avantor™ delivered by VWR™

Instruction Manual

VWR® Gel Documentation System CHEMI Only

European Catalogue Number: 730-1471

CE

UK CA

VWR

Version 01 Issue 04/2021

Legal Address of Manufacturer

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Safety Instructions

Safety Practices

This document describes the general safety practices and precautions that must be observed when operating a VWR® Gel documentation Chemi Only System.

This advice is intended to supplement, not supersede, the normal safety codes in the user's country. The information provided does not cover every safety procedure that should be followed. Ultimately, maintenance of a safe laboratory environment is the responsibility of the user and the user's organisation.

Please consult all documentation supplied with the VWR® Gel documentation Chemi Only System before starting to work with the instrument. Carefully read the safety information in this document and in the other documentation supplied. When setting up the instrument or performing analysis or maintenance procedures, strictly follow the instructions provided.

Warning Notices

Within this User Guide WARNINGS are used to highlight information or instructions that **must** be followed in order to avoid personal injury to yourself or other people in the vicinity, e.g. switch off the mains voltage and remove the mains cord before cleaning.
WARNINGS appear as below:

WARNING	**Switch off the mains voltage and remove the mains cord before cleaning.**

WARNING	**Ensure that all instrument users read and understand the precautions listed below.**

WARNING	**You are advised to post a copy of the precautions near to or on the instrument itself.**

Precautions

The following precautions must be observed when using a VWR® Chemi Only System:

- Be sure that the voltage of the VWR® Chemi Only System corresponds to the voltage available where it is to be installed.

- Never remove the side or back panels of the VWR® Chemi Only System without first shutting down the instrument and disconnecting the mains cord.

General Operating Conditions

VWR® Chemi Only Systems have been designed and tested in accordance with the safety requirements of the International Electrotechnical Commission (IEC). VWR® Chemi Only Systems conform to IEC61010-1:2010 (Safety Requirements for electrical equipment for measurement, control and laboratory use) as it applies to IEC Class 1 (earthed) appliances, and therefore meet the requirements of EC directive 2006/95/EC.

If possible, avoid any adjustment, maintenance or repair to the instrument while it is open and operative. However, if any adjustment, maintenance or repair is necessary while the instrument is open, this must be done by a skilled person who is aware of the hazards involved.
Whenever circumstances arise that mean a VWR® Chemi Only System may be unsafe, make it inoperative. In particular, a VWR® Chemi Only System may be unsafe if it:

- Shows visible damage.
- Fails to perform the intended measurement.
- Has been subjected to severe transport stresses.
- Has been subjected to prolonged storage in unfavorable conditions.

Environmental Conditions

VWR® Chemi Only Systems should only be used under the following conditions:

- Indoors.
- At altitudes below 2000m.
- In ambient temperatures between 5°C and 40°C.
- With relative humidity below 80% for temperatures up to 31°C, decreasing linearly to 50% relative humidity at 40°C.
- Electrical supply fluctuations not exceeding +10% of the nominal voltage.

WARNING	**The protection provided by the equipment may be impaired if the environmental conditions do not lie within these parameters.**

Electrical Safety

VWR® Chemi Only Systems are designed to protect the user from potential electrical hazards. This section describes some recommended electrical safety practices.

WARNING	**Lethal voltages are present at certain points within the instrument.** **When the instrument is connected to mains power, removing the instrument covers is likely to expose live parts.** **Even when the power switch is off, high voltages can still be present – capacitors within the instrument may still be charged even if the instrument has been disconnected from all live voltage sources.**

The VWR® Chemi Only System must be correctly connected to a suitable electrical supply. The supply must have a correctly installed protective conductor (earth or ground) and must be installed and checked by a qualified electrician before connecting the instrument.

WARNING	**Any interruption of the protective conductor inside or outside the VWR® Chemi Only System, or disconnection of the protective conductor terminal is likely to make the instrument dangerous.** **Intentional interruption of the protective conductor is prohibited.**

WARNING	**Ensure that the mains supply socket on the instrument is not obstructed, i.e. leave a gap to allow easy disconnection of the mains cord.**

WARNING	**If the mains power cord has to be replaced, ensure that the replacement cord is appropriately rated and approved for the intended use.**

When working with the VWR® Chemi Only System:

- Connect the instrument to a correctly installed mains power outlet that has a protective conductor connection.
- Do not operate the instrument with any covers or internal parts removed.
- Do not attempt to make internal adjustments or replacements except as directed in the VWR® Chemi Only System documentation.
- Disconnect the instrument from all live voltage sources before opening it to make any adjustments, replacements, maintenance or repair. If the opened instrument must be operated for further adjustment, maintenance or repair, this must only be done by a supplier's Service Engineer.
- If it is possible that the instrument is no longer electrically safe for use, make the instrument inoperative and secure it against any unauthorised or unintentional operation. The electrical safety of the instrument is likely to be impaired if:
    - It has any signs of visible damage.
    - If it has been subjected to prolonged storage in unfavourable conditions.
    - If it has been subjected to severe stress during transportation.

Electrical Protection

- Insulation: Class I rating for external circuits. Only connect equipment that meets the requirements of IEC 61010-1:2010, IEC 60950-1:2005 (including AMD1:2009 AND AMD2:2013 CSV) or equivalent standards.

- Installation Category: The instruments are able to withstand transient overvoltages typically present on the mains supply. The normal level of transient overvoltages is impulse withstand (overvoltage) category II of IEC 60664-1:2007.

- Pollution Degree 2: Normally only non-conductive pollution occurs. Occasionally, however, temporary conductivity caused by condensation must be expected.

EMC Compliance

EC Directive

The VWR® Chemi Only System is designed and tested to meet the requirements of the EC directive 2004/108/EC and 93/68/EC. The instrument complies with the EMC standard EN61326-1:2013 (EMC standard for electrical equipment for measurement, control and laboratory use) and EN55011:2009 AND A1:2010 (ISM) class A (rf emissions).

FCC Rules and Regulations

The VWR® Chemi Only System is classified as a digital device used exclusively as industrial, commercial or medical test equipment. It is exempt from the technical standards specified in Part 15 of the FCC Rules and Regulations based on Section 15.103 (c).

Warning Labels

Warning labels attached to the instrument draw attention to specific hazards - refer to this User Guide and other documentation provided with the instrument for more details concerning potential hazards and any precautions or other actions that must be taken.

WARNING	**To prevent potential personal injury and damage to the instrument, switch OFF all components in the system and disconnect them from the mains power supply before altering, or making any new electrical connections.**

Unpacking a VWR® Chemi Only System

Removing from the Packaging

Visual Inspection

Upon taking delivery of a new VWR® Chemi Only Instrument:

- Check the contents of the cartons as they are unpacked against the contents listed on the packing list
- Check each item on the packing list for damage and document any damage carefully
- If any items are missing or damaged, contact your local distributor immediately

Unpacking the Main Box

The VWR® Chemi Only Instrument is packaged in a large carton which is securely strapped. Some Instruments may be shipped as a carton only, others may be shipped with the carton strapped onto a wooden pallet. Accessories are shipped in one or more separate cartons.
To unpack a typical VWR® Chemi Only Instrument:

WARNING	**VWR® Chemi Only Instrument requires two people to lift it safely. A VWR® Chemi Only Instrument complete weighs approximately 20Kg.**

VWR® Chemi Only Unpacking Guide

A. Original packing of VWR® Chemi only

B. Open the box and remove the drawer and accessories bag

C. Remove the cardboard surrounding the VWR® Chemi Only and gently lift out of box

D. Remove the foam and plastic surrounding the VWR® Chemi Only

E. Slide in the VWR® Chemi Only drawer and the system is now ready to use

PACKAGE CONTENTS
Mains power cord - suitable for country of use Camera to PC lead (USB Type A) Darkroom to PC USB lead

Overview

The VWR® Gel Documentation Chemi Only system is dedicated to Chemiluminescence imaging. The system is built for high performance, automation and features a next generation high quantum efficiency CCD camera for even greater sensitivity.

Western blot imaging has never been so easy than with the VWR®Chemi Only system. The system automatically selects the right imaging conditions for any blot irrespective of the chemiluminescent reagents being used.

Darkroom - this provides a completely black environment into which the sample to be imaged is enclosed.
White LED lights are provided on each side of the Darkroom to provide general illumination when positioning and setting up samples.

VWR®Chemi Only system

The VWR®Chemi Only system is to be used with your own monitor and computer.

Specifications	
Image resolution (pixels M)	4
Effective resolution (pixels M)	16
A/D	16 Bit
Greyscales	65536
Quantum efficiency @425nm	73%
Cooling regulated (degrees)	-57°C
Lens (motor driven)	Fixed f0.95
Epi LED white lights	Yes
Maximum blot size	11x8cm
Use with external PC	Yes
Software	VWR® Gel Doc Image capture software and VWR® Gel Doc software

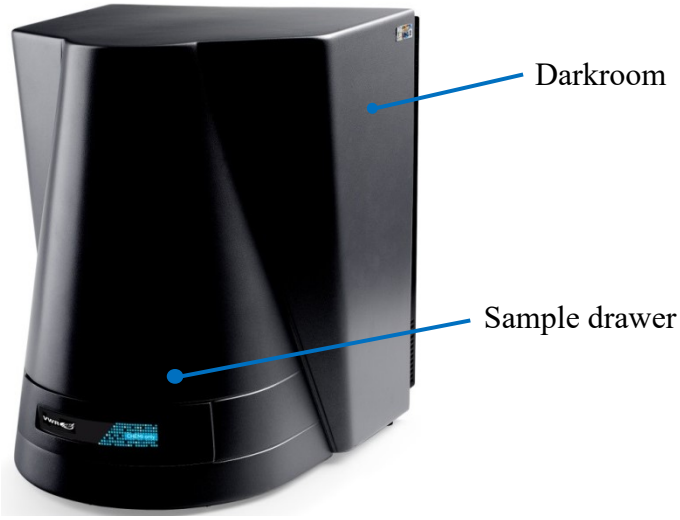
VWR®Image Capture Software

The VWR® Image Capture software runs in a standard Windows environment and provides an application driven and time-saving workflow for running a variety of life-science applications.

The VWR® Chemi Only Instrument is controlled and operated by the VWR® Image Capture software running on an external PC operating a standard Microsoft Windows environment. Two cable connections are required between the PC and the VWR® Chemi Only Instrument; one for the Darkroom, and one for the Camera.
The raw data recorded by the digital camera is processed by the VWR® Image Capture software to generate the images and technical files which are the VWR® Chemi Only Instrument's basic outputs.

The VWR® Image Capture software provides both automatic and manual modes of control of the VWR® Chemi Only hardware and has an inbuilt database of application specific data which it uses in automatic capture mode to optimise the hardware configuration in order to obtain the optimal sample image. The database contains information relating to:

- Sample format; Blot
- Blot type; Chemiluminescence
- Sample type; Protein
- Substrate types



TYPICAL VWR® CHEMI Only - FRONT

Software Installation

Minimum System Requirements

The VWR® Image Capture software can operate on the following Microsoft Windows Operating Systems:

Windows 7 Professional SP3 (32 bit and 64 bit versions)
Windows 8 Professional
Windows 10 Professional and Windows 10 Enterprise

Note: Home versions of the Windows Operating Systems are not supported.

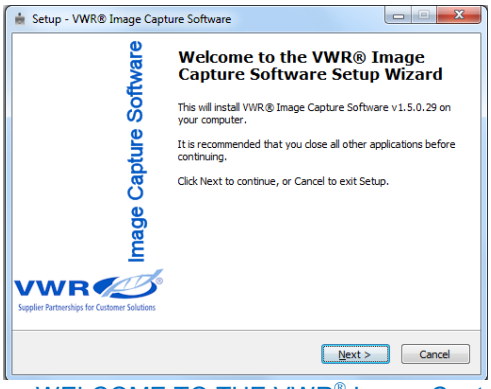
Software Installation

A VWR® Chemi Only Instrument needs to have the VWR® Image Capture software installed on the associated PC from which the instrument is to be controlled.
The VWR® Image Capture software can only be installed from a Windows account that has Administrator rights. Installation is performed in the following order:

1. Run the Set-up Program
2. Select the Instrument Hardware Information
3. Select the Installation Folder Destination Location
4. Select the Start Menu Folder
5. Install Device Drivers using the Device Driver Installation Wizard

Run the Set-up Program

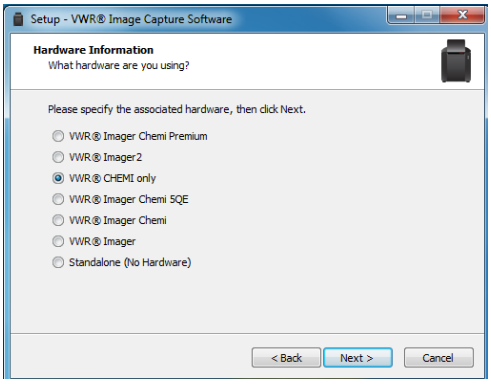
1. Insert the VWR® Image Capture USB stick/CD ROM and run the **Set-Up Program**. The following screen will appear:



SETUP - VWR® Image Capture - WELCOME TO THE VWR® Image Capture SETUP WIZARD SCREEN

2. Click on the **Next >** button. The first **Hardware Information** screen will appear.

Select the instrument Hardware Information

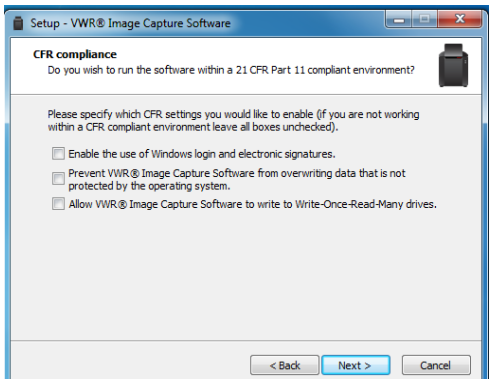


SET-UP -VWR® Image Capture- HARDWARE INFORMATION SCREEN-INSTRUMENT TYPE

3. Select the instrument type that you have by selecting the appropriate radio button, i.e. VWR® CHEMI only.

4. Click on the **Next >** button. The CFR compliance screen will appear

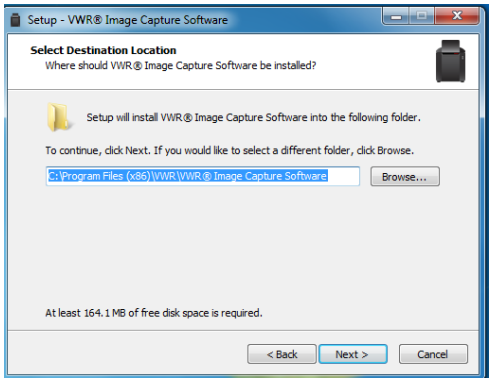
Select if running VWR® Image Capture software in a CFR21 part 11 compliance environment



SET-UP-VWR® IMAGE CAPTURE-CFR COMPLIANCE

5. Click on the **Next >** button. The setup-Select Destination Location screen will appear

Select the Installation Folder Destination Location



SET-UP VWR® Image Capture-SELECT DESINATION LOCATION SCREEN

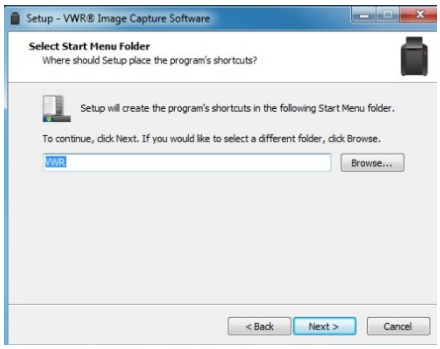
Select the folder in which you would like the VWR® Image Capture to be installed:

- To accept the displayed default folder click on the **Next >** button.
- To choose a different folder click on the **Browse...** button and navigate to the desired folder or create a new folder. Then click on the **Next >** button.

Note: The VWR® Image Capture software installation requires free space of at least 80.7MB.

6. The Setup-VWR® Image Capture Select Start Menu Folder screen will appear.

Select the Start Menu Folder

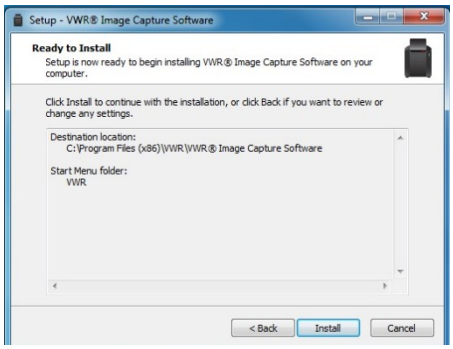


SET-UP-VWR® Image Capture-SELECT START MENU FOLDER SCREEN

7. Select the folder in which you would like VWR® Image Capture program start shortcut to be installed:

   - To accept the displayed default folder click on **Next >** button.
   - To choose a different folder click on the **Browse...** button and navigate to the desired folder or create a new folder. Then click on the **Next >** button.

8. The Ready to Install screen will appear. Click on the install button to start the installation process.

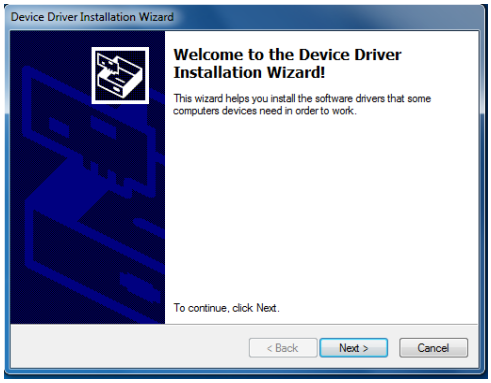


SETUP- VWR® Image Capture –READY TO INSTALL SCREEN

9. The Device Driver Installation Wizard screen will appear

Install device drivers using the Device Driver Installation Wizard

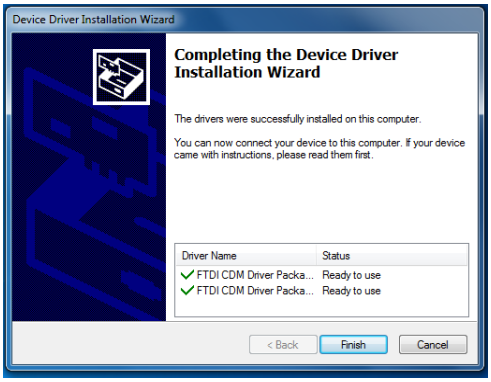
This part of the installation process installs the software drivers that some computers need in order to complete the installation.



DEVICE DRIVER INSTALLATION WIZARD WELCOME SCREEN

10. Click on the **Next >** button. The Wizard (a sub-program, part of the VWR® Image Capture software) will automatically install the necessary device drivers on the PC that the hardware device you selected previously needs in order to operate.

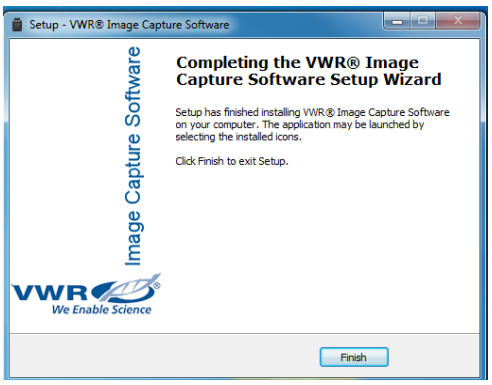
Once the device drivers have been installed, the screen will change to the second Device Driver Installation Wizard screen. This displays details of the device drivers that have been installed.



DEVICE DRIVER INSTALLATION WIZARD FINISH SCREEN

11. Click on the **Finish** button.

12. The setup-VWR® Image Capture software completing the VWR® Image Capture Setup Wizard screen will appear. This indicates that the installation process has finished successfully.



SETUP-VWR Image Capture- COMPLETING THE VWR® Image Capture SETUP WIZARD SCREEN

13. Click on the **Finish** button to complete the set-up process.
14. Remove the VWR® Image Capture USB Stick.

Operating

Operator Controls

Rear Panel

The rear panel of the VWR® Chemi Only Instrument contains two User controls:

- An ON/OFF rocker switch, used for energising/de-energising the instrument.

Connected PC

The keyboard and mouse of an external PC connected to a VWR® Chemi Only Instrument function as normal.

Instrument Set-up - Darkroom

Make sure that the Laboratory bench is strong enough to support the VWR® Chemi Only Instrument and is stable and level.

