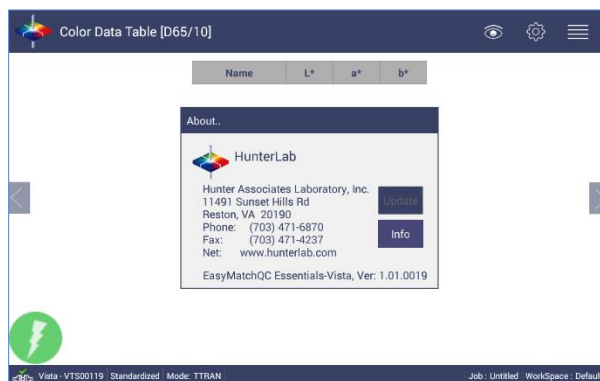


Figure 4. Tap here 6x



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



Figure 5. Select Essentials Update

- To return to the operation of the Vista, click on **Essentials**.
- 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:
  - **Set as Standard** – to set the sample as Standard
  - **Rename** – to rename the sample
  - **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:
  - **Rename** – to rename the standard,
  - **Delete** – to delete the standard. The deleted Standard is reverted into the samples list with its original name.
  - **Hitch** – to Hitch the standard.



Figure 10. Long Press to Rename, Delete or Hitch

## 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 11. Hitch Standardization*

## Navigating the Essentials Screen

The EasyMatch Essentials Tools and Status features are shown below.

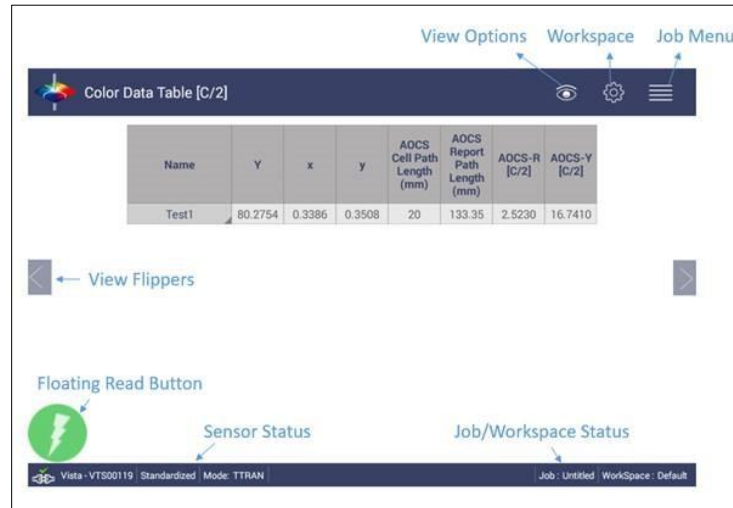


Figure 12. User Interface Screen for Vista & Essentials

### 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.
- Once a Standard is named, it can be **Renamed**, **Deleted** or changed to a **Hitch Standard**.

### 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.

### Tools: 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.

### **Tools: 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: Jobs**



- A job is a collection of all the data views (displays) and measurements (standards and samples) used for a 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.

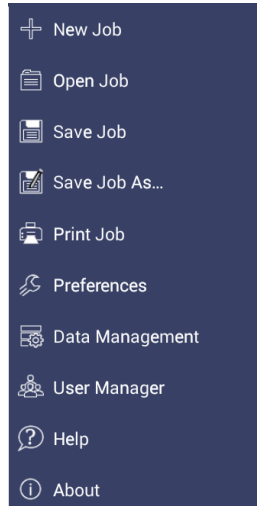


# CHAPTER FOUR

## Tool Bar: Jobs Function



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



*Figure 13. 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. The Job Status bar displays the new job as 'untitled'.

#### 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**.

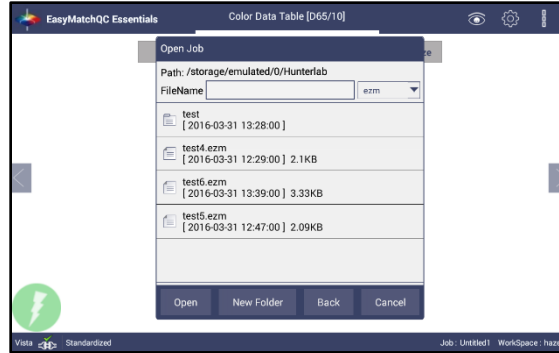


Figure 14. Open A Job

### 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.

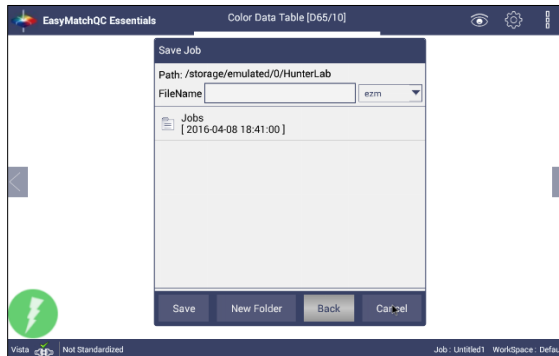


Figure 15. Save A Job

### 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 standardization time interval**
  - **Set screen brightness and date/time**
  - **Enable novice tooltip**
  - **Enable application security**
  - **Use last login credentials**
  - **Configure and enable network data export**
  - **Configure network settings**

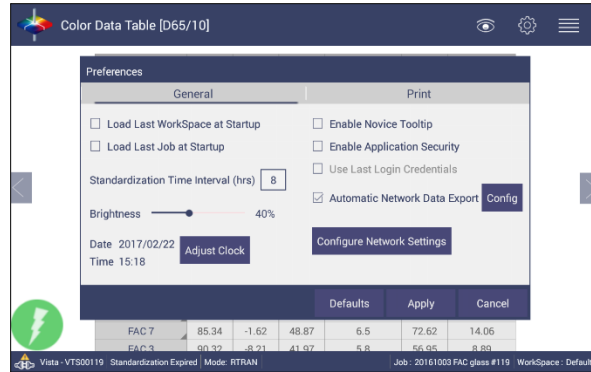


Figure 16. Jobs> Preferences> General Page

- To **Load the Last Workspace at Startup**, check this box and press **Apply**.
- To **Load the last Job at Startup**, check this box and press **Apply**.
- The **Standardization Time Interval** is a useful reminder to restandardize after time (hours). Press **Apply** to set the new interval. When the time has lapsed, a prompt to restandardize will be displayed before measurements can be taken.
- Set the screen **Brightness** using a sliding scale and press **Apply**.
- Set the Date and Time, time zone, date and time format using the **Adjust Clock** feature.
- **Enable Novice Tooltips** by checking on the box. Once enabled, on screen tips can be are displayed for 3 seconds. To display again, roll over the **'lightbulb icon'** on the lower right part of the screen.



Figure 17. Example of Novice Tool Tip

- **Enable Application Security**. This selection is available after the User Manager has been set up. Please refer to the **Jobs: User Manager** for more information.
  - ❖ When this is selected, the application will require valid login credentials at startup. 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.

- To **Configure and Enable the Network Data Export** and **Network Settings**, please connect the Vista to a computer as described in Special Functions (Chapter 7).
- 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**.

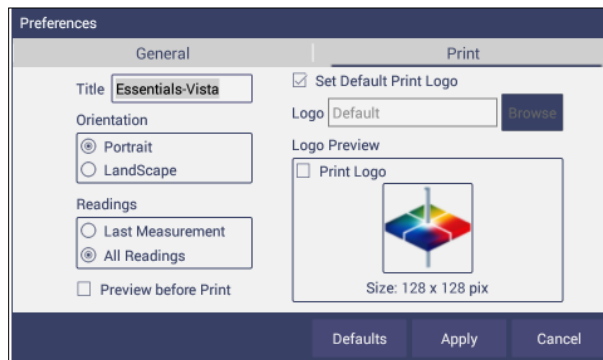


Figure 18. Job> Preferences> Configure Print Page

## Tools: Workspace



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

## Jobs: Data Management

The data contains standard(s) and sample measurements saved in Job files 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.
- **Import** a selected Job(s), Standard(s) and Workspace (s) from a USB flash drive.
- **Export** the Job(s), Standard(s) and Workspace(s) to a USB flash drive.
- **Email** the selected Job(s).
- **Delete** a Job(s), Standard(s) and Workspace(s).
- **Backup** the Job Files and Database into a USB Flash drive.
- **Restore** the Job files and Database from a USB Flash drive.

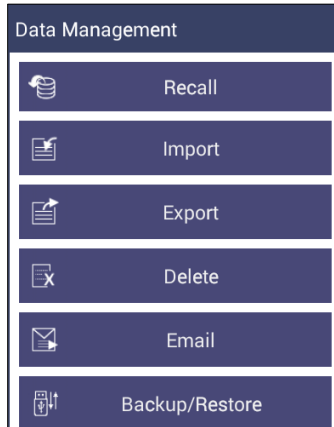


Figure 19. Data Management Menu

- **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/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 matching samples 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 standard contained in the selected Job and all samples are filled into the sample list.
- **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 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.

