

# Azure Imaging Systems

## User Manual

for the Azure 200, Azure 280, Azure 300,  
Azure 400, Azure 500, Azure 600



# Safety and Regulatory Compliance

## Important Safety Information

Please read these instructions before operating the Azure Imaging System.

## UV Safety Precautions



**CAUTION** Because U.V. radiation can cause serious damage to unprotected eyes and skin, we recommend to wear U.V. protection glasses or face shield.

The Azure Imaging System comes with a built-in Ultra-Violet (UV 200-400nm) Transilluminator. Exposure to UV radiation can cause permanent damage to the eyes and skin. The enclosure confines the radiation within the system and shields the user from exposure. The system is also equipped with a two-way safety interlock switch which automatically cuts off the power to the transilluminator when the door is opened during normal use.

It may become necessary to defeat the safety lock or operate the transilluminator outside the system for service. In this case, be sure to use the following safety precautions:

- Always wear UV-protected eyewear that is specified by the safety equipment manufacturer as providing protection at the wavelength(s) used, making sure that the eyewear protects any areas where radiation may come through (UV sunglasses may not prevent UV radiation from coming in through the sides or around the lenses).
- Always cover all skin that may be exposed to UV light, especially the face, neck, hands, and arms.
- Always make sure that any UV protection devices (such as the safety switch on the light cabinet apparatus) are working properly. If not, discontinue use until the device(s) are properly repaired.
- Use only UV lamps in the transilluminator and ensure they are the correct size and voltage.

## Electrical Safety Precautions

Be sure to take proper precautions when handling any electrical equipment. NEVER work on any live circuit, fixture, receptacle, or switch. Safety rules you should follow whenever working with any electrical appliance include:

- Always shut off power at the main disconnect before changing a fuse.
- Always shut off power to the circuit before repairing or replacing a switch, receptacle, or fixture.
- Always tape over the main switch, empty fuse socket, or circuit breaker you are working on.
- Always check that the circuit is dead before beginning work on it. Using a circuit tester or voltmeter can help you determine this.
- Always unplug any appliance before repairing it.

## Protective ground terminal



The ground terminal, intended for connection to an external protective conductor for protection against electric shock in case of a fault, is located on the inside of the back panel.

Because U.V. radiation can cause serious damage to unprotected eyes and skin, we recommend to wear U.V. protection glasses or face shield.

## Hot surface warning



Under normal conditions, the temperature of glass surface of UV transilluminator is below 50 °C and safe to touch. However, if the system malfunctions, it is possible that the glass surface temperature may exceed 80°C. Please exercise caution when touching the glass surface if this occurs.

## Laser Safety

### General Information

Azure Biosystems imaging system models 600 and 500 both include a laser illumination system that provides 660nm and 784nm Narrow band excitation for NIR applications. The imaging systems are certified to comply with CE, UL and CSA safety standards and consists of two fully enclosed electronic modules located on the right and left interior sides of the imaging chamber. This laser system is by its appropriate classification and definition a non-removable laser system as it is not operable when the laser modules themselves are removed from within the system.

### Safety Features

Azure Biosystems imaging systems are designed to prevent direct and collateral human exposure to radiation by means of a safety interlock switch located on the right front side of the imaging chamber. The safety interlock reacts to “door open” and “door closed” states and defeats all power to internal light sources when the door is in the “open position”. Lasers and other internal system light sources will not power on unless the door is fully closed. If the access door is opened during imaging, all light sources will immediately power off to prevent human exposure to internal illumination sources. Right and left laser modules located in the 500 and 600 imaging chamber are installed in a highly diffused protective metal enclosure preventing exposure to full laser radiation power. In addition, the entire laser system is fully enclosed within the system enclosure and there are no viewing ports, windows, or openings to facilitate viewing of, or exposure to radiation fields from direct impact, reflection, or leakage. It is possible to override the safety switch, which allows the user to turn on the light sources with the door open, which may be useful for band excision in UV.

