

# 500 Series Spectrodensitometer

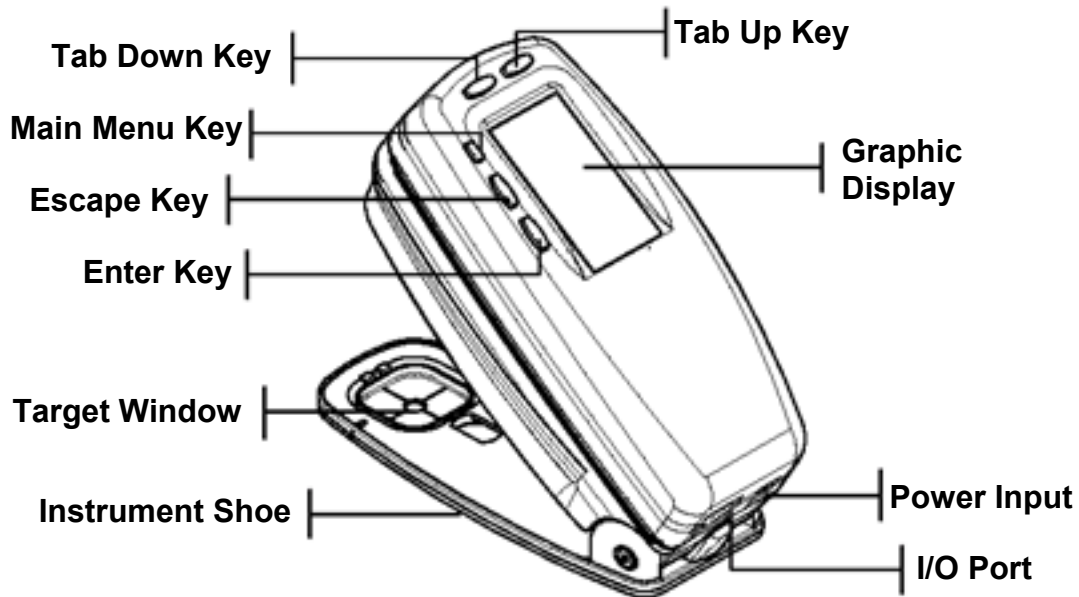
## Quick Help Guide



# 500 Series Overview

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## Instrument Description & Features



## The Main Menu

When the instrument is first powered-up, the main screen appears. The left side of the screen lists all available functions. The right side of the screen lists instrument information when the Main Menu title is highlighted and specific option information when a function is highlighted.

## The Keys

**Tab Down key** – advances the highlighted bar (reverse video) down to the next available option in the display.

**Tab Up key** – performs the same function as the Tab Down key except it moves the highlighted bar up.

**Enter key** – selects the highlighted item.


**Escape key** – backs-up the instrument screen one menu level.

**Main Menu key** – returns the instrument screen to the main menu. This is a quick exit out of any function.

# 500 Series Operation

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## Quick Calibration of the Instrument

 *Why should you calibrate? Calibrating the instrument every day ensures the best measurement accuracy and stability. Under normal circumstances, the instrument should be calibrated at least once a day.*

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**NEED TO KNOW:** Every white calibration reference has a set of reflectance values that are unique. Use the calibration reference only if the reflectance values match those stored in the instrument you are calibrating. You should verify that the serial number on the bottom of the reference matches the serial number on the bottom of the instrument.


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1. Make sure the calibration reference is clean before use. Carefully clean the reference and white ceramic disk with a dry, lint-free cloth. Do not use solvents or cleaners of any kind.
2. Press Tab Up or Tab Down to highlight calibration. Press Enter key to access the white calibration function.
3. Place the instrument onto the calibration reference. The instrument fits snugly with the target window opening centered over the white ceramic disk.
4. Lower the instrument to the shoe; hold steady until the user dialog indicates the calibration is completed.
5. Store the calibration reference in a dry, dust free area, away from direct exposure to light.