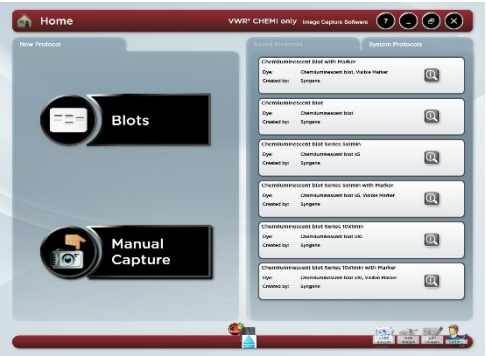
Caution	**Do not energise any of the components until instructed to.**

Make the following cable connections:

15. Connect the mains power cord between a power supply socket and the Instrument. DO NOT switch on.

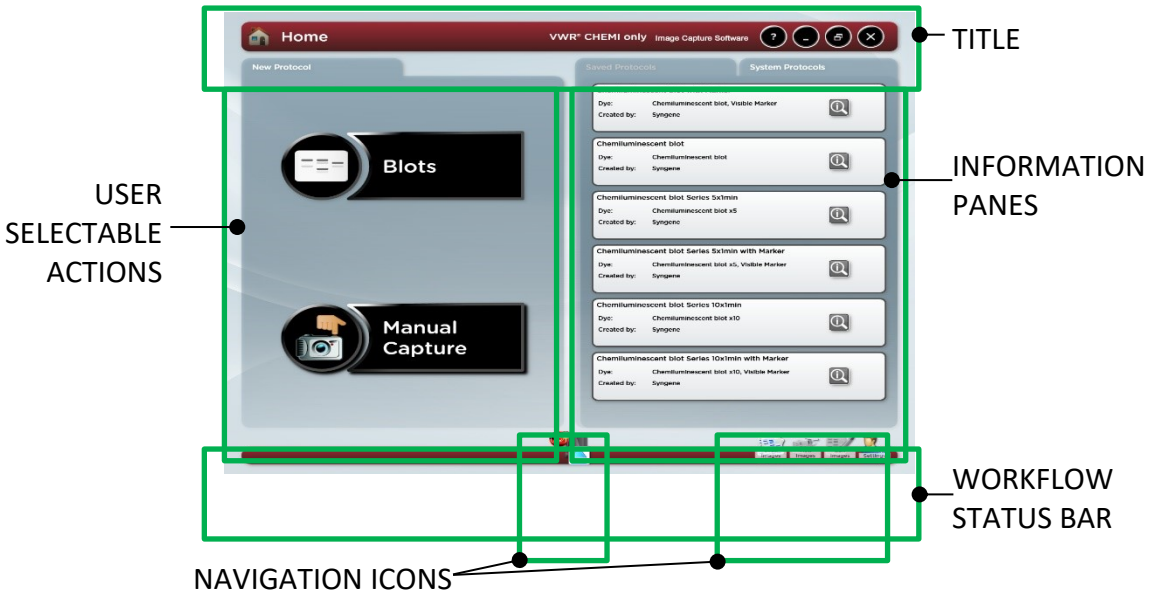
WARNING	**Ensure that the mains supply socket on the Instrument is not obstructed, i.e. leave a gap to allow easy disconnection of the mains cord.**

16. Connect Darkroom to the PC using the USB lead.
17. Connect the camera USB cable to the back of the darkroom to connect the camera to the PC.
18. Energise the Darkroom - ON/OFF switch on the back of the Darkroom.
19. Startup the PC and install the VWR® Image Capture software.
20. The VWR® Gel Doc software will install automatically.
21. Double click the ( ) icon to start the VWR® Image Capture software.

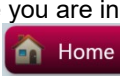


VWR® Image Capture HOME SCREEN

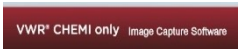
VWR® Image Capture **Standard View Home Screen Layout**



TITLE BAR

Displays an icon to show where you are in the VWR® Image Capture program, e.g. here it shows the 

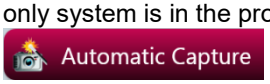
icon to show that you are on the Home Screen. On other screens within the VWR® Image Capture program this button is used to return you to the Home screen.

Displays the camera resolution, the connected hardware and the program title 

, for this particular installation it shows that a with a VWR® Chemi only with a 4MP image resolution system is installed and the VWR® Image Capture program is running.

Displays the icon, for accessing System data - camera hardware and program version information, as shown below:

Also displays the standard Windows program buttons , for minimise, maximise, and close.

At various points through the image capture process the top left hand corner of the title bar is used to display icons which indicate the stage in the process that has been reached/is being actioned, e.g. when the VWR® chemi only system is in the process of making an automatic exposure the 

icon is displayed, and when a manual exposure is being made the

icon is displayed.

USER SELECTABLE ACTIONS

Buttons for selecting the various main actions or functions that are available to the User from the current screen, in this case:

Quick access into the automatic image capture process for a Blot sample,

.

Accessing manual image capture

.

INFORMATION PANES

Displays information or images. May be presented in a number of configurations depending on the User's location within the program.

The Standard View Home screen displays Saved Protocols (also referred to as User Configurations) and sort/select options for the Protocols.

WORKFLOW STATUS BAR

Displays various items of information:

Home icon (when not on the Home screen).

Workflow icons - illustrate the User's position within a series of steps that form a sequence of actions necessary to complete an activity, e.g. Manual Capture. Clicking on an icon takes the User to screen associated with the icon.

When multiple steps are displayed a grey arrow appears in between each icon. This indicates each step back in sequence.

Instrument status, e.g. here it shows the icon, indicating that the Camera is establishing connection with the program. This icon changes depending on status:

indicates that the Camera and Darkroom are OK and ready for use

indicates that the Camera is overheated or

otherwise not ready

indicates that the Darkroom is establishing connection with the program

indicates that the Darkroom is not connected

Indicates that neither the Camera nor the Darkroom are connected

Navigation icons - enable a User to navigate to various Settings or System Tools screens. The icons displayed depend on the activity being undertaken within the program.

NAVIGATION ICONS Shown here, with icon labels displayed:

Load Images icon, to navigate to Load Images screen

View Images icon, to navigate to View Images screen

Settings icon, to navigate to User Preferences screen

Entering Personal Preferences

Every individual who logs on to a VWR® Chemi only Instrument can create a customised set of Instrument settings, i.e. a profile, which reflects the nature of the work the individual normally undertakes and what they do with the test results.

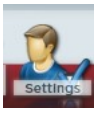
22. Select the **Settings** icon on the Home screen. This displays the User Preferences screen.

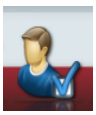
USER PREFERENCES SCREEN- GENERAL SETTINGS

23. Set your preferences:

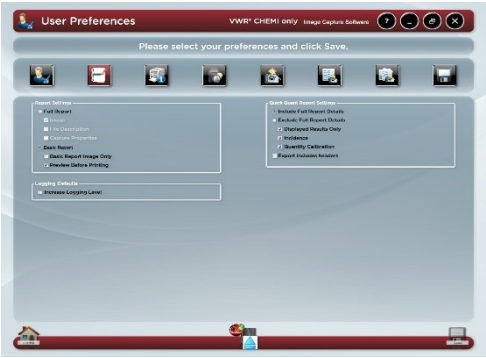
GENERAL SETTINGS

- **Show labels on navigation buttons** - checking this checkbox turns on the labels on the **Navigation** buttons, i.e.:

with labels 

without labels 

- **Classic View** - checking this checkbox changes the display from **Standard View**, the default setting, to **Classic View**.
- **Prompt to save Protocols**- if no longer wish to have this prompt displayed after an image is captured please un-check this checkbox.
- **Preview Mode**- check the box to 'Enable Preview mode for manual and chemi'. This will turn on the upper white lights to help with sample positioning . Select an exposure time the default is 250ms.
- **Protocols backup**- check the box to 'Enablethe back up of the protocol storage file'. select the number of backups and the time interval between back ups (in days).
- **Annotation Handle Size Defaults-** check box to increase annotation handle size if using a touch screen.



USER PREFERENCES REPORT SETTINGS SCREEN

REPORT SETTINGS

Enables you to pre-set some report defaults, this is useful where you are doing repetitive tests and want the same type of report for each test. The settable options are:

- **Full Report** - checking this checkbox sets the Instrument to generate a Full Report for each test. The Full Report content can be controlled using the additional checkboxes, check to include the feature:
  - Image
  - File Description
  - Capture Properties
- **Basic Report** - checking this checkbox sets the Instrument to generate a Basic Report for each test. Additional features are:
  - Basic Report Image Only - if the checkbox is checked, the printed report contains only the captured image for the test. If not checked, the report contains the image plus some basic information, e.g. filename / username / date / time / sample / filter, etc.
  - Preview Before Printing - if the checkbox is checked, the screen displays a preview of the report before it is printed. If not checked, the report is printed without a preview being displayed.
- **Quick Quant Report settings**- select the analysis report setting for all your images
  - Select to include or exclude full report details

- Displayed results only, incidence or quantity calibration results
- Export includes headers

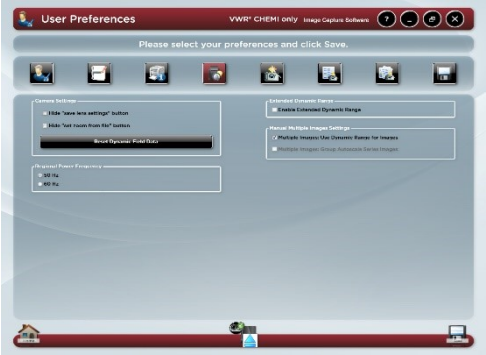
LOGGING DEFAULTS

- **Increase Logging level**-this will permit VWR Support to access more information on how the software is running on your instrument.

USER PREFERENCES PRINTER SETTINGS SCREEN

PRINTER SETTINGS

Enables you to select a printer and set printer preferences for your selected printer, generally these will only be settable for the current session. The options available to you in Printer Settings will vary based on your operating system and printer make/model.

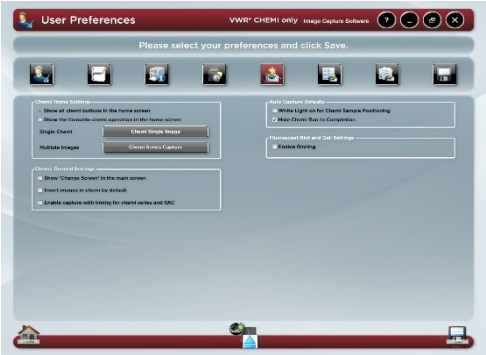


USER PREFERENCES SYSTEM SETTINGS SCREEN

SYSTEM SETTINGS

Manual Multiplex images and settings- Check the box 'multiple images group autoscale series images' When capturing multiple images in a series or a multiplex capture you can select for multiplexed images to use dynamic range for images and for multiple images you can select to group autoscale series images.

Using the dynamic range will allow very faint bands to be seen as the system will automatically scale to show the best image possible. If it is turned off then it will be possible to see images get brighter as the capture time increases, but you may need to manipulate the histogram to visualise very week bands

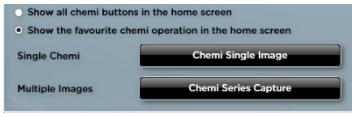


USER PREFERENCES CHEMI GENERAL SETTINGS SCREEN

CHEMI GENERAL SETTINGS

Chemi home settings

- **Show all chemi buttons on home screen-** There are currently four different ways of capturing a chemiluminescent image; Chemi Rapid, Chemi (single image), Chemi (series) and Signal Accumulation Calculator.
- **Show Favourite chemi operation in home screen-** Select to show your favourite chemi operation in the home screen- use the drop down menu's to select your favourite for single chemi and multiple chemi images.



Chemi General settings

- **Select to show 'Change screen' in the main menu screen-** this allows you to easily switch between the different chemi modes. For example if you have selected chemi Rapid then at the top right hand side a button will be available to change screen to chemi single image using the drop down menu.

- **Check the box to automatically invert chemi images-** this will be a default setting.

- **Enable capture with timing for chemi series and SAC-** This allows you to pick an image from the series to capture as a single image using that images imaging conditions.

- **Auto Capture Defaults**- checking this checkbox sets the Gel Doc image capture Software so that whenever it gets to the Sample Positioning stage in a chemiluminescence image capture operation, it automatically switches on the interior white lights. Hide chemi to completion check box -some users may wish to keep capturing their chemi image until signal can no longer be detected uncheck this box if you would like to use this feature.

CHEMI SINGLE SETTINGS

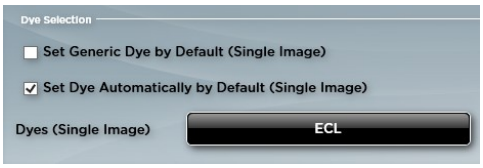
Chemi single settings are split in to two sections chemi Rapid settings and chemi single settings.

Chemi Rapid settings

- Select the slider bar position for chemi Rapid exposure time. Choose from min, average, and max. For chemi Rapid settings you can use the slider bar to adjust the exposure time choose between min, average and max. Min is using more binning resulting in less resolution but a fast capture and max is using no binning, full resolution and result in a longer capture time.

Check box to image a visible or colour marker for chemi single.

If you would like the software to pick a generic chemiluminescent reagent as default please check the box. Alternatively, you can select the chemiluminescent reagent you wish to use as default by using the drop down menu.



Chemi single settings

Check box to image a visible or colour marker for chemi single.

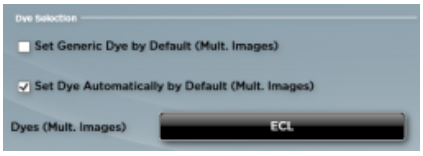
If you would like the software to pick a generic chemiluminescent reagent as default please check the box. Alternatively, you can select the chemiluminescent reagent you wish to use as default by using the drop down menu.

CHEMI MULTIPLE SETTINGS

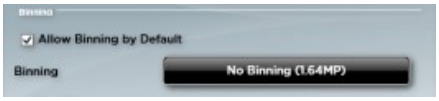
Chemi Series settings

Check box to image a visible or colour marker for Chemi Series capture.

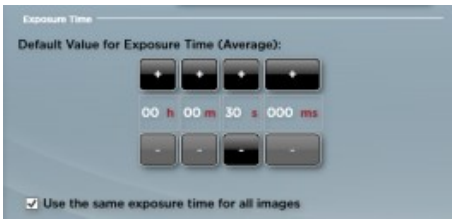
If you would like the software to pick a generic chemiluminescent reagent as default please check the box. Alternatively, you can select the chemiluminescent reagent you wish to use as default by using the drop down menu.



Select to 'Allow binning by Default' use the drop down menu to select binning level. Binning will increase sensitivity but reduce resolution.



Enter default values for exposure time. Check the box to use the same exposure time for all images

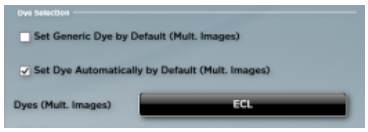


Select the number of images you wish to capture and whether you would like to add the contents of previous image. This will add the each captured image to the previous image. This will add each captured image to the previous image improving the signal to noise ratio.

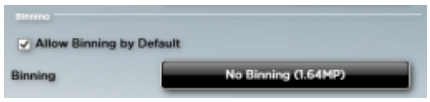
Signal Accumulation Calculator settings

Check box to image a visible or colour marker for Signal Accumulation Calculator.

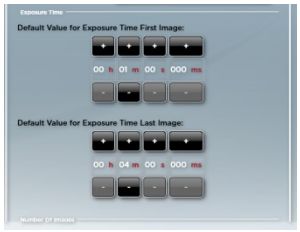
If you would like the software to pick a generic chemiluminescent reagent as default please check the box. Alternatively, you can select the chemiluminescent reagent you wish to use as default by using the drop down menu.



Select to 'Allow binning by Default' use the drop down menu to select binning level. Binning will increase sensitivity but reduce resolution



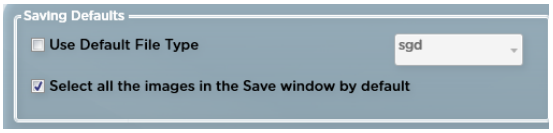
Enter default values for the exposure time settings for the signal accumulation feature for the first and last image.



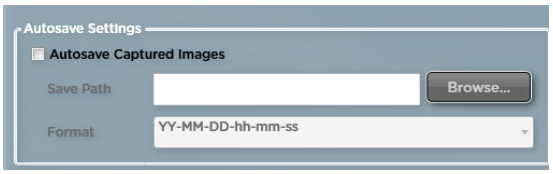
Select the number of images to capture for S.A.C as default.

SAVING SETTINGS

- Select the default file type for saving images the current default is .sgd file format. Check the box to select al images in the save window by default.



- **Autosave settings**- Check to autosave captured images once selected use the 'Browse' button to navigate to the location in which you would like the images to be saved to. Select the name format for the images to be saved using the drop down menu.



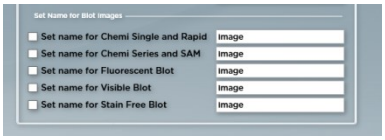
SAVE AS SETTINGS

- Select between extended or classical window. The extended window will allow you to easily save batches of images whereas the classical window will use the standard windows pop-up to export images

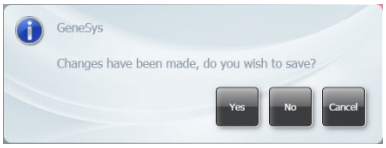
- From the drop down menus select the default file format for export choose from TIFF, BMP and JPEG. Select the default DPI and the bit depth from the drop down menus.

- Check the box to select all images in the 'save as' window by default.

- **Image name settings-** You can enter a name for each type of blot image captured in Gel Doc Image capture software to automatically use the entered name when exporting or saving that type of image.



To save any changes you make, select the **Save** icon . If you attempt to navigate away from the User Preferences screen without first saving the changes, the following pop-up message is displayed:

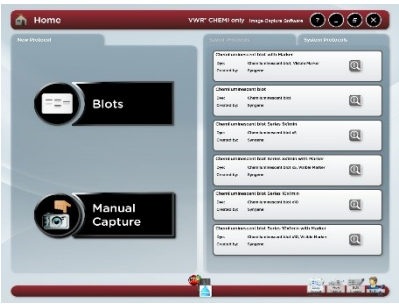


SAVE CHANGES MESSAGE POP-UP

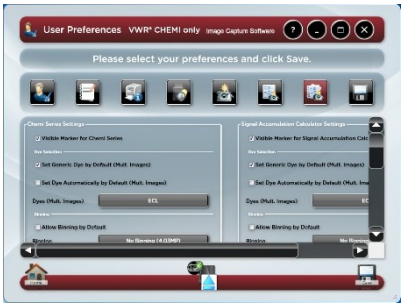
Select the icon to return to the Home screen.

Adjusting Basic Screen Viewing Size

By default VWR® Image Capture starts up with the display at full screen size. The size of the screen display can be adjusted by selecting the Maximise/Restore VWR® Image Capture button in the Title Bar and then resizing the display by dragging the dotted arrow icon in the bottom right hand corner.



HOME SCREEN DEFAULT



GEL DOC SCREEN-ADJUSTED

Loading Test Samples

Sample Drawer

Place the test sample centrally into the drawer so that the sample fits within the indentations. It is recommended that the sample is placed horizontally to ensure maximum image resolution.

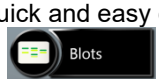
Automatic Image Capture Mode

Automatic image capture can be carried out from either Home screen.

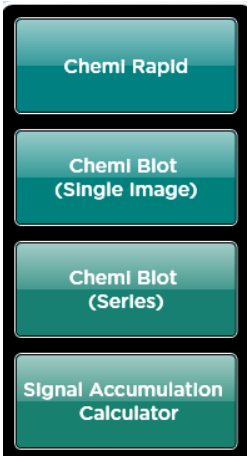
Automatic Image Capture

Chemi Rapid

For users who would like a quick and easy capture of their chemiluminescent blot.

1. Select the Blots icon 

on the Home screen. This displays the Blots drop-down list.



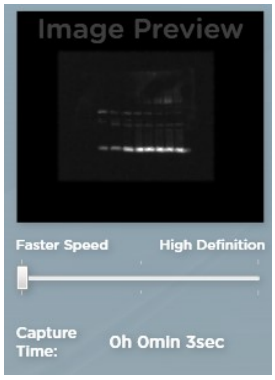
BLOTS DROP-DOWN LIST

1. Select your Blot type from the drop-down list e.g. Chemi Rapid.
2. Close the darkroom door and Gel Doc software will automatically capture your image according to the chemi settings selected on the settings page.

Chemi blot (Single Image)

For users who would like to capture a single image of their chemiluminescent blot without ever saturating their blot.