### Maintenance

Azure Biosystems 500 and 600 laser systems do not require regular, periodic, or preventive maintenance in the form of adjustments, calibrations, cleaning, or other standard maintenance procedures to maintain optimal performance, thereby removing the need for users or their service technicians to initiate any actions where exposure to laser radiation would occur.

### Serviceability

Replacement of faulty laser modules is a manufacturer-only repair action and not a customer-service action. Laser repair or replacement may be performed in the field by Azure Biosystems authorized service technicians, or by return of the entire system to Azure Biosystems, or its authorized service location(s) for laser repair or replacement. Lasers are deemed to be faulty or defective if users discover images that show evidence of output signal level loss in either the left or right laser module, a significant difference between the output signal levels between the left and right lasers modules, or complete loss of output signal level in either or both laser modules. Users or their service technicians should make no attempt to determine the cause of faulty laser operation, and should promptly contact Azure Biosystems at [support@azurebiosystems.com](mailto:support@azurebiosystems.com) or their nearest Azure Biosystems authorized service location.

### Caution

Azure Biosystems 500 and 600 systems contain a defeatable safety interlock system. It is not recommended or advised by Azure Biosystems, under any circumstances, for users to defeat the interlock system and perform laser imaging, or imaging with any 500 or 600 light source with the access door open. The access door must be fully closed.

## For Research Use Only

This instrument is suitable for research use only. It must be used, therefore, only by personnel who know the health risks associated with the reagents that are normally used with this instrument.

## Warranty

The Azure Imaging System products are warranted against defects in materials and workmanship for one year unless otherwise outlined on your sales order or [www.azurebiosystems.com/warranty](http://www.azurebiosystems.com/warranty). If any defect occurs in the instrument during this warranty period, Azure Biosystems, Inc. will repair or replace the defective parts at its discretion without charge. The following defects, however, are specifically excluded:

- Defects caused by improper operation.
- Repair or modification done by anyone other than Azure Biosystems or the company's authorized agent.
- Use of spare parts supplied by anyone other than Azure Biosystems.
- Damage caused by accident or misuse.
- Damage caused by disaster.
- Corrosion caused by improper solvents or samples.

## Voltage Setting Information

The Azure Imaging System has a power supply that automatically chooses the correct voltage for your country or region.

## CE Conformity

The following Azure Imaging Systems, models: 200, 280, 300, 400, 500, 600 are in conformity with the provisions of the following EC Directives, including all amendments, and national legislation implementing these directives:

- Low Voltage Directive 2006/95/EC
- EMC Directive 2004/108/EC

And that the following harmonized standards have been applied:

- EN61010-1: 2001
- EN61326-1: 1997+A1:1998+A2:2001+A3:2003 Class A
- EN61000-4-2, EN61000-4-3, EN61000-4-4, EN61000-4-5, EN61000-4-6, EN61000-4-11

**Protection category: IP20 according IEC 60529**

## Contact

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# 1. Introduction

The Azure Imaging System offers high performance imaging for a wide variety of applications. The family of instruments includes the following products: 200, 280, 300, 400, 500 and 600.

Select which one fits your applications now, and learn more about upgrading later when your needs change. Contact your Azure representative to find out about upgrade options at [info@azurebiosystems.com](mailto:info@azurebiosystems.com).

Each Azure imaging workstation can be upgraded in the field to a higher model with a wider range of applications. Contact us at [info@azurebiosystems.com](mailto:info@azurebiosystems.com) to learn more.

The Azure imaging system includes the following key components:

- **Cabinet** – The cabinet is a light tight image station. It includes the camera and lens, light sources, filter wheel, integrated tablet, and USBs for data collection.
- **Camera** – High resolution camera, preinstalled in the system.
- **UV Transilluminator** – The UV illuminator provides 302nm and 365nm trans illumination. It is mounted on a pull-out tray.
- **EPI LEDs** – The LED module allows you to take Blue Light and Color images.
- **EPI RGB LEDs** – High intensity LED illuminators (Azure 400 and 600).
- **EPI 658 and 784 Laser Diodes** – (Azure 500 and 600).
- **Filter Wheel** – The 7 position filter wheel is automated. It includes the standard Orange filter for most UV fluorescent applications, and additional Red, Green, Blue, and/or IR filters for multichannel systems.
- **Integrated Computer** – The touch screen PC is completely integrated for system control and image acquisition.
- **Black Tray** – Stored in the front door, the Black Tray (also called Blot Tray) is required for imaging all blots. For fluorescent blots, it is placed on the UV transilluminator. For Chemi blots, it can be placed on the UV transilluminator, or on the chemi shelf in the cabinet.
- **Trans White Table** – The Trans White Table can be plugged into the system with the cable behind the UV transilluminator. This table is placed on top of the UV transilluminator and provides an even light source that can be used for Coomassie imaging. The Trans White Table will only turn on when the system door is closed.
- **USB Ports** – There are 3 USB ports for data transfer. One located on the front panel, and two on the lower right side of the cabinet.
- **USB Memory Stick** – The Azure Biosystems memory stick contains calibration files relevant to your imaging system.
- **AzureSpot Analysis Software** – Please contact our technical support to receive your electronic license at [support@azurebiosystems.com](mailto:support@azurebiosystems.com). Be sure to have your system serial number when you reach out for support for the AzureSpot Analysis Software license keys.

## 1.1 Table of Specifications

Image Resolution	5.4M pixels (200); 6M pixels (280); 8.3M pixels (300, 400, 500, 600)
Epi-illuminations	White LED; Blue LED; RGB LED (400, 600); 660nm LD (500, 600) 784nm LD (500, 600)
Trans-Illumination	302nm/365nm
Maximum Field of View	20 cm x 15 cm
Image output	16 bit TIFF, JPEG
Working environment	Ambient temperature/humidity: 0 –30°C / 85%
Power requirement	100-240 VAC, 4A
Dimensions (W x D x H)	38 cm x 30 cm x 45 cm
Weight	22 kg (49 lbs.)



**Azure 600**



**Azure 500**



**Azure 400**



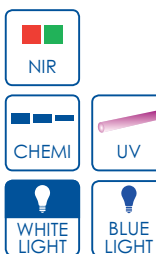
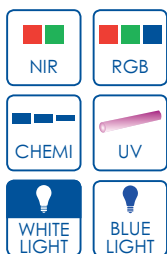
**Azure 300**



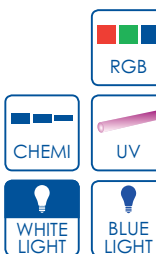
**Azure 280**



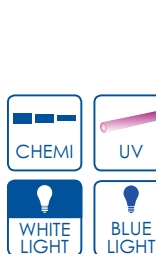
**Azure 200**



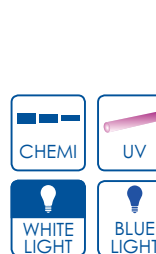
Upgradable  
to 600



Upgradable  
to 600



Upgradable  
to 400, 500,  
and 600



Upgradable  
to 300, 400,  
500, and 600

Azure 300 and Azure 500 are upgradeable with the Q module, adding a 524 nm LED.

## 1.2 Contacting Technical Support

For questions about installation, setup or general use of the system, please contact [support@azurebiosystems.com](mailto:support@azurebiosystems.com) or call (925) 307-7127, 9am-4pm Pacific time.

## 2. Installation and Setup

### 2.1 System Placement

**WARNING: Excessive Weight Hazard – Please use two or more people to lift the system. Failure to do so can result in system damage and personal injury.**

As with all electrical instruments, the Azure imaging system should be located away from water, solvents, or corrosive materials, on a flat and stable surface with adequate clearance on all sides. The system must remain stationary during operation.

The system should be placed away from interfering electrical signals and magnetic fields. If possible, a dedicated electrical outlet should be used to eliminate electrical interference from other instrumentation in your laboratory.

The Azure Imaging System should be installed at no more than 3000 meters above sea level. Additionally the unit should be placed out of direct, bright sunlight or illumination sources to guard against light leaks.

### 2.2 Connecting to Power

The power entry module is located in the lower right on the back panel of the system. Connect the power cord to a secure power outlet.

