

# TOPAZ<sup>®</sup> HD TOPAZ XL HD

## Desktop Video Magnifier User's Guide

Freedom Scientific, Inc.

[www.FreedomScientific.com](http://www.FreedomScientific.com)

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## Safety and Maintenance

To keep the unit in good condition and to ensure safe usage, observe the following guidelines:

- Do not stare at the operating illumination LED as it may be harmful to the eyes
- Power rating: 100-240V~ 1A 47-63Hz
- Read the instructions in this user's guide before attempting to use the unit.
- Do not attempt to repair the unit or open its case. This product contains no user serviceable parts.
- Keep the unit away from wet areas, rain, and other sources of liquids or high humidity. Do not submerge the unit.
- Always operate the unit in a place where the temperature is between 10° and 40° C (50° and 104° F).
- Always store the unit in a place where the temperature is between -20° and 65° C (-4° and 149° F).
- Always use the unit on a stable, level, hard surface such as a desk or table.
- When cleaning the screen, camera lens, or self-view lens, unplug the power cord and apply a small amount of non-abrasive cleanser, such as the following, to a soft, lint-free cloth and gently wipe:
  - Water
  - Isopropyl alcohol
  - Petroleum benzene
  - Vinegar mixed with water at a concentration of no more than 10 percent vinegar, for example, 1.5 tablespoons of vinegar per cup of water (100 ml per liter)

### CAUTION:

Do not apply excessive pressure to the screen, camera, or self-view lens. Do not spray cleanser directly on these items. Also, do not use any cleanser that contains the following agents: acetone, ethyl alcohol, ethyl acid, ammonia, or methyl chloride.

When cleaning the rest of the unit, make sure the unit is unplugged. Use a lightly dampened, soft, clean cloth with water or mild detergent.

## Federal Communications Commission (FCC) Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio or television technician for help

**CAUTION:** Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## Industry Canada (IC) Compliance Statement

CAN ICES-3(B) / NMB-3(B)

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## TOPAZ HD and TOPAZ XL HD at a Glance

The TOPAZ® HD and TOPAZ XL HD desktop video magnifiers provide clear and sharp magnification of documents, newspapers, photos, and other items. With simple to use controls, you can make quick magnification, color, and brightness adjustments to best suit your vision needs.

The high-definition camera produces a clear picture with sharp images and crisp text. This lets you use a lower magnification to maximize the amount of information displayed on the screen. It also reduces the need to move the XY table as much when reading text, looking at pictures, or working on crafts and other projects.

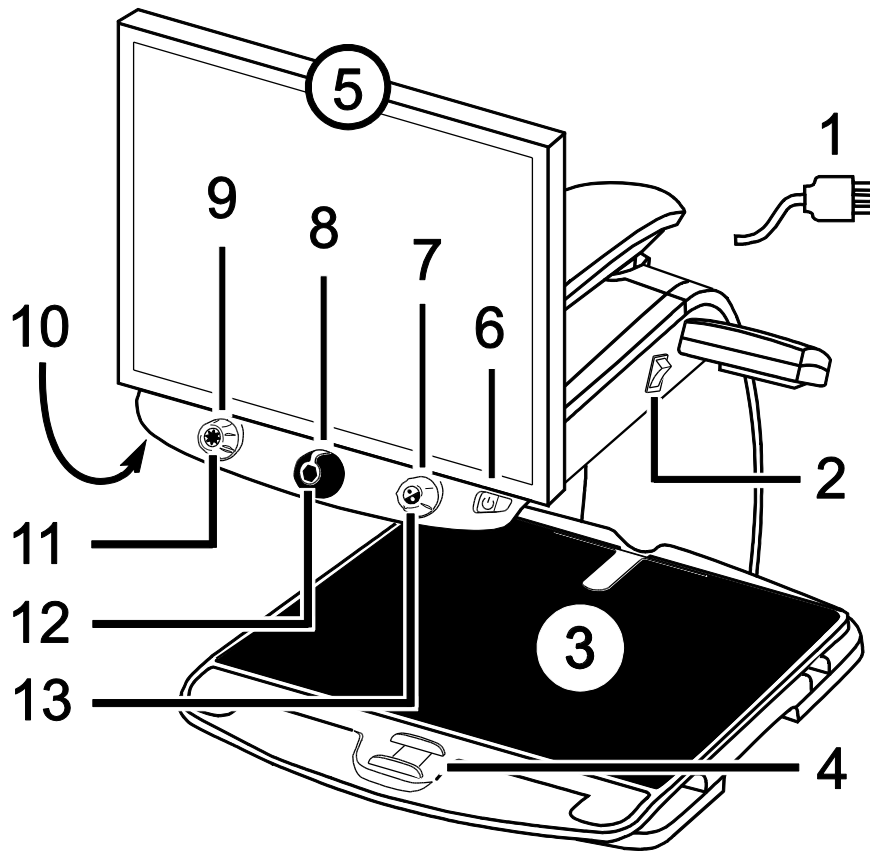
The TOPAZ models also include the following features:

- Auto-focus, which creates the clearest view without any need to make adjustments
- 16 magnification levels with a crisp, sharp image that lets you precisely adjust text to the size you need
- Adjustable pre-set color modes for high contrast text that is most comfortable for you
- One-touch button to freeze images
- Widescreen 20-inch, 22-inch, or 24-inch LCD monitor
- Adjustable screen brightness
- Lines, masks, and shades that make it easier to concentrate on certain areas of a document, newspaper, magazine, or book
- Create and save custom settings using the Configuration menu
- Adjust the height and angle of the monitor for the best view as well as extra neck and upper back comfort when viewing the screen
- Use the Position Locator beam to mark the center of the image for easy document placement and writing (TOPAZ XL HD only)
- Connect TOPAZ XL HD and your computer through the VGA video ports to use the unit as your main computer monitor, and then easily switch back and forth between your computer and the unit's camera view

- Connect TOPAZ XL HD and your computer through USB ports to use the optional GEM<sup>®</sup> image management software to view, capture, and save magnified images from the unit to your computer
- Two lights on either side of the camera provide object illumination, which is diffused to prevent glare and reflections when viewing shiny documents like magazines and photos
- Large low-friction reading table moves a full 16 inches from left to right for easy reading of even large-format documents
- XY table's braking mechanism lets you lock the table movement down tight when you want it to hold steady
- Working distance between XY table and camera: 8.25 inches / 21 cm