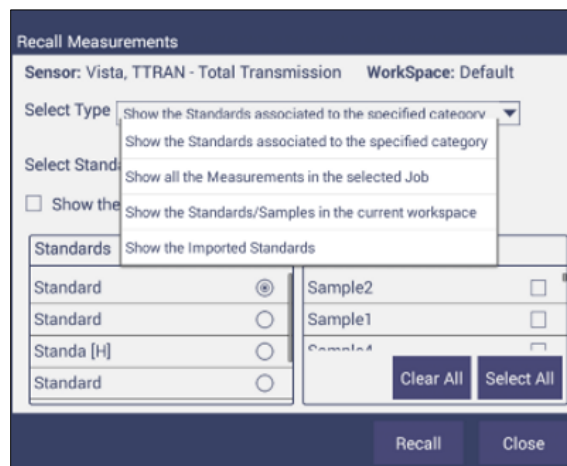


Figure 20. Recall Measurements

- **Jobs: Data Management: Import.** This feature allows the user to import the below data from a USB flash drive into the instrument. Data can be one file, multiple files or all files. Please note that all selected files should be in the same file path location.
  - **Job**
  - **Standard**
  - **Workspace**

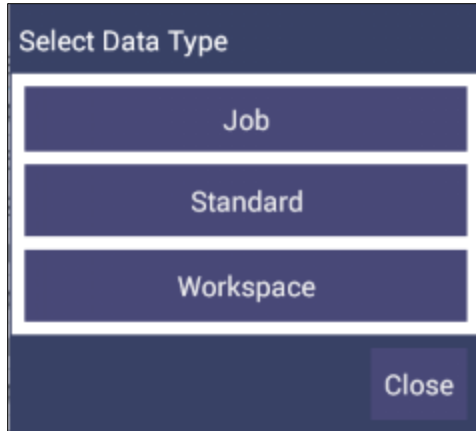


Figure 21. Import Data Type

- **Import Job**

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

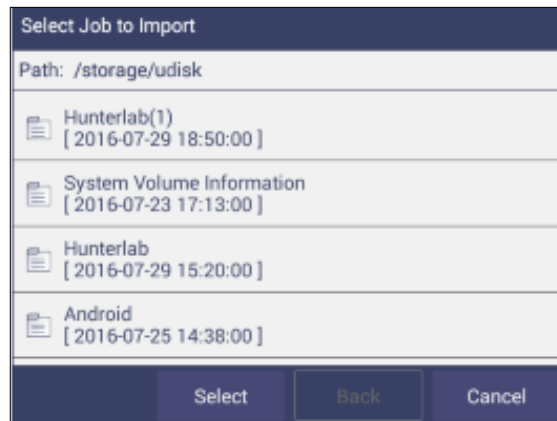


Figure 22. Import Job

- **Import Standard**

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



Figure 23. Import Standard

- **Import Workspace**

This option allows the user to browse and select a Workspace(s) (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.

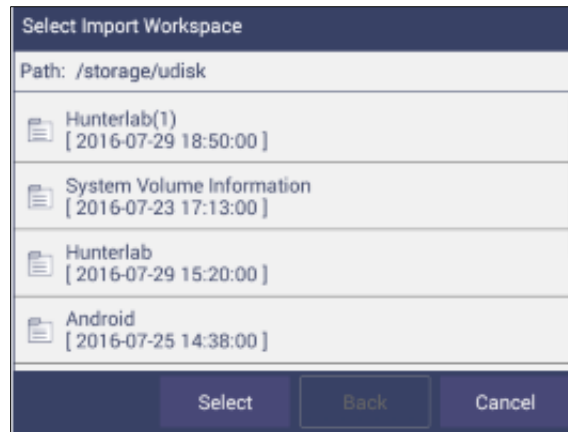


Figure 24. Import Workspace



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

- **Jobs: Data Management: Export.** This feature allows the user to export the below data from instrument into a USB flash drive. Data can be one file, multiple files or all files. Please note that all selected files should be in the same file path location.
  - **Job**
  - **Standard**
  - **Workspace**
  - **Export Job:** This option allows the user to browse and select an existing Job(s) (.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.

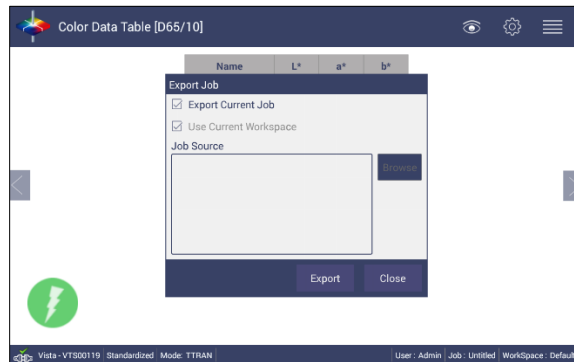


Figure 25. Export Current Job

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

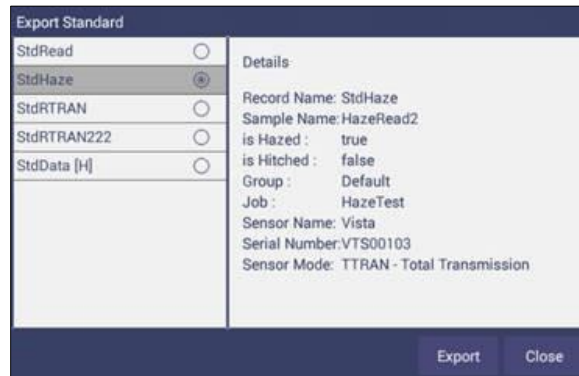


Figure 26. Export Standard

- **Export Workspace**

This option allows the user to browse and select an existing Workspace(s) 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..** Saved Jobs can be emailed if there is an active internet connection. When the **Email** option is clicked, the following screen is shown prompting the user to browse and select a user and enter the recipient mail address. Data can be one file, multiple files or all files. Please note that all selected files should be in the same file path location.

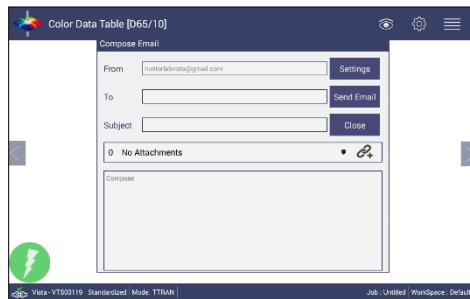


Figure 27. Enter an Address to Email a Job

- **Mail Settings**

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



Figure 28. Enter SMTP Mail Server Information

- **Jobs: Data Management: Delete.** The Delete function will allow deletion of Jobs, Standards and Workspace. Data can be one file, multiple files or all files. Please note that all selected files should be in the same file path location
- **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 backup folder of a thumb drive and upload to the Vista.

## Jobs: 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, go to **Jobs > User Manager** to set up **Create Administrative Groups** first followed by **Create User Groups**.

The screenshot shows the 'User Manager' application window with the 'Group' tab selected. On the left is a vertical menu with options: 'Create', 'Privileges', 'Delete', and 'Reset Password'. The main area contains the following fields: 'Group Name' (text input), 'Type' (dropdown menu set to 'Administrative'), and 'Description' (text input). At the bottom right are 'Create' and 'Close' buttons.

Figure 29. Create a Group

- Once the groups have been established, then individual users with **User Names** and **Passwords** can be setup for both Administrator and User Groups.

The screenshot shows the 'User Manager' application window with the 'User' tab selected. On the left is a vertical menu with options: 'Create', 'Privileges', 'Delete', and 'Reset Password'. The main area contains the following fields: 'User Name' (text input), 'Password' (text input), 'Confirm Password' (text input), 'Group' (dropdown menu set to 'Administrators'), and 'Description' (text input). At the bottom right are 'Create' and 'Close' buttons.

Figure 30. Setup Administrative & General Users

- Users in Administrative Groups have all features enabled. For Users in User Groups, **Privileges** can be setup as shown below. Press **Update Profile** to complete.

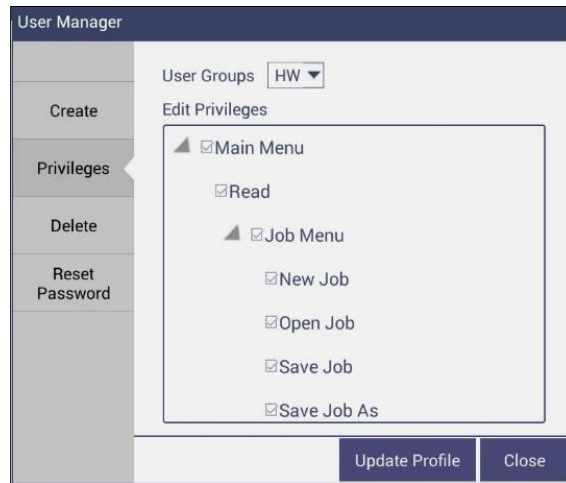


Figure 31. User Privileges

- To complete enabling security, go to **Jobs> Preferences** and enable security on the right side.

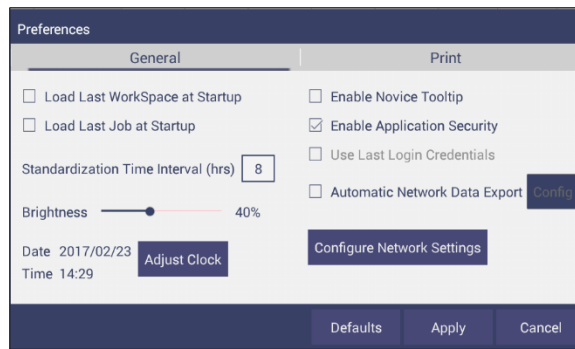


Figure 32. Enabling Security

- After enabling security, each user must enter a name and password when logging into the Vista. For convenience, the user can check the box under **Jobs> Preferences> General** to use the 'last login credentials'.