**It is important to connect the system to a well-grounded power source. Azure Biosystems recommends that you employ a surge protecting power strip to protect against unexpected power surges that may cause damage to the electrical components.**



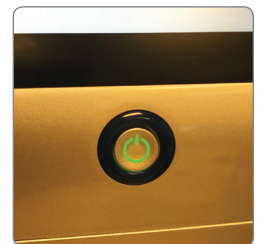
### 2.3 Turning the System On/Off

The main power switch is located at the back panel, next to the power cord.

1. First, flip the power switch to On (I).
2. To wake the integrated computer, press the power button on the front of the system. The power button on the front of the system will light up green when the system is on.

To turn off the system, shut down the built-in computer by:

1. Swiping from the right to left on the right side of the screen.
  - a. Select **SETTINGS**.
  - b. Select **POWER**.
  - c. Select **SHUT DOWN**.
2. Turn off power to the system using the power switch on the back of the instrument.



Azure Biosystems recommends leaving the system on during working hours.



## 2.4 Software Installation

The Azure Acquisition Software is pre-installed. When the 13.3 inch touchscreen running Windows 10 Enterprise is powered on, the software launches directly into the Azure Imaging System capture software application. If the software has been closed, double click on the desktop icon.

Once the system is done initializing, the software displays the gallery tab, and is ready to use.

Please contact Azure technical support at [support@azurebiosystems.com](mailto:support@azurebiosystems.com) for questions about upgrading the software.

## 2.5 Other USB Input Devices

You may attach regulatory approved, Windows OS supported USB keyboard, USB mouse or other USB input devices to either the front or upper USB port.

### 3. CAPTURE SOFTWARE OVERVIEW

Azure Imaging System captures high quality images with an intuitive user interface. The icon based software allows you to program multiple different applications with the touch of a button. There is no need to focus on your sample. Simply put your sample in the system, select an exposure time, then hit capture.






#### 3.1 The home page contains the following imaging options:

1. **Chemluminescent Blot** – for samples with chemiluminescent signals such as from HRP. See Section 3.3 for additional information.
2. **Fluorescent Blot** – for samples with fluorescent signals in up to four channels (red, green, blue, and grayscale) for multiplex imaging. See Section 3.4 for additional information.
3. **Nucleic Acid Gel** – image nucleic acid blots. See Section 3.5 for additional details.
4. **Protein Gels** – image protein blots. See Section 3.6 for additional details.
5. **Custom** – select your preferred features from any of the other imaging modalities. See Section 3.7 for additional details.

Other options include:

6. **Protocol selection** – use to save and load custom imaging protocols. See Section 4.1 for details.
7. **Auto Save Functionality** – automatically save any image taken during a session. See Section 4.1 for details.

On the left there are the following buttons:

8. Reach the home page at any time by clicking .
9. Go to the Gallery  to edit and analyze images. See Section 4.1 for details.
10. Go to this guide at any time by clicking .
11.  takes you to Settings. See Section 4.3 for details.
12. Click  in the box to exit the program and return to the desktop.
13. Time and date based on Windows settings.
14. Software version number.



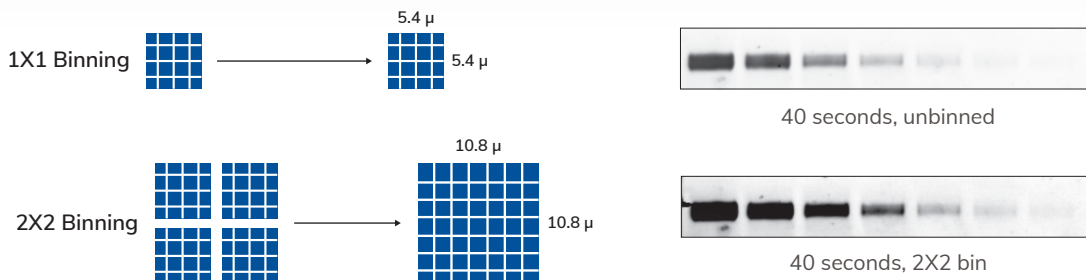
### 3.2 Key definitions that apply to all imaging types:

#### 1. Auto vs Manual

- **Auto Scan** – determine your optimal exposure time automatically.
- **Manual** – enables you to set each parameter to your preferred specifications.