## Hardware Description



1. Power Cord

2. Main Power Switch

3. XY Table

4. XY Table Brake

5. Monitor

6. Power Button

7. Color Select Dial

8. Magnification Dial

9. Brightness Dial

10. Focus Lock Button – bottom of control panel

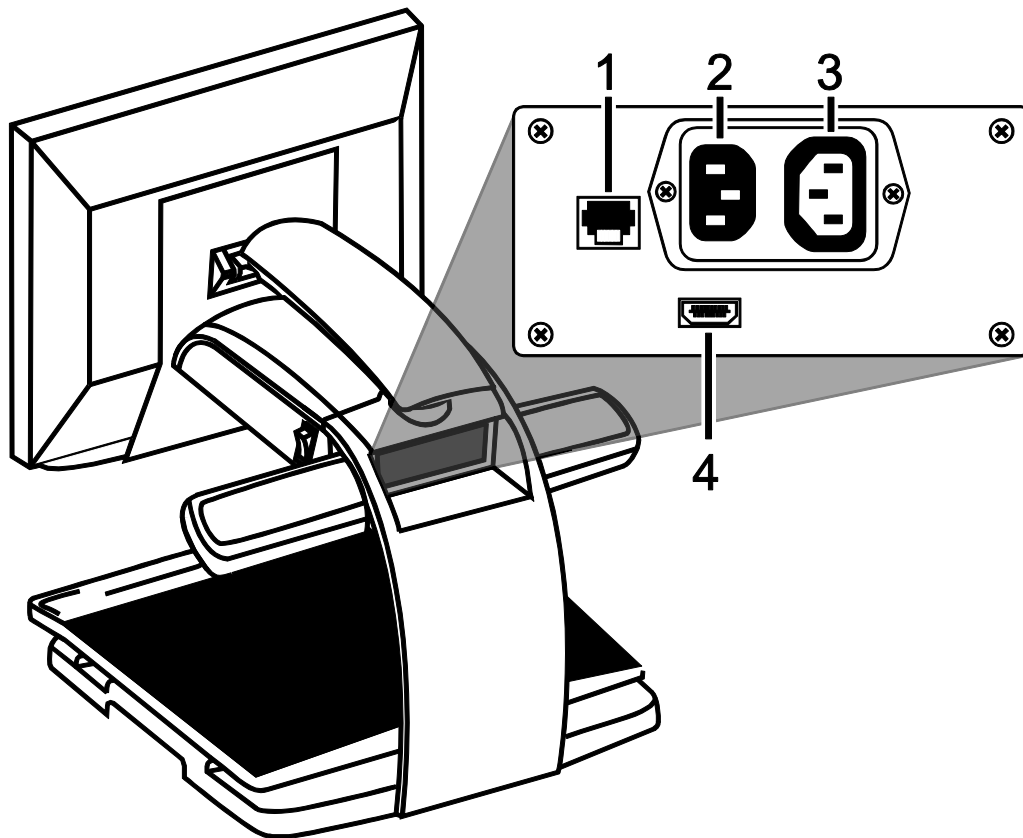
11. Find Button

12. Freeze Frame Button

13. Reference Line Button or Computer View Toggle Button \*

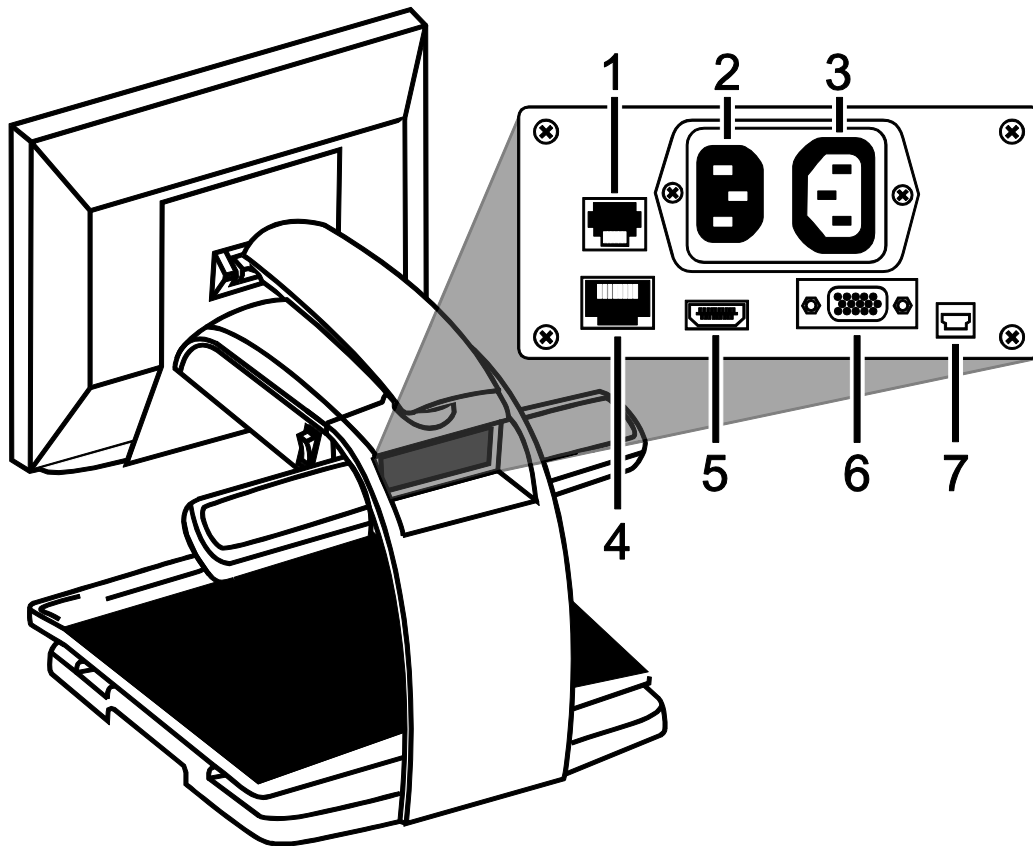
\* TOPAZ XL HD can be connected to a computer and used as a computer monitor. When used this way, the button switches between your computer and the unit's camera view.

### TOPAZ HD



1. **Control panel jack.**  
Modular jack that connects the control panel to the unit's camera. Do not disconnect cable unless servicing the unit.
2. **AC power connector.**  
Plug power cord from wall outlet to TOPAZ.
3. **Monitor power connector.**  
Power cord from monitor to TOPAZ. There is no need to remove it under normal operation.
4. **Monitor HDMI connector.**  
Connects the TOPAZ monitor to the TOPAZ camera. There is no need to remove it under normal operation.

## TOPAZ XL HD

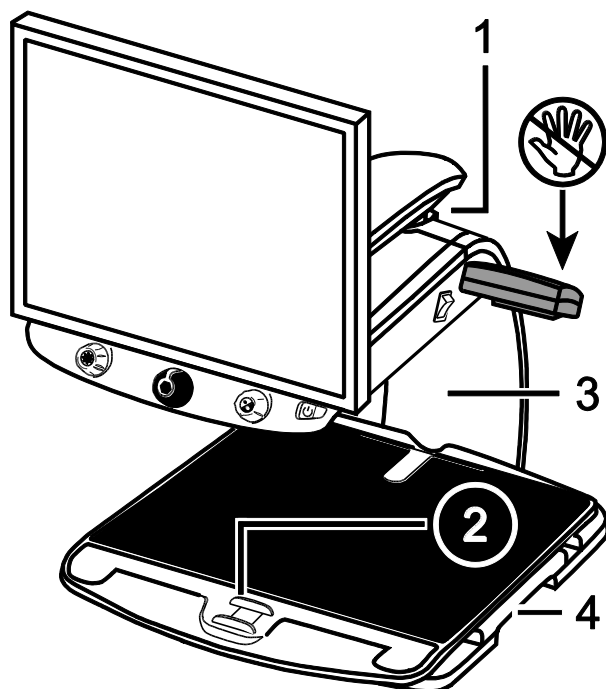


1. **Control panel jack.**  
Modular jack that connects the control panel to the camera. Do not disconnect cable unless servicing the unit.
2. **AC power connector.**  
Plug power cord from wall outlet to the unit.
3. **Monitor power connector.**  
Power cord from monitor to TOPAZ. There is no need to remove it under normal operation.
4. **Test port.**  
Do not connect to this port.
5. **Monitor HDMI connector.**  
Connects the monitor to the camera. There is no need to remove it under normal operation. However, if you later decide to connect a TV or larger monitor to the unit, then use this connector.
6. **VGA In video connector (15-pin).**  
Connects a computer's video output to the TOPAZ monitor. The monitor now becomes your computer's display.
7. **USB connector.**  
Connects a computer to the unit for operation with GEM image management software.

## Transporting and Moving the Unit

When carrying and moving the unit, always lock the monitor arm and XY table as described in this section.

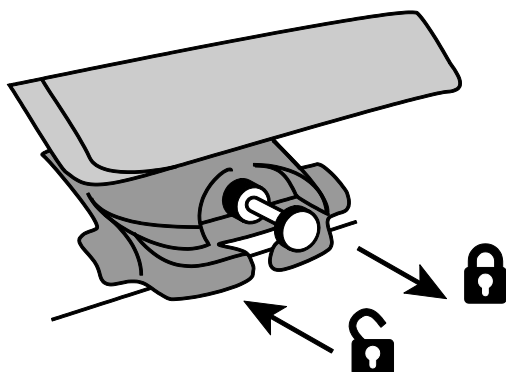
The unit weighs approximately 41 lbs. (18.6 kgs) to 44 lbs. (20 kgs). Use caution when lifting and carrying the unit.



- 1. Monitor Arm Lock
- 2. XY Table Brake
- 3. Rear Post
- 4. Repositioning Grips

**Note:** Do **NOT** lift the unit by its LCD reading lights.

1. Lock the **monitor arm** to secure and prevent the monitor from moving to the left or right.

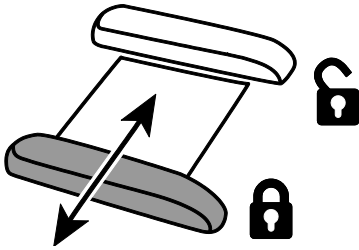


Pull pin out to lock.

**Note:** Monitor arm must be in the center position before pins lock.

Push pin in to unlock.

2. Lock the **XY table** to stop it from moving by pulling the red brake lock toward you.



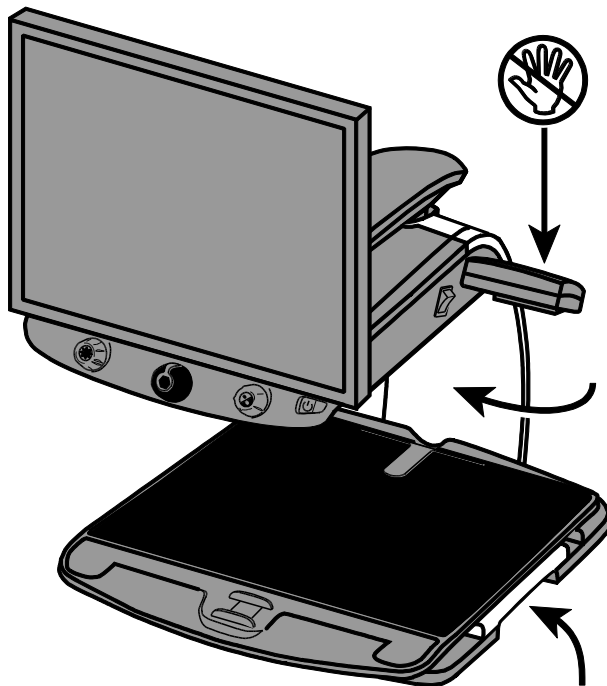
3. Lift and carry the unit by the **rear post** (see figure below) to move it to a sturdy surface such as a table, desk, or countertop.

One suggested method is to wrap your forearm around the rear post and then lift.

**Important:**

Do **NOT** lift the unit by the LED reading lights.

4. Use the **repositioning grips** on both sides of the reading table to move and position the unit to your liking once it is on a sturdy surface.