1. Select your Blot type from the drop-down list e.g. Chemi blot (Single Image).
2. From the dye selection screen select the reagent you are using (this is for reference only).
3. Close the darkroom door and the software will automatically evaluate the optimal exposure times and show an image preview.
4. Under the ‘Image Preview’ use the slider bar to adjust the exposure time. Slide the bar towards faster speed to decrease the exposure time (note: this will involve the use of binning. Binning involves combining pixels on the camera sensor together to form a ‘super pixel’ letting more light reach the sensor. When using binning resolution of the image can be lost). Slide the bar towards ‘high definition’ for more publication quality images (this will require longer exposure times as less binning will be used).



5. Check the box if you would like to image a visible marker.

6. Select 'Auto Expose Area' if required.
7. Press capture to capture an image. **Note:** If you have not pressed the capture button straight away after the evaluation time then when you press capture a message will pop up 'Preview time has expired' chemiluminescent signal may have decreased. Are you sure you would like to continue?' Select 'Yes' to continue and capture the image. Select 'No' if you wish to stop capture and reevaluate the capture time using the 'Eval. time' button.
8. Press the 'stop' button to stop the capture at any time.

Chemi Blot (Series)

1. Select your Blot type from the drop-down list e.g. Chemi Blot (Series).
2. Select the reagent you are using (this is for reference only).
3. Check the box if you would like to image a visible marker. Select the number of images you would like to capture and the level of binning.
4. Check the box to 'add the contents of the previous image'. This can help to improve the signal to noise ratio providing smoother backgrounds.
5. Press the 'Green arrow' to input the exposure time for each image or you can check the box to 'use the same exposure for all images'.
6. On the sample positioning screen adjust the lens controls.
7. Press the capture button to capture the image.

Signal Accumulation Calculator (S.A.C)

Signal Accumulation Calculator (S.A.C) allows the user to take a series of cumulative images. The User Estimates the shortest and the longest exposure times required to achieve the optimal image. Then decide on the number of images to be taken within this time range. For example select to capture 4 images and specify shortest exposure time as 1 minute and the maximum as 4 minutes. The first image will be taken at 1 minute and the last at 4 minutes and the remaining two images are taken at even intervals in between at 1 minute each capture.
S.A.C. capture is useful for determining the optimal imaging time for a chemiluminescent sample. Note: For very faint signals it is advisable to use Chemi Blot (Series) capture.

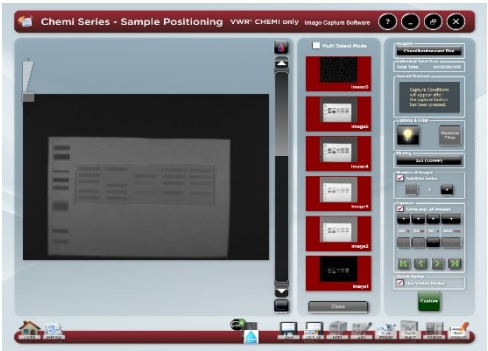
1. Select your Blot type from the drop-down list e.g. Signal Accumulation Calculator.

2. Input the exposure time for the first image e.g. 1 minute then input the exposure time for the last image e.g. 4 minutes.

3. Select the total number of images to be captured.

4. Check the box if you would like to image a visible marker.

Press the capture button to capture the image.



AUTOMATIC IMAGE CAPTURE - SAMPLE POSITIONING AND CAPTURE SCREEN

SAMPLE POSITIONING

At this point the Camera is live and the image it is seeing of your sample is presented in the left hand pane. Controls are provided for you to improve this live preview image of your sample, enabling you to improve the image quality before the Instrument makes an image capture.

LIGHTING OPTIONS TO IMPROVE SAMPLE IMAGING

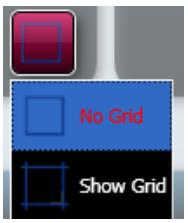
The **Lighting** function provides additional options for aligning the sample in the Drawer. Selecting the icon turns the interior white lights on, giving greater visibility of the sample in the Drawer. Re-select the icon to turn the white lights off again. The sample image should now appear much clearer.

SAMPLE ALIGNMENT USING THE GRID

The **Grid** button lets you overlay a grid on the image, enabling you to better align the sample. Use the **Door Open** button on the right hand side of the Darkroom to open the Darkroom Door slightly to enable

you to move the sample around to align it with the grid projection. Pressing the **Grid** button calls up the grid menu.

- **No Grid** option removes the grid projection.
- **Show Grid** option displays the default grid projection, 2 rows x 2 columns



GRID MENU

CONTROLLING THE IMAGE SATURATION

Select the **Show Saturation** button . The **Saturation** function can be used to check if areas of the image are going to be over-exposed; over-exposed white bands will be highlighted in red on the image, over-exposed black bands will be highlighted in blue on the image. This function is useful if the **Select AutoExpose Area** function has been used. Please note that saturated bands are not quantifiable.

SAMPLE IMAGE ZOOMING

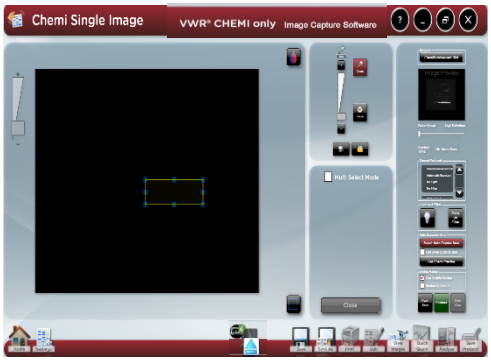
- The **Digital Zoom** slider allows you to zoom in or out of the displayed image. Dragging the slider towards the **+** sign zooms in, dragging the slider towards the **-** sign zooms out. Zooming in or magnifying an area of the image allows you to align the sample more accurately, using the grid overlay.

USING A SELECTED AREA TO IMPROVE SAMPLE IMAGE QUALITY

The **Select AutoExpose Area** function allows you to define an area of interest to set the Camera exposure. This can be used to improve an area of the image where the bands are very faint. The software determines the correct exposure settings for the defined area, resulting in a good image of the defined area. However, although this procedure may result in faint bands becoming more visible, more prominent bands may be overexposed (saturated).

Select the **Select AutoExpose Area** button

. This introduces a yellow selector box onto the sample image. The yellow box can be dragged around and resized.

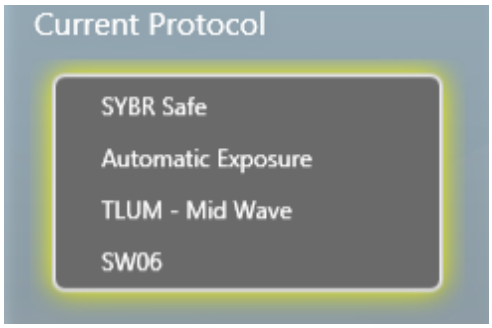


AUTOEXPOSE AREA SELECTOR BOX

You also have the option to use the area outside of the yellow box to set the exposure. This is useful if the bulk of the image is faint and only a small area contains prominent bands. The yellow box can be positioned to contain the prominent bands and then the **Use Area Outside ROI** checkbox can be checked. Exposure will then be based on the area outside the yellow box.

CURRENT PROTOCOL BOX

The **Current Protocol** box summarises the lighting and filter combination being used, and displays the exposure information; an exposure time if a manual exposure has been set, 'Automatic Exposure' if the exposure is to be set automatically.

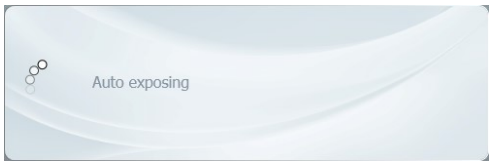


CURRENT PROTOCOL BOX

IMAGE CAPTURE

To capture an image using the entered selections, select the **Capture** button .

The following pop-up message is displayed as the Instrument makes an image capture:



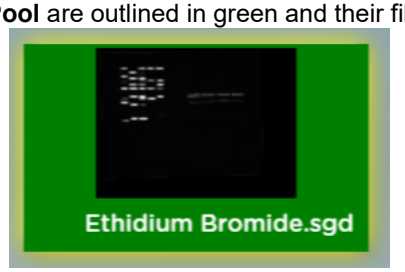
AUTO EXPOSING MESSAGE POP-UP

The **Exposure Timing** icon appears at the bottom of the screen. This changes to display the progress of the exposure as a coloured bar progressing around the icon. If capturing multiple exposures, the icon displays multiple coloured bars.
While the exposure is progressing, and this may take several minutes, it is possible to navigate away from the Automatic Capture screen and browse, view and edit previously captured images. The **Exposure Timing** icon remains displayed at the bottom of the screen. Selecting this icon at any time returns you to the Automatic Capture screen.
Once the image is captured, it appears in the left hand pane and also as a thumbnail in the central **Image Pool** pane. As more images are captured, these also appear in the **Image Pool**. When initially captured, images in the **Image Pool** are unsaved and are outlined in red.

UNSAVED IMAGE POOL IMAGE

To save the captured image, select the image in the **Image Pool** and select the **Save** icon .

Once saved, images in the **Image Pool** are outlined in green and their filename appears below the image.

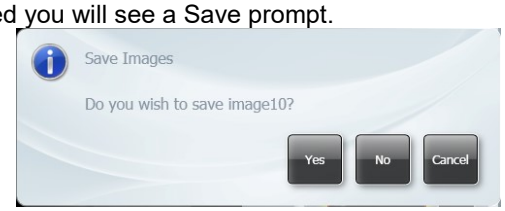


SAVED IMAGE POOL IMAGE

If further images are captured, additional images appear in the **Image Pool**, stacked vertically.
Images can be dismissed from the **Image Pool** by selecting them and then selecting the **Close** button

.

If an image has not been saved you will see a Save prompt.



SAVE PROMPT

If multiple images are captured without any images being saved, multiple images can be selected and saved in a single operation. Check the **Multi Select Mode** checkbox in the Image Pool and select multiple images.

To save the selected images, select the **Save** icon
.

HISTOGRAM

Select the **Histogram** button
. This displays a histogram or graphical representation of the distribution of grey scales recorded by the camera sensor; with black to the extreme left, white to the extreme right.

HISTOGRAM DISPLAY

The **Histogram** button
turns red to indicate that the function has been selected. Selecting the button again cancels the **Histogram** function.
The histogram is a graph showing the number of pixels in the image at each different intensity value found in that image. For a 16-bit image there are a possible 65535 different intensities so the histogram will graphically display 256 numbers showing the distribution of pixels amongst those grayscale values. If the graph is bunched up to the left it indicates that not many grayscale levels have been captured and the red lines on the histogram graph may need to be adjusted to see bands. If the graph reaches to the far right (65535 grayscales) this indicates that the image may be saturated.

IMAGE SLIDER CONTROLS

The following controls are available to adjust the way a captured image looks.

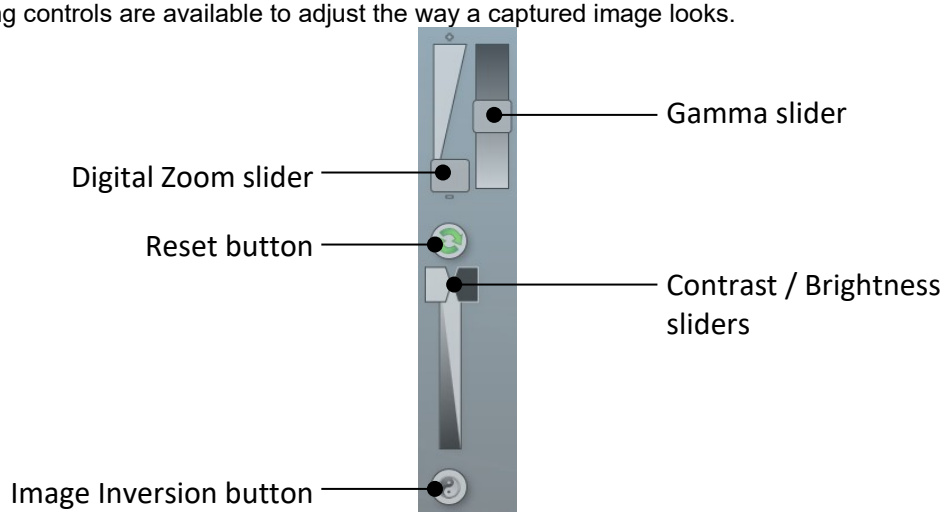


IMAGE SLIDER CONTROLS

The **Digital Zoom** slider allows you to zoom in or out of the displayed image. Dragging the slider towards the **+** sign zooms in, dragging the slider towards the **-** sign zooms out.
The **Gamma** slider changes the tone of the overall image. With reference to the histogram mentioned previously, the Gamma function changes the relative brightness of the recorded midrange tones by shifting them either towards the dark end or the white end of the graph, without changing the extreme dark or extreme white values. This gives the recorded image an overall darker or lighter appearance.
Contrast is a measure of how bright highlights are in an image. Brightness is a measure of how bright shadows are in an image. Use the **Contrast** slider to control how bright the lightest objects in an image are displayed. Use the **Brightness** slider to control how bright dark objects in an image are displayed.
If you make changes using the sliders you can undo the changes by selecting the **Reset** icon.
Use the **Image Inversion** button to invert the image, i.e. white appears black, black appears white. This can help when making changes with the slider controls. Selecting the **Image Inversion** button a second time changes the image back to normal.

CAPTURED IMAGE INFORMATION

Select the **Image Information** icon . This displays a pop-up window displaying captured image information. The information displayed is as follows:

- Dye
- Image capture date / time
- Filter
- Light
- Exposure time
- Iris f number
- Image size
- Range (range of grey scales captured)

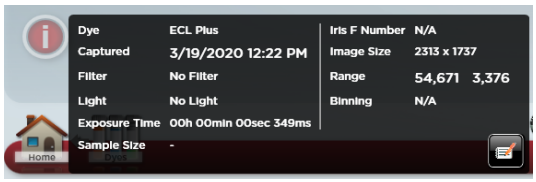


IMAGE INFORMATION POP-UP WINDOW

The **Image Information** icon turns red. Selecting the **Image Information** icon a second time closes the pop-up window.

Selecting the **Save Protocol** icon saves the displayed settings as a configuration (or protocol) or repeatable workflow. Refer to **PROTOCOLS - SAVING, OPENING AND EDITING**.

Automatic Image Capture - Image Actions Following Capture

Further actions can be performed on captured images by selecting **Image Action** icons. The function of these is explained in other parts of this User Guide.

IMAGE ACTION ICONS

Manual Image Capture Mode

Manual Capture mode allows the User to take complete control of every function of a VWR® Chemi Only Instrument. Manual image capture is particularly useful for the more unusual imaging applications or if a User has known imaging parameters that they want to use.
Within the Manual Capture mode, the following options are possible:

- **Single Image** - used to capture a single image of your sample.
- **Series Images** - used to capture a series (variable number) of separate images of your sample, using the same or different exposure/filter/lighting settings for each capture. For example, capture a series of images using different exposure settings, compare the resulting captured images, save the best captured image and delete the unwanted captured images.
- **Multiplex** - used to capture an image of Chemi blot and a visible marker, with different exposure/filter/lighting settings for each capture, which are then displayed as separate images and as a combined image.
- **Additive Series** - used to capture a series (variable number) of separate images of your sample, with the same or different exposure/filter/lighting settings for each capture, which are then combined into a single combined (additive) image.

Manual Image Capture - Start

1. Open the Darkroom Drawer and position the sample in the Drawer within the guidelines, as noted previously.
2. Select the **Manual Capture** icon

on the Home screen. This displays the basic Manual Capture screen.
3.

MANUAL CAPTURE - BASIC SCREEN - DEFAULT

Note: By default the Manual Capture screen opens in **Single Image** mode.

4. Select the type of image capture you want to make by selecting from the options in the right hand pane.

IMAGE CAPTURE OPTIONS

- To capture a single image press the **Single Image** button. See **Manual Image Capture - Single Image**.
- To capture a series of images, with different settings for each, press the **Series** button. See **Manual Image Capture - Series**.
- To capture a single image press the **Single Image** button. See **Manual Image Capture - Single Image**.
- To capture a series of images, with different settings for each, press the **Series** button. See **Manual Image Capture - Series**.
- To capture a series of images, with the same or different settings for each, which will then be combined into a single combined image press the **Additive Series** button. See **Manual Image Capture - Additive Series**.
- To capture a series of images, with different settings for each, which will then be displayed as separate images plus a combined image press the **Multiplex** button. See **Manual Image Capture - Multiplex**.

Manual Image Capture - Single Image

Note: A single image can be captured directly from the basic Manual Capture screen without accessing the **Image Capture** options.

5. Make Single Image settings directly on the basic Manual Capture screen or by selecting the **Single Image** button from the **Image Capture** options.

MANUAL CAPTURE - SINGLE IMAGE SELECTED

6. Using the **Lighting** and **Filters** functions in the right hand pane to make your lighting and filter selections.

LIGHTING AND FILTERS FUNCTIONS

(i) Select the **Lighting** button and select your preferred light from the drop-down menu.

LIGHTING DROP-DOWN MENU

LIGHTING TO IMPROVE SAMPLE PREVIEW IMAGING

The **Lighting** function provides light inside the Darkroom for better aligning of the sample.

Selecting the icon turns the interior white lights on, giving greater visibility of the sample in the Darkroom. Re-select the icon to turn the white lights off again.

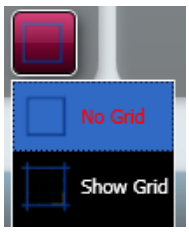
SAMPLE IMAGE ZOOMING

- The **Digital Zoom** slider allows you to zoom in or out of the displayed image. Dragging the slider towards the **+** sign zooms in, dragging the slider towards the **-** sign zooms out. Zooming in or magnifying an area of the image allows you to align the sample more accurately, using the grid overlay.

SAMPLE ALIGNMENT USING THE GRID

- The **Grid** button lets you overlay a grid on the image, enabling you to better align the sample. Use the **Door Open** button on the right hand side of the Darkroom to open the Darkroom Door slightly to enable you to move the sample around to align it with the grid projection. Pressing the **Grid** button calls up the grid menu.

- **No Grid** option removes the grid projection.
- **Show Grid** option displays the default grid projection, 2 rows x 2 columns.



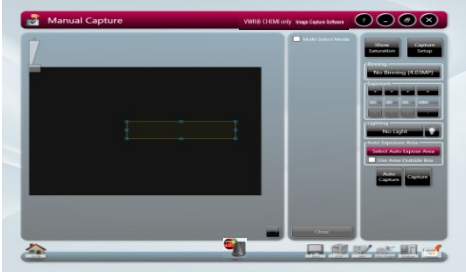
GRID MENU

USING A SELECTED AREA TO IMPROVE SAMPLE IMAGE QUALITY

The **Select AutoExpose Area** function allows you to define an area of interest to set the Camera exposure. This can be used to improve an area of the image where the bands are very faint. The software determines the correct exposure settings for the defined area, resulting in a good image of the defined area. However, although this procedure may result in faint bands becoming more visible, more prominent bands may be overexposed (saturated).

Select the **Select AutoExpose Area** button

. This introduces a yellow selector box onto the sample image. The yellow box can be dragged around and resized.

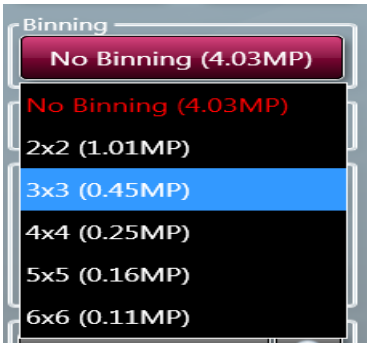


AUTOEXPOSE AREA SELECTOR BOX

You also have the option to use the area outside of the yellow box to set the exposure. This is useful if the bulk of the image is faint and only a small area contains prominent bands. The yellow box can be positioned to contain the prominent bands and then the **Use Area Outside ROI** checkbox can be checked. Exposure will then be based on the area outside the yellow box.

7. Select the Camera resolution that you want to use to capture your sample image.

The **Binning** function is a way of improving image capture times. By combining the outputs from adjacent pixels on the image sensor, in square groups, e.g. 2 x 2, 3 x 3, 4 x 4, etc, the pixels are effectively enlarged while being reduced in number. This provides faster image capture, due to the reduced number of data reading operations required, improved signal to noise ratios, but reduced spatial resolution, i.e. 2 x 2 binning on an 8 MP sensor effectively results in a 2 MP sensor with pixels four times the size of the 8 MP sensor pixels.
Select the **Binning** button and select the binning ratio you want to use from the drop-down list.



BINNING RATIO DROP-DOWN LIST

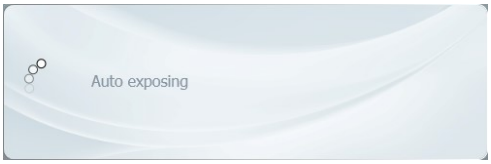
8. You are now ready to capture your sample image. You have two options; to let the VWR® Image Capture program set the exposure time automatically, or, you set the exposure time manually.