#### 2. Sensitivity

– refers to the pixel binning setting (i.e. how the pixels are grouped). The higher the sensitivity value, the lower the spatial resolution. 1x1 uses the full resolution of the camera, and other possible settings are 2x2, 3x3, 4x4, 6x6, and 8x8. Therefore, choose 1x1 for the highest resolution.




Pixel binning improves image sensitivity. Pixel binning is a powerful technique for digital imaging that increases sensitivity by combining pixels to make a larger “super-pixel.” The super-pixel has a higher signal-to-noise ratio (SNR) than the unbinned pixel.

#### 3. Exposure

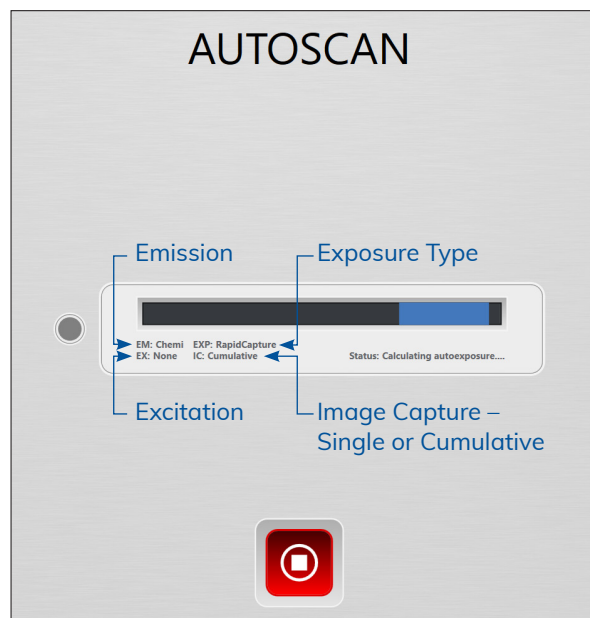
– choose the exposure time manually or use autoexposure which will allow the software to capture image for you using the full dynamic range of the camera. There are four possible modes:

- **Underexpose** – software will optimize a short exposure time to the brightest signal on the blot. Weaker signals may not be visualized in an underexposed image. This is the fastest method.
- **Overexpose** – software will calculate an exposure time that saturates the brightest bands in the blot to potentially capture weaker signals. This is useful for blots where the brightest bands may not be the bands of interest. This will oversaturate part of the image.
- **Wide Dynamic Range** – software will calculate an exposure time that is long enough to capture the widest range of signal while avoiding saturation. This autoexposure method is well suited to most blots. Uses the full dynamic range of the camera.
- **Manual** – select a custom amount of time. The maximum is 60 minutes.

#### 4. Live Mode

– click  to enable live mode. Click again to close. Turns on a light and let's you see a live image.

- **Auto-exposure to region** – set area that you want the autoexpose to focus on.
- Capture selected region can crop image before you capture it.



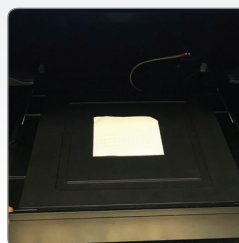
### 3.3 Imaging Workflow for Chemiluminescent Applications




Use this with samples that have membranes with chemiluminescent signals such as from HRP.




1. Remove the black tray and place blot in the center of the tray.
2. Close the Azure Imaging System door.
3. Place the blot tray in one of two positions: on the UV transilluminator, or on the chemi shelf, in the middle of the imaging system.

Note that using the chemi shelf will block light coming from the primary shelf underneath, so shelves must be used one at a time.

- Use the position on the UV transilluminator for larger blots.
- Use the position on the chemi shelf for small blots. Using this top shelf increases the resolution of the blot.