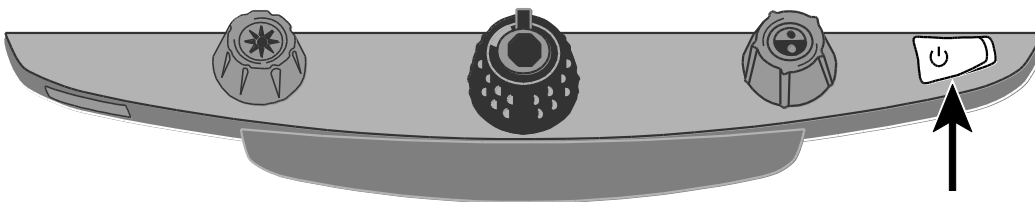


## Power and Monitor Adjustments

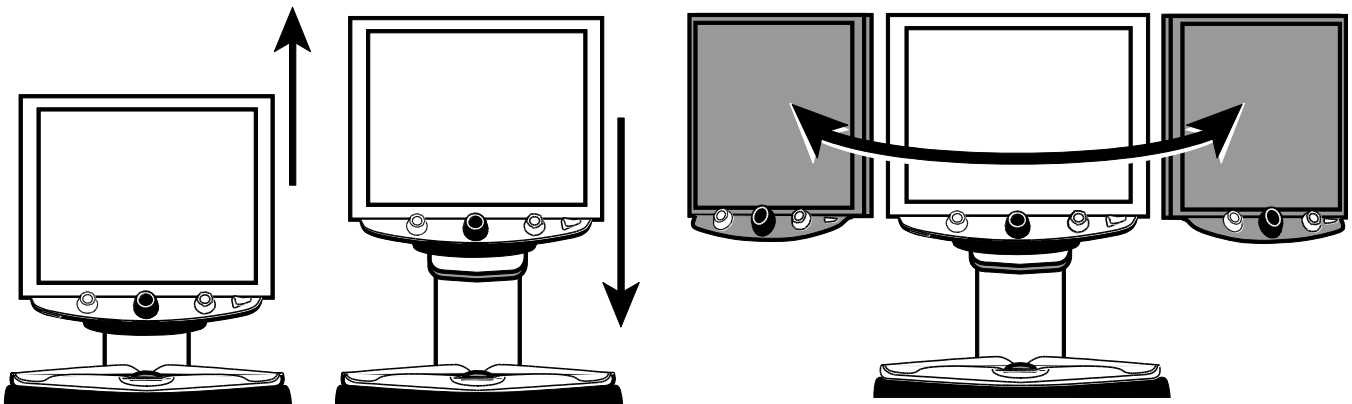
1. Plug the power cord from the middle power connector on the rear of the unit to an electrical wall outlet.
2. Press the white main power switch to the ON (1) position. It is located near the LED reading light on the right side of the unit.



3. Press the green standby power switch on the right side of the control panel.



4. Hold the sides of the monitor with both hands and move it up or down to change the height, or turn the monitor left or right to adjust the angle for the best view.



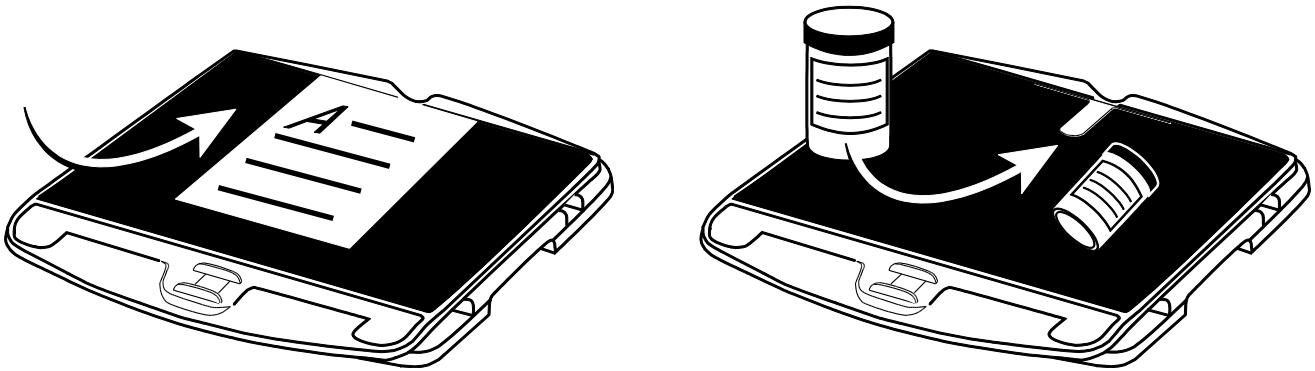
**Note:** If the monitor does not move to the left or right, make sure to release the arm lock (push the locking pin in) located at the base of the monitor arm. Also, make sure that the monitor is raised up so that it freely moves from left to right.

For arm lock information, refer to *Transporting and Moving the Unit* as mentioned earlier on page 6.

### Placing Items on the XY Table

The following describes how to change magnification and brightness, change color modes, and freeze an image on the screen.

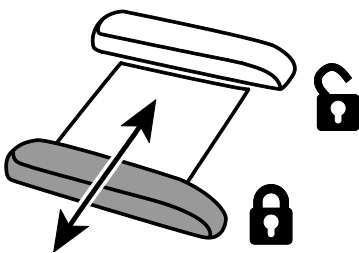
1. Make sure the unit is turned on and that the XY table is visible on the monitor screen.
2. Place the item that you want to magnify onto the center of the reading table.



If it is a document, move it back so that it touches the rear of the XY table.

To read a cylindrical item, such as a pill bottle, place it in the indentation located at the rear of the XY table. This prevents the bottle from rolling on the table.

3. Unlock and move the XY table so that the document or item displays on the screen.

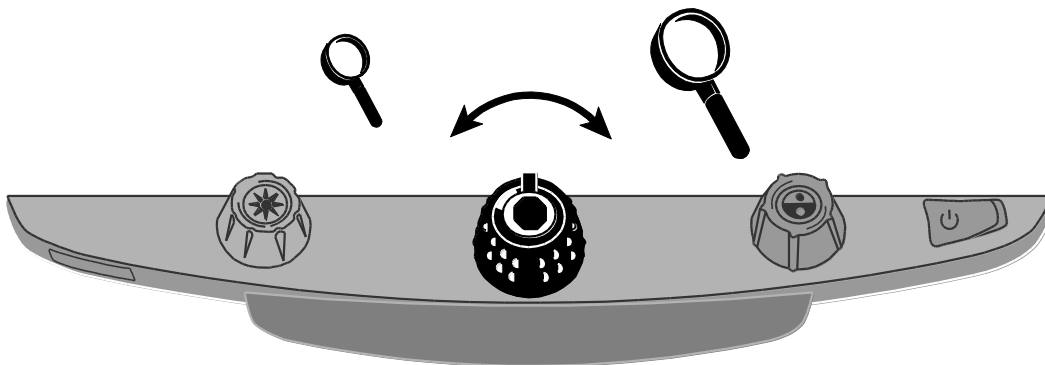


Note that when the table is unlocked, you can move it back and forth so that the document's text moves across the screen making reading easier.

## Changing Magnification

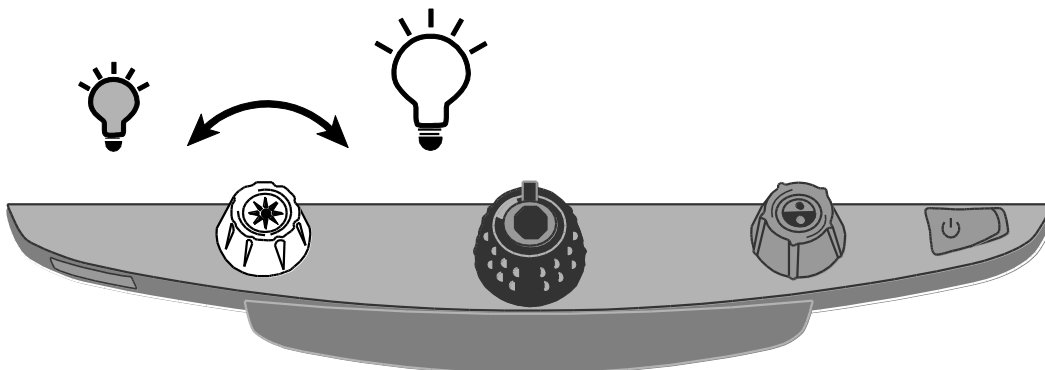
Turn the **black Magnification dial** clockwise to zoom in or counterclockwise to zoom away from the object that is displayed on the screen.

The unit can display 16 levels of magnification.



## Adjusting Screen and Image Brightness

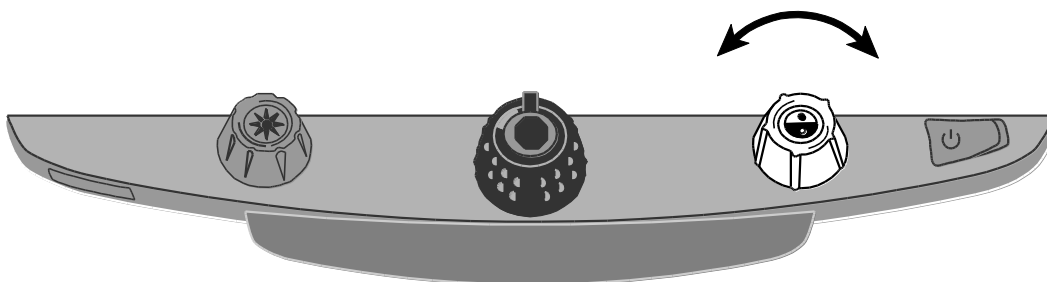
Turn the **yellow Brightness dial** to adjust brightness.