Figure 33. Login Credentials

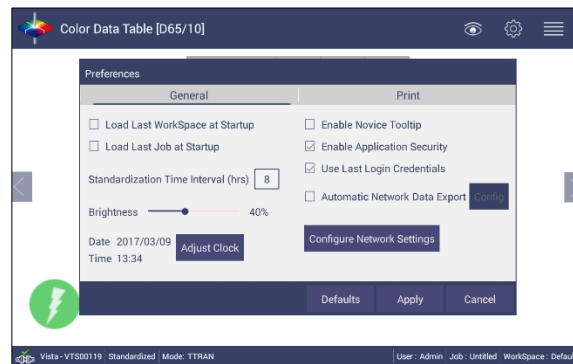


Figure 34. Enable Last Login Credentials

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

## 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.

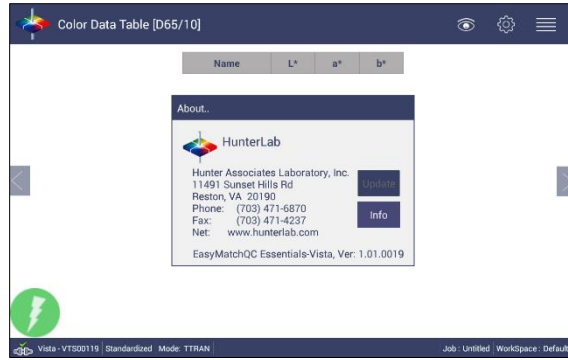


Figure 35. Job> About the Software

For detailed information, please press the **Info** button on the screen.

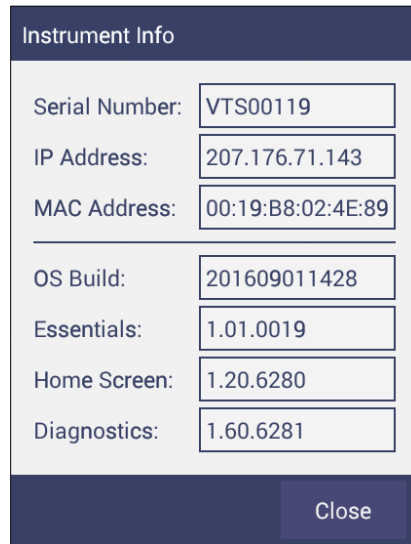


Figure 36. Instrument Info

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.

# CHAPTER FIVE

## Tool Bar: Workspace



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

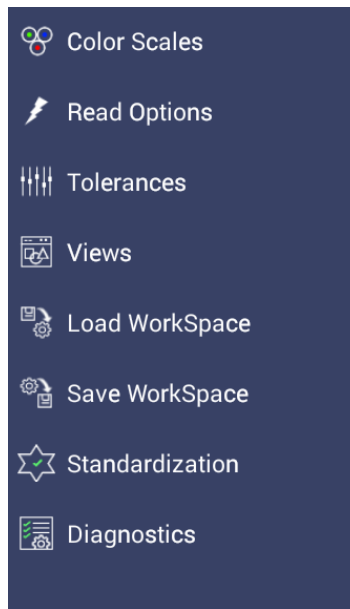


Figure 37. Workspace Parameters

### Workspace: Color Scales

- 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.

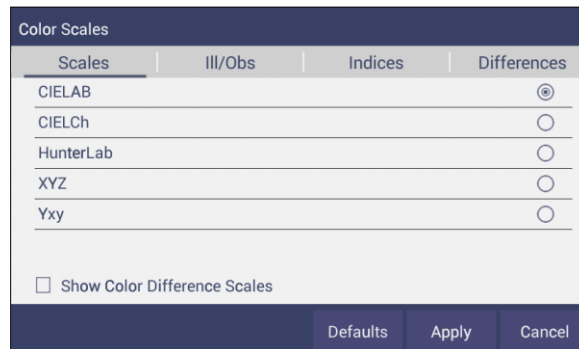


Figure 38. Color Measurement Scales

- 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 viewing the screen.

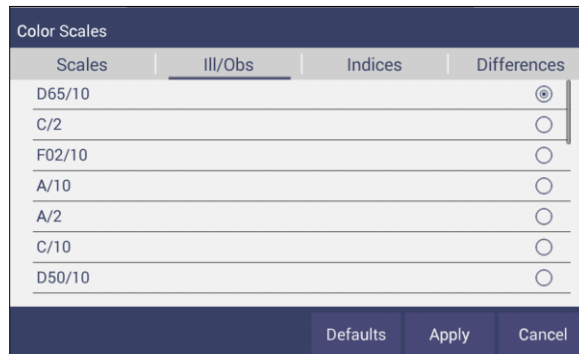


Figure 39. Illuminant/Observer Configuration

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

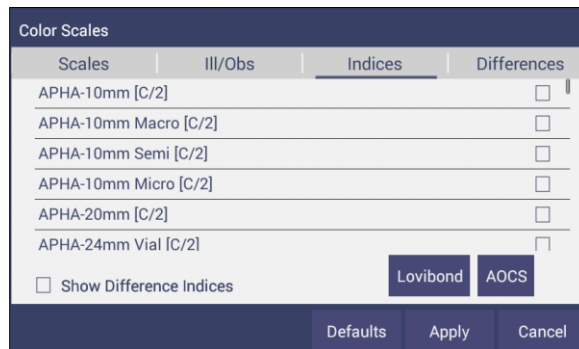


Figure 40. Index Configuration

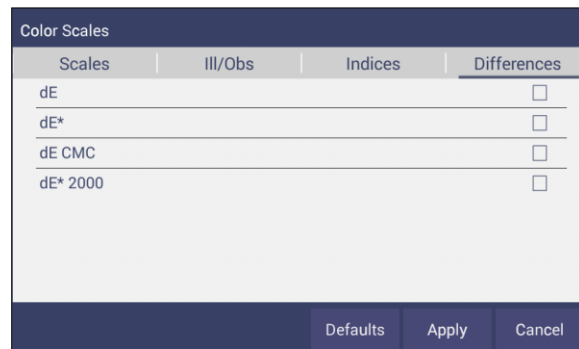


Figure 41. Color Measurement Differences



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 <sup>1</sup>
C	2/10	CIE LCh	dL*C*h	APHA/PtCo/Hazen	Tolerances
F02	2/10	Hunter Lab	dXYZ	Saybolt	Time <sup>3</sup>
D50	2/10	XYZ <sup>1</sup>	dLab	Gardner	Date <sup>3</sup>
D55	2/10	Yxy <sup>1</sup>	dYxy	Haze	
D75	2/10		dE	Y Transmittance	Trace Range 1 <sup>2</sup>
F07	2/10		dE CMC	EBC	Trace Range 2 <sup>2</sup>
F11	2/10		dE* 2000	ASBC & Turbidity	Trace Range 3 <sup>2</sup>
TL84	2/10		dE*	ADMI	Trace Range 4 <sup>2</sup>
ULT 30	2/10			ASTM D1500	Auto Range <sup>2</sup>
ULT 35	2/10			YI D1925	Display: Line <sup>2</sup>
	2/10			YI E313, WI E313	Display: Point <sup>2</sup>
				USP, JP	Zoom
				EP Y, GY, R, BY, B	Average <sup>2</sup>
				Iodine	Std. Deviation <sup>2</sup>
				NTU	Meas per Display <sup>2</sup>
				LOVIBOND® RY	
				AOCS RY	

<sup>1</sup>Not Available on Color Plot, <sup>2</sup>Trend Plot Only, <sup>3</sup>Color Data Table Only

LOVIBOND is a trademark of Tintometer LTD, UK.

## 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.

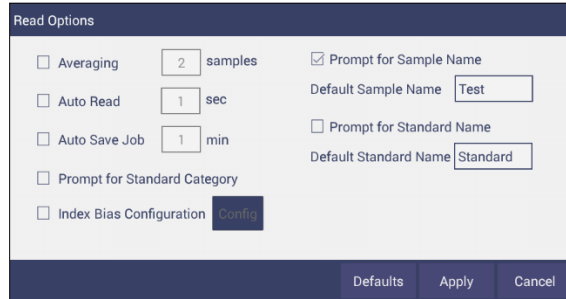


Figure 42. Read Options

### ○ 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 43. 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 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 <3 seconds and it will read as fast as it can update. When in Auto Read mode, the Read Button is enhanced with a checkmark.



Name	L*	a*	b*
Test9	100.00	-0.01	-0.00
Test8	100.00	-0.01	0.00
Test7	100.00	-0.01	0.00
Sample6	98.24	-5.64	17.88
Sample5	94.87	0.41	4.26
Sample4	94.85	0.42	4.26
Sample3	98.80	-0.27	8.35
Sample2	91.96	-19.65	-11.62
Sample1	100.01	-0.01	0.00

Figure 44. Auto Read

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.

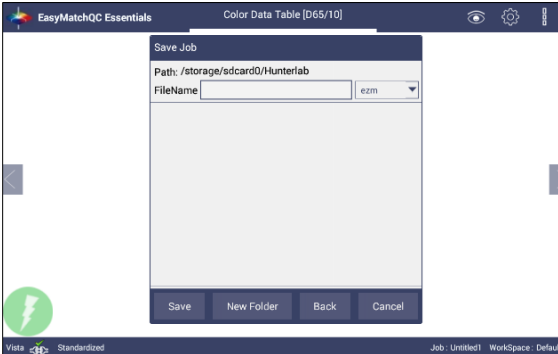


Figure 45. Auto Save Job

- **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.