4. Close the door to the system.
5. Select **Chemi Blot** from the home screen. The default setting will be chemiluminescence in the gray channel. Choose additional dyes such as AzureRed for total protein normalization. To select an additional dye, hit the , a table will pop up that shows you your dye selection. Click the name of a dye to select it. (Note: list of dyes available is customizable in the Settings tab.)
6. Pick the name of the dye you are imaging. (Note: if your dye does not appear on the list, contact Azure Technical Support.)
7. Next, select your imaging protocol:
  - Select **Autoscan** if you are not sure of your exposure time.
    - For single channel image (chemi only): The system defaults to 20 images with autoexpose. Note: this number is customizable in the settings tab. It's like watching your blot develop incrementally before your eyes!
    - Select the best image in the gallery tab. Stop the image capture any time by pressing the  button that will appear in the gallery after the first image is acquired.
    - For multi channel images (chemi with fluorescent total protein stain): The system will auto expose each channel, and display the one multichannel image in the gallery.
  - If you select Manually Image, you can choose your own specifications.
8. **Sensitivity** – see Section 3.2 for details.
9. **Exposure** – see Section 3.2 for details.
10. **Imaging Mode** – select Single to take one image, Cumulative to take 20 images automatically, or Multiple to select up to 10. Be sure to select the time interval at which you want to take the images.
11. **Marker** – system will acquire a white light image of your protein marker/ladder after capture of the chemi image. This can be overlaid on top of the chemi image, maintaining the positions on the gel or membrane.
12. If you are interested in repositioning your sample before you take the image, use Live Mode.  See Section 3.2 for details.

13. Select  to capture the image.
14. All images will be displayed in the Gallery. The Gallery can be reached by clicking . See Section 4.1 for instructions on using the Gallery.
15. Select  to go back one screen.

### 3.4 Imaging Workflow for Fluorescent Applications

Use this for samples with fluorescent signals in up to four channels (red, green, blue, and grayscale) for multiplex imaging.

1. Remove the black blot tray and place blot in the center of the tray. Then return tray to imaging chamber.
2. Close the Azure Imaging System door.
3. Select **Fluorescent Blots** from the home screen.
4. Select dyes in between one and four channels: red, green, blue, and grayscale.
5. Pick the name of the dye you are imaging. *Note, if your dye does not appear on the list, contact Azure Technical Support.*
6. Select **Auto Scan** to produce an image with default settings. This is best to use when you don't know what you expect to see on the blot. See Section 3.2 for additional details.
7. Select **Manually Image** to customize the settings.
8. **Sensitivity** – see Section 3.2 for details.
9. **Exposure** – see Section 3.2 for details
10. If you are interested in repositioning your sample before you take the image, use **Live Mode**.  See Section 3.2 for details.
11. Select  to capture the image.
12. The images will be displayed in the Gallery. The Gallery can be reached by clicking the tile icon. See Section 4.1 for instructions on using the Gallery.
13. Select  to go back one screen.




### 3.5 Imaging Workflow for Nucleic Acid Gel

Use this for nucleic acid blotting samples in up to four channels (red, green, blue, and grayscale).

1. Open door and place blot directly on trans UV illuminator.
2. Place Interlock Switch Override Key in safety interlock in order to enable UV light. (See Step 10 below for further details if you're using this method.) *Note: always wear safety goggles when utilizing override switch.*
3. Close the Azure Imaging System door.
4. Select **Nucleic Acid Gel** from the home screen.
5. Select dyes in between one and four channels: red, green, blue, and grayscale.
6. Pick the name of the dye you are imaging. *Note, if your dye does not appear on the list, contact Azure Technical Support.*
7. Select **Auto Scan** to produce an image with default settings. This is best to use when you don't know what you expect to see on the blot. See Section 3.2 for additional details.
8. Select **Manually Image** to customize the settings.




9. **Sensitivity** – see Section 3.2 for details.
10. **Exposure** – see Section 3.2 for details.
11. **UV Override** – select this to customize UV light settings.
  - **Band Excision** – requires overriding the safety interlock. Open the system door, then pull the override safety interlock switch.
  - **Light On** – 5 minutes (check box to automatically acquire image when time is expired). This step is necessary to warm up the UV table for the UV dye.