## Changing Screen Colors

Turn the **blue Color Select dial** to choose a color mode that best suits your vision needs.



A color mode is a pre-defined color combination (for example, yellow text on a black background). You can use color modes to reduce glare and provide contrast to make it easier to read text on the screen.

There are five default color modes:

- True Full Color – always available, cannot be deleted
- Black on White (high-contrast positive) – always available, cannot be deleted
- White on Black (high-contrast negative) – always available, cannot be deleted
- Yellow on Blue
- Yellow on Black

You can also activate up to 28 additional color modes for a total of 33. For a complete list, refer to *Color Modes* on page 19.

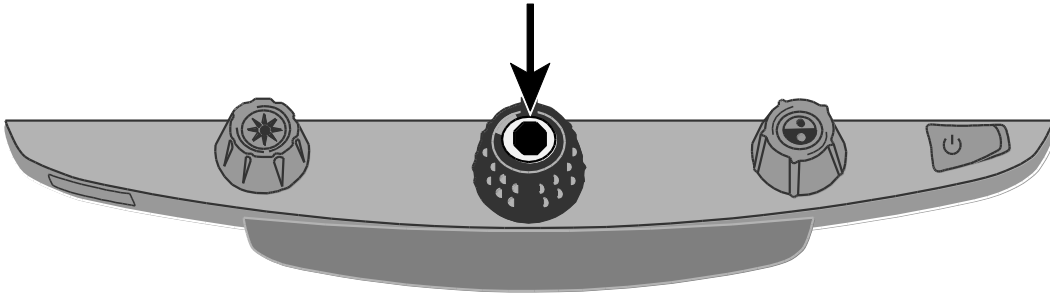
To add more color modes, refer to *Changing Configuration Menu Settings* on page 20

## Freezing an Image

To freeze the current image that is displayed on the screen, do the following:

1. Press the center of the **black Magnification dial**.

The freeze frame icon appears on the screen: **||**

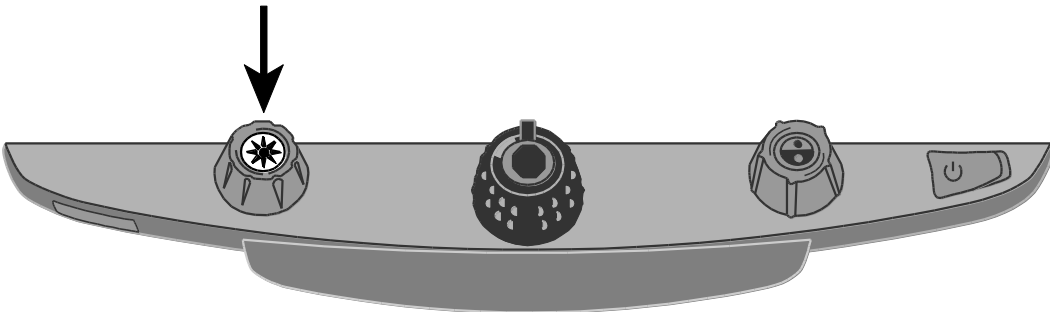


2. Press it again to turn off Freeze Frame and return to the camera's live view.


## Using the Find Feature

The Find feature is useful when moving and repositioning a document or item under the camera. Crosshairs display on the screen to assist with positioning.

1. Press and **hold** the **Find button** located in the center of the **yellow Brightness dial**.



Crosshairs display on the screen (indicating the center of the image on the screen), and the camera zooms out.

2. While still holding the button, move the XY table and use the crosshairs to center and view a new area of the document.
3. Release the **Find button** .

The camera zooms in to its previous magnification level and the crosshairs turn off.

## Locking the Focus

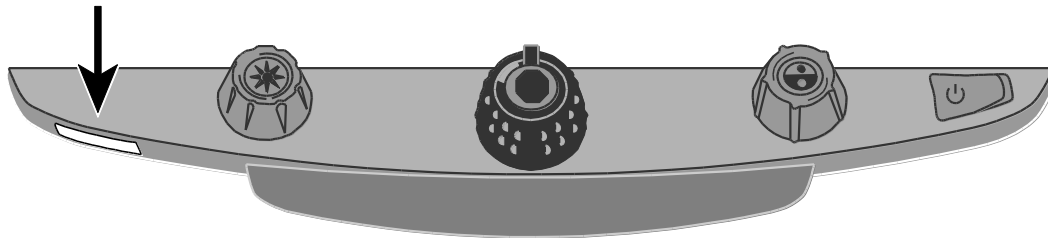
Focus lock keeps the camera focused on the item you are viewing instead of trying to automatically focus on your hand, or any other item that passes in front of the camera. This is useful when working or writing directly under the camera.

In addition to focus lock, the TOPAZ XL HD has a Position Locator beam that projects a red dot onto the XY table. Use it to help you pinpoint your location on the XY table and what you see on the monitor.

To use Focus Lock, do the following:

1. Press the **red Focus Lock button** once to turn on Focus Lock.

The padlock icon appears on the screen: 



2. For **TOPAZ HD**:

- Press it a second time to turn off Focus Lock and restore automatic focus.

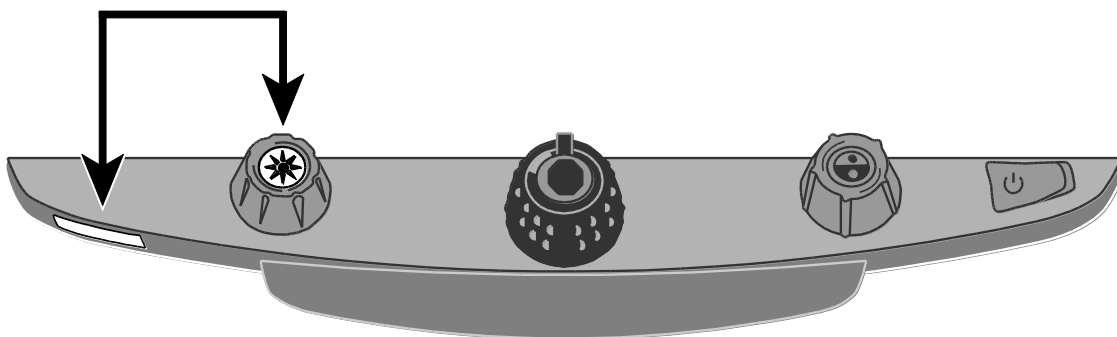
For **TOPAZ XL HD**:

- Press the button a second time to turn on the Position Locator beam and remain in Focus Lock mode.
- Press it a third time to turn off the beam and Focus Lock. Automatic focus is restored.

### Turning LED Reading Lights On or Off

**Note:** The unit has two lights designed to illuminate documents and other items that you place on the reading table. This lighting is diffused to reduce glare and reflections. However, some items, such as photographs or glossy magazine pages, may be too shiny or reflective to view easily. When viewing such items, you can turn off the reading lights if you like.

1. To turn off the LED reading lights, press and hold the center of the **yellow Brightness dial** and the **red Focus Lock button** simultaneously.
2. Press and **hold** both again when you want to turn the reading lights on.

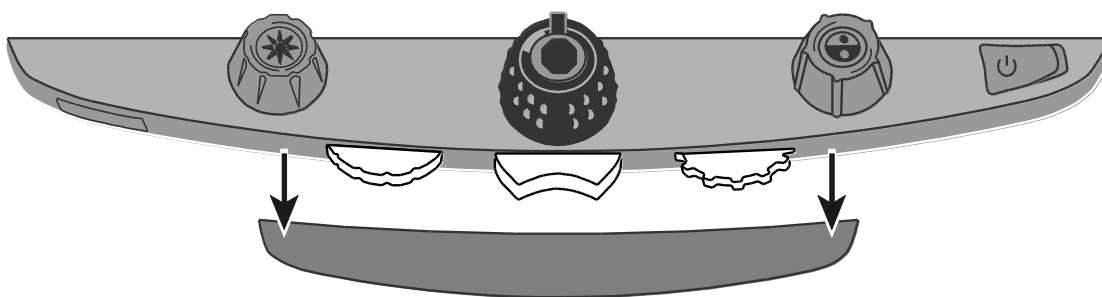


**Note:** You can adjust brightness setting in the Configuration menu. For more information, refer to the Configuration menu procedure on page 20.

## Lines, Masks, and Shades

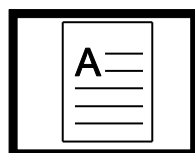
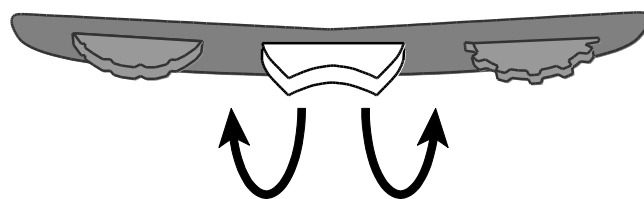
Lines display as two horizontal or vertical lines on the screen. Masks and shades block part of the screen to show only a horizontal or vertical slice of the screen. This makes it easier to focus on a specific area of the reading material while also reducing glare from bright backgrounds. You can also adjust the distance between the lines, masks, or shades that display on the screen.