9. Select the **Auto Capture** button

.

10. The VWR® Image Capture program will decide the best exposure time for the settings you have entered. This time will appear in the **Exposure** function in the right hand pane. The Auto Capture function is designed to capture the maximum available number of grey scales without allowing image saturation. This function is useful for quantifying data.

11. The following pop-up message is displayed as the Instrument makes an image capture:



AUTO EXPOSING MESSAGE POP-UP

12. The **Exposure Timing** icon appears at the bottom of the screen. This changes to display the progress of the exposure as a coloured bar progressing around the icon.

13. While the exposure is progressing, and this may take several minutes, it is possible to navigate away from the Manual Capture screen and browse, view and edit previously captured images.

14. Once the image is captured, it appears in the left hand pane and also as a thumbnail in the central **Image Pool** pane. If more images are captured, these also appear in the **Image Pool**. When initially captured, images in the **Image Pool** are unsaved and are outlined in red.

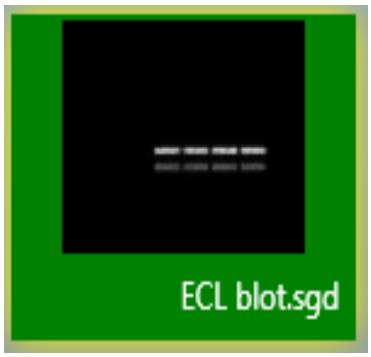
UNSAVED IMAGE POOL IMAGE

15. 11b. To save a captured image, select the image in the **Image Pool** and select the Save icon
.

16. Once saved, images in the **Image Pool** are outlined in green and their filename appears below the image.

17. To save a captured image, select the image in the **Image Pool** and select the Save icon .

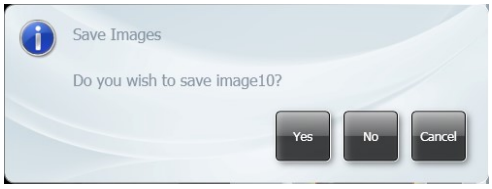
18. Once saved, images in the **Image Pool** are outlined in green and their filename appears below the image.



SAVED IMAGE POOL IMAGE

19. If further images are captured, additional images appear in the **Image Pool**, stacked vertically.

20. Images can be dismissed from the **Image Pool** by selecting them and then selecting the **Close** button Close . If an image has not been saved you will see a Save prompt.



SAVE PROMPT

21. (i) If multiple images are captured without any images being saved, multiple images can be selected and saved in a single operation. Check the **Multi Select Mode** checkbox in the **Image Pool** and select multiple images.

22. (ii) To save the selected images, select the **Save** icon .

MANUAL CAPTURE - SINGLE IMAGE WITH MANUAL EXPOSURE

23. 11a. Set an exposure time:

24. The **Exposure** controls are simple plus/minus buttons for adjusting the following time periods; hours (**h**) , minutes (**m**) , seconds (**s**) , and milliseconds (**ms**) .

MANUAL EXPOSURE CONTROLS

25. Using the **Exposure** plus/minus buttons enter an exposure time for the image.

26. 11b. Select the **Capture** button

.

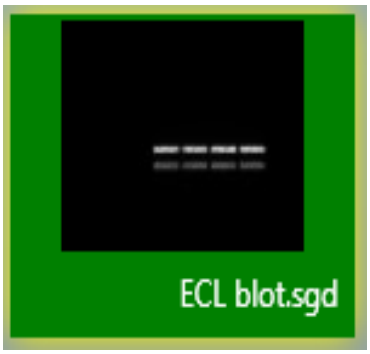
The following pop-up message is displayed as the Instrument makes an image capture:

AUTO EXPOSING MESSAGE POP-UP

The **Exposure Timing** icon appears at the bottom of the screen. This changes to display the progress of the exposure as a coloured bar progressing around the icon.
While the exposure is progressing, and this may take several minutes, it is possible to navigate away from the Manual Capture screen and browse, view and edit previously captured images.
Once the image is captured, it appears in the left hand pane and also as a thumbnail in the central **Image Pool** pane. If more images are captured, these also appear in the **Image Pool**.
When initially captured, images in the **Image Pool** are unsaved and are outlined in red.

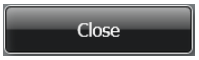
UNSAVED IMAGE POOL IMAGE

11c. To save a captured image, select the image in the **Image Pool** and select the **Save** icon .
Once saved, images in the **Image Pool** are outlined in green and their filename appears below the image.

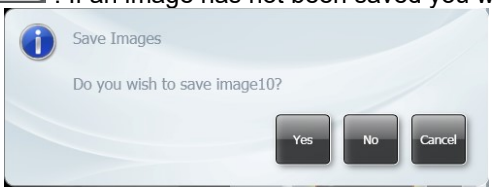


SAVED IMAGE POOL IMAGE

If further images are captured, additional images appear in the Image Pool, stacked vertically.

Images can be dismissed from the **Image Pool** by selecting them and then selecting the **Close** button 

. If an image has not been saved you will see a Save prompt.



SAVE PROMPT

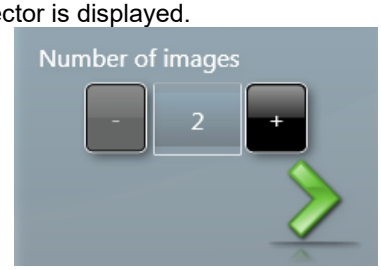
(i) If multiple images are captured without any images being saved, multiple images can be selected and saved in a single operation. Check the **Multi Select Mode** checkbox in the **Image Pool** and select multiple images.

(ii) To save the selected images, select the **Save** icon .

Manual Image Capture - Series

6. Select the **Series** button from the **Image Capture** options.

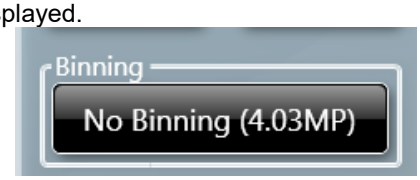
   You must now define the number of images you want in your series. In the right hand pane the **Number of images** selector is displayed.



NUMBER OF IMAGES SELECTION

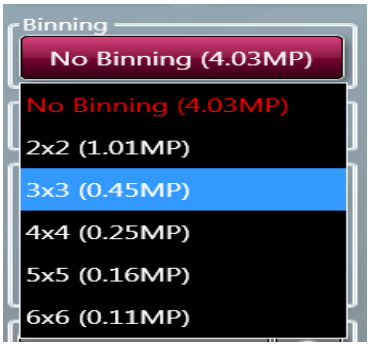
7. Use the **+** / **-** buttons to select the number of images you want to capture, then select the **Next** arrow . For this example, set to 3 by selecting the **+** button.

   You must now define a Camera resolution for your series of images. In the right hand pane the **Binning** selector is displayed.



BINNING SELECTOR

8. Select the **No Binning (4.03MP)** button and select the binning ratio you want to use from the drop-down list, then select the **Next** arrow , or if you want to use the full resolution just select the **Next** arrow .



BINNING RATIO DROP-DOWN LIST

9. You must now set the interval time (time between captures in the series), the exposure times for each image in your series of images, and the lighting/filter sets for your images. The controls for these are displayed in the right hand pane.

SERIES EXPOSURE CONTROLS - FIRST IMAGE

SERIES EXPOSURE CONTROLS - SECOND IMAGE
SAME AS PREVIOUS UNSET

SERIES EXPOSURE CONTROLS - THIRD IMAGE
SAME AS PREVIOUS UNSET

The display is almost the same for each image in the series and by default starts at image 1.
The **Capture Interval** controls are simple **+** / **-** buttons for adjusting the following time periods; hours (**h**) , minutes (**m**) , seconds (**s**) , and milliseconds (**ms**) .
Using the **Capture Interval +** / **-** buttons enter an interval time for the series of images.
The manual **Exposure** controls are simple **+** / **-** buttons for adjusting the following time periods; hours (**h**) , minutes (**m**) , seconds (**s**) , and milliseconds (**ms**) .
To set a manual exposure time select the **Manual** button and use the **Exposure +** / **-** buttons enter an exposure time for the first image. Alternatively, selecting the **Auto** button after you have selected the lighting and filters allows the system to automatically select the most appropriate exposure time for the image 1.
Use the **Lighting** and **Filters** functions in the right hand pane to make your lighting and filter selections as described previously.

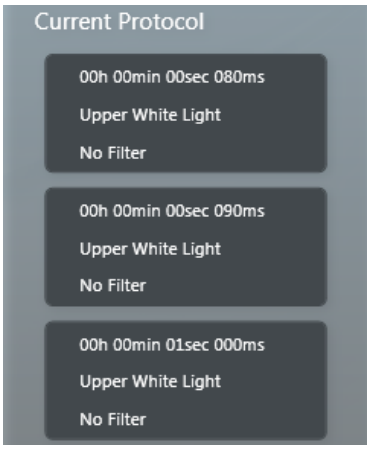
10. Select the **Next** arrow to make the settings for image 2. Select the **Last** arrow to apply the settings you have entered for image 1 to all of the remaining images in your series. Go to Step 14.

11. By default the **Same as previous** checkbox is checked, making the settings for the second image the same as the settings for first image, and the setting boxes are greyed out meaning that no manual changes can be made. To make changes for the second and subsequent images, uncheck the **Same as previous** checkbox.

12. Enter the settings for all the images in your series.

13. Select the **Next** arrow .

14. The exposure/interval/lighting/filter choices that you have selected are now displayed as a set of Current Protocols in the right hand pane.

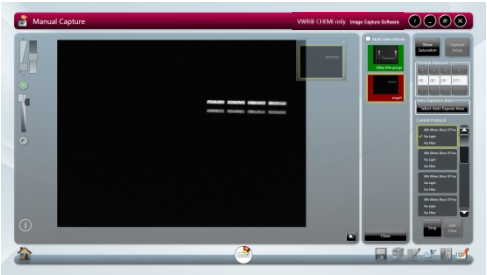


SERIES PROTOCOLS

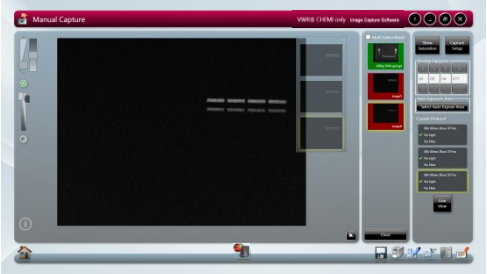
15. Position the sample and improve the the preview sample image as much as possible using the Light / Digital Zoom / Grid / Select Autoexpose Area / Lens Controls, as described previously.

16. Select the **Capture** button .

The **Exposure Timing** icon appears at the bottom of the screen.
This changes to display the progress of the exposures as concentric coloured bars progressing around the icon .
While the exposures are progressing, and this may take several minutes, it is possible to navigate away from the Manual Capture screen and browse, view and edit previously captured images.
The Current Protocol display changes as the series of captures is made. As a capture is made using a protocol, the protocol box is highlighted yellow. When the capture is complete a green tick appears inside the protocol box and the yellow highlight is removed. The yellow highlight then appears on the next protocol box in the series, once that capture has commenced.



SERIES EXPOSURE - FIRST IMAGE BEING CAPTURED



SERIES EXPOSURE - ALL THREE CAPTURES COMPLETE

As the first image is captured, it appears as the main image in the left hand **Image** pane, as a thumbnail in the **Image** pane, and as a thumbnail in the central **Image Pool** pane. As subsequent images in the series are captured, these also appear as thumbnails in the **Image** pane, the images being stacked vertically. The main image in the **Image** pane changes as each image is captured, displaying the current image. The thumbnail image in the **Image Pool** also changes as each capture is made, displaying a combined image.

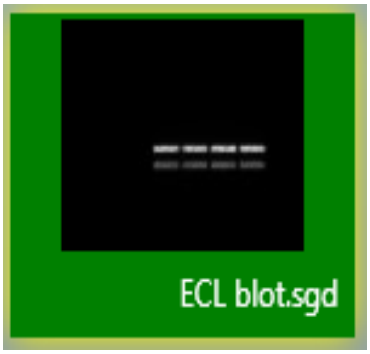
UNSAVED IMAGE POOL IMAGE

17. The series of images captured can be viewed individually as a large image in the left hand pane by selecting the desired image from the series of thumbnail images.

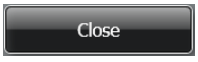
    The thumbnail images in the **Image** pane overlay and partially obscure the main image. To view the entire main image, select the minimise icon in the top right hand corner above the first thumbnail image. This hides the thumbnails, leaving just a banner containing a minimise icon. Selecting the minimise icon in the banner displays the thumbnail images again.
    The best image or images can then be saved, and the unwanted images can be deleted.

18. To save a captured image, select the image in the **Image** pane or the **Image Pool** and select the **Save** icon .

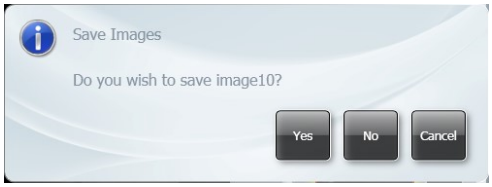
    Once saved, images in the **Image Pool** are outlined in green and their filename appears below the image.



S\AVED IMAGE POOL IMAGE

Images can be dismissed from the **Image Pool** by selecting them and then selecting the **Close** button 

. If an image has not been saved you will see a Save prompt.



SAVE PROMPT

(i) If multiple images are captured without any images being saved, multiple images can be selected and saved in a single operation. Check the **Multi Select Mode** checkbox in the **Image Pool** and select multiple images.

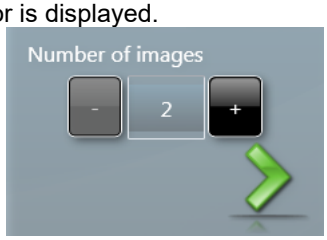
(ii) To save the selected images, select the **Save** icon .

For more information on saving refer to **Common Screen Functions and Tools**.

Manual Image Capture - Additive Series

6. Select the **Additive Series** button from the **Image Capture** options.

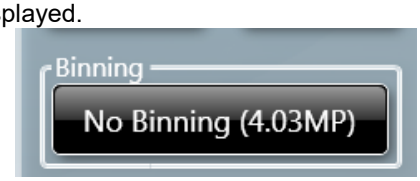
   You must now define the number of images you want in your series. In the right hand pane the **Number of images** selector is displayed.



NUMBER OF IMAGES SELECTION

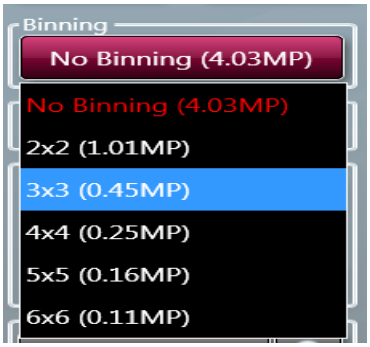
7. Use the **+** / **-** buttons to select the number of images you want to capture, then select the **Next** arrow . For this example, set to 3 by selecting the **+** button.

   You must now define a Camera resolution for your series of images. In the right hand pane the **Binning** selector is displayed.



BINNING SELECTOR

8. Select the **No Binning (4.03MP)** button and select the binning ratio you want to use from the drop-down list, then select the **Next** arrow , or if you want to use the full resolution just select the **Next** arrow .



BINNING RATIO DROP-DOWN LIST

9. You must now set the exposure time, capture intervals, and select lighting and filter options for image 1. This process is the same as that for **Manual Image Capture - Series**.

10. The display is almost the same for each image in the series and by default starts at image 1.

11. The **Capture Interval** controls are simple **+** / **-** buttons for adjusting the following time periods; hours (**h**) , minutes (**m**) , seconds (**s**) , and milliseconds (**ms**) .

12. Using the **Capture Interval +** / **-** buttons enter an interval time for the series of images.

13. The manual **Exposure** controls are simple **+** / **-** buttons for adjusting the following time periods; hours (**h**) , minutes (**m**) , seconds (**s**) , and milliseconds (**ms**) .

14. To set a manual exposure time select the **Manual** button and use the **Exposure +** / **-** buttons enter an exposure time for the first image. Alternatively, selecting the **Auto** button after you have selected the lighting and filters allows the system to automatically select the most appropriate exposure time for the image 1.

15. Use the **Lighting** and **Filters** functions in the right hand pane to make your lighting and filter selections as described previously.

16. Select the **Next** arrow to make the settings for image 2. Select the **Last** arrow to apply the settings you have entered for image 1 to all of the remaining images in your series.

17. By default the **Same as previous** checkbox is checked, making the settings for the second image the same as the settings for first image. To make changes for the second and subsequent images, uncheck the **Same as previous** checkbox.

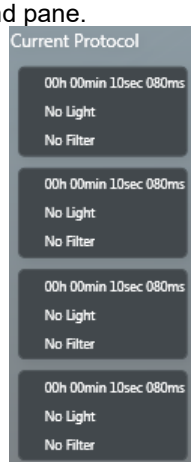
18. Enter the settings for all the images in your series.

19. Select the **Next** arrow .

20. If the Neutral Fielding option is available, determined by your lighting/filter selections, you now have to decide whether or not to apply Neutral Fielding.

    The Neutral Fielding option allows you to correct the image for uneven lighting. This can cause problems when quantifying bands or spots across a large sample. The image of the neutral field is normalised for light illumination. This normalisation is then applied to the gel image, such that uneven light illumination generated by the light source is addressed.

    The exposure/lighting/filter choices that you have selected are now displayed as a set of Current Protocols in the right hand pane.

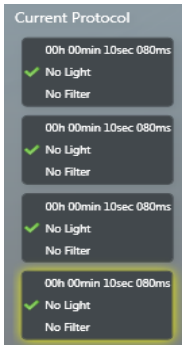


ADDITIVE SERIES PROTOCOLS

21. Position the sample and improve the preview sample image as much as possible using the Light / Digital Zoom / Grid / Select Autoexpose Area / Lens Controls, as described previously.

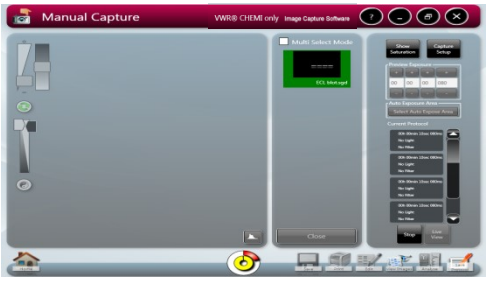
22. Select the **Capture** button .

The **Exposure Timing** icon appears at the bottom of the screen.
This changes to display the progress of the exposures as concentric coloured bars progressing around the icon .
While the exposures are progressing, and this may take several minutes, it is possible to navigate away from the Manual Capture screen and browse, view and edit previously captured images.

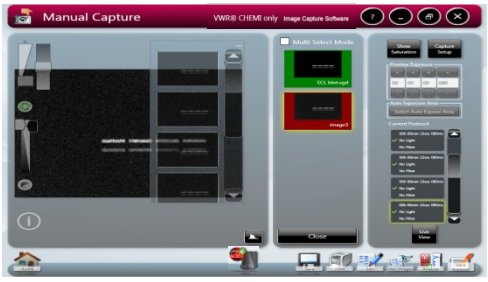


ADDITIVE SERIES PROTOCOLS - WITH CAPTURES TAKEN

The Current Protocol display changes as the series of captures is made. As a capture is made using a protocol, the protocol box is highlighted yellow. When the capture is complete a green tick appears inside the protocol box and the yellow highlight is removed. The yellow highlight then appears on the next protocol box in the series, once that capture has commenced.



ADDITIVE SERIES EXPOSURE - READY TO START CAPTURES



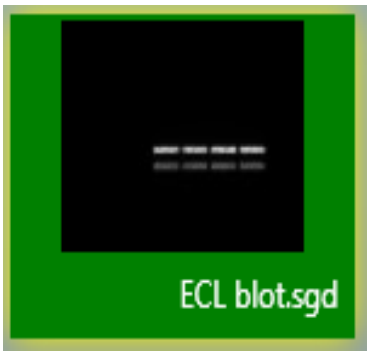
ADDITIVE SERIES EXPOSURE - ALL FIVE CAPTURES COMPLETE

As the first image is captured, it appears as the main image in the left hand **Image** pane and also as a thumbnail in the left hand pane. As subsequent images in the series are captured, these also appear as thumbnails in the **Image** pane, the images being stacked vertically. The main image in the **Image** pane changes as each image is captured, as each of the newly made captures is added to the main image to produce a combined or additive image.
Once the series of captures is complete, the combined image appears as the main image in the **Image** pane, along with the stack of series captured images, and also as a thumbnail in the central **Image Pool** pane. When initially captured, images in the **Image Pool** are unsaved and are outlined in red.