# 500 Series Operation

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## Full Calibration of the Instrument

 *When should you perform full calibration? 500 series instruments occasionally require a black calibration in addition to the usual white tile calibration. This may occur because of a change in surrounding temperature or after a reset of the instrument.*

1. Make sure the calibration reference is clean before use. Carefully clean the reference and white ceramic disk with a dry, lint-free cloth. Do not use solvents or cleaners of any kind.
2. Press Tab Up or Tab Down to highlight Configuration. Press Enter key.
3. Press Tab Up or Tab Down to highlight Cal Option :24 hrs. Press Enter key.
4. Full Calibration should already be highlighted. Press Enter key.
5. Place the instrument onto the calibration reference. The instrument fits snugly with the target window opening centered over the white ceramic disk. Lower the instrument to the shoe; hold steady until the user dialog indicates the calibration is completed. The instrument will prompt that you to do this twice.
6. Now measure black. Black refers to absence of all light. Proceed as follows:

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Locate the triangle shaped plastic piece on the back of your 500, it is located below the power and communication ports. You will find that you can rotate this piece, which allows the instrument shoe to open until it is perpendicular to the body of the instrument.

You will now want to hold the instrument in such a fashion that when we take a reading no light is reflected back to the optics. Most people find that holding the instrument under a desk in a darkened room works best. Be sure to hold the instrument at an angle so the light from the lamps does not reflect directly back towards the instrument.


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7. Use a finger to depress the read switch and continue holding it down while the instrument takes a series of four readings. The read switch is the small plunger located in front of the optics assembly on the bottom of the 500. Be sure that nothing is in front of the optics when you do this (watch out for your other fingers), and do not release the switch until the four readings are complete.
8. The Full Calibration is now complete. Press the X key to go to the Main Menu. You can close the shoe and rotate the triangle plastic stop back to its original position.

# 500 Series Operation

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## **Measuring Density** (All models in the 500 Series)

 *Why should you measure density? Density values are used to indicate to the press operator whether the amount of ink being printed should be increased or decreased. If the density value measured is higher than the target density, the amount of ink being printed needs to be reduced. Likewise, if the measured density value is lower than the target value, the amount of ink being printed needs to be increased.*

1. Press the X key to go to the Main Menu.
2. Press the Down Tab Key one time to highlight the word Density.
3. Press the Enter Key to select the density function.
4. Place the instrument on your sample so that the target window is positioned over an area of solid ink coverage.
5. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
6. Lift the instrument back up.
7. You will now see the density value appear in the display.

# 500 Series Operation

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## Measuring Dot Area/Dot Gain (models 508, 518, 520, 528, & 530)


**?** *Why should you measure dot area or dot gain? Dot area and dot gain (or Tone Value/Tone Value Increase) are used to indicate to the press operator how well screen values are being reproduced. Dot area indicates the actual percentage of the area that is covered with ink. For example, a dot area reading of 68% means that in the area measured 68% of the area is covered with ink and 32% of the area is paper. Dot gain simply subtracts the original dot area (from the film) from this measured value. For example, if this 68% tint was 50% in the film and you read this same spot in dot gain mode, your reading would be 18% (68% - 50%).*

1. Press the X key to go to the Main Menu.
2. Press the Down Tab Key to highlight the word Dot.
3. Press the Enter Key to select the dot function.
4. Place the instrument on your sample so that the target window is positioned over an area that contains no ink. (We need to measure the paper by itself.)
5. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
6. Lift the instrument back up.
7. Place the instrument on your sample so that the target window is positioned over an area of solid ink coverage.
8. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
9. Lift the instrument back up.
10. Place the instrument on your sample so that the target window is positioned over the tint patch that you are interested in measuring.
11. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
12. Lift the instrument back up.
13. You will now see the dot area (or dot gain) value appear in the display.

# 500 Series Operation

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## **Measuring Trap** (models 518, 528, and 530)


 *Why should you measure trap? Trap readings are used to indicate to the press operator how well a layer of ink is printing over the top of a previously printed layer of ink. Higher readings indicate better transfer.*

1. Press the X key to go to the Main Menu.
2. Press the Down Tab Key to highlight the word Trap.
3. Press the Enter Key to select the trap function.
4. Place the instrument on your sample so that the target window is positioned over an area that contains no ink. (We need to measure the paper by itself.)
5. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
6. Lift the instrument back up.
7. Place the instrument on your sample so that the target window is positioned over an area where 2 inks overprint as solids.
8. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
9. Lift the instrument back up.
10. Place the instrument on your sample so that the target window is positioned over an area of solid ink coverage, on the second down ink.
11. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
12. Lift the instrument back up.
13. Place the instrument on your sample so that the target window is positioned over an area of solid ink coverage, on the first down ink.
14. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
15. Lift the instrument back up.
16. You will now see the trap value appear in the display.