**Note:** The switch and dials that control lines, masks, and shades are located under the plastic cover on the bottom of the control panel. Press the two recessed tabs on the backside of the cover to remove it to access the purple switch and dials.

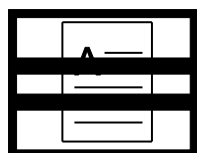


### Displaying Lines, Masks, or Shades – Center Switch

Press the **center purple switch** to the right or left to cycle through and display lines, masks, or shades horizontally or vertically on the screen.



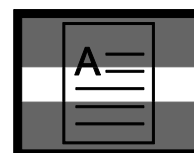
None



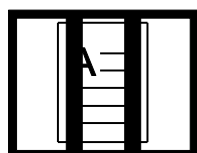
Horizontal  
Lines



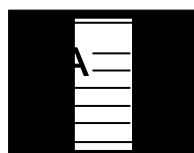
Horizontal  
Masks



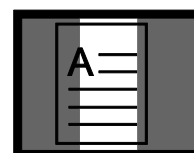
Horizontal  
Shades



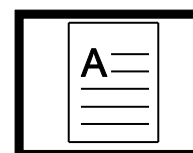
Vertical  
Lines



Vertical  
Masks



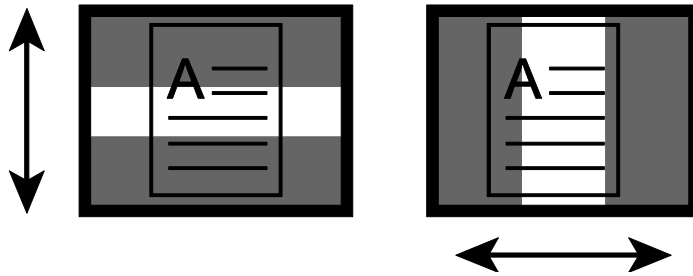
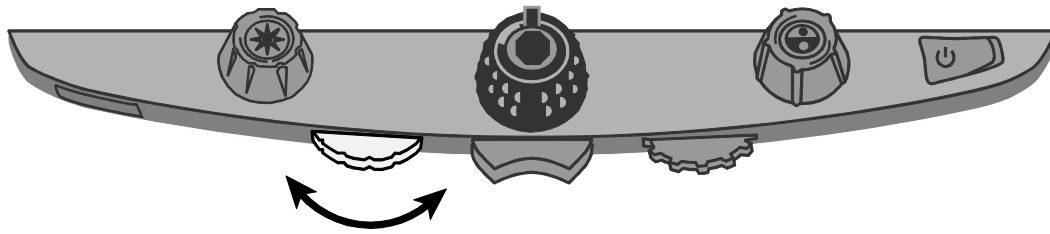
Vertical  
Shades



None

## Moving Lines, Masks, or Shades – Left Wheel

Turn the **left purple Adjustment wheel** to the left or right to move lines, masks, or shades up and down or left and right on the screen.



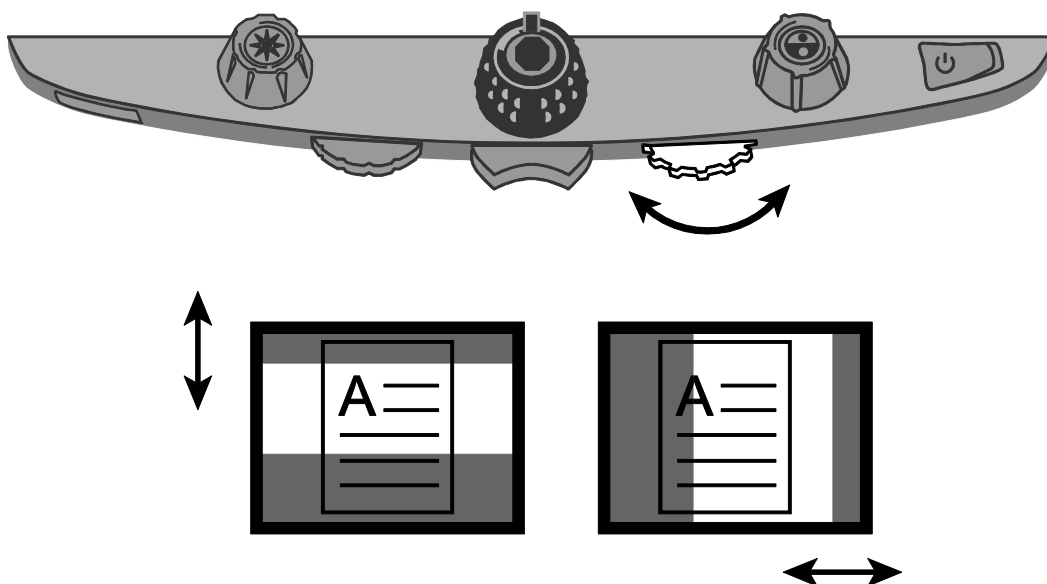
## Moving a Single Line, Mask, or Shade – Right Wheel

For horizontal lines, masks, or shades:

- Turn the **right purple Width wheel** to the left or right, which moves the top line, mask, or shade up or down. This increases or decreases the distance between horizontal lines, masks, or shades.

For vertical lines, masks, or shades:

- Turn the **right purple Width wheel** to the left or right, which moves the right line, mask, or shade to the left or right. This increases or decreases the distance between vertical lines, masks, or shades.

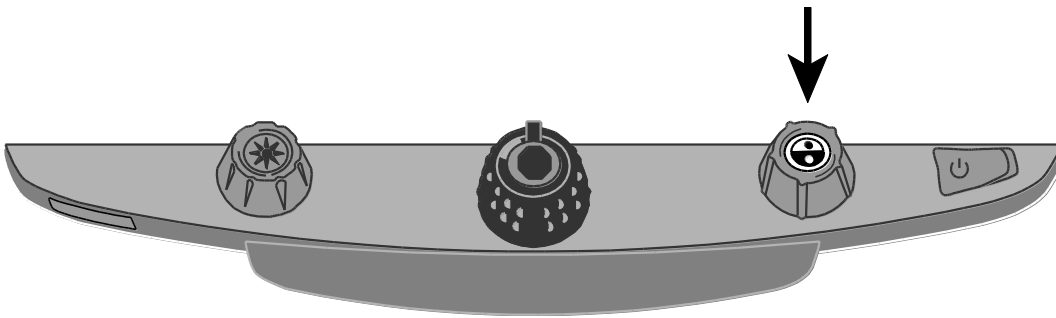


## Using the Reading Line

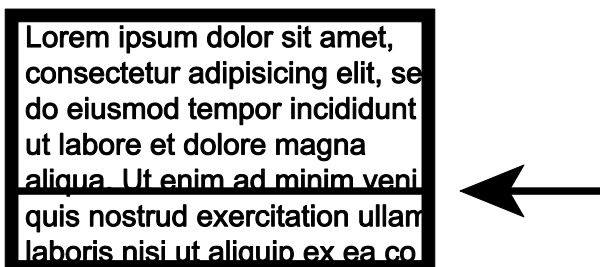
The reading line is a single horizontal line that displays on the screen to help you maintain your place while reading a document. It is useful when using the XY table to scroll your document across the screen.


To use the reading line, do the following:

1. Press the center of the **blue Color Select dial** to place a horizontal line across the screen.



The line displays approximately one third of the way up from the bottom of the screen.



2. Next, move the XY table to the right to continue reading text. To read the next line, move the reading table away from you so that the reading line displays under the next line of text. You can then slide the XY table to the left side of the document to continue reading.
3. To remove the reading line from the screen, press the center of the **blue Color Select dial**  again.

**Note:** This feature is not available when TOPAZ XL HD is connected to your computer via the VGA connector. When connected this way, the center of the dial becomes the Computer View Toggle button and switches between computer view and the unit's camera view.



There are five factory default color modes and 28 additional color modes that you can activate and use. Select the color modes that best suit your visual needs, for example, yellow text against a black background.

**Note:** To change color modes, see steps 1-3 in *Changing Configuration Menu Settings* on page 20.

1. Full Color <sup>1</sup>	12. Blue on White	23. Violet on White
2. Black on White <sup>1</sup> (high-contrast positive)	13. Green on Black	24. White on Violet
3. White on Black <sup>1</sup> (high-contrast negative)	14. Black on Green	25. Orange on Black
4. Yellow on Blue <sup>2</sup>	15. Red on White	26. Black on Orange
5. Yellow on Black <sup>2</sup>	16. White on Red	27. Green on Yellow
6. Grayscale	17. White on Green	28. Yellow on Green
7. Blue on Yellow	18. Green on White	29. Amber on White
8. Black on Yellow	19. Black on Blue	30. White on Amber
9. Violet on Black	20. Blue on Black	31. Black on Amber
10. Black on Violet	21. Black on Red	32. Amber on Black
11. White on Blue	22. Red on Black	33. High-Contrast Full Color

<sup>1</sup> Default color modes for positions 1 through 3; cannot be changed or deleted.