UNSAVED IMAGE POOL IMAGE

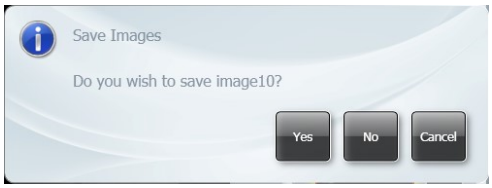
23. To save a captured image, select the image in the Image Pool and select the **Save** icon .

Once saved, images in the **Image Pool** are outlined in green and their filename appears below the image.



SAVED IMAGE POOL IMAGE

Images can be dismissed from the **Image Pool** by selecting them and then selecting the **Close** button . If an image has not been saved you will see a Save Images prompt.



SAVE PROMPT

(i) If multiple images are captured without any images being saved, multiple images can be selected and saved in a single operation. Check the **Multi Select Mode** checkbox in the **Image Pool** and select multiple images.

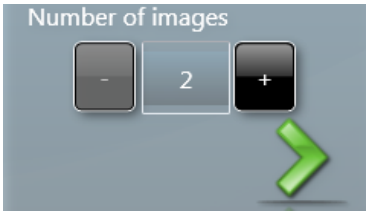
(ii) To save the selected images, select the **Save** icon .

For more information on saving refer to **Common Screen Functions and Tools**.

Manual Image Capture - Multiplex

6. Select the **Multiplex** button from the **Image Capture** options.

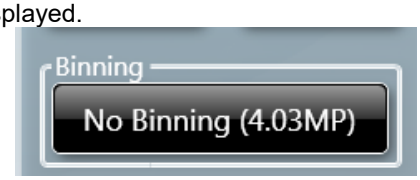
You must now define the number of images you want in your series. In the right hand pane the **Number of images** selector is displayed.



NUMBER OF IMAGES SELECTION

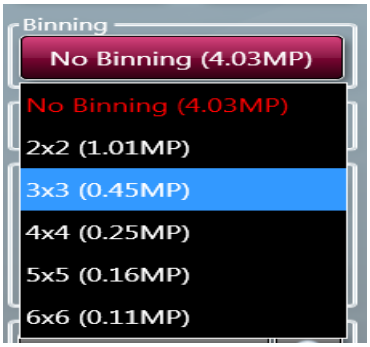
7. Use the **+** / **-** buttons to select the number of images you want to capture, then select the **Next** arrow . For this example, set to 3 by selecting the **+** button.

You must now define a Camera resolution for your series of images. In the right hand pane the **Binning** selector is displayed.



BINNING SELECTOR

8. Select the **No Binning (4.03MP)** button and select the binning ratio you want to use from the drop-down list, then select the **Next** arrow , or if you want to use the full resolution just select the **Next** arrow .



BINNING RATIO DROP-DOWN LIST

9. You must now set the exposure time, and select lighting and filter options for image 1.

The display is almost the same for each image in the series and by default starts at image 1.
The **Capture Interval** controls are simple **+** / **-** buttons for adjusting the following time periods; hours (**h**) , minutes (**m**) , seconds (**s**) , and milliseconds (**ms**) .
Using the **Capture Interval +** / **-** buttons enter an interval time for the series of images.
The manual **Exposure** controls are simple **+** / **-** buttons for adjusting the following time periods; hours (**h**) , minutes (**m**) , seconds (**s**) , and milliseconds (**ms**) .
To set a manual exposure time select the **Manual** button and use the **Exposure +** / **-** buttons enter an exposure time for the first image. Alternatively, selecting the **Auto** button after you have selected the lighting and filters allows the system to automatically select the most appropriate exposure time for the image.
Use the **Lighting** and **Filters** functions in the right hand pane to make your lighting and filter selections as described previously.

10. Select the **Next** arrow to make the settings for image 2. Select the **Last** arrow to apply the settings you have entered for image 1 to all of the remaining images in your series.

11. Enter the settings for all the images in your series.

12. Select the **Next** arrow .

13. The exposure/lighting/filter choices that you have selected are now displayed as a set of Current Protocols in the right hand pane.

MULTIPLEX PROTOCOLS

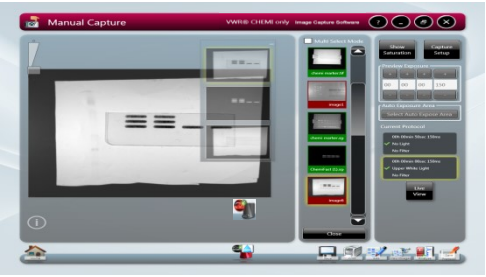
14. Position the sample and improve the the preview sample image as much as possible using the Light / Digital Zoom / Grid / Select Autoexpose Area / Lens Controls, as described previously.

15. Select the **Capture** button

.

The **Exposure Timing** icon appears at the bottom of the screen.
This changes to display the progress of the exposures as concentric coloured bars progressing around the icon .
While the exposures are progressing, and this may take several minutes, it is possible to navigate away from the Manual Capture screen and browse, view and edit previously captured images.
The Current Protocol display changes as the series of captures is made. As a capture is made using a protocol, the protocol box is highlighted yellow. When the capture is complete a green tick appears inside the protocol box and the yellow highlight is removed. The yellow highlight then appears on the next protocol box in the series, once that capture has commenced.
As the first image is captured, it appears as the main image in the left hand **Image** pane, as two vertically stacked thumbnails in the **Image** pane, and as a thumbnail in the central **Image Pool** pane.
As subsequent images in the series are captured, the main image in the **Image** pane and the top image in the thumbnail stack change, becoming combined images. Also the newly captured image is added to the bottom of the thumbnail stack. The thumbnail stack of images represents the combined image and the separate images that make it up. By default the main image is the selected image from the thumbnail stack, this is indicated by a yellow highlight around the top image in the stack.
Once the series of captures is complete, the combined image appears as the main image in the **Image** pane along with the stack of series captured images, and also as a thumbnail in the central **Image Pool** pane. The thumbnail stack in the **Image** pane will consist of one more image than the number of images selected on the **Number of images** selector since it displays the individual capture images and the combined image.

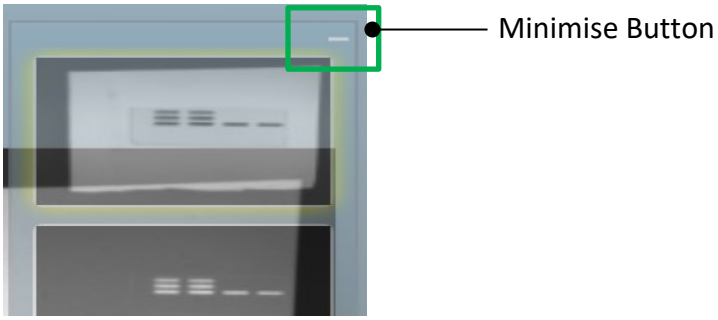
MULTIPLEX EXPOSURE - READY TO START CAPTURES



MULTIPLEX EXPOSURE - ALL TWO CAPTURES COMPLETE

In the left hand pane the main image displayed is the image in the thumbnail stack that is selected, this is indicated by a yellow highlight around the thumbnail. By default this is the combined image.

(i) To make one of the individual capture images in the stack the main image, select the drawing side of the thumbnail. The yellow highlight will move from the default thumbnail to the selected thumbnail.



MINIMISE BUTTON

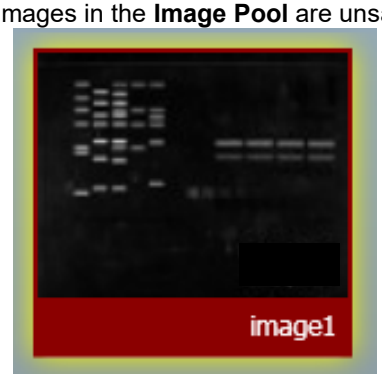
(ii) To view the complete main image in the left hand pane, select the **Minimise** button above the thumbnail stack.

(iii) To view the thumbnail stack once more, select the **Minimise** button again.

The appearance of the individual captured images can be manipulated if desired to improve the appearance of the overall combined image, e.g. by changing the colour of the coloured bands to produce a greater colour contrast.

(iv) Select the right arrow at the side of the thumbnail image you want to change and select a new colour from the drop down menu. To reject a colour and return to the original setting select **Default** from the drop down menu.

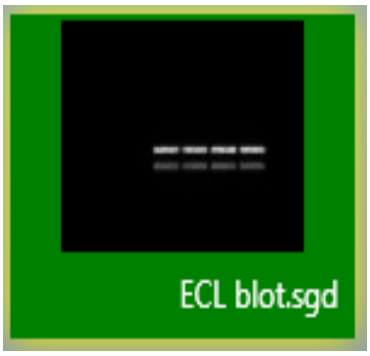
When initially captured, images in the **Image Pool** are unsaved and are outlined in red.



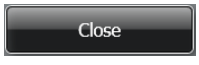
UNSAVED IMAGE POOL IMAGE

16. To save a captured image, select the image in the Image Pool and select the Save icon .

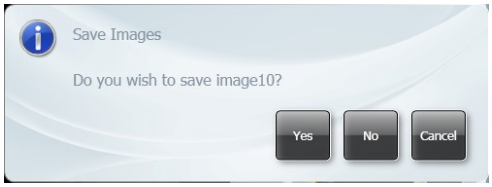
Once saved, images in the **Image Pool** are outlined in green and their filename appears below the image.



SAVED IMAGE POOL IMAGE

Images can be dismissed from the **Image Pool** by selecting them and then selecting the **Close** button 

. If an image has not been saved you will see a Save prompt.



SAVE PROMPT

(i) If multiple images are captured without any images being saved, multiple images can be selected and saved in a single operation. Check the **Multi Select Mode** checkbox in the **Image Pool** and select multiple images.

(ii) To save the selected images, select the **Save** icon .

For more information on saving refer to **Common Screen Functions and Tools**.

Manual Image Capture - Image Actions Following Capture

Further actions can be performed on captured images by selecting **Image Action** icons. The function of these is explained in other parts of this User Guide.

IMAGE ACTION ICONS

Protocols- Saving,Opening and Editing

Introduction

The VWR® Image Capture software can make the running of repeated workflows easier by storing a workflow as a Protocol. Protocols can be:

- Easily created
- Have a wide variety of settings
- Easily re-used
- Easily modified

Creating and Saving a Protocol

From Home Screen

To create a Protocol for a **Blot** from the Home screen:

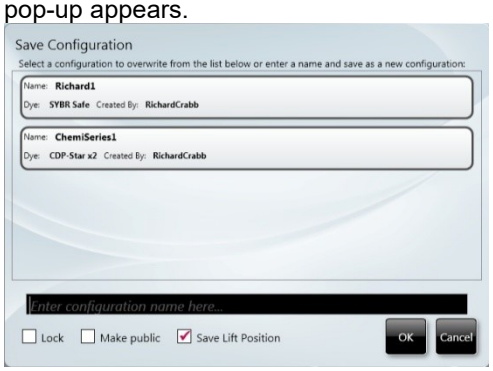
1. Work through the following process; select the Blot icon , select your sample type, select your dye, position your sample, and capture an image.

2. Once the image has been captured the Saved Protocols pop-up appears.

SAVED PROTOCOLS POP-UP

(i) Select the **Yes** button.

The **Save Protocol** pop-up appears.



SAVE CONFIGURATION POP-UP

(ii) Follow the prompt in the pop-up and either select an existing Protocol from those displayed (which will be overwritten by you saving your new Protocol), or enter a name for your new Protocol in the **Enter Protocol name here…** box, eg **ECL chemi**.

By default when you save the Protocol that you have just created, the software will only allow you to access it. This behaviour can be modified using the two checkboxes at the bottom left of the pop-up.

- Use the **Lock** checkbox to prevent adjustments being made to the Protocol.
- Use the **Make public** checkbox to make the Protocol accessible to other Users.

The new saved Protocol **ECL Blot** appears on the Home screens, eg on the Home screen:

NEW PROTOCOL - ADDED TO TOP OF LIST

By default when you save the Protocol that you have just created, the software will only allow you to access it. This behaviour can be modified using the two checkboxes at the bottom left of the pop-up.

- Use the **Lock** checkbox to prevent adjustments being made to the Protocol.

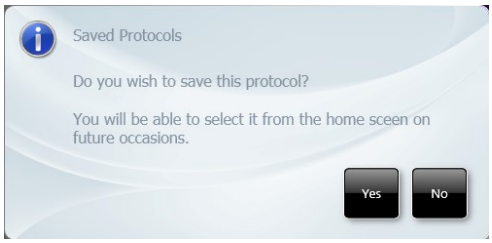
- Use the **Make public** checkbox to make the Protocol accessible to other Users.

In Auto Image Capture Mode

To create a Protocol in Auto Image Capture mode:

1. Work through the following process; select the Blot icon , select your sample type, select your dye, position your sample, and capture an image.

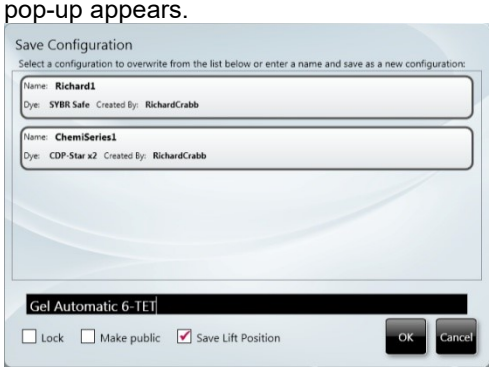
2. Once the image has been captured the Saved Protocols pop-up appears.



SAVED PROTOCOLS POP-UP

(i) Select the **Yes** button.

The **Save Protocol** pop-up appears.



SAVE CONFIGURATION POP-UP

(ii) Follow the prompt in the pop-up and either select an existing Protocol from those displayed (which will be overwritten by you saving your new Protocol), or enter a name for your new Configuration in the **Enter protocol name here…** box, eg **Blot Chemi**.

By default when you save the Protocol that you have just created, the software will only allow you to access it. This behaviour can be modified using the two checkboxes at the bottom left of the pop-up.

- Use the **Lock** checkbox to prevent adjustments being made to the Protocol.

- Use the **Make public** checkbox to make the Protocol accessible to other Users.

(iii) Select the **OK** button to save the Protocol

The new saved Protocol **Blot chemi** appears on the Home screens, eg on the Home screen:

NEW PROTOCOL - ADDED TO TOP OF LIST

In Manual Image Capture Mode

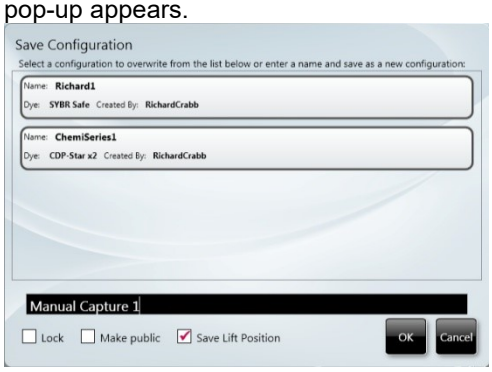
To create a Protocol in Manual Image Capture mode:

3. Work through the Manual Image Capture process described previously and capture an image.

4. Select the Save Protocol icon from the **Image Action** icons.

(i) Select the **Save Protocol** icon .

The **Save Protocol** pop-up appears.



SAVE PROTOCOL POP-UP

(ii) Follow the prompt in the pop-up and either select an existing Protocol from those displayed (which will be overwritten by you saving your new Protocol), or enter a name for your new Configuration in the **Enter protocol name here…** box, eg **Manual Capture 1**.

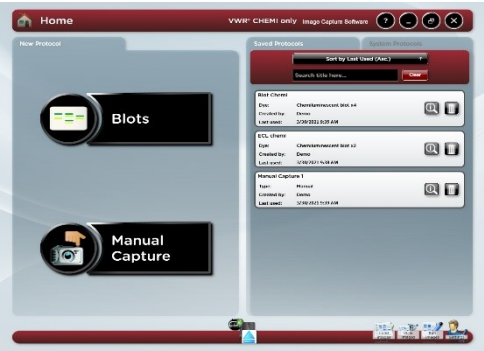
By default when you save the Protocol that you have just created, the software will only allow you to access it. This behaviour can be modified using the two checkboxes at the bottom left of the pop-up.

- Use the **Lock** checkbox to prevent adjustments being made to the Protocol.

- Use the **Make public** checkbox to make the Protocol accessible to other Users.

(iii) Select the **OK** button to save the Protocol.

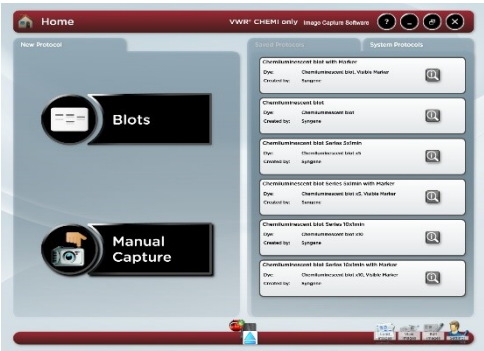
The new saved Protocol **Manual Capture 1** appears on the Home screens, eg on the Home screen:



NEW PROTOCOL- ADDED TO TOP OF LIST

Using Protocols

All accessible previously created and saved Protocols appear on the Home screens.



HOME SCREEN

Opening a System Protocol

System protocols are pre-installed configurations that the user can use for imaging some of the more common applications.

To open and use a system Protocol from the Home screen:

1. On the home screen select the 'System Protocols' tab
2. Select the Protocol you wish to use

If the protocol is in Auto Image Capture mode the system will display the Sample Positioning screen. if the protocol is in the Manual Image Capture mode the system will display the revelant Manual Capture screen with the difined protocols displayed.

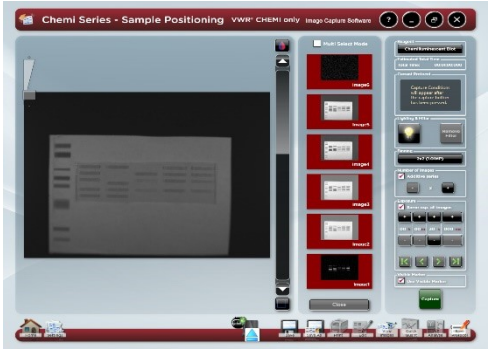
3. Position the sample and complete the the appropriate Automatic or Manual Image Capture process as described previously.

Opening a Protocol

To open and use an existing Protocol from the Home screen:

1. On the Home screen select the Protocol you want to use.

   On the Standard View Home screen you can sort and search saved protocol:
   Sort By options are: **Last Used**, **Title**, **Author**, **Type/Dye**.
   Search is by entering text in the *Search title here...* field. There is also a **Clear** button to clear entered search text.
   The software will configure your VWR® Chemi Only Instrument based on the data in the Configuration file and will take you to the following point in the image capture process:
   If the Configuration is in Auto Image Capture mode the system will display the Sample Positioning screen, as shown below:



AUTOMATIC CAPTURE SAMPLE POSITIONING

   If the Protocol is in Manual Image Capture mode the system will display the relevant Manual Capture screen with the defined protocols displayed, typically as shown below:

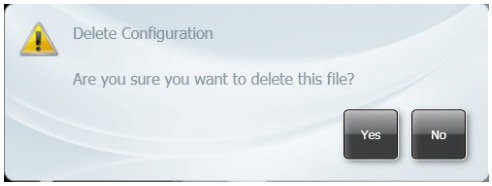
TYPICAL MANUAL CAPTURE SAMPLE POSITIONING

2. Position the sample and complete the appropriate Automatic or Manual Image Capture process as described previously.

Deleting a Protocol

To delete a Protocol from the Home screen:

3. Select the **Delete Protocol** button in the Protocol that you want to delete.



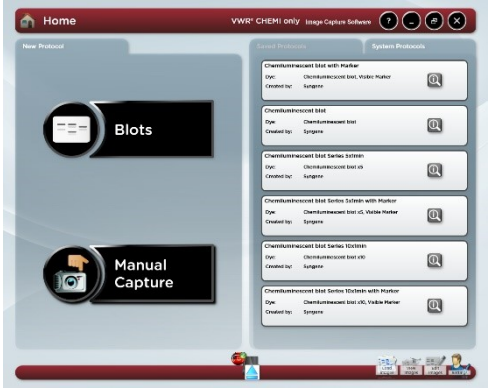
DELETE PROTOCOL POP-UP

4. In the **Delete Protocol** pop-up select the **Yes** button.

5. The selected Protocol is deleted and is no longer visible on the Home screen.

Editing a Saved Protocol

All accessible previously created and saved Protocols appear on the Home screen.