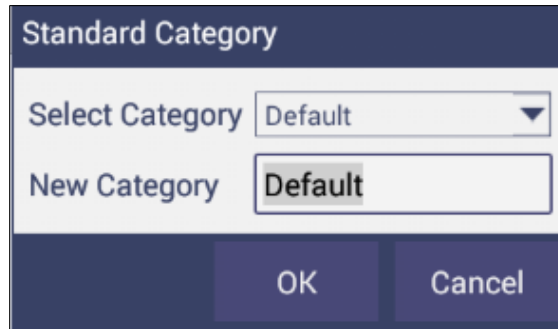


Figure 46. Prompt for Standard Category

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.  

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

$$\text{Gain Correction} = \frac{(\text{Expected Value 1} - \text{Expected Value 2})}{(\text{Measured Value 1} - \text{Measured Value 2})}$$
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.

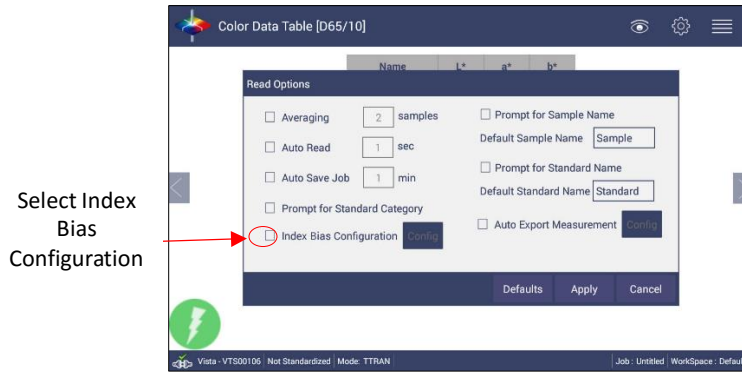


Figure 47. Slope & Bias Correction

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

Figure 48. 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.

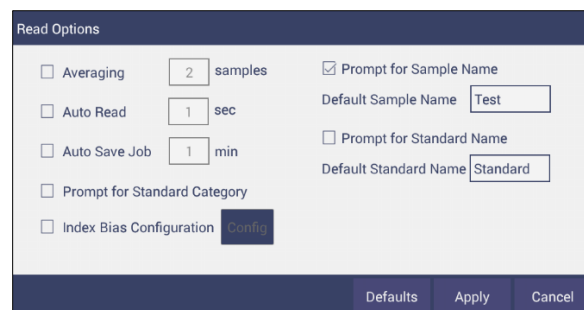


Figure 49. Prompt for Sample (Standard) Name



Figure 50. Input Sample Name

## Workspace: Tolerances

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

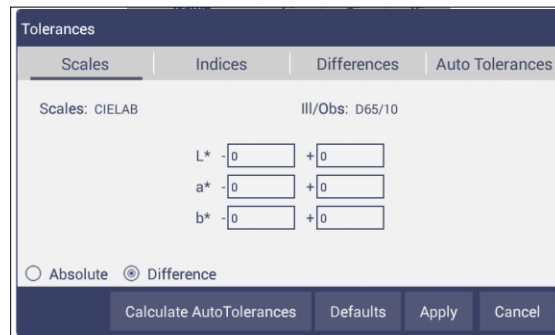


Figure 51. Tolerances Configuration

- Tolerances** can be entered manually for a selected scale, index and difference, or can be auto-calculated using **AutoTolerance**. 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.



Figure 52. Tolerances for Scales

Figure 53. Indices Tolerance Configuration

Figure 54. Difference Tolerance Configuration

- **AutoTolerances** 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 55. AutoTolerance Configuration

- Once the tolerance parameters are selected, press **Apply** and then **Calculate AutoTolerances**. The calculated tolerances are displayed under the AutoTolerance tab. If AutoTolerances 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 56. Workspace Views

## Workspace: Load Workspace

- **Workspace** – A workspace is a collection of user preferred parameters as a template. When a user exits EasyMatch 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.

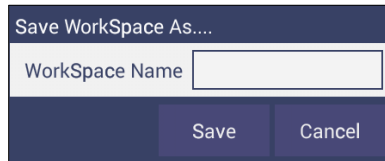


Figure 57. Save Workspace

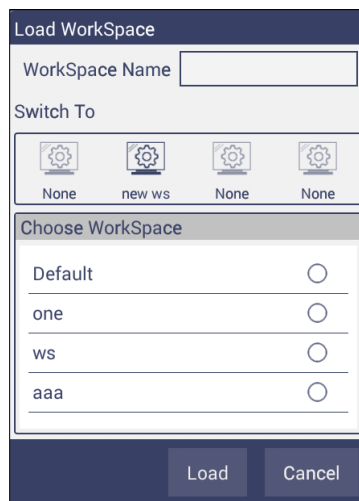


Figure 58. Load Workspace

Note: When a user exits EasyMatch 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**.

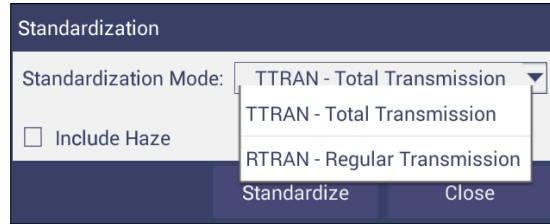


Figure 59. Standardize

- 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 60. 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.

## Workspace: Diagnostics

Three Performance Diagnostics are included with software version 1.01.0021 and higher. These are Repeatability, ND Filter and a wavelength accuracy test using a Didymium filter. More tests are planned for future software versions. For updated software, please check [support.hunterlab.com](http://support.hunterlab.com).



Figure 61. Performance Diagnostics Menu

### Testing the Vista for Colorimetric Repeatability:

- The Repeatability Test assesses how consistently the instrument can measure color. To begin the sample compartment should be free of samples and obstacles and the user is prompted to press **Start** to standardize. All sample readings must pass to pass the test.



Figure 62. Set up for Colorimetric Repeatability

- A table of the difference between the current reading and the first reading (Standard) is shown after every measurement. By comparing each reading to the tolerance, a Pass/Fail assessment is shown.

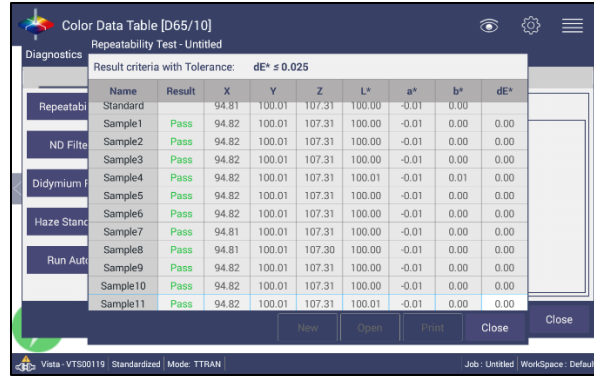


Figure 63. Repeatability Readings with Pass/Fail

When all 30 readings have been made, the final test result is shown and saved automatically. To **Print** the results, press **Repeatability Test** and **Open** the file.

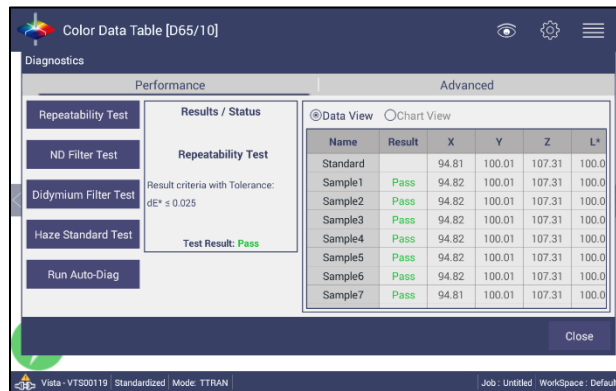


Figure 64. Read Options to select Pass/Fail and Tolerances

### Reading the Neutral Density Filter

- This test requires that you enter the target values for the ND filter that you are using in the test.

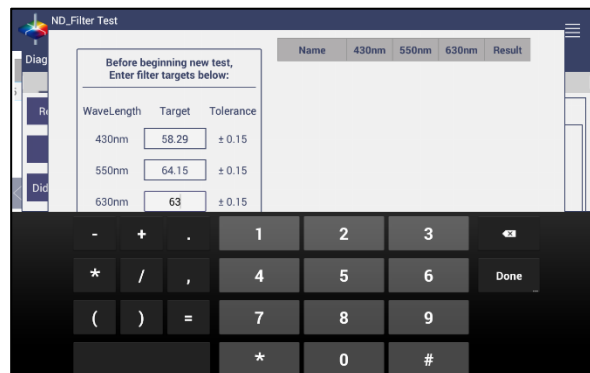


Figure 65. Input Target Values for ND Filter

- Once the target values have been entered, remove all samples from the transmittance compartment and press **Start** to Standardize in RTRAN on air.

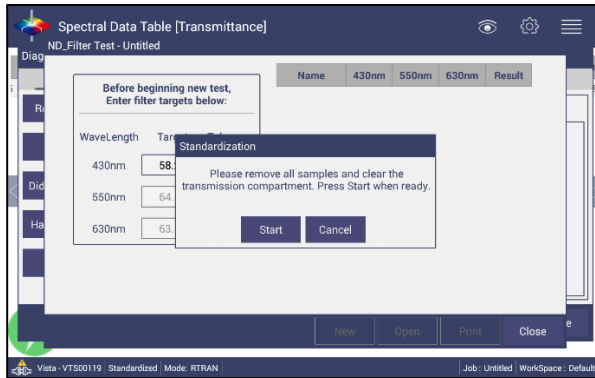


Figure 66. Press Start to Begin Standardization

- After Standardization, insert the ND filter next to the lens and press **Start**.