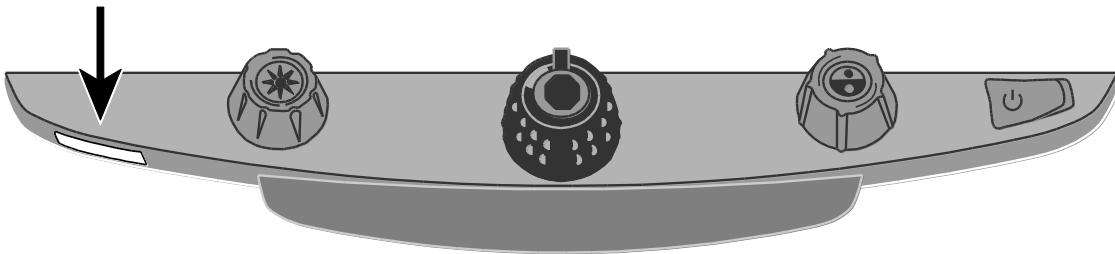
<sup>2</sup> Default color modes for positions 4 and 5; can be changed or deleted. A maximum of 12 positions can be active.

## Changing Configuration Menu Settings

You can change the unit's factory settings using the Configuration menu as described in this section.


**Note:** When configuring color modes, it is best to have both a page of text and a color photo to place under the camera to select settings best suited for you.

1. Press and **hold** the **red Focus Lock button** for approximately 10 seconds to open the Configuration menu. Release the button when the color mode settings display.




The color mode setting (**T**) displays in the lower left corner of the screen.





- The hollow outline **T** displays for positions 1-3 and indicates that color settings cannot be changed or disabled
  - The solid outline **T** displays for positions 4-12 and indicates that color settings can be edited
2. Turn the **blue Color Select dial**  to scroll through positions 4-12.

The color combination currently displayed on the screen is assigned to that position number.

To select and enable (✓) a position with its current color mode:









- Press the center of the **black Magnification dial** .
- If you press it again, the position is cleared (**X**) and disabled.

To select a position and choose a different color mode:

- Turn the **yellow Brightness dial**  to view the 33 color modes.
- When you find a color mode that you want to use, press the center of the **black Magnification dial**  to select (✓) the color combination and enable the current position.

Repeat this step as necessary to configure other positions.

3. Press the **red Focus Lock button** to move to other settings, which are listed below. For more information about these settings, see page 28.


Icon	Description	Default Setting
	Freeze Frame	✓
	Focus Lock	✓
	Home <sup>1</sup>	✗
	Find	✓
	Single Reading Line	✓
	LED Reading Light Brightness	3 (High)
	Magnification Tables <sup>2</sup>	1
	Magnification Display Number <sup>2</sup>	“88”

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<sup>1</sup> See *Restore User Settings When Powering On the Unit* on page 24 for more details.

<sup>2</sup> See *Adjusting Magnification Settings* on page 33 for more details.

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4. When an item that you want to change displays, press the center of the **black Magnification dial**  to:
  - Select and enable (✓) a setting
  - Clear and disable (✗) a setting
  - Cycle through the different options available for a setting
5. When finished, press and **hold** the **red Focus Lock button** for at least 10 seconds to save your new default setting and exit the Configuration menu.

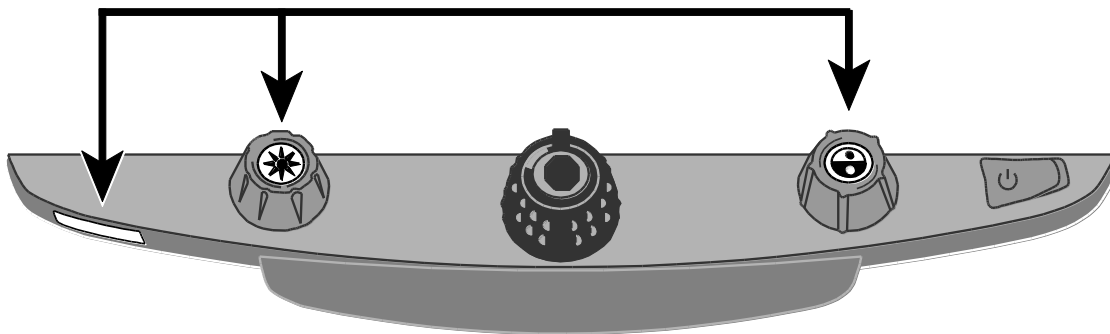
**Note:** To restore factory default settings, refer to page 26 for more information.

## Saving and Restoring User Settings

After enabling or disabling color modes and other settings in the Configuration menu, you can select your favorite color combination and screen brightness settings, and then save all changes as your default user settings. Being able to recall these settings is useful if you decide to experiment with other colors and settings, but are not satisfied with the changes.

### Save User Settings

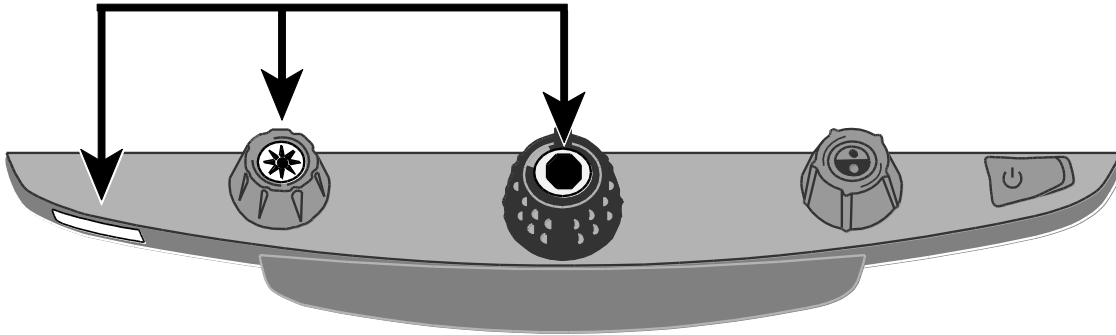
Press and **hold** these control panel buttons simultaneously until the Save icon  displays.



- Red Focus Lock button
- Center of yellow Brightness dial
- Center of blue Color Select dial

## Restore User Settings


If it is necessary to restore user settings, press and **hold** these control panel buttons simultaneously for at least 10 seconds.



- Red Focus Lock button
- Center of yellow Brightness dial
- Center of black Magnification dial

## Restore User Settings When Powering On the Unit




By default, the unit always powers on with the same settings as the previous session, to include color mode, brightness adjustments, and any lines, masks, or shades used.

If you want the unit to always start in a specific color mode and brightness, while also resetting all adjustments made in the prior session, select **Home**  in the Configuration menu. (Home is disabled by default.)

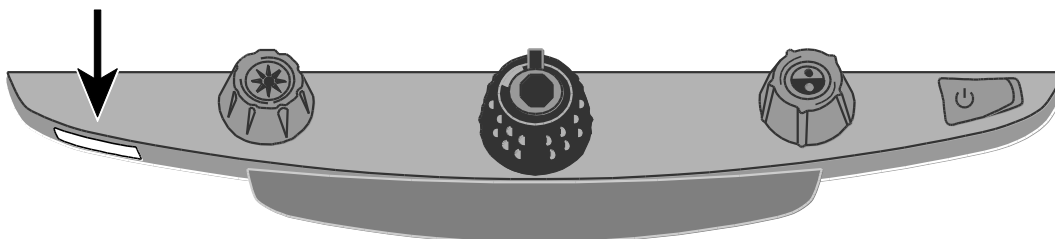
To open the Configuration menu and select **Home**, refer to **Changing Configuration Menu Settings** on page 20.

After exiting the Configuration menu, save your changes as described earlier.

## Disabling Center Push Buttons on the Control Panel


To simplify operation, you can disable the center push buttons on the control panel that operate the Freeze Frame ; Find ; and Single Reading Line  features. To do this,

1. Press and **hold** the **red Focus Lock button** (bottom left side of the control panel) for at least 10 seconds to open the Configuration menu.



2. Press the **red Focus Lock button** until Freeze Frame  displays. It is selected (✓) by default.

Press the center of the **black Magnification dial**  to clear (✗) Freeze Frame.




3. Press the **red Focus Lock button** again to move to the Find  setting. It is selected (✓) by default.

Press the center of the **black Magnification dial**  to clear (✗) Find.

4. Press the **red Focus Lock button** again to move to the Single Reading Line  setting. The option is selected (✓) by default.

Press the center of the **black Magnification dial**  to clear (✗) the Single Reading Line.

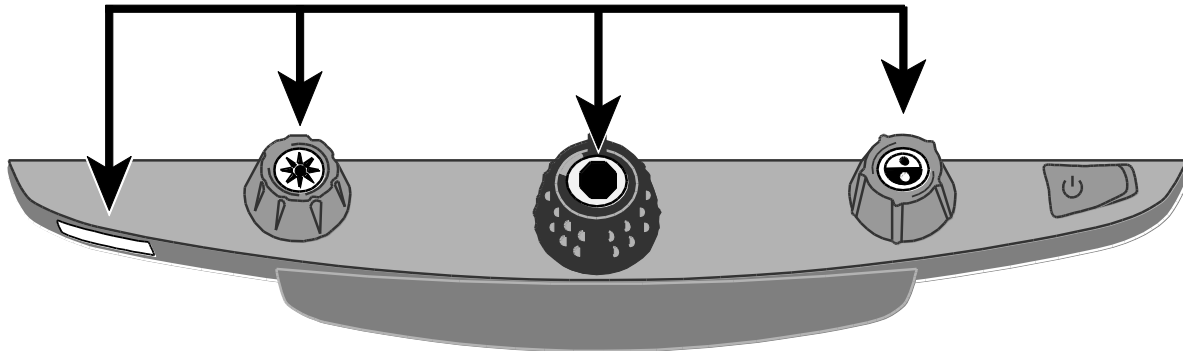
5. When finished, press and **hold** the **red Focus Lock button** for at least 10 seconds to save and exit the Configuration menu.