HOME SCREEN

To edit a previously saved Protocol, first open the Protocol as described previously. Then use the normal controls/actions available on the Auto Image Capture Sample Positioning screen or Manual Capture screen to change the settings.

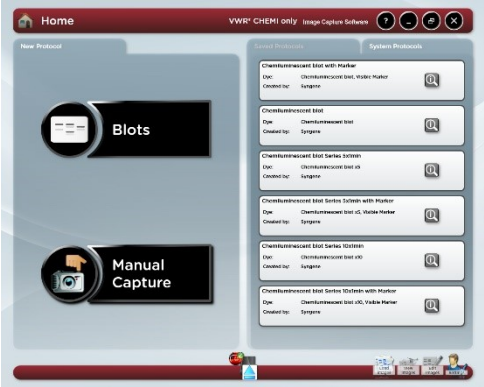
- For Auto Image Capture Sample Positioning screen refer to **Automatic Image Capture Mode**.
- For Manual Capture screen refer to **Manual Image Capture Mode**.

If you make changes to an existing Protocol and want to save the new Protocol as a new Protocol, refer to **Creating and Saving a Protocol**.

Image Functions

Load Images Screen

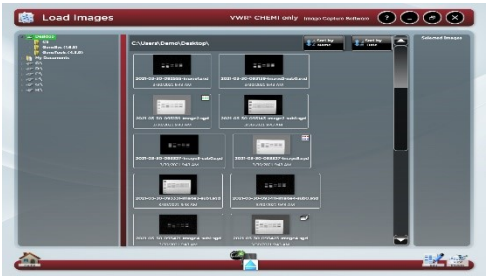
Previously saved images can be located and browsed through from the Home screen.



HOME SCREEN

Select the **Load Images** icon on the Standard View Home screen or the **Load Images** icon

on the Classic View Home screen. This displays the Load Images screen.

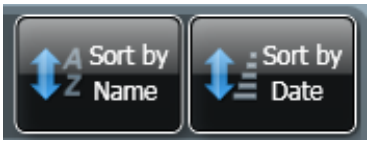


LOAD IMAGES SCREEN

- By default the software navigates to the default save location and displays thumbnail size images of all the saved images at that location. The software also maps the current drives that it can detect and connect to and displays this in the standard Windows format in the left hand pane. Images saved in other locations can be displayed by navigating to their location using the tree structure displayed in the left hand pane.

- Recovered images at the default save location are displayed in the central pane. Also displayed at the top of the central pane is the drive/folder path.

- Images displayed in the central pane of the Load Images screen can be sorted by two parameters; **Sort by Name** or **Sort by Date**. Select one of the two icons at the top of the central image pane.

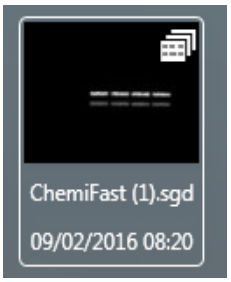


SORT ICONS

- **Sort by Name** sorts the files in the displayed drive/folder alphabetically with 'A' at the top.

- **Sort by Date** sorts the files in the displayed drive/folder by date with the most recent at the top.

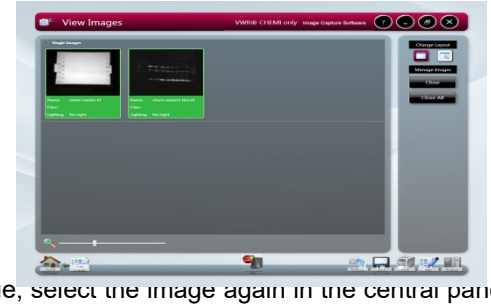
- Series images can be identified by a pattern of overlapping images in the top right hand corner of the thumbnail image, as shown below:



SERIES IMAGE THUMBNAIL

- If more images than can be displayed are available then a scroll bar appears, scrolling allows you to display the initially non-displayed images.

- Selecting an image or images in the central pane adds the selected image or images to the **Selected Images** pane. At the same time the image(s) selected in the central pane turn green, as shown below.



- To de-select an image, select the image again in the central pane or select the red **Dismiss** icon in the corner of the image in the **Selected Images** pane.

Image Actions from Load Images Screen

Once you have located your image(s) using the Load Images screen there are two image actions available; **View Images** and **Edit**. The two **Image Action** icons are displayed at the bottom of the Load Images screen.

- Initially these icons are initially greyed-out (unavailable), only becoming active once an image has been selected.

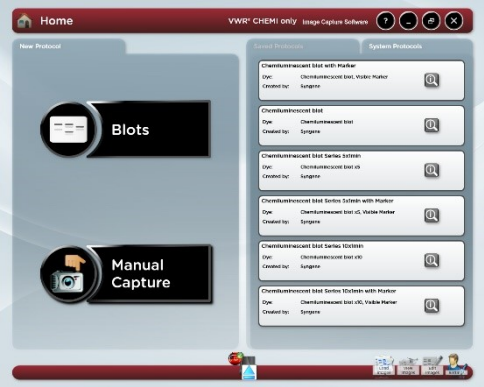
- Selecting the **View Images** icon opens the View Images screen with the image(s) selected on the Load Images screen displayed in the view pane.

- Selecting the **Edit** icon opens the Image Edit screen with the image(s) selected on the Load Images screen displayed in the **Selected Images** pane.

- For the actions that can be performed using these screens refer to **View Images Screen** and **Image Edit Screen** sections of this Guide.

View Images Screen

The View Images screen is used to view and compare captured images. Images can be saved or unsaved. The View Images screen can be accessed as follows:

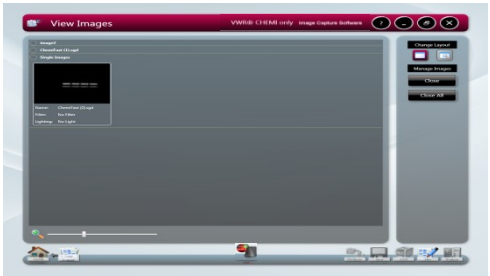


HOME SCREEN

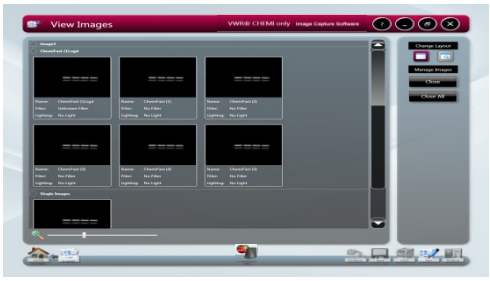
The View Images function is only available when captures have been made during the current Gel Doc session and images have been saved, are unsaved, or when previously saved images have been selected using the Load Images function.

- From the Home screen - by selecting the **View Images** icon .
- The View Images screen can also be accessed from any other screen displaying the **View Images** icon in the **Image Action** icons.

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected.



VIEW IMAGES SCREEN - SINGLE IMAGES ONLY DISPLAYED



VIEW IMAGES SCREEN - SINGLE AND MULTIPLEXED IMAGES DISPLAYED

View Images Screen - Single Images

Single image captures selected for viewing are all displayed in a division of the main left hand pane labelled **Single Images**.

View Images Screen - Multiplexed Images

Multiple image capture files, e.g. multiplexed images, selected for viewing are each displayed in a division of the main left hand pane labelled with name given to the multiplexed image file, e.g. **marker and chemi image.sgd**. The multiplexed image plus all of its constituent separate image captures, if saved, are displayed.

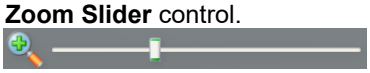
View Images Screen - Image Display Options

The View Images screen or the images displayed on it can be altered in several ways using the following options:

- Zoom
- Change Layout
- Manage Images
- Hide/Show

ZOOM

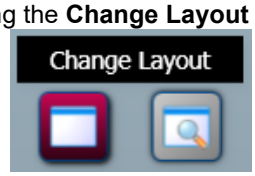
Images are displayed as thumbnails on the View Images screen. The size of the images can be changed by adjusting the **Zoom Slider** control.



ZOOM SLIDER

CHANGE LAYOUT

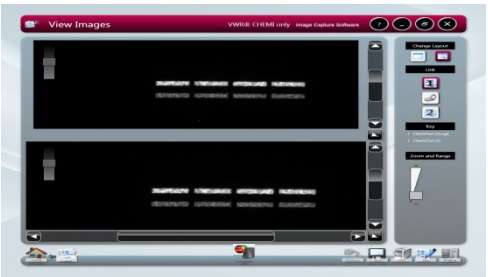
Two options are available using the **Change Layout** controls.



CHANGE LAYOUT CONTROLS

By default the View Images screen opens with the **File Display** button selected and the **Compare** button greyed-out (unavailable). The **Compare** button becomes active once files are selected in the View Images main pane.

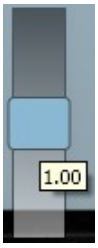
Up to four images can be selected and compared. Selecting the **Compare** button displays the Compare Images version of the View Images screen.



VIEW IMAGES - COMPARE IMAGES SCREEN

The left hand pane contains the following controls for each individual image:

- The **Gamma** slider changes the tone of the overall image. With reference to the histogram mentioned previously, the Gamma function changes the relative brightness of the recorded midrange tones by shifting them either towards the dark end or the white end of the graph, without changing the extreme dark or extreme white values. This gives the recorded image an overall darker or lighter appearance.

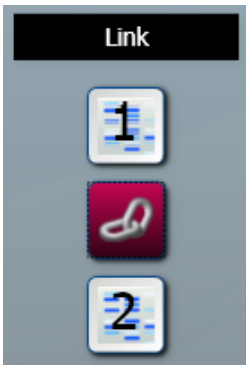


GAMMA SLIDER

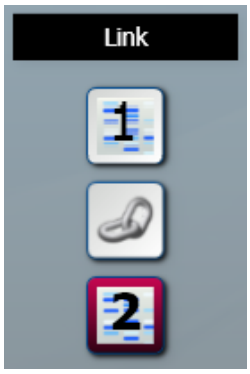
- **Scroll** bars allow you to view the entire area of an image. A horizontal scroll bar appears when the **Zoom** function is used on an image.

The right hand pane contains the following controls:

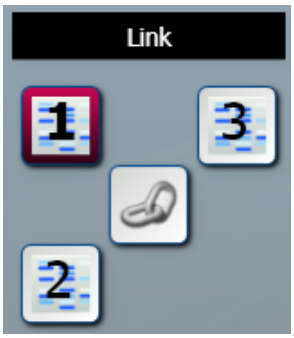
- The **Change Layout** controls.
- The **Link** controls.



TWO IMAGES - LINKED



TWO IMAGES - UNLINKED

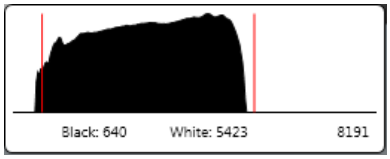


THREE IMAGES

The default setting is for images being compared to be unlinked. The numbers in the **Link** boxes correspond to the positions of the images in the left hand pane.
With the images unlinked, adjustments made using the **Scroll** bars or the **Zoom and Range** controls are applied only to the selected image. The selected image is indicated in the **Link** boxes by the selected image number being outlined red.

Images can be linked by selecting the **Link** button. With the images linked, adjustments made using the **Scroll** bars or the **Zoom and Range** controls are applied equally to all of the linked images.
Selecting one of the images in the left hand pane or one of the numbered **Link** boxes unlinks the images.
Unlinked images can be zoomed into and panned around by positioning the cursor over the selected image and when the cursor changes hold and drag to move the image around in its viewing window.

A Histogram button is displayed for each image, below the vertical **Scroll** bar. Selecting this displays a histogram or graphical representation of the distribution of grey scales recorded by the camera sensor; with black to the extreme left, white to the extreme right.



HISTOGRAM DISPLAY

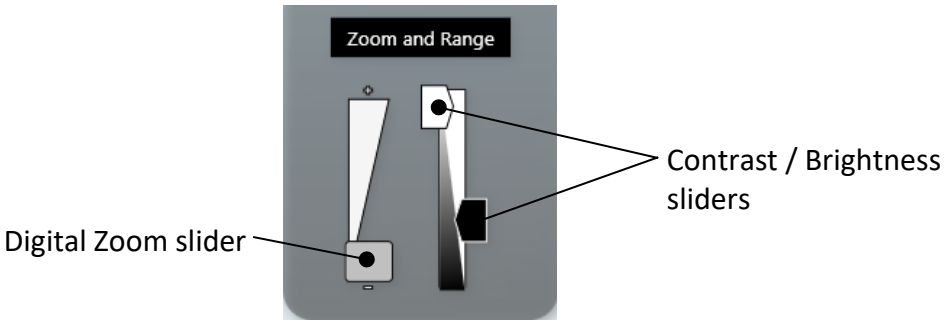
The **Histogram** button turns red to indicate that the function has been selected. Selecting the button again cancels the **Histogram** function.
The histogram is a graph showing the number of pixels in the image at each different intensity value found in that image. For a 16-bit image there are a possible 65535 different intensities so the histogram will graphically display 256 numbers showing the distribution of pixels amongst those grayscale values. If the graph is bunched up

to the left it indicates that not many grayscale levels have been captured and the red lines on the histogram graph may need to be adjusted to see bands. If the graph reaches to the far right (65535 grayscales) this indicates that the image may be saturated.
The image **Key**.

IMAGE KEY

The **Key** displays the filenames of the displayed images. As with the **Link** controls, the **Key** numbers correspond to the image positions in the left hand pane.

- The **Zoom and Range** controls.



ZOOM AND RANGE CONTROLS

The **Digital Zoom** slider allows you to zoom in or out of the displayed image. Dragging the slider towards the **+** sign zooms in, dragging the slider towards the **-** sign zooms out.
Contrast is a measure of how bright highlights are in an image. Brightness is a measure of how bright shadows are in an image. Use the **Contrast** slider to control how bright the lightest objects in an image are displayed. Use the **Brightness** slider to control how bright dark objects in an image are displayed.

Selecting the **File Display** button when on the View Images - Compare Images screen takes you back to the standard View Images screen.

MANAGE IMAGES

Two options are available using the **Manage Images** controls.

MANAGE IMAGES CONTROLS

Selecting the **Close** button closes only the selected image file(s).
Selecting the **Close All** button closes all image files.

HIDE/SHOW

Selecting the arrow Single Images (inactive) Single Images (active)next to an image title on the View screen hides the image(s) associated with that title, i.e. the thumbnails are not displayed but the image title is still displayed. This provides more area for the other images to be displayed in. The up arrow changes to a down arrow.
Hidden images can be displayed again by selecting the down arrow.

View Images Screen - Combining Single Images into a New Multiplexed Image

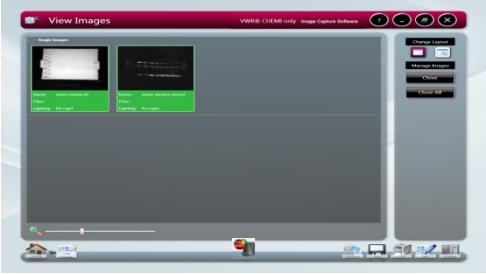
More than one single image can be combined to produce a new mutliplexed image using the **Create Multiplexed Image** icon which is displayed with the **Image Action** icons at the bottom right of the screen. The **Multiplexed Image** icon only becomes active once files are selected in the View Images main pane.

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected

To create a new multiplexed image:

6. In the **Single Images** display, select the images that you want to combine. This function

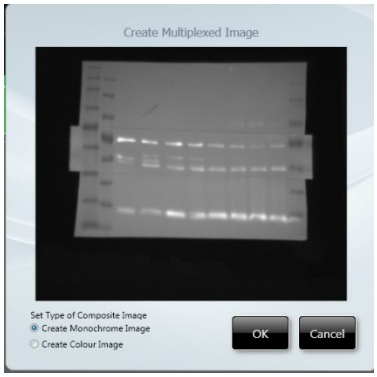
7. can also be utilised from the **Change Layout - Compare** function, in which case the images are already selected, i.e. the images you have selected to compare.



CREATE MULTIPLEXED IMAGE - IMAGES SELECTED

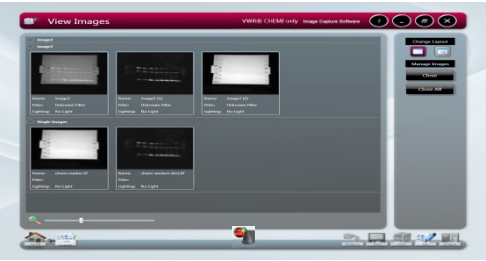
8. Select the Create Multiplexed Image button . This displays the **Create Multiplexed Image** pop-up. This shows what the multiplexed image will look like.

   Options are available using the **Set Type of Composite Image** buttons; **Create Monochrome Image**.



MULTIPLEXED IMAGE - MONOCHROME IMAGE

9. Select the **OK** button to create the multiplexed image or select the **Cancel** button to cancel the multiplexed image creation. The multiplexed image created is displayed on the View Images screen.



MULTIPLEXED IMAGE CREATED

The newly created multiplexed image now has its own row in the main left hand pane, the multiplexed image plus all of the selected constituent images are displayed.

Image Edit Screen

The Image Edit screen provides a wide variety of image manipulation options. The Image Edit screen can be accessed from other screens by selecting the **Edit** icon from the **Image Action** icons.

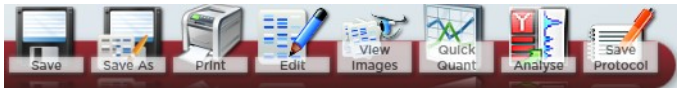


Image Edit Screen - Image Editing Main Options

The Image Edit screen provides a variety of image editing options grouped into four main options:

- General
- Annotate
- Enhance
- 3D View

By default the Image Edit screen opens in General mode.

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected.

IMAGE EDIT SCREEN - GENERAL MODE

The other main option modes are selected using the buttons in the top left hand pane.

IMAGE EDIT SCREEN - MAIN OPTION SELECTION BUTTONS

Image Edit Screen - General Option

The **General** option provides a range of basic image manipulation tools. The lower left hand pane of the **General** screen provides the following controls/functions:

- Image Source
- Rotation
- Copy Image
- Other

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected.

GENERAL CONTROLS/FUNCTIONS

IMAGE SOURCE

As you make changes to an image file the VWR® Image Capture software makes a copy of the file to which the changes are made. There are therefore two versions of the image file; the original unchanged image file, and the changed image file. The **Image Source** function allows you to view either of these two files. To view the unchanged file select the **View Original Image** button . To view the changed file select the **View Processed Image** button .

ROTATION

Displayed images can be rotated freely by selecting the **Allow Rotation** button . Once the image has been rotated the new image orientation can be fixed by selecting the **Allow Rotation** button a second time. Image orientation can be reset to its original position by selecting the **Reset Rotation** button .

COPY IMAGE

An image can be copied to the Windows Clipboard by selecting the **Copy** button

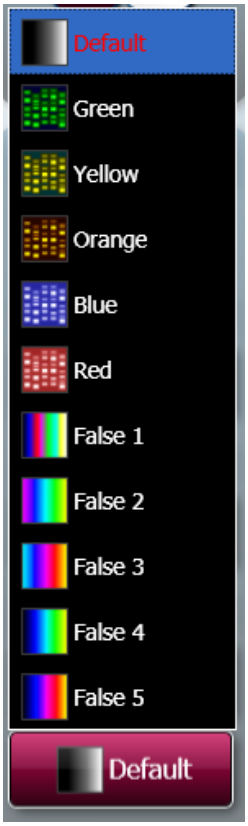
. This allows you to paste the image into another package.

OTHER

The Other functions provided are **Saturation** and **Colour**.
The **Saturation** function can be used to check if areas of the image are going to be over-exposed; over-exposed white bands will be highlighted in red on the image, over-exposed black bands will be highlighted in blue on the image. This function is useful if the **Select AutoExpose Area** function has been used. Please note that saturated bands are not quantifiable. To use this function select the **Saturation** button

.
The **Colour** function can be used to improve the appearance of an image by changing the colour of the coloured bands to produce a greater colour contrast, this can make seeing faint bands more visible. Select the **Default** button

and select a new colour from the drop-down menu. To reject a colour and return to the original setting select **Default** from the drop down menu.



OTHER FUNCTIONS - DEFAULT COLOUR MENU

The **Default** function can also be used to applied a colour wash that emulates different dyes.

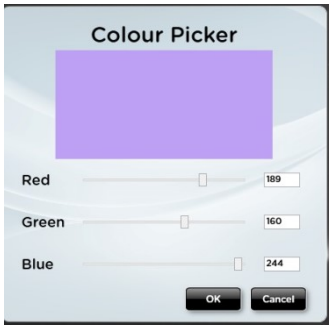
- Select the green colour wash to emulate a SYBR Green DNA gel.
- Select the yellow colour wash to emulate a SYBR Gold DNA gel.
- The orange-blue-red colour wash makes a protein gel appear silver, Coomassie blue and SYPRO red stained.