Figure 67. Reading the ND Filter

- Ten readings are taken and compared to the tolerance as an average. This test is then automatically saved and can be printed by pressing **ND Filter> Open> Print**.

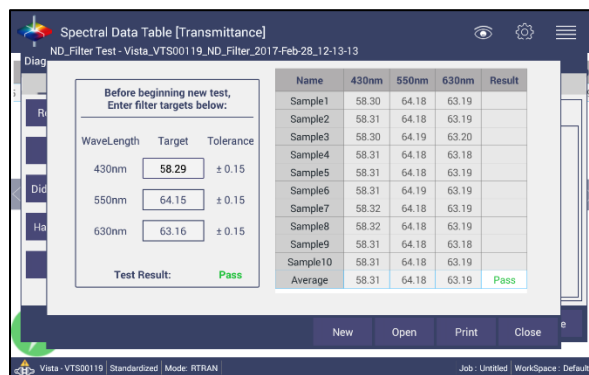


Figure 68. ND Test Result

### Reading the Didymium Filter on the Vista.

- The wavelength test allows you to assess readings of the didymium filter that are 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. To begin, input the target values for the Didymium filter at 430nm and 570nm.

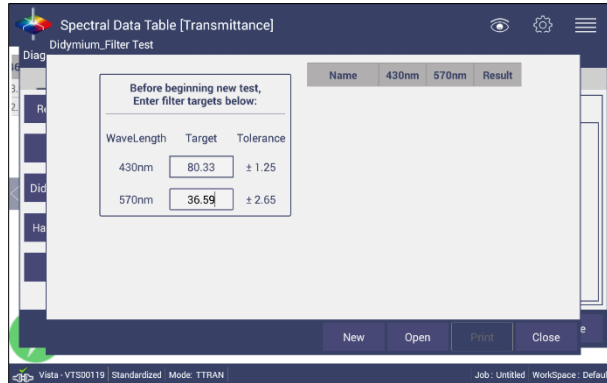


Figure 69. Select Didymium Target Values

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



Figure 70. Standardize in RTRAN

- Place the didymium filter at the lens side of the instrument. Note: The didymium filter should be clean and free of finger prints.

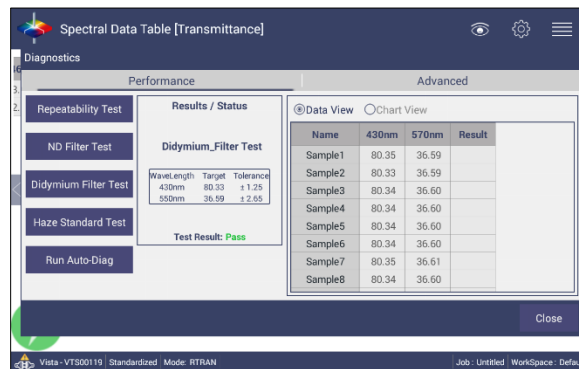


Figure 71. Didymium Test Results

- Results are an average of the 10 readings. The results are automatically saved and can be printed by pressing **Didymium Filter** > **Open** > **Print**.

# CHAPTER SIX

## Options (Views)



### Views: EZ View

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

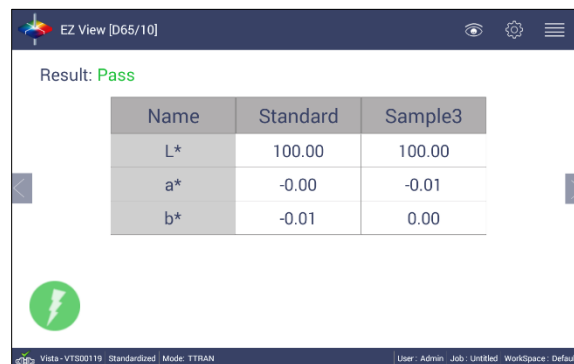


Figure 72. EZ View Display

- **View Options** includes the selection of **No Color Scale**, **Pass/Fail**, **measurement precision and font size**.

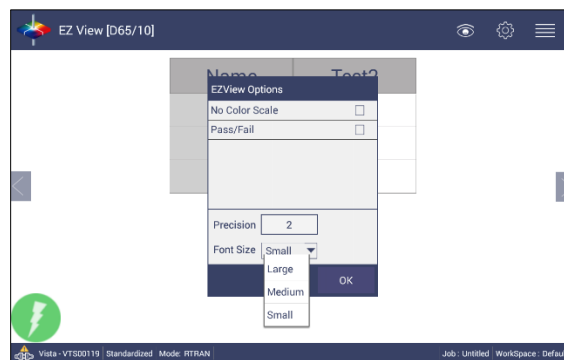


Figure 73. EZ View Options

## 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 74. Color Data Display

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

Figure 75. 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.

Name	Pass/Fail	L*	a*	b*	dL*	da*	db*
Sample 3				0.02			
Sample 2				0.00			
Sample 1				0.00			

Figure 76. Changing a Sample into a Standard



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

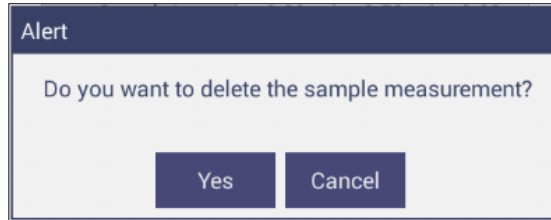


Figure 77. Delete the Sample Measurement

## 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	70.73
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 78. Spectral Data Table

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	70.73
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

**Spectral Data Options**  
 Absolute  Difference  
 Spectral Data Type: Reflectance/Tr  
 Start Wavelength: 400 nm  
 End Wavelength: 700 nm  
 Interval: 10 nm  
 Precision: 2  
 OK Close

Figure 79. Spectral Data Table Options

## Views: Spectral Plot

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

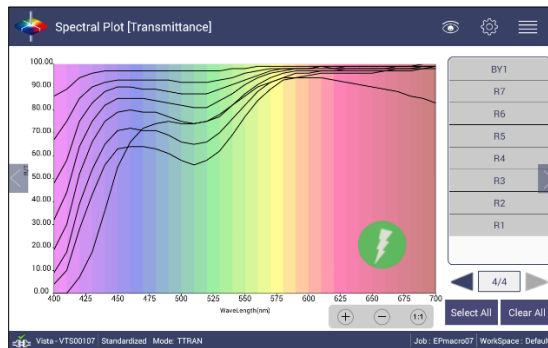


Figure 80. Spectral Plot View

- 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.
- The Samples List is paginated. Click the left and right arrow buttons below the samples list to navigate between pages.
- Press and hold on the left/right arrows to show a small dialog box. This dialog allows you to select the number of records per page to display and the page number to display.

Figure 81. Spectral Plot Options

- Spectral Plot Options:** Check the Spectral Data Type as Transmittance. Note that only Transmittance will work with the Vista.
- Uncheck the **Options: Show Background**, to display the plot with white background color.
- Check **Options: Auto Range** to automatically scale the contents to fit. If Auto Range is not selected, then enter the Y- and X-axis range to display.

## 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 the other 3 traces 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.

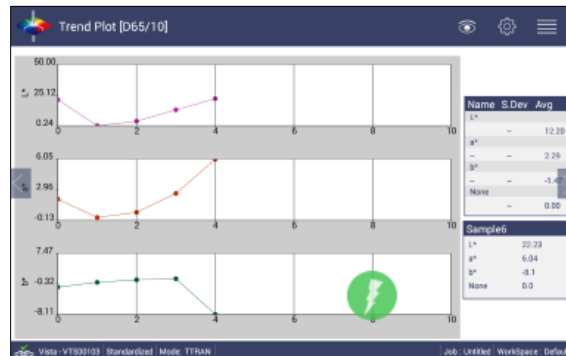


Figure 82. Trend Plot

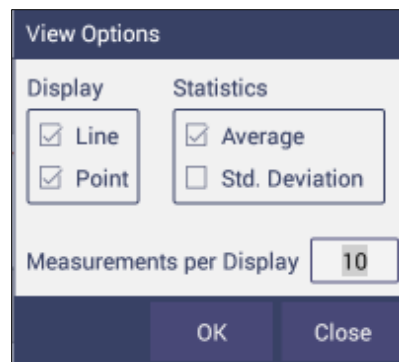


Figure 83. Trend Plot Options

- **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.

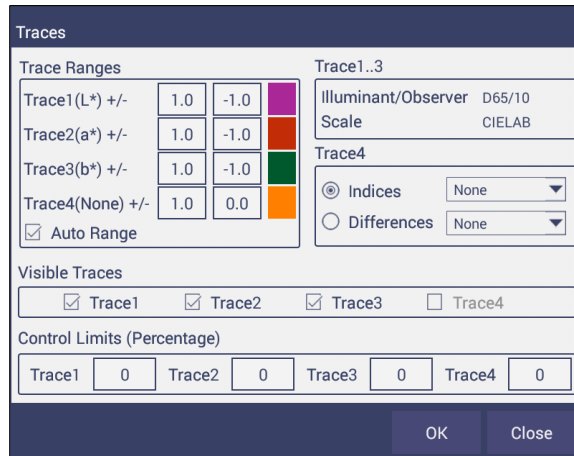


Figure 84. Trend Plot Traces

## 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.
- The displayed samples are shown in a list box on the right of the screen. The color plot can be zoomed and the data points can be viewed in detail.
- Press and hold on the left/right page arrows to show a small dialog box. This dialog allows you to select the number of records per page to display and the default page number to display.