# 500 Series Operation

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## Measuring Print Contrast (models 518, 528, and 530)


 **Why should you measure print contrast?** *Print Contrast indicates to the press operator how well shadow detail is maintained. Higher values indicate that shadow detail is more open.*

1. Press the X key to go to the Main Menu.
2. Press the Down Tab Key to highlight the word Print Contr.
3. Press the Enter Key to select the print contrast function.
4. Place the instrument on your sample so that the target window is positioned over an area of solid ink coverage.
5. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
6. Place the instrument on your sample so that the target window is positioned over a 75% tint patch that you are interested in measuring.
7. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
8. Lift the instrument back up.
9. You will now see the print contrast value appear in the display.

# 500 Series Operation

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## Measuring Hue Error/Grayness (models 518, 528, and 530)


 **Why should you measure hue error & grayness?** *Hue error and grayness values indicate to the press operator how far away their process colors are from a theoretically perfect ink shade. The closer to zero these values are, the closer the ink shade is to this ideal. Please note that there is no such thing as a perfect ink shade, all will have some degree of contamination, therefore do not expect to measure zero.*

1. Press the X key to go to the Main Menu.
2. Press the Down Tab Key to highlight the word Hue/Grayness.
3. Press the Enter Key to select the density function.
4. Place the instrument on your sample so that the target window is positioned over an area of solid ink coverage.
5. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
6. Lift the instrument back up.
7. You will now see the hue error and grayness values appear in the display.

# 500 Series Operation

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## **Measuring Color** (models 520, 528, and 530)

 **Why should you measure color?** *This function is used to determine how a sample varies in color from your standard and how far away the sample is from that standard. There are many values that can be used to measure color. Your instrument will be set to the values your supervisor/manager determines. The procedure for taking the measurement is the same regardless of the setting.*

1. Press the X key to go to the Main Menu.
2. Press the Down Tab Key to highlight the word Color.
3. Press the Enter Key to select the color function.
4. Place the instrument on your sample so that the target window is positioned over an area of solid ink coverage.
5. Press down on the instrument until you see the word <Completed> appear at the bottom of the window.
6. Lift the instrument back up.
7. You will now see the color values appear in the display.

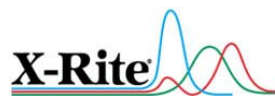
# 500 Series Operation

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## Troubleshooting

*Errors encountered during a measurement are displayed in the User Dialog. All errors are accompanied by a long beep. Any errors (except <Battery Low>) encountered during a measurement cancel that measurement; and the data displayed is from the prior measurement.*

Displayed Error	Reason
<Measure Aborted>	Displays with an incomplete measurement. Instrument was released too soon.
<Invalid Measure>	Measure did not complete successfully. Try again. Could be a hardware failure if it occurs again.
<Needs Cal!>	Displays when calibration is required.
<Cal Failed!>	Calibration failed. Make sure the instrument is properly positioned on the reference.
<Cal Aborted!>	Displays with an incomplete cal measurement. Instrument was released too soon.
<Battery Low>	This warning appears when the battery falls below approximately 25% of full charge. Measurements are still possible, but the battery should be charged soon.
<CHARGE BATTERY>	Displays when not enough battery power remains to take measurement. The current measurement is aborted.
<CHECK BATTERY>	Battery not installed, disconnected, or dead. Unit will not allow any measurements.
<50% Dot Fail>	Did not measure a true 50% dot tint in 50% Dot Cal procedure.
<WRONG CHARGER>	Wrong charger connected to unit.
MP Failure	This error "pops up" instead of appearing in the User Dialog. It is generated when trying to change the configuration, but the unit cannot make the change permanent. Try again.



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*This reference guide has been compiled as an aid for use on the shop floor.  
As such, it does not attempt to explain all the features of the instrument.  
It also assumes that the supervisor or manager has properly configured the instrument  
If you need help configuring you instrument, please reference your operator's manual.  
If you do not have a manual, they can be downloaded from the X-Rite web site at [www.xrite.com](http://www.xrite.com).*