If the image being edited is a multiplex image, the colour change is applied to all of the individual exposure captures but not the composite image. To apply the colour change to the composite image as well check the **Use in Composite** checkbox.

If the image being edited is a multiplex image, the colour change is applied to all of the individual exposure captures but not the composite image. To apply the colour change to the composite image as well check the **Use in Composite** checkbox.

Use the colour picker to add a custom colour to a single image. Select the 'Colour Image'

button and then from the pop up use the slider bars to create a custom colour.



Press the 'Reset Colour' button

to remove the custom colour.

Image Edit Screen - Annote Option

The **Annotate** option provides a means of adding both textual and graphical annotations to an image. The lower left hand pane of the **Annotate** screen provides the following controls/functions:

- Image Source
- Annotation Tools
- Copy and Paste
- Edit

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected.

ANNOTATE CONTROLS/FUNCTIONS

IMAGE SOURCE

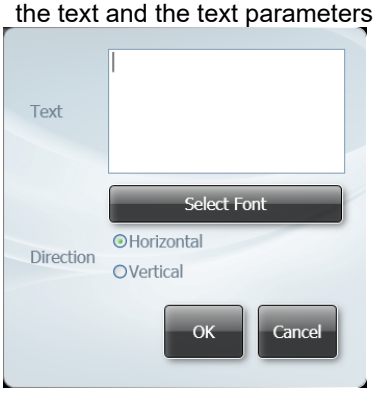
This function is as described previously in **Image Edit Screen - General Option**.

ANNOTATION TOOLS

The following image annotation tools are available:

Select tool		Polygon tool	
Pan tool		Line tool	
Text tool	Abc	Arrow tool	
Fill/No Fill tool	Fill	Select Colour tool	
Rectangle tool		Select Line Style tool	
Ellipse tool			

The **Select** tool enables you to select text or objects that you have added to an image.
The **Pan** tool enables you to pan around an image if you have enlarged it so that not all of the image is viewable in the central image viewing pane. Select the tool icon and then click and drag or touch and drag to move the image around.
The **Text** tool enables you to add text in text boxes to your image. Select the tool and position the cursor roughly where want the annotation to appear and left click/tap, and then start typing. Using the **Select** tool you can then position the text box exactly where you want it, and resize the text box horizontally and vertically. Double clicking/tapping the text enables you to change the text and the text parameters using the pop-up dialogue boxes shown below.



TEXT POP-UP 1

TEXT POP-UP 2

The font selection pop-up dialogue box is opened by selecting the **Select Font** button on the text dialogue box.
The parameters you can change are:

- The text itself. The text previously typed in the text box appears in the **Text** box. This text cab edited directly.
- Text direction (horizontal or vertical)
- Font
- Size
- Style (normal/italic/oblique) and (normal/bold)

The **Fill/No Fill** tool enables you to fill shapes that you have added to the image. Select the shape, then select a colour for the fill using the **Select Colour** tool.
The **Rectangle** tool enables you to add 4-sided shapes to an image. Draw the shape, then select it using the **Select** tool, and the shape can be positioned by dragging and resized using the visible 'handles'. A rectangle can be filled using the **Fill/No Fill** and **Select Colour** tools. The outline of a rectangle can be coloured and the style of the line can be changed using the **Select Colour** and **Select Line Style** tools.
The **Ellipse** tool enables you to add ellipses (circles) to an image. Draw the shape, then select it using the **Select** tool, and the shape can be positioned by dragging and resized using the

visible 'handles'. An ellipse can be filled using the **Fill/No Fill** and **Select Colour** tools. The outline of an ellipse can be coloured and the style of the line can be changed using the **Select Colour** and **Select Line Style** tools.
The **Polygon** tool enables you to add freehand shapes to an image. Draw the shape, then right click/double tap to stop drawing. Using the **Select** tool the shape can be 're-shaped' using the visible 'handles'. Shapes can be filled using the **Fill/No Fill** and **Select Colour** tools. The outline of the shape can be coloured and the style of the line can be changed using the **Select Colour** and **Select Line Style** tools.
The **Line** tool enables you to draw straight lines, at any angle and of any length, on an image. Draw the line, then select it using the **Select** tool, and the line can be positioned by dragging and resized using the visible 'handles'. The line can be coloured and the style of the line can be changed using the **Select Colour** and **Select Line Style** tools.
The **Arrow** tool enables you to draw a straight line with an arrowhead at one end, at any angle and of any length, on an image. Draw the arrow, then select it using the **Select** tool, and the arrow can be positioned by dragging and resized using the visible 'handles'. The arrow can be coloured and the style of the arrow can be changed using the **Select Colour** and **Select Line Style** tools.
The **Select Colour** and **Select Line Style** tools are used as described above.
COPY AND PASTE
The **Copy and Paste** function enables you to copy and paste annotations created as described above. If the paste function is used on the same image, then the pasted annotation appears directly transposed over the top of the source annotation. The pasted annotation can then be dragged to where it is required and modified/changed as described previously. A copied annotation can also be pasted into a different image, where it can be modified/changed as described previously.
To copy an annotation of any type, first select the annotation, then select the **Copy Selected Annotations** button . To paste the copied annotation, first select the destination image, then select the **Paste Annotations** button .
EDIT
The **Edit** function enables you to align and delete annotations created as described above. The align and delete functions only apply to annotations which have been selected.
To align annotations, first select the annotations (more than one selection is made by holding down the **Ctrl** key on the PC keyboard), select the **Align Selected Annotations** button , then from the drop-down menu select the alignment direction.

ANNOTATION ALIGNMENT DROP-DOWN MENU

To delete annotations, first select the annotations, then select the **Delete Selected Annotations** button .

Note: The **Delete** key on the PC keyboard can also be used to delete selected annotations.

Image Edit Screen - Enhance Option

The lower left hand pane of the **Enhance** screen provides the following controls/functions:

- Image Source
- Enhancement Tools
- Resolution

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected.

ENHANCE OPTION TOOLS/CONTROLS/FUNCTIONS

IMAGE SOURCE

This function is as described previously in **Image Edit Screen - General Option**.

ENHANCEMENT TOOLS

The following image enhancement tools are available:

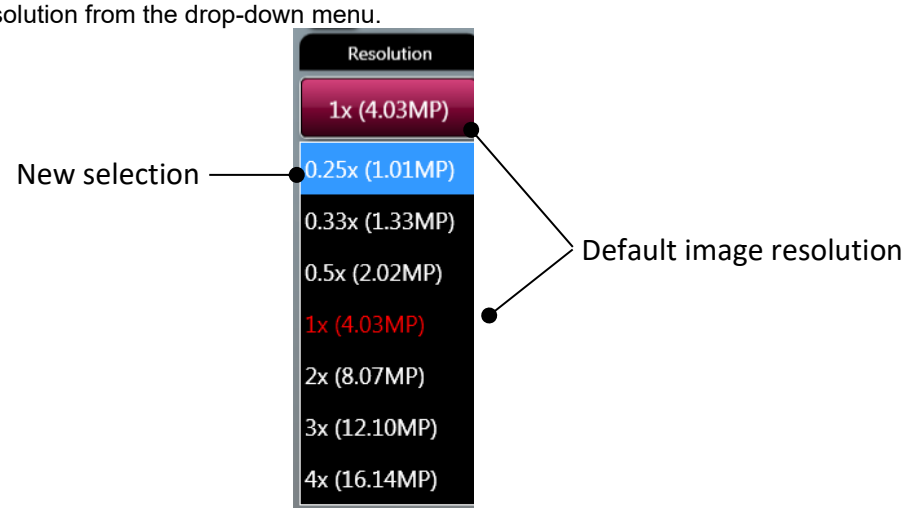
Sharpen tool		Flip Vertical tool	
Smooth tool		Flip Horizontal tool	
Invert tool		Define area to be cropped tool	
Speckle Correct tool		Crop area tool	

The **Sharpen** tool applies a sharpening filter to the selected image. The sharpening filter should make the edges of bands more pronounced. However, there may also be an increase in graininess.
The **Smooth** tool applies a smoothing filter to the selected image. This can be useful if the image has specks of dust or bubbles present. However, there may also be a reduction in band sharpness.
The **Invert** tool reverses the image, i.e. white appears black, black appears white. This can be useful when trying to view very faint bands on an image.
The **Speckle Correct** tool can be used to remove white speckles or 'hot pixels' from an image.
The **Flip Vertical** tool mirrors the selected image in the vertical plane. This can be useful if the sample has been placed in the Darkroom the wrong way round.
The **Flip Horizontal** tool mirrors the selected image in the horizontal plane. This can be useful if the sample has been placed in the Darkroom the wrong way round.
The **Define area to be cropped** tool enables you to select an area of the selected image so that you can isolate the chosen portion of the image from the rest of the image in order to view that portion more closely. Select the **Define area to be cropped** icon and draw a rectangle that covers the area you want to examine. The rectangle is outlined in pink and filled with a transparent pink fill. Select the fill area and the selection rectangle can be accurately positioned by dragging and resized using the visible 'handles'. This enables you to finely control the selected area of interest. Selecting the **Define area to be cropped** tool once more cancels the selection rectangle just made, but leaves the cursor in selection mode, allowing you to restart the selection process. Selecting the **Define area to be cropped** tool twice more cancels the selection rectangle just made and also cancels the selection function.

Once you have defined the area you want to examine more closely using the **Define area to be cropped** tool, select the **Crop area** tool to perform the crop function. The defined area is 'cut out' of the image, the rest of the image is discarded, and the cropped or 'cut out' selection is enlarged to the full viewing area.

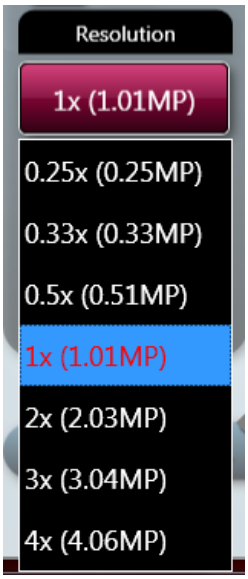
RESOLUTION

The **Resolution** tool can be used to change the resolution of the selected image. When the **Enhancement Tools** option is selected the system displays the current/default resolution of the selected image in the **Resolution** box.
To change the resolution of the current displayed image select the Resolution tool and select a new resolution from the drop-down menu.



RESOLUTION MENU

The options displayed in the Resolution drop-down menu depend on the resolution that the image is captured at, an example is shown below:



RESOLUTION MENU

Note: If you use the **Resolution** option, you can make and undo one change of image resolution. Having made a change and used the **Undo** button to revert to the original resolution, the **Resolution** option is greyed out and is unavailable. To try another resolution you must dismiss the image and reload it from the **Load Images** screen.

Image Edit Screen - General / Annotate / Enhance Options Common Controls

The central image viewing pane of the General, Annotate and Enhance options of the Image Edit Screen provide a common set of image controls.

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected.

IMAGE SLIDER CONTROLS

The following controls are available to adjust the display of a captured image.

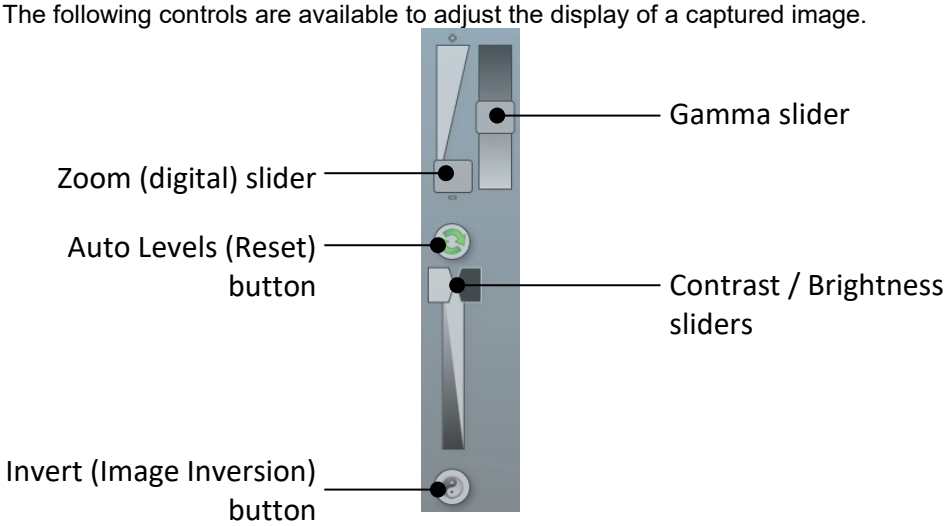


IMAGE SLIDER CONTROLS

The **Zoom** slider allows you to zoom in or out of the displayed image. Dragging the slider towards the **+** sign zooms in, dragging the slider towards the **-** sign zooms out.

The **Gamma** slider changes the tone of the overall image. With reference to the histogram mentioned previously, the Gamma function changes the relative brightness of the recorded midrange tones by shifting them either towards the dark end or the white end of the graph, without changing the extreme dark or extreme white values. This gives the recorded image an overall darker or lighter appearance.
Contrast is a measure of how bright highlights are in an image. Brightness is a measure of how bright shadows are in an image. Use the **Contrast** slider to control how bright the lightest objects in an image are displayed. Use the **Brightness** slider to control how bright dark objects in an image are displayed.
If you make changes using the sliders you can undo the changes by selecting the **Auto Levels** icon.
Use the **Invert** button to invert the image, i.e. white appears black, black appears white. This can help when making changes with the slider controls. Selecting the **Invert** button a second time changes the image back to how it was originally.

CAPTURED IMAGE INFORMATION

Select the **Image Information** icon . This displays a pop-up window displaying captured image information. The information displayed is as follows:

- Dye
- Image capture date / time
- Filter
- Light
- Exposure time
- Iris f number
- Image size
- Range (range of grey scales captured)

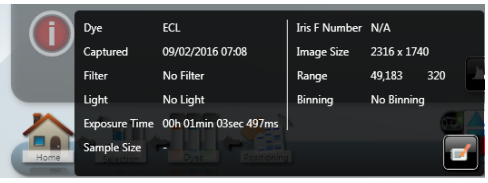
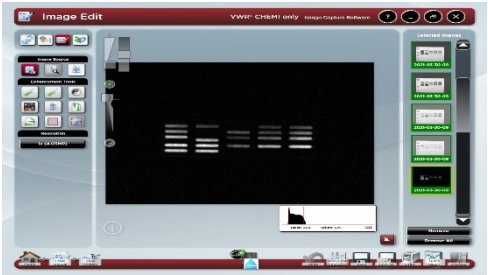


IMAGE INFORMATION POP-UP WINDOW

The **Image Information** icon turns red. Selecting the **Image Information** icon a second time closes the pop-up window.

IMAGE HISTOGRAM

Select the **Histogram** button . This displays a histogram or graphical representation of the distribution of grey scales recorded by the camera sensor; with black to the extreme left, white to the extreme right.



HISTOGRAM DISPLAY

The **Histogram** button turns red to indicate that the function has been selected. Selecting the button again cancels the **Histogram** function.
The histogram is a graph showing the number of pixels in the image at each different intensity value found in that image. For a 16-bit image there are a possible 65535 different intensities so the histogram will graphically display 256 numbers showing the distribution of pixels amongst those grayscale values. If the graph is bunched up to the left it indicates that not many grayscale levels have been captured and the red lines on the histogram graph may need to be adjusted to see bands. If the graph reaches to the far right (65535 grayscales) this indicates that the image may be saturated.

Image Edit Screen - 3D View Option

The **3D View** screen presents the selected image in three-dimensional form, revealing gel thickness, and with the peaks representing (and being proportional to) the distribution of grey scales recorded by the camera sensor.

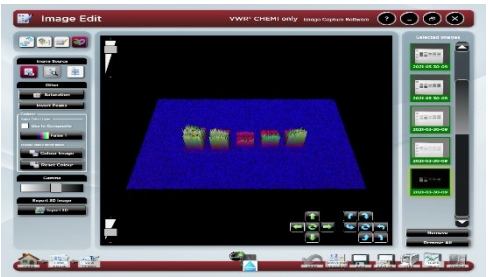
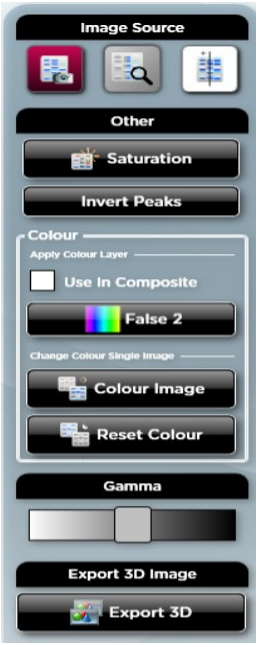


IMAGE EDIT SCREEN - 3D VIEW OPTION

The lower left hand pane of the **3D View** version of the screen provides the following controls/functions:

- Image Source
- Other
- Gamma

Note: Selected function buttons turn red. They stay red and the function remains active until the function button is re-selected.



3D VIEW OPTION CONTROLS/FUNCTIONS

IMAGE SOURCE

This function is as described previously in **Image Edit Screen - General Option**.

OTHER

The **Saturation** and **Default** functions are as described previously in **Image Edit Screen - General Option**.

INVERT PEAKS

Select invert peaks to invert the band peaks on the 3D view.

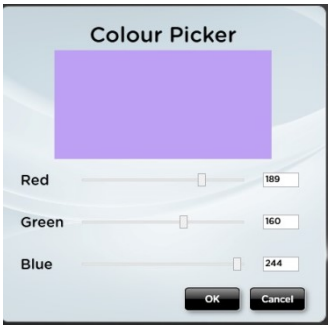
COLOUR

The **Colour** function can be used to improve the appearance of an image by changing the colour of the coloured bands to produce a greater colour contrast; this can make seeing fainter bands more visible.

The image being viewed in the 3D view is a multiplex; the colour change is applied to all of the individual exposure captures but not the composite image. To apply the colour change to the composite image as well check the **Use in Composite** check box.

Use the colour picker to add a custom colour to a single image. Select the 'Colour Image' button

and then from the pop up use the slider bars to create a custom colour.



Press the 'Reset Colour' button

to remove the custom colour.

GAMMA

The **Gamma** slider changes the tone of the overall image. With reference to the histogram mentioned previously, the Gamma function changes the relative brightness of the recorded midrange tones by shifting them either towards the dark end or the white end of the graph, without changing the extreme dark or extreme white values. This gives the recorded image an overall darker or lighter appearance.

IMAGE EDITING FUNCTIONS

The central image viewing pane of the **3D View** option of the Image Edit Screen provides the following functions for altering the view of the displayed image:

Pan Up control		Rotate Right control	
Reset Pan button		Rotate Forward control	
Pan Down control		Rotate Anti-clockwise control	
Pan Left control		Reset Rotation button	
Pan Right control		Rotate Clockwise control	
		Rotate Backward control	
		Rotate Left control	

Selecting an action by clicking or tapping on an icon once moves the image in the relevant direction by a programmed amount or step. The image can be moved in the relevant direction continuously by 'holding down' the icon.
Selecting either of the **Reset** icons resets the image back to its original position.
The **Zoom** control, located in the upper left hand corner of the viewing pane, magnifies/reduces the size of the image within the viewing pane.

ZOOM SLIDER

The **Scale** control, located in the lower left hand corner of the viewing pane, increases/decreases the vertical axis used to display the distribution of grey scales information.

SCALE SLIDER

Image Edit Screen - All Options Common Controls

ACTION ICONS

All four of the Image Edit main option screens provide the same **Action** icons across the bottom of the screen.
The left hand group of **Action** icons is as follows:

- Selecting the **Load Images** icon takes you back to the Browse Images screen, allowing you to search for images.

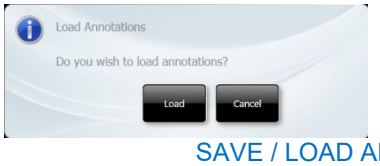
- Selecting the **View Images** icon takes you back to the View Images screen, allowing you to view and compare captured images.

The right hand group of **Action** icons is as follows:

- The **Undo last change** icon only becomes active once you have performed an action on an image, e.g. added an annotation. Selecting the active **Undo last change** icon takes you back to the position you were in prior to your last action, e.g. the annotation you just added is removed.

- The **Save/Load Annotations** icon saves any annotations that you have made on an image into a separate annotation file. This separate annotation file can be opened and the annotations applied to more than one image. This is useful when capturing a series of similar images which need to be annotated identically for comparison purposes.