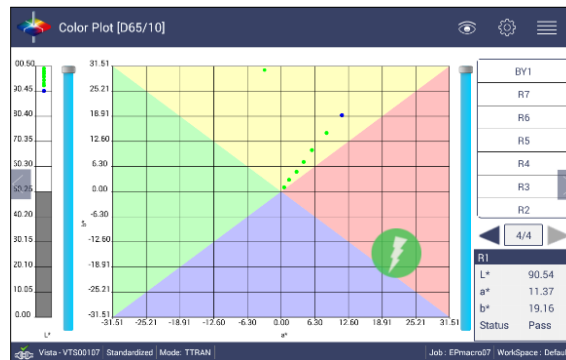


Figure 85. Color Plot View

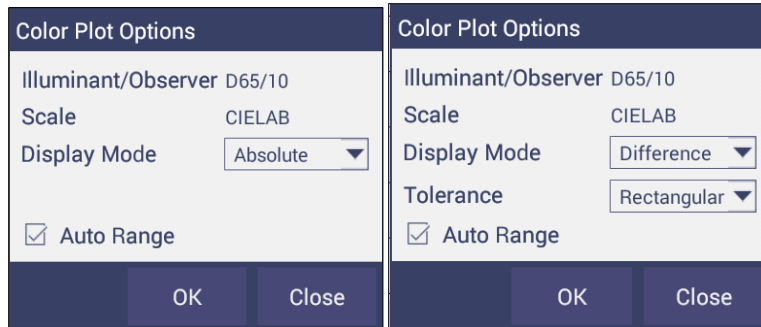


Figure 86. Color Plot Options

- 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.



# CHAPTER SEVEN

## Special Functions

### Auto-exporting Data through a Direct Connection between Vista and a Computer

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



*Figure 87- Ethernet Cable*



*Figure 88- Crossover Adapter*



*Figure 89- Ethernet to RS-232 converter for Connection via Serial port*



*Figure 90- RS-232 to USB converter for connection via USB port*

- **Configure Ethernet to RS-232**
  - 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:**
  - Plug Ethernet cable (Figure 87) into RJ-45 Ethernet connection at rear of Vista. Plug other end of cable into Crossover Adapter (Figure 88).



Figure 91. Rear View of Vista

- Plug other end of the Crossover Adapter into Ethernet port of Ethernet to RS-232 adaptor (Figure 89).
- 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.

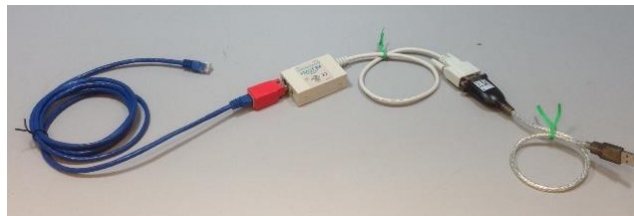


Figure 92. Cable Configuration for Direct Computer Connection

- **Configure the Vista:** (Note: Requires Essentials Rev 14 or higher)
  - Configure the Ethernet port of Vista. Select **Jobs Menu > Preferences** and Select **Config Network Settings**. Uncheck the box next to “Use DHCP for Ethernet Configuration” as shown in Figure 93. 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**



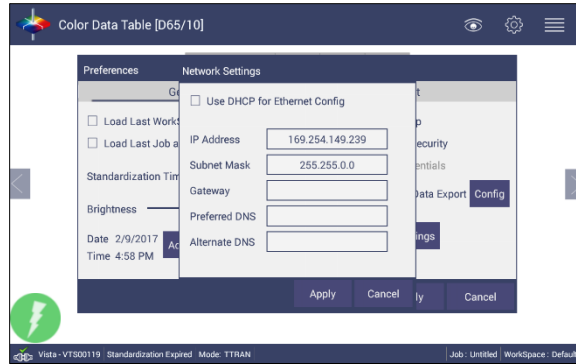


Figure 93. Configuration Parameters for Ethernet

- Press **Apply** on the Ethernet Configuration and then **Apply** on the Preferences Page to complete.
- Cycle power on the instrument.
- Go to **Preferences** and select **Auto Network Data Export**.

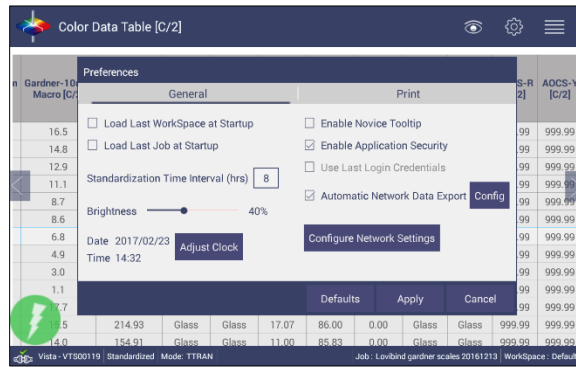


Figure 94. Read Options> Auto Export Measurements

- For a direct connection between Vista and data collection computer, set up the Vista as a **Client**.
- 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** on the screen to continue.

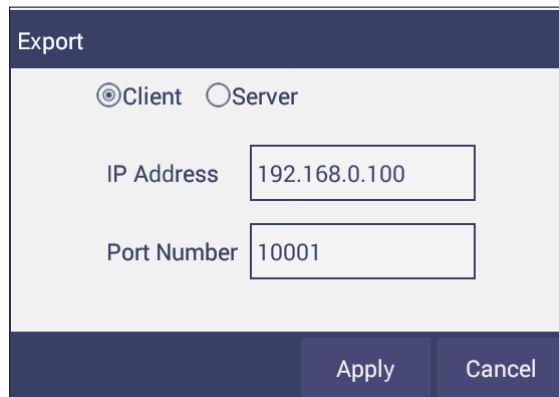


Figure 95. Read Options Export

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

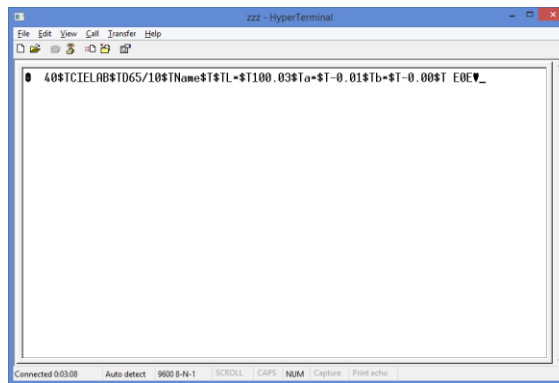


Figure 96. Data Output

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>.

---

## Auto-Exporting Data through an Ethernet Connection

- **Materials Needed**
  - **Vista Firmware** needed: 1.01.0014 and above.
  - 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 97. Ethernet Cable

- **Configure the Vista:**
  - Set up the Vista as the Server. Go to **Preferences** and select **Auto Network Data Export** Measurement using a check and select Configure. Choose Vista as **Server** and **Port number as 11111**. You can also choose a delimiter to mark your data.

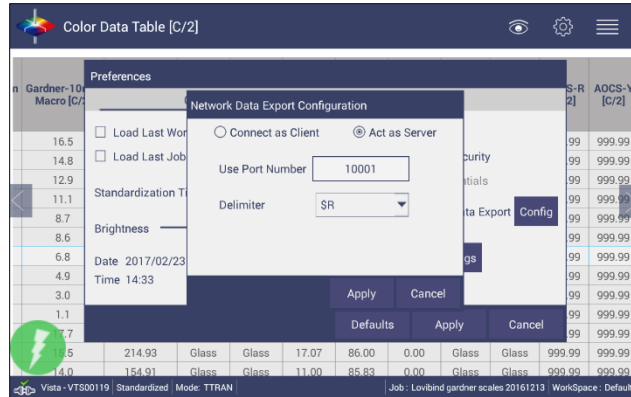


Figure 98. Auto Export Measurement

- To define the data export, go to **Jobs> Preferences** and Select '**Config Network Settings**'. Uncheck the DHCP box for Ethernet Configuration as shown in the Figure below. 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**

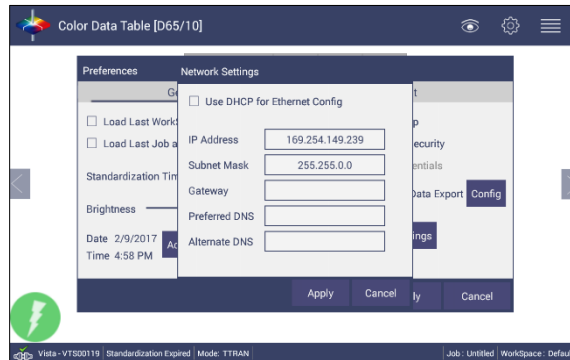


Figure 99. Jobs> Preferences> Ethernet Configuration

- Press **Apply** on the Ethernet Configuration, cycle power on the instrument and then **Apply** on the Preferences Page to complete.
  - The Vista is now ready to send data.
- **Configure the Computer Using HyperTerminal Software**
    - Go to the computer and open HyperTerminal.
    - Make a new connection:
      - Enter a name for the connection.