**WARNING: ALWAYS WEAR APPROPRIATE PROTECTION WHEN EXPOSED TO UV LIGHT. The use of protective eyeglasses, mask, and/or gloves is strongly recommended.**

12. If you are interested in repositioning your sample before you take the image, use **Live Mode**.  See Section 3.2 for details.
13. Select  to capture the image.
14. The images will be displayed in the Gallery. The Gallery can be reached by clicking the tile icon. See Section 4.1 for instructions on using the Gallery.
15. Select  to go back one screen.







### 3.6 Imaging Workflow for Protein Gel

Use this for protein gel applications (e.g. polyacrylamide gel electrophoresis – PAGE).

1. Remove the black blot tray and place sample in center of tray. Make sure to place the blot in the center of the tray.
2. Close the Azure Imaging System door.
3. Select **Nucleic Acid Gel** from the home screen.
4. Select dyes in between one and four channels: red, green, blue, and grayscale.
5. Pick the name of the dye you are imaging. *Note, if your dye does not appear on the list, contact Azure Technical Support.*
6. Select **Auto Scan** to produce an image with default settings. This is best to use when you don't know what you expect to see on the blot. See Section 3.2 for additional details.
7. Select **Manually Image** to customize the settings.
8. **Sensitivity** – See Section 3.2 for details.
9. **Exposure** – See Section 3.2 for details.
10. If you are interested in repositioning your sample before you take the image, use **Live Mode**.  See Section 3.2 for details.
11. Select  to capture the image.
12. The images will be displayed in the Gallery. The Gallery can be reached by clicking the tile icon. See Section 4.1 for instructions on using the Gallery.
13. Select  to go back one screen.

### 3.7 Imaging Workflow for Custom Image

Use this to select every aspect of your imaging protocol.

1. Select  to name the image you plan to capture, or to add this image to an existing protocol.
2. **Sensitivity** – see Section 3.2 for details.
3. Choose Excitation and Emission Filters with  as well as which channel you want to use.
4.  Select camera aperture size. We recommend a wider aperture for chemiluminescence and a mid-level aperture for RGB and NIR. The most narrow aperture is best for UV applications.
5.  Select camera focus.  
The focus value in custom defaults to the focus value of the filter you select. You can then manually move the slider to select a focus value around the default setting.  
*Note: For Azure 200, the focus does not need to be adjusted for the UV table or black tray.*
6.  Select Exposure type. See Section 3.2 for a detailed explanation of the exposure types.
7. **Add Dye** – add another set of options from numbers 3-6 above (e.g. Excitation/emission/channel, aperture, focus, and exposure times). Can add up to four for the four channels (red, green, blue, and greyscale).
8. Pick the name of the dye you are imaging. *Note, if your dye does not appear on the list, contact Azure Technical Support.*
9. **Marker** – system will acquire a white light image of your protein marker/ladder.
10. **Delete Protocol** – select if you do not want to save or continue to use this protocol.
11. **Save Protocol** – select to use this protocol again.
12. **Preview** – take a sample image before image capture.
13. Select  to capture the image.
14. Select your preferences and then save.

## 4. IMAGE GALLERY OVERVIEW

This section discusses the ways in which you can analyze images.

### 4.1 Gallery

Reach the gallery at any time by clicking .

1. From the File dropdown menu, select the following options:
  - **Open** – use this icon to open an image that is stored locally, on a USB, or on the network.
  - **Close** – close the image that you're currently viewing.
  - **Close All** – close all images currently open in Gallery.
  - **Save** – save an image to a USB, the integrated computer, or to a network drive. Images can be saved as a TIFF or JPEG file. File names are automatically generated with the date and time stamp. You can overwrite this name by editing it in the displayed textbox. All images are saved as 600 DPI.
  - **Save As** – save a copy of a previously saved image with an alternate name, file type, or to an alternate file location.
  - **Save All** – saves any unsaved images open in the gallery tab. The file names will be automatically generated with the date and time stamp.
  - **Exit** – exit the gallery. Program will prompt you to save any unsaved images. If you leave the gallery by the home button, the image(s) will still be there when you return to the gallery.
2. From the Print dropdown menu, you can:
  - **Print** – print to a local printer connected to the system, or to a network printer.
  - **Print Report** – print the image you're viewing as well as data about the image. These include Exposure type, Bin Level, Gain, Filter, Calibration, Software version, System SN.
3. Create a Multiplex image by merging between two and four channels.
4. Create Signal Channel creates multiple images that show the signal from each channel.