With the buttons disabled, nothing will happen when you press the center of the **yellow Brightness dial** , the **black Magnification dial** , or the **blue Color Select dial** .

When you restore your user settings or the factory default settings, the buttons and features are enabled again.

## Resetting Factory Default Settings

To reset the unit to its default factory settings, press and **hold** the following dials and buttons simultaneously for 10 seconds. Release the dials and buttons when the screen goes blank.



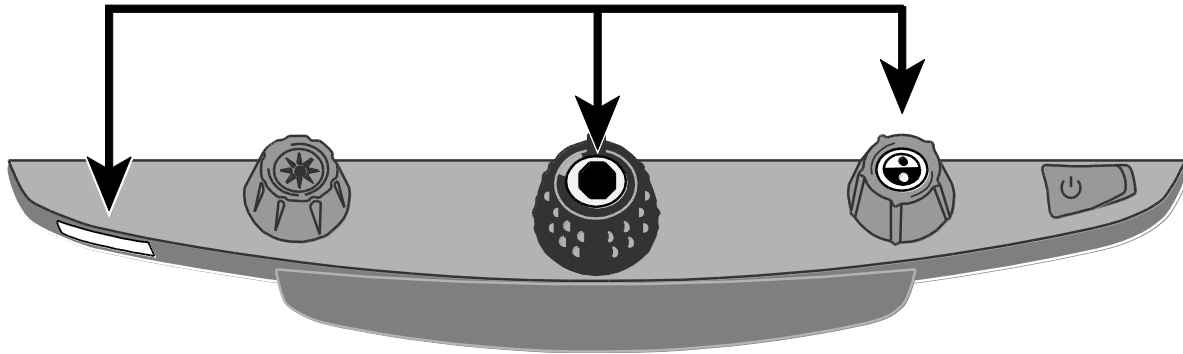
- Red Focus Lock button
- Center of yellow Brightness dial
- Center of black Magnification dial
- Center of blue Color Select dial



## Displaying Firmware Version Number





Press and **hold** the following dials and buttons simultaneously for five seconds to display the firmware version number. The word **Ver.** followed by several sets of numbers flash one at a time on the screen. The first three sets indicate the unit's firmware version.



If you need technical assistance, please have this information available before contacting Technical Support.







- Red Focus Lock button
- Center of black Magnification dial
- Center of blue Color Select dial




## Appendix A – Configuration Menu Settings

Setting	Description
<p>Color Select</p> <p> </p>	<p>Adds more color positions so that additional color combinations are available when you turn the <b>blue Color Select dial</b> during normal operation.</p> <p>By default, positions 1 through 5 are available. Positions 6 through 12 can be added using this setting.</p> <p><b>Hollow icon - </b></p> <p>Positions 1 through 3 are always available and cannot be changed.</p> <p>Position 1 is always full color. Position 2 is black on white (high-contrast positive). Position 3 is white on black (high-contrast negative).</p> <p><b>Solid icon - </b></p> <p>Displays for positions 4 through 12. These positions can be added to or removed from normal operation. In addition, you can select one of 33 different color combinations for each position.</p> <p>By default, position 4 is yellow on blue, and position 5 is yellow on black. Both positions can be changed using this setting.</p> <p><b>Adding and removing Color Modes</b></p> <p>To add a position, select (✓) it by pressing the center of the <b>black Magnification dial</b>. To remove a position, clear (✗) it by pressing the center of the dial again.</p>

Setting	Description
<p>Freeze Frame</p> 	<p>Disables or enables freeze frame functionality. It is enabled (✓) by default.</p> <p>If you disable (✗) it, Freeze Frame is no longer available when you press the center of the <b>black Magnification dial</b> during normal operation.</p>
<p>Focus Lock</p> 	<p>This setting disable or enable focus lock functionality. If you disable (✗) the setting, you completely disable focus lock so that it is not available when you press the <b>red Focus Lock button</b> during normal operation. In this case, only the red position locator beam is available when the button is pressed.</p> <p>The Focus Lock setting is selected (✓) by default.</p> <p>When using the unit, the camera automatically focuses on the closest object in view. However, if you want focus to remain on a specific object such as a document on the XY table, you can turn on Focus Lock by pressing the <b>red Focus Lock button</b>. This prevents the camera from accidentally focusing on your hand or any other item that moves in front of the camera. During normal operation, it is recommended that you leave Focus Lock off.</p>

Setting	Description
Home 	<p>This setting is cleared (✕) by default. When cleared, the unit will always turn on using the same color, brightness, and reading lines or mask settings as in your last session.</p> <p>When selected (✓), the Home setting resets the unit to your default user settings every time you turn on the unit. Your default settings can be what you choose in the Configuration menu, or what you set and save later during normal operation.</p>
Find 	<p>During normal operation, Find displays a set of crosshairs on the screen and zooms out so that you can see more of the item displayed on the screen.</p> <p>This setting is enabled (✓) by default. If you disable (✕) it, Find is no longer available when you press the center of the <b>yellow Brightness button</b> during normal operation.</p>
Single Reading Line 	<p>This setting is selected (✓) by default. It allows you to display a horizontal line across the bottom third of the screen during normal operation. Use it to help you maintain your place when reading a document.</p> <p>When cleared (✕), the line does not display when you press the center of the <b>blue Color Select dial</b> during normal operation.</p>
LED Reading Lights 	<p>The reading lights can be set to one of three brightness levels: low (1), medium (2), or high (3). By default, the brightness level is set to high (3).</p> <p>Press the center of the <b>black Magnification dial</b> to select a brightness level.</p>

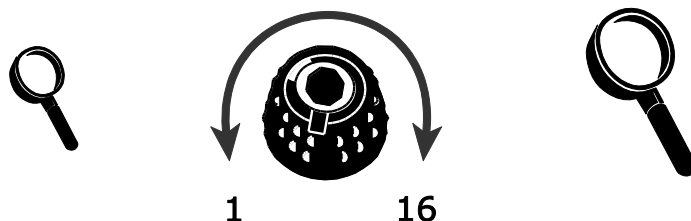
Setting	Description
<p>Magnification Levels</p> <p><b>AAa</b></p>	<p>The unit can display 16 levels of magnification when you turn the <b>black Magnification dial</b> (positions 1 to 16).</p> <p>Three separate magnification tables are available for use. Each table offers slightly different values so that you can choose the best magnification power for you.</p> <p><b>Table 1</b> is the default magnification table and is ideal for most users.</p> <p><b>Table 2</b> is best if you are comfortable with lower magnification. It provides finer adjustments between positions 1 through 5.</p> <p><b>Table 3</b> provides finer adjustments in the middle magnification range available between positions 6 through 10. This table is good if you need greater magnification.</p> <p>Press the center of the <b>black Magnification dial</b> to select table 1, 2, or 3.</p>

Setting	Description
<p>Magnification Display Number</p> <div>    </div>	<p>Sets the type of magnification value that displays on the screen as you turn the <b>black Magnification dial</b>.</p> <p>Press the center of the <b>black Magnification dial</b> to select a value.</p> <p>Select the icon with “88” to display the magnification in use relative to the 16 dial positions, for example, 1, 2, 3, 14, 15, 16.</p> <p>Select the icon with the clear magnifying glass if you do not want to see a magnification value display as you turn the dial.</p> <p>Select the icon with “X” to display the actual magnification value, for example, 3.7, 6.4, 13, and so on.</p>

## Appendix B – Adjusting Magnification Settings

**Note:** The following advanced feature is intended for sales and support personnel. It is accessed in the Configuration mode.

The unit can display 16 levels of magnification. To increase magnification, turn the **black Magnification dial** clockwise. To decrease magnification, turn it counterclockwise.




To get the most out of the unit, there are three magnification tables from which you can choose the best magnification power for you.

- **Table 1** is the default magnification table and is ideal for most users. Turn the black **Magnification** dial to step through positions 1 through 16.
- **Table 2** is ideal if you are comfortable with lower magnification. It provides finer adjustments between positions 1 through 8.
- **Table 3** provides finer adjustments for midrange magnification available between positions 8 through 14. This table is good if you need greater magnification.

Experiment with the different magnification tables and use the one that is best for you. You can always revert to table 1 at any time if you are not comfortable with the magnification available in tables 2 and 3. The following describes how to select and edit your viewing preferences.

### Selecting a Magnification Table


1. Press and hold the **red Focus Lock button** for approximately 10 seconds until the letter **T** displays in the lower left corner of the screen.
2. Continue to press the **red Focus Lock button** until the video magnification icon **AAA** displays on the screen.
3. Press the center of the **black Magnification dial**  to select one of the three magnification tables.

4. Do one of the following:

- To save the change and exit configuration mode, press and hold the **red Focus Lock button** for approximately 10 seconds until the on-screen display at the bottom of the screen closes.
- To customize how magnification values display on the screen, perform the steps in the next section.