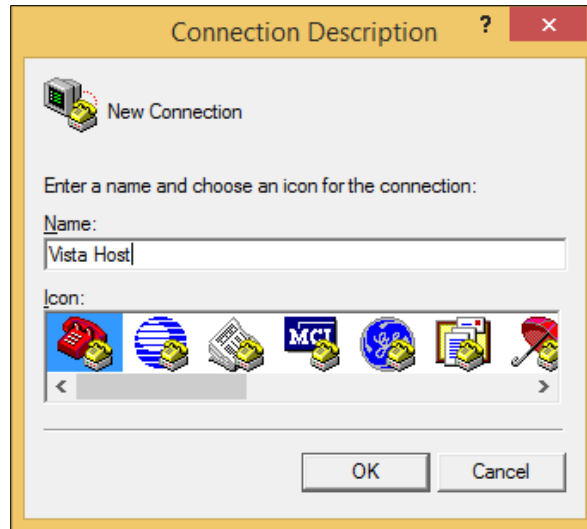


Figure 100. Setup for HyperTerminal

- Connect using TCP/IP(Winsock)
- Enter the Vista IP address and Port Number

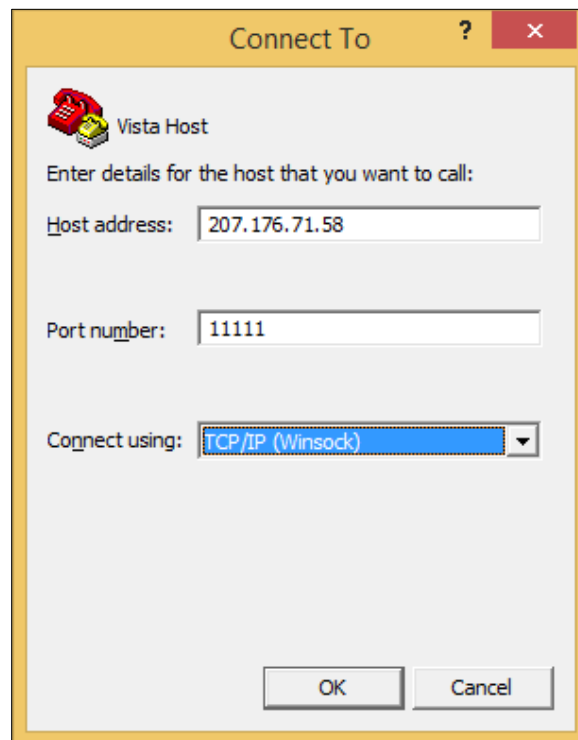


Figure 101. HyperTerminal Connection to Vista

- **Send Data from the Vista:**
  - Configure the Vista for the **Color Data Screen:**

- Select Color Scales, Indices & Illuminant/Obs (**Workspace**> **Color Scales**)
- **Standardize** the instrument. (**Workspace**> **Standardization**)
  - **Read** sample and view the data on the computer.

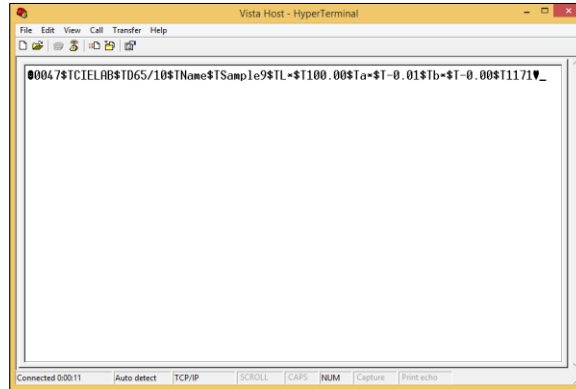


Figure 102. Data from Vista through Ethernet Connection

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>.

## Connecting Vista to EasyMatch® QC

EasyMatch QC and EasyMatch QC-ER Version 4.88 and above can connect with Vista. Note that instruments built before VTS00135 may need additional hardware or Essentials update (1.00.14 and above). There are three methods to connect the Vista to EasyMatch QC.

1. Connect Vista to a Network through an Ethernet port.
  - a. Both Vista and the computer with EasyMatch QC are connected to Ethernet ports with the same Ethernet network (See Figure 91)
  - b. Open EasyMatch QC in the computer.
  - c. From the **Sensor** menu, select **Add Sensor**.
  - d. Select **Vista** as the Sensor Type, **Ethernet** and check the box to **Discover and select a Sensor in the Network**. Press **Search** to automatically find the Vista.
  - e. A drop-down list of available sensors will be shown with the IP address and sensor name. Select the sensor. If the software returns with '????' it means that the Vista is not free to connect to EasyMatch QC. If this happens, restart Vista and search again.

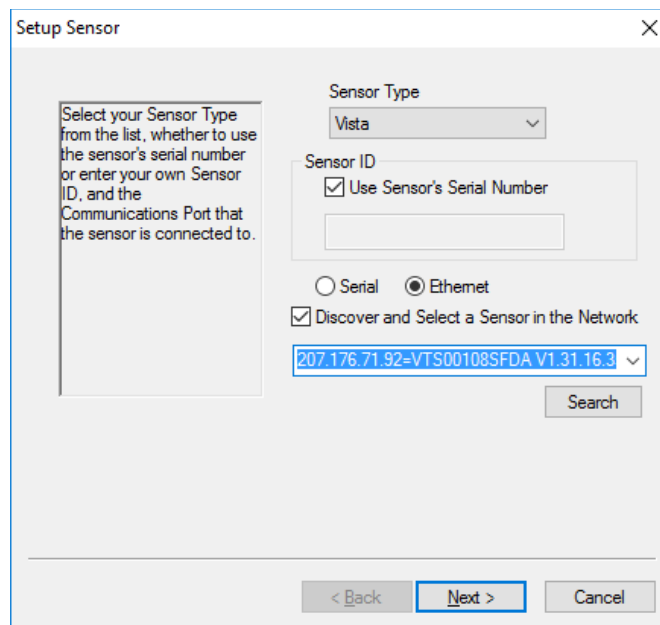


Figure 103. Setup Sensor

- f. Select Next to standardize.

2. Connect Vista and PC with an Ethernet cable directly.
  - a. Connect the Ethernet cable and then restart Vista and the computer.
  - b. Open Command Prompt in the computer.
  - c. Type in **ipconfig**. Under the Ethernet adapter information, review the **autoconfiguration IPv4 Address** and **Subnet Mask**.

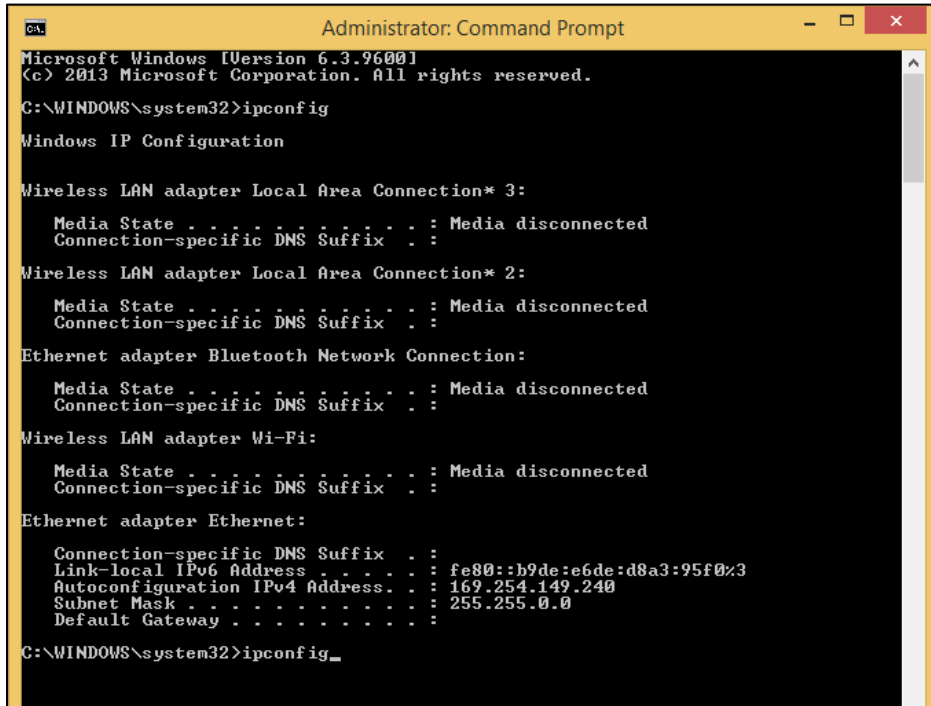


Figure 104. Configuration for EasyMatch QC

- d. Open Vista Essentials, go to **Preferences > Configure Network Settings**. Uncheck **'Use DHCP for Ethernet Config'**. Type in the **IP address** and **Subnet Mask** manually, then press **'Apply'**. The IP address here should be exact same as the 'autoconfiguration IPv4 Address' in the PC, except changing the last two digits.
- e. **Restart** Vista to apply the network settings.

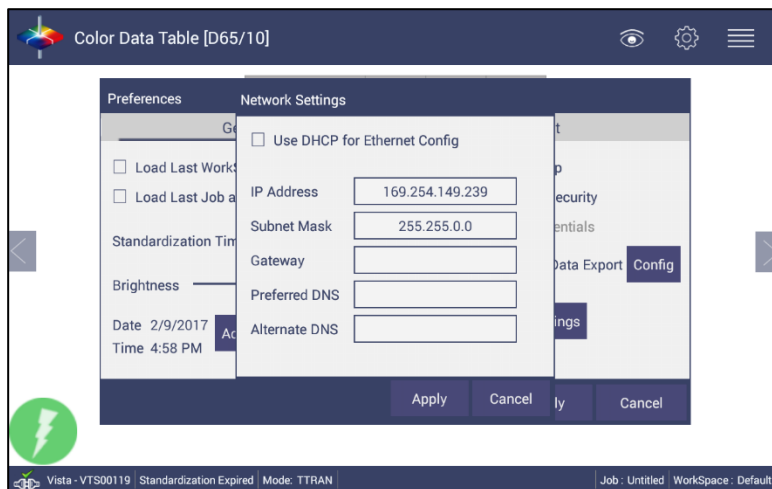


Figure 105. Configure IP Address & Subnet in Essentials



- f. Open EasyMatch QC and from the Sensor menu, click **Add Sensor** and select **Vista**. Select **Ethernet** and uncheck the box to 'Discover and Select a Sensor in the Network'. Then type in the **IP address** which has been set up in Vista Essentials.