### 4.2 Image Analysis Functions

1. **Adjustments**
  - Select preferred amounts of black, white, and gamma signal.
  - Auto will auto-select from these three categories.
  - Invert the colors.
  - Saturation will highlight in pink which pixels are beyond the detection limit of the camera.
  - Recommended for chemiluminescent blots. *Note: Adjusting these settings will not affect the raw data when saved as a .tiff file. Only images saved as a .jpg will display with the adjusted contrast settings, as the .JPG file format alters the raw data. Azure recommends using .tiff formats for images that need to be quantified, and saving a copy as a .jpg with contrast adjustments for publication purposes.*
2. **ROI** – select of region of interest for further actions including crop and copy.
  - Select:
    - Crop in order to isolate a particular area of the image. A new tab will open with an image of the selected area.



- Copy a region of interest on a single channel image. After selecting another image of the same size, use the paste option to overlay the copied image.
  - Clear clipboard erases the saved image done with cropping or copying so you can select a new region.
3. **Transform** – rotate a small amount (best for adjusting slanted images), rotate left, rotate right, flip on the horizontal, and flip on the vertical in order to change the alignment of the image.
  4. **Resize** – customize width, height, and dots per inch (DPI).
  5. **Annotations** – add a pointer, rectangle, ellipse, line, pencil, or text. Select fill color, line width, and text properties. Undo and redo with buttons below.
  6. **Info** – gives detailed information about image in view. Displays the parameters for image acquisition including date & time, capture type, light source, exposure time, filter position, aperture, focus, bin level, calibration, software version, and comments.
  7. Use to scroll between images in the gallery when you have taken multiple images.

### 4.3 Settings

You can reach the Settings at any time by clicking  .

#### 1. General

- **Dye List** – can re-name and select Emission Filter (595/55, 513/17, 527/28, 684/24, 710/40, 832/37) and Excitation Filter (Chemi/None, 302, 365, 472, 524, 628, 658, 784). Can also select the sample types that can access these dyes (choose any number of Chemi, Fluorescent, Protein Gel, and Nucleic Acid).
  - Select **File Saving Settings**. Can choose to enable autosave and/or saving a publication image.
  - **Simulation Mode** allows you to run the software even if not connected to an Azure Imaging System.
  - **Single Imaging Mode** allows you to select the number of images in cumulative. The default is 10.
  - **Auto-Exposure**
    - **Rapid capture** will enable you to get an image and quickly calculate an optimal exposure time.
    - **Wide dynamic range** will calculate an exposure time that will give you the widest dynamic range without saturation.
    - **Overexpose** – calculates an exposure time that will enable you to see faint bands.
2. **Create Darkmasters** – Darkmasters are usually factory-made, but it's possible to make your own. Enter exposure times for each set of master images (from 1 to 60 minutes). Can enter comma separated list of exposure times for multiple groups of master images. Under More Options, can create one individual darkmaster image. Select BIN, speed, exposure, and frames.
    - **CCD Temp** – this green light indicates the CCD chip has cooled to the proper imaging temperature.
  3. **Focus Calibration** – select Light Source and Tray Type (UVT or elevated).
  4. **Create Flat-field Image** – select Filter Type, Light Source, Aperture Type, Tray Type, and Exposure Time. Check box to view the image in a Gallery Tab.
  5. **Change Password** – type old password in order to select new password.
  6. **Manage Users** – add, etc, or delete users. You can specify passwords for each one if you choose.



7. **Manage Protocols** – edit or create Custom Protocols. Select Edit button to the right of existing protocols. Or, select light source, name, filter, whether you want cumulative, multiple or single images, the default focus, aperture, and exposure, and the live step and preview step settings.



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