## Changing the Magnification Display Number

Once you have selected a magnification table, you can choose whether or not the current magnification value displays on the screen as you turn the **black Magnification dial**. To set your preference, do the following:

1. Press the **red Focus Lock button** until the magnifying glass icon displays on the screen.
2. Press the center of the **black Magnification dial**  to select how magnification values display. This is represented by the magnifying glass icon.



Select to display the magnification in use relative to the 16 positions of the **black Magnification dial**, for example, 1, 2, 3,..., 14, 15, 16.



Select if you do not want any magnification value to display as you turn the **black Magnification dial**.



Select to display the actual magnification value, for example, 3.7, 6.4, 13, and so on.


3. To save changes and exit configuration mode, press and hold the **red Focus Lock button** for approximately 10 seconds until the on-screen display at the bottom of the screen closes.

To discard any changes made while configuration mode is open, do not touch any control panel dials, buttons, switches, or wheels for approximately 30 seconds. This closes configuration mode without saving changes.



## Appendix C – Using TOPAZ XL HD as a Computer Monitor

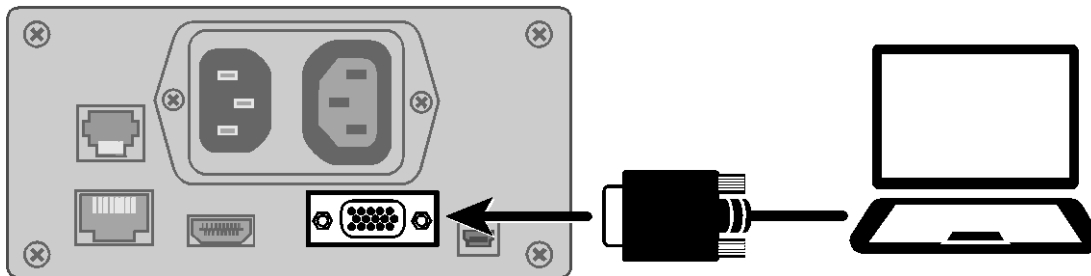
### Connecting Computer to TOPAZ XL HD

You can connect TOPAZ XL HD directly to your computer and use it as your primary monitor. When connected, you can always switch back to the camera view by pressing the center of the **blue Color Select dial** .

#### Important:

Connecting the unit to a computer requires a 15-pin VGA video cable. Count the number of pins, and make sure the video cable has all 15 pins. Anything less will not work.

1. Power off both the unit and your computer.
2. Connect one end of a 15-pin VGA (video) cable to the video port on your computer. Refer to your computer documentation for the location of this port. Connect the other end of the cable to the VGA connector on TOPAZ XL HD.




3. Power on TOPAZ XL HD and then your computer.

The video signal from your computer now goes to TOPAZ XL HD making it your computer monitor.

4. When using a laptop computer, make sure to turn on the laptop's VGA port. This is typically done by pressing and holding the **Fn** key along with one of the function keys ranging from **F1** to **F12**. Refer to your computer documentation for the correct function key.

Pressing this key combination usually cycles between seeing what appears only on the laptop screen, the TOPAZ XL HD's screen, and both screens simultaneously.

- Press the center of the **blue Color Select dial**  to cycle the view between your computer and the TOPAZ XL HD camera. The computer view displays what you are running on your computer. The camera view displays items that are on the XY table.

When the camera view displays on the TOPAZ XL HD monitor, you can use all TOPAZ XL HD functionality. This includes changing magnification, selecting different color modes, changing brightness, and so on.

When the computer view displays on the TOPAZ XL HD monitor, TOPAZ XL HD functionality is disabled.

**Note:** If the image on your monitor is distorted in some way, for example, the screen is compressed horizontally or is skewed, or the screen is wavy, dull, or flickering, you may need to change the current screen resolution set on your computer as described in the next section.

## Screen Resolutions

The following screen resolutions supported for the following TOPAZ XL HD models. Shaded cells indicate the recommended settings.

TOPAZ XL HD 20-inch	TOPAZ XL HD 22-inch	TOPAZ XL HD 24-inch
640 x 480p at 60Hz	720 x 400p at 70Hz	640 x 480p at 60Hz
800 x 600p at 60Hz	640 x 480p at 60Hz	800 x 600p at 60Hz
1024 x 768p at 60Hz	800 x 600p at 60Hz	1024 x 768p at 60Hz
1280 x 800p at 60Hz	1024 x 768p at 60Hz	1024 x 768p at 70Hz
1280 x 960p at 60Hz	1024 x 768p at 70Hz	1152 x 864 at 70 Hz
1280 x 1024p at 60Hz	1152 x 864p at 75Hz	<b>1280 x 800p at 60Hz</b>
<b>1280 x 720p at 60Hz</b>	<b>1280 x 800p at 60Hz</b>	1280 x 1024p at 60Hz
1600 x 900p at 60Hz	1280 x 1024p at 60Hz	1440 x 900p at 60Hz
	1440 x 900p at 60Hz	1920 x 1080p at 60Hz
	1600 x 1200p at 60Hz	
	1680 x 1050p at 60Hz	

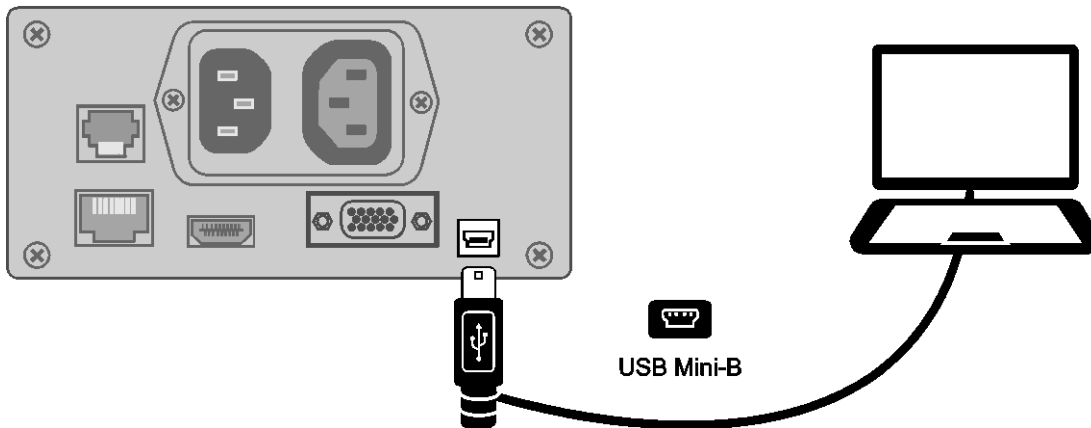
## Appendix D – Making a USB Connection to TOPAZ XL HD

GEM<sup>®</sup> image management software lets you view, capture, and save magnified images from TOPAZ XL HD to your computer. You can quickly and easily step through or jump to multiple images captured by the software. To use the GEM, refer to the software documentation.

**Note:** Connecting TOPAZ XL HD to a computer requires a cable with a USB Mini-B plug.

1. To connect TOPAZ XL HD to a computer, connect the USB Mini-B plug into the USB connector on the back of TOPAZ XL HD.

The video signal and camera image from TOPAZ XL HD goes directly to your computer. The TOPAZ XL HD view is visible using the GEM software



2. To use the software, refer to the GEM user documentation for more information.

## Appendix E – Troubleshooting

Problem	Solution
The screen is blank.	<p>Press the unit's power button.</p> <p>Make sure the power cable is correctly connected to the unit and a power outlet.</p> <p>Reduce magnification.</p> <p>Adjust brightness.</p> <p>Switch to a different color mode.</p>
The unit does not power on.	<p>Press the unit's power button.</p> <p>Make sure the power cable is correctly connected to the unit and a power outlet.</p> <p>Ensure that the power outlets have power and are not malfunctioning. If the outlets are connected to a wall switch, make sure that the switch is on.</p>
The image on the screen is not changing.	Press the red Freeze Frame button to return to live view.
The image on the screen is too bright, or there is a glare from the screen that makes it difficult to see.	<p>Reduce brightness.</p> <p>Switch to a different color mode.</p>
The image on the screen is too dark.	<p>Increase brightness.</p> <p>Switch to a different color mode.</p>
The unit does not power on with my user settings.	Ensure that the Home setting is enabled.
There are smudges or blemishes on the screen.	Clean the screen using a damp, soft, lint-free cloth.

## Service and Support

You can contact Freedom Scientific Technical Support to receive technical assistance. Before contacting Technical Support, it is recommended that you refer to *Troubleshooting* on page 38 to try to resolve your problem quickly.

**Note:** This device has no user-serviceable components. Any unauthorized attempt to service or replace internal components will void the product warranty.

To contact Technical Support by Web, visit **[www.FreedomScientific.com](http://www.FreedomScientific.com)**, choose Support, and complete the form to submit questions.

To contact by e-mail, send questions to **[Support@FreedomScientific.com](mailto:Support@FreedomScientific.com)**.

To contact by telephone, U.S. customers can call **(727) 803-8600**, Monday through Friday, from 8:30 AM to 7:00 PM (Eastern Time).

When you call, please have your questions ready and be prepared to provide the following information:

- Product name
- Product serial number
- What you were doing when the problem occurred
- How you tried to solve the problem

### Product Registration

Visit **[www.FreedomScientific.com/Forms/ProductRegistration](http://www.FreedomScientific.com/Forms/ProductRegistration)** to register your product and validate your warranty.

## **Notes**

## **Notes**

## **Notes**