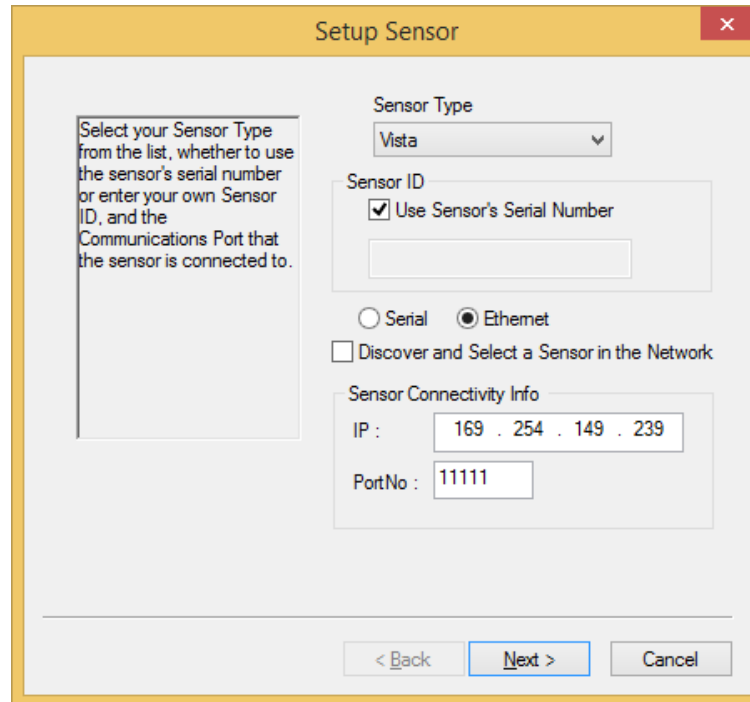
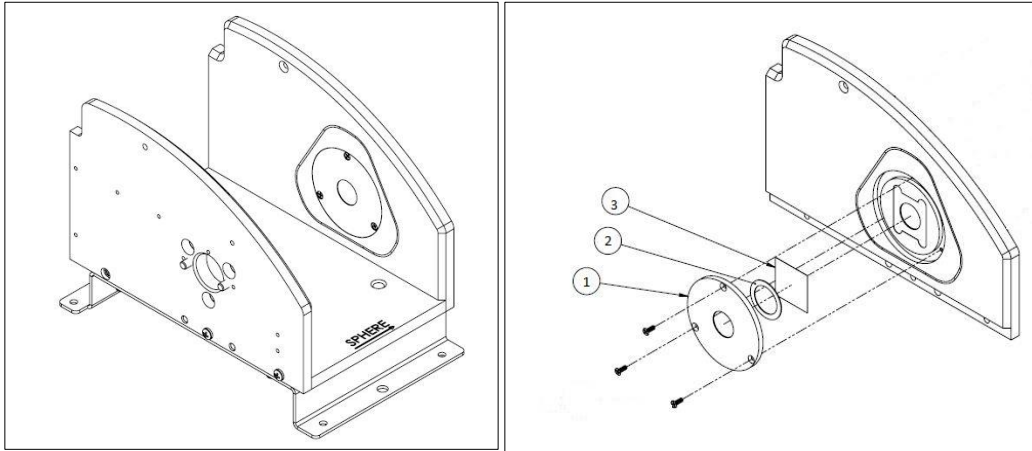


Figure 106. Setup Sensor in EasyMatch QC

- g. You are now ready to use EasyMatch QC with the Vista.
3. Connect Vista to a Computer through a Wireless Access Point
- About the connection and setup, please find the detail in this link, <https://support.hunterlab.com/hc/en-us/articles/217231926-Connect-VISTA-through-Wireless-Access-Point-to-a-Computer-for-EZMQC-and-CalVer->
  - In **Sensor**, click '**Add Sensor**' and select '**Vista**'. Select '**Ethernet**' and check the box '**Discover and Select a Sensor in the Network**' and then click '**Search**'. There will be a drop-down list of all available Vista sensors. If the sensor in the list including IP address as well as sensor name, then it is connectable. If the sensor in the list with '??????' instead of sensor name, it means that EasyMatch QC can find the Vista, while Vista is not free to connect. If you meet this problem, restart Vista and click **Search** again.
  - Click Next to do standardization.

## 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 107. Inserting a Protective Cover Glass*

## Tips & Tricks: Assigning a Standard



Figure 108. 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.

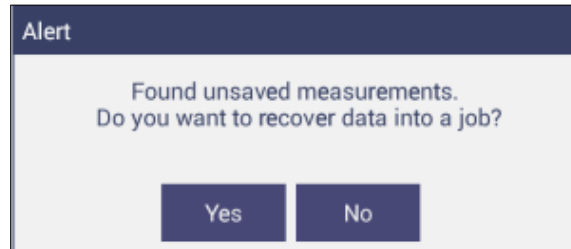


Figure 109. Exiting Essentials

- 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 110. Recover Data*

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

# 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.

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

### Operating Conditions

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	Certificate of Compliance, Didymium Diagnostic Filter, Power Supply, Vista Quick Start Guide, Stylus, USB Flash Drive, Cleaning Cloth

### Physical Characteristics

Weight	6.4kg (14.0lbs)
Dimensions (Height x width x length)	177.8mm x 485.8mm x 228.6mm (7in x 19.1in x 9.0in)
Base to Measurement Port Distance	63.5mm (2.5in)
Communications Interface: USB Micro OTG: Front Panel USB:  Ethernet RJ45:	To printer, keyboard, mouse To USB thumb drive for saving & backing up data For Save, Print and Email capability

Standards Conformance: Colorimetric	CIE 15:2004, ASTM E1164, DIN 5033, Teil 7 and JIS Z 8722 Condition E, G;
Standards Conformance: Haze	ASTM D1003
System Power	100-240 VAC, 47-63 Hz, 60W

### 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	<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	$\Delta E^*(D65/10) \leq 0.15$ (Avg) on Transmittance Filter Set; $\Delta E^*(D65/10) \leq 0.25$ (Max) on Transmittance Filter Set; +/- 0.30% at 10% TH (Haze)
Colorimetric Repeatability	$\Delta E^* < 0.02$ on air w/30 readings

## Measurement

Data Views	Color Data, Spectral Plot, EZ View, Tristimulus Color Plot, Trend Plot
Illuminants	C, D65, F02, A, D50, D55, D75, F07, F11, TL84, ULT30, ULT35
Observers	2° and 10°
Color Scales	CIE L*a*b*, Hunter Lab, CIE LCh, CIE Yxy, CIE XYZ and differences
Color Difference Indices	$\Delta E^*$ , $\Delta E$ , $\Delta E$ CMC (l:c), $\Delta E^*2000$
Indices and Metrics	APHA/PtCo/Hazen, Saybolt, Gardner, YI E313 Yellowness, YI D1925, ADMI, EBC, ASBC Turbidity, CIE Y Transmittance, USP, EP, JP, NTU, EP Opalescence, ASTM D1500, LOVIBOND® RY, AOCS RY
Other	Hitch Standardization Haze
Data Storage	250 spectral or tristimulus with Pass/Fail Tolerances as Working, Physical, Numeric and Hitch

## Regulatory Notice



### *Declaration of Conformity*

EU / EMC Directive: 2014/30/EU

Standard to which Conformity is Declared: IEC 61326-1: 2012 / EN: 2013

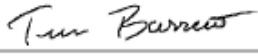
Manufacturer: Hunter Associates Laboratory, Inc.  
11491 Sunset Hills Rd, Reston, VA, USA

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 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 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.

# 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 are free from defects in material and workmanship under normal use. This warranty is limited to repairing or replacing any defective hardware or software that may cause the instrument to perform outside of its specified tolerances. This warranty is one year from date of shipment of new instruments and two months from the date of shipment of repaired instruments. Note that printers and computers are covered under the original manufacturer's warranty.

The warranty is void if the user has made unauthorized repairs, improperly installation, operated, or subjected the instrument to conditions outside of the specific operating conditions specified in the product documentation.

The HunterLab warranty does not cover consumable items such as lamps, fuses, batteries, etc. An instrument registration card is shipped with each HunterLab instrument. It is important that the instrument owner return this card promptly upon receipt of equipment.

Questions concerning operation, maintenance, or repair of your equipment can be directed to the Service Department at [Service@hunterlab.com](mailto:Service@hunterlab.com). Additional information can be obtained at <http://support.hunterlab.com>.

### 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**

Per 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***
  - Notify your local carrier.
  - 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.
  - 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.
  - Advise HunterLab regarding replacement.
- ***Parcel Post Shipment***
  - Notify HunterLab at once in writing, giving details of the loss or damage. This information is required for filing a claim.
  - Hold the damaged goods with their container and packaging for possible inspection by postal authorities.
  - Advise HunterLab regarding replacement.
- ***United Parcel Service***
  - 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.
  - Retain the container and packaging.
  - 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.
  - Notify HunterLab immediately, referencing your order number and item.
  - 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 an 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 HunterLab address within the United States is available on the previous page. Customers outside the United States should contact their HunterLab distributor for initial assistance.

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