



FastGene®

FAS-X

Gel Documentation System

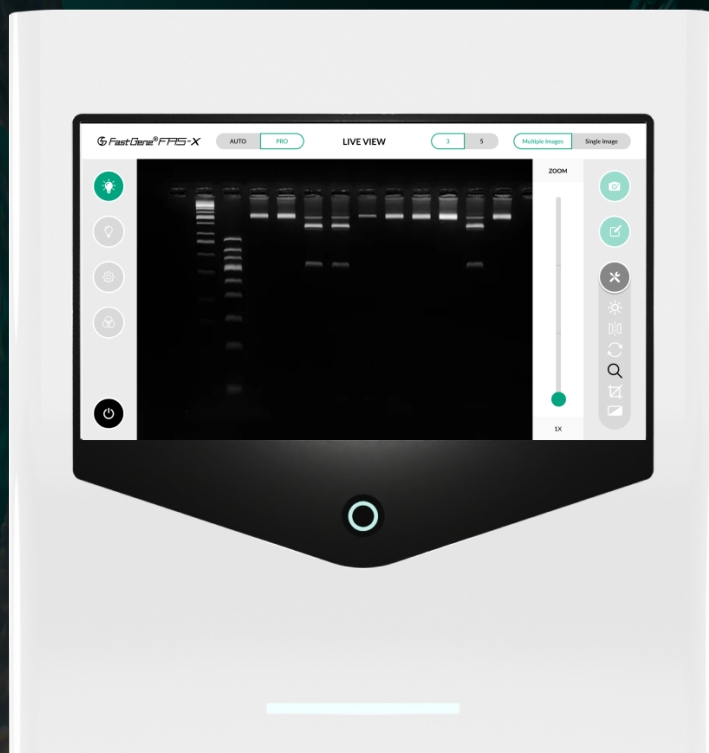
Catalog #: GP-FAS-X

WELCOME TO

FastGene® FAS-X



NIPPON Genetics EUROPE
INNOVATION FOR YOU



Software version: 2.0.0

Manual version: 6.0



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1. General Information

1.1. Safety information

Please read carefully the following notes to be able to properly use the FastGene® FAS-X imaging system.

⚠ Please wear the appropriate personal protective equipment (amber goggles).

⚠ Please read the safety precautions stated in this operating manual.

⚠ Using FastGene® Blue/Green LED technology will normally not injure eyes, skins, and samples. However, prolonged exposure of human naked eyes with light irradiation in the blue spectrum may increase the probability of suffering from retina diseases. Therefore, we recommend using the amber goggle, when handling the transilluminator while the FastGene® FAS-X is open.

⚠ The transilluminator will get warm due to the operation. The temperature is not harmful and will not cause any defects.

⚠ Operate the FAS-X only if it is connected to a safety socket.

⚠ Place the unit on a level and stable surface with minimal chance of dropping.

⚠ Only use the added power supply or an equal one.

⚠ The transilluminator can heat up after some time

1.2. Warranty

The FastGene® FAS-X is warranted against defects in materials and workmanship for 1 year. In case of any defects occurring in the instrument or accessories during this warranty period, NIPPON Genetics EUROPE will repair or replace the defective parts at its discretion without charge.

The following defects, however, are specifically excluded:

- Defects caused by improper operation.
- Repair or modification done by anyone other than NIPPON Genetics EUROPE or an authorized agent.
- Damage caused by substituting alternative parts.
- Use of fittings or spare parts supplied by anyone other than NIPPON Genetics EUROPE.
- Damage caused by accident or misuse.
- Damage caused by disaster.
- Corrosion caused by improper solvent or sample.

For any inquiry or request for repair service, contact NIPPON Genetics EUROPE or your local distributor. Please send a message containing information about the model and serial number of your instrument.

1.3. Regulatory notice

IMPORTANT: This NIPPON Genetics EUROPE instrument is designed and certified to meet safety standards and EMC regulations. Certified products are safe to use when operated in accordance with the instruction manual. This instrument must not be modified or altered in any way. Alteration of this instrument will:

- Void the manufacturer's warranty
- Void the safety and EMC certification
- Create a potential safety hazard

NIPPON Genetics EUROPE is not responsible for any injury or damage caused by the use of this instrument for purposes other than those for which it is intended, or by modifications of the instrument not performed by NIPPON Genetics EUROPE or an authorized agent.

1.4. Important notice

Please, read the installation instruction carefully before installing the FastGene® FAS-X. This instrument is intended for clinical and research laboratory use with DNA gel activation and it must be operated only by specialized personnel aware of the potential risks associated with the chemical and biological agents normally used with this unit and the health risks associated with blue light radiation. Please wear the amber goggle for your own protection!

Please make sure to connect the instrument only to a safety socket!

1.5. General precaution

- Plug the transilluminator on an electric line with ground connection by using the annexed power adaptor.
- Do not pour liquids directly on the transilluminator.
- Switch off the instrument immediately after usage.
- Position the transilluminator to prevent harm to nearby operators.
- Before you switch on the transilluminator, please wear amber goggles.
- Clean with ddH₂O, alcohol or appropriate cleaning agents according to the chemicals used.
- Always wear disposable gloves.

2. Specifications

Illuminator (built-in)

Built-in Blue-Green light	470-520 nm
View Area	26 x 21 cm

White light plate (accessory)