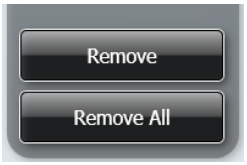
  Selecting the **Save/Load Annotations** icon calls up a Save/Load Annotations dilaogue box which you use to either save your annotations to a particular file, or load a previously saved set of annotations.



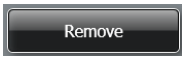
SAVE / LOAD ANNOTATIONS DIALOGUE BOXES

RIGHT HAND PANE

The right hand pane of all four of the Image Edit main option screens provides the same information.
The right hand pane contains the image pool of images selected for editing. Each image is displayed in the image pool as a thumbnail. If more than one image thumbnail is displayed, the currently displayed image is highlighted yellow. To change the image displayed, select the image in the right hand pane.
At the bottom of the right hand pane there are two buttons for dismissing images from the image pool, as follows:



REMOVE / REMOVE ALL BUTTONS

Selecting the **Remove** button 

dismisses the currently selected image from the image pool.

Selecting the **Remove All** button

dismisses all images from the image pool.

Common Screen Functions and Tools

The following general **Action** icons are available when using the VWR® Image Capture software:

The **Home** icon when selected takes you back to the VWR® Image Capture Home screen.

The **Save** icon is used to save captured/modified images.

The **Print** icon is used to print an image.

The **Analyse** icon is used to export an image to the VWR® Gel Doc Software package for further analysis.

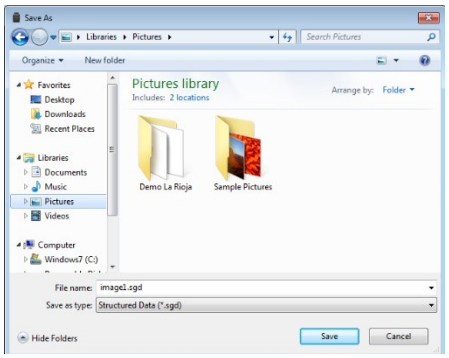
Action icons can only be selected once they are active, i.e. they are coloured in.

Saving Images

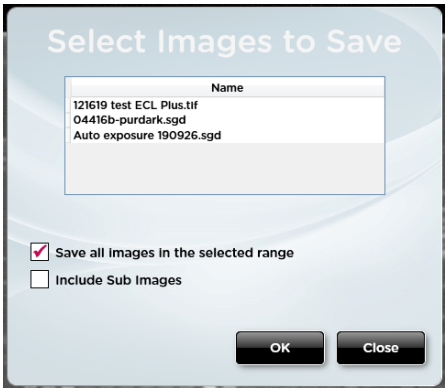
Any time that an image is captured or in some way changed, e.g. annotated, colour washed for increased contrast, etc, and the **Save** icon is active, using the Gel Doc Image Capture software you have the opportunity to save the image.

Select the **Save** icon from the bottom of the screen. This displays the standard Windows™ **Save** screen.

From the pop-up save dialog box browse the file saving location and easily edit the file name before saving. All images will be saved in the .sgd file format which is a Structured data file which contains lots of useful diagnostic information particularly important if you have any support questions. **N.B** the windows pop up only appears if you are saving a single image.

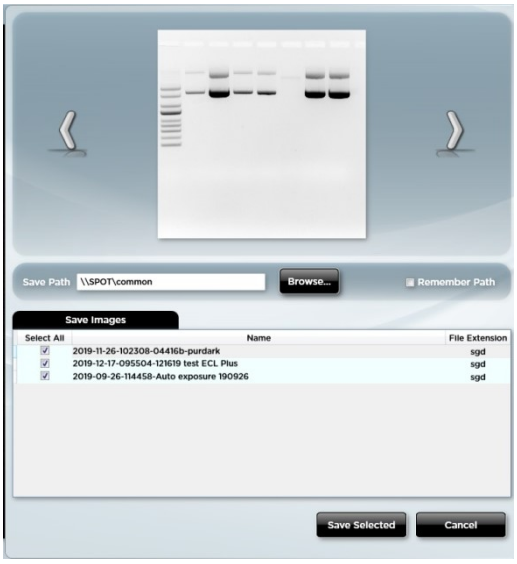


To save batches of images at the same time which is particularly useful for multiplexed images, if you have captured a series of images or if you have captured several images in one session then check the' Multi select mode' check box and then select the images you wish to save from the image pool then select the save icon.
From the pop-up window the list of images that you have selected will appear. Check the box to save all images in the selected range or to include sub images. Then press ok.



SELECTED IMAGES SAVE SCREEN

If ‘OK’ button has been selected then a second save screen will appear showing a preview image once an image has been selected. Enter a save path by using the browse button. Check the box to ‘Remember the Path’ if saving images to the same location each time.



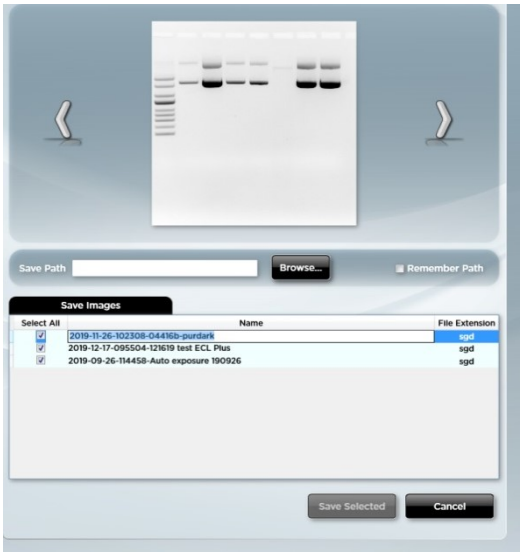
From the save screen the file name can be changed the default is set to the date and time the image was captured. To change the file name select the image from the list and type the new file name in the box. If you change the file name of an image that has sub images associated to it Gel Doc image capture software will also automatically change the file name for the sub images too.

If ‘OK’ button has been selected then a second save screen will appear showing a preview image. Enter a save path by using the browse button. Check the box to ‘Remember the Path’ if saving images to the same location each time.

Note Save selected button will

be greyed out until a ‘Save Path ‘has been entered.

From the save screen the file name can be changed the default is set to date and time. To change the file name select the image from the list and type the new file name in the box.



CHANGING FILE NAME

Select 'Save Selected' **Save Selected** button to save your images in the Structured file format .sgd.

Save As

The 'Save As' feature in Gel Doc image capture software allows the user to save the image in the following file formats Tiff, Bmp and Jpg. From the pop up window use the drop down menu's to select which image to export from to which image to export to.

Check the box to export all images in the selected range. Then select to export as 'displayed' or as captured'. As displayed will export your image with any edited features you may have performed such as, changing the contrast and brightness of an image or if you have rotated or cropped the image. As captured will export the image as it was captured.

You can also from the capture or edit screen check the 'multi select mode' check box and then select the images you wish to export from the image pool.

From the pop-up window the list of images that you have selected will appear. Check the box to export all the images in the selected range and then 'as displayed' or 'as captured'. Then press ok.

Select

to continue to save images or select

You easily edit the file name of any image selected and if you change the file name of an image that has sub images associated to it Gel Doc image capture software will automatically change the file name for all the sub images too.

You can export your images as Tiff, bmp or jpeg file formats. Select your preferred file format from the drop down list. – this can also be selected as a default setting in the setting menu.

For publication purposes you can adjust the bit depth and dpi of tiff images.

If ‘OK’ button has been selected then a second save screen will appear showing a preview image. Enter a save path by using the browse button. Check the box to ‘Remember the Path’ if saving images to the same location each time.

Note Save selected button will be greyed out until a ‘Save Path ‘has been entered.
From the save screen the file name can be changed the default is set to date and time. To change the file name select the image from the list and type the new file name in the box. The file extension can be

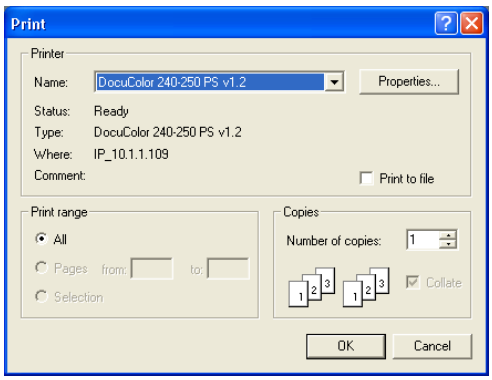
changed to any of the following formats .Tif,.bmp and .JPG. The DPI can also be altered from 96-1500 dpi and the bit depth from 8 bits to 16 bits using the drop down menus.

Select 'Save Selected' button to save your images in the file format of your choice.

Printing

Any time that an image is captured, viewed, or in some way changed, e.g. annotated, colour washed for increased contrast, etc, and the **Print** icon is active, using the VWR® Image Capture software you have the opportunity to print the image.

Note: The **Print** dialogue box will change depending on the version of Windows™ that you are using.



TYPICAL PRINT DIALOGUE BOX

Select your printer in the **Printer** box, **Name:** field.
Select the range of pages you want to print in the **Print range** box.
Select the printer settings you want to use by selecting the **Properties...** button.
Select the number of copies you want to print in the **Copies** box, **Number of copies:** field.

What is printed depends on the selections made on the User Preferences screen, as follows:

- **Full Report** - checking this checkbox sets the Instrument to generate a Full Report for each test. The Full Report content can be controlled using the additional checkboxes, check to include the feature:
  - Image
  - File Description
  - Capture Properties
- **Basic Report** - checking this checkbox sets the Instrument to generate a Basic Report for each test. Additional features are:
  - Basic Report Image Only - if the checkbox is checked, the printed report contains only the captured image for the test. If not checked, the report contains the image plus some basic information, e.g. filename / username / date / time / sample / filter, etc.
  - Preview Before Printing - if the checkbox is checked, the screen displays a preview of the report before it is printed. If not checked, the report is printed without a preview being displayed. If this option is checked when you select more than one image and then select print you have to go through a print preview stage for each image.

The print function is actioned by selecting the **Print** icon from the bottom of the screen.
What is printed also depends on the following:

- Printing from the View Images screen.
- Printing from the Image Edit screen.

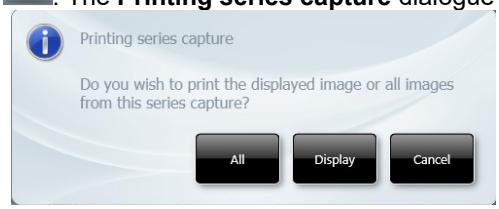
- Printing a single image capture.
- Printing an additive series capture.
- Printing a multiplex capture.

SINGLE IMAGE CAPTURE

From View Images, single images can be selected and printed individually or multiple single images can be selected and printed collectively.
From Image Edit, single images can be selected and printed individually.

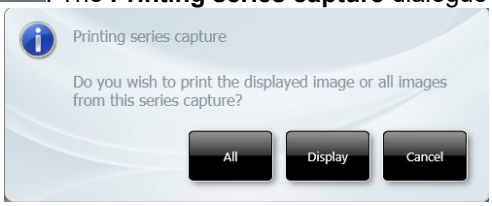
ADDITIVE SERIES CAPTURES

OPTION 1
From View Images, to print the constituent images:
Select the additive image.
Select the **Print** icon . The **Printing series capture** dialogue box is displayed.



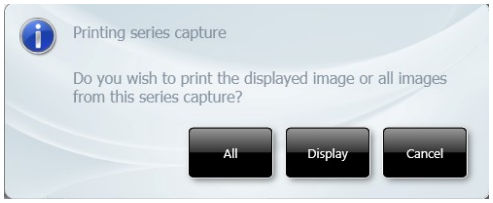
PRINTING SERIES CAPTURE DIALOGUE BOX

Select the **All** button. All of the constituent image captures print. The additive image does not print.
OPTION 2
From View Images, to print the additive image:
Select the additive image.
Select the **Print** icon . The **Printing series capture** dialogue box is displayed.



PRINTING SERIES CAPTURE DIALOGUE BOX

Select the **Display** button. The additive image prints (blank sheet).
OPTION 3
From View Images, to print a single constituent image:
Select the constituent image.
Select the **Print** icon .
The selected constituent image prints.
OPTION 4
From View Images, to print more than one constituent image:
Select the constituent images.
Select the **Print** icon .
The selected constituent images print.
OPTION 5
From Image Edit, to print all of the constituent images:
Select any one of the constituent image thumbnails.
Select the **Print** icon . The **Printing series capture** dialogue box is displayed.



PRINTING SERIES CAPTURE DIALOGUE BOX

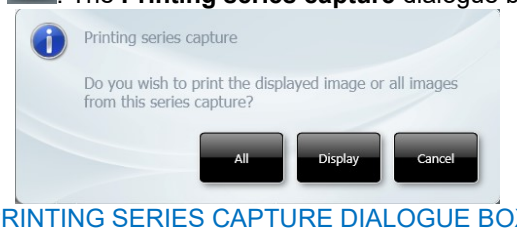
Select the **All** button. All of the constituent image captures print. The additive image does not print.

OPTION 6

From Image Edit, to print any one constituent image:

Select one of the constituent image thumbnails.

Select the **Print** icon . The **Printing series capture** dialogue box is displayed.



PRINTING SERIES CAPTURE DIALOGUE BOX

Select the **Display** button. The selected constituent image prints.

MULTIPLEX CAPTURES

OPTION 1

From View Images, to print the multiplexed image plus the constituent images:

Select the multiplex image.

Select the **Print** icon . The **Printing multiplex** dialogue box is displayed.

PRINTING MULTIPLEX CAPTURE DIALOGUE BOX

Select the **All** button. The multiplexed image (blank page) plus all of the constituent images print.

OPTION 2

From View Images, select the additive image:

Select the **Print** icon . The **Printing multiplex** dialogue box is displayed.

PRINTING MULTIPLEX CAPTURE DIALOGUE BOX

Select the **Display** button. The currently displayed image prints.

OPTION 3

From View Images, to print a single constituent image:

Select the constituent image.

Select the **Print** icon .

The selected constituent image prints.

OPTION 4

From View Images, to print more than one constituent image:

Select the constituent images.

Select the **Print** icon .
The selected constituent images print.
OPTION 5
From Image Edit, to print the multiplexed image plus the constituent images:
Select the multiplexed image from the thumbnails.

Select the **Print** icon . The **Printing multiplex** dialogue box is displayed.

PRINTING MULTIPLEX CAPTURE DIALOGUE BOX

Select the **All** button. The multiplexed image plus all of the constituent images print.
OPTION 6
From Image Edit, to print the multiplexed image:
Select the multiplexed image from the thumbnails.

Select the **Print** icon . The **Printing multiplex** dialogue box is displayed.

PRINTING MULTIPLEX CAPTURE DIALOGUE BOX

Select the **Display** button. The selected multiplexed image prints.
OPTION 7
From Image Edit, to print the multiplexed image plus the constituent images:
Select one of the constituent image thumbnails.

Select the **Print** icon . The **Printing multiplex** dialogue box is displayed.

PRINTING MULTIPLEX CAPTURE DIALOGUE BOX

Select the **All** button. The multiplexed image plus all of the constituent images print.
OPTION 8
From Image Edit, to print any one constituent image:
Select one of the constituent image thumbnails.

Select the **Print** icon . The **Printing series capture** dialogue box is displayed.

PRINTING MULTIPLEX CAPTURE DIALOGUE BOX

Select the **Display** button. The selected constituent image prints.

FULL REPORT PRINT OPTIONS

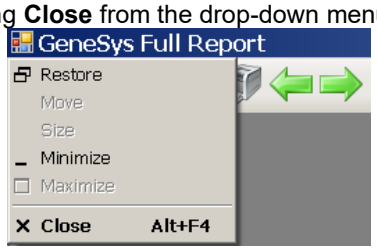
If the **Full Report** option is selected on the User Preferences screen, when you select the **Print** icon you can view pages of the report and access the print settings screens using the icons at the top of the screen.

The following actions are available:

Zoom in		Printer Setup	
Zoom out		Print	
No zoom		Previous	
		Next	

EXIT WITHOUT PRINTING

Having made your selections, if for some reason having previewed the report, either Full or Basic, you do not want to print the report you can exit the Print function without printing by selecting the **Report** icon at the top left of the screen and selecting **Close** from the drop-down menu.



EXIT WITHOUT PRINTING

Operator Maintenance

Looking After a VWR® Chemi Only Instrument

A VWR® Imager Chemi Only Instrument does not require regular maintenance or calibration other than occasional checking and cleaning.

Cleaning a VWR® Chemi Only Instrument

WARNING	**Switch off the instrument and unplug the mains power cord from the electrical supply.**

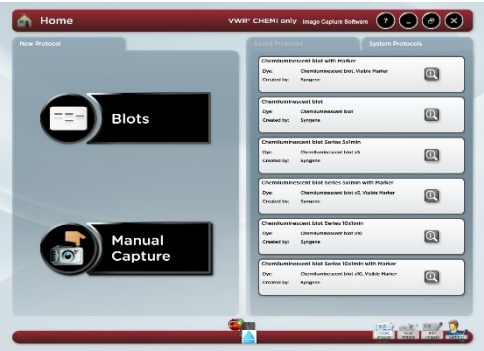
The outside of the VWR® Chemi Only Instrument can be cleaned using a soft lint-free cloth, moistened if required with a little water. Mild detergent may be used, if necessary. Do not use abrasive or solvent based cleaning materials. Always perform a patch test on an inconspicuous area before you clean the entire surface.
Surfaces which may become contaminated with biochemical materials/reagents, e.g. the interior surfaces of the Darkroom, the Black Tray, can be cleaned using a soft lint free cloth and a non-fluorescent cleaning agent such as; a neutral detergent or 70% ethanol solution.
Avoid spilling any liquid into the body of the instrument and clean any external spills immediately. If any liquid enters the main body of the instrument, make the instrument inoperative and contact the supplier.

Contacting VWR International

If it becomes necessary to contact VWR International the following information will be required:

- Unit Serial Number
- Camera
- VWR® Image Capture Version
- Database Version

The Unit Serial Number can be found on a sticker on the back of the Darkroom. The other system information can be found from the VWR® Imager Capture software Home screens, as shown below:



HOME SCREEN

On the View Home screen, select the icon in the Title Bar. The About VWR® Image Capture pop-up appears:

ABOUT VWR® Image Capture software POP-UP

Select the **OK** button to close the pop-up.

Technical service

Web Resources

Web Resources

Visit the VWR website at **www.vwr.com** for:

• Complete technical service contact information

• Access to the VWR Online Catalogue, and information about accessories and related products

• Additional product information and special offers

Contact us For information or technical assistance contact your local VWR representative or visit. www.vwr.com.

Warranty

VWR warrants that this product will be free from defects in material and workmanship for a period of two (2) years from date of delivery. If a defect is present, VWR will, at its option and cost, repair, replace, or refund the purchase price of this product to the customer, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse, or misapplication, or from ordinary wear and tear. If the required maintenance and inspection services are not performed according to the manuals and any local regulations, such warranty turns invalid, except to the extent, the defect of the product is not due to such non-performance.

Items being returned must be insured by the customer against possible damage or loss. This warranty shall be limited to the aforementioned remedies. IT IS EXPRESSLY AGREED THAT THIS WARRANTY WILL BE IN LIEU OF ALL WARRANTIES OF FITNESS AND IN LIEU OF THE WARRANTY OF MERCHANTABILITY.

Compliance with local laws and regulations

The customer is responsible for applying for and obtaining the necessary regulatory approvals or other authorisations necessary to run or use the Product in its local environment. VWR will not be held liable for any related omission or for not obtaining the required approval or authorisation, unless any refusal is due to a defect of the product.

VWR® Chemi Only Troubleshooting

PROBLEM	POSSIBLE CAUSE	SOLUTION
Camera not connected or not responding.	Camera USB cable not plugged in. Software driver for the camera is missing.	Make sure all cables are connected as shown in Instrument Set-up and/or the Installation Quick Guide. Install camera driver. Press the refresh button on the VWR® Chemi Only.
Chemi Substrate not in list.	The dye that you are using is not currently listed in the database.	Contact VWR International

Disposal

Disposing of a VWR® Chemi Only

This equipment is marked with the crossed out wheeled bin symbol to indicate that this equipment must not be disposed of with unsorted waste.

Instead it's your responsibility to correctly dispose of your equipment at lifecycle -end by handling it over to an authorized facility for separate collection and recycling. It's also your responsibility to decontaminate the equipment in case of biological, chemical and/or radiological contamination, so as to protect from health hazards the persons involved in the disposal and recycling of the equipment.

For more information about where you can drop off your waste of equipment, please contact your local dealer from whom you originally purchased this equipment.

By doing so, you will help to conserve natural and environmental resources and you will ensure that your equipment is recycled in a manner that protects human health.

Thank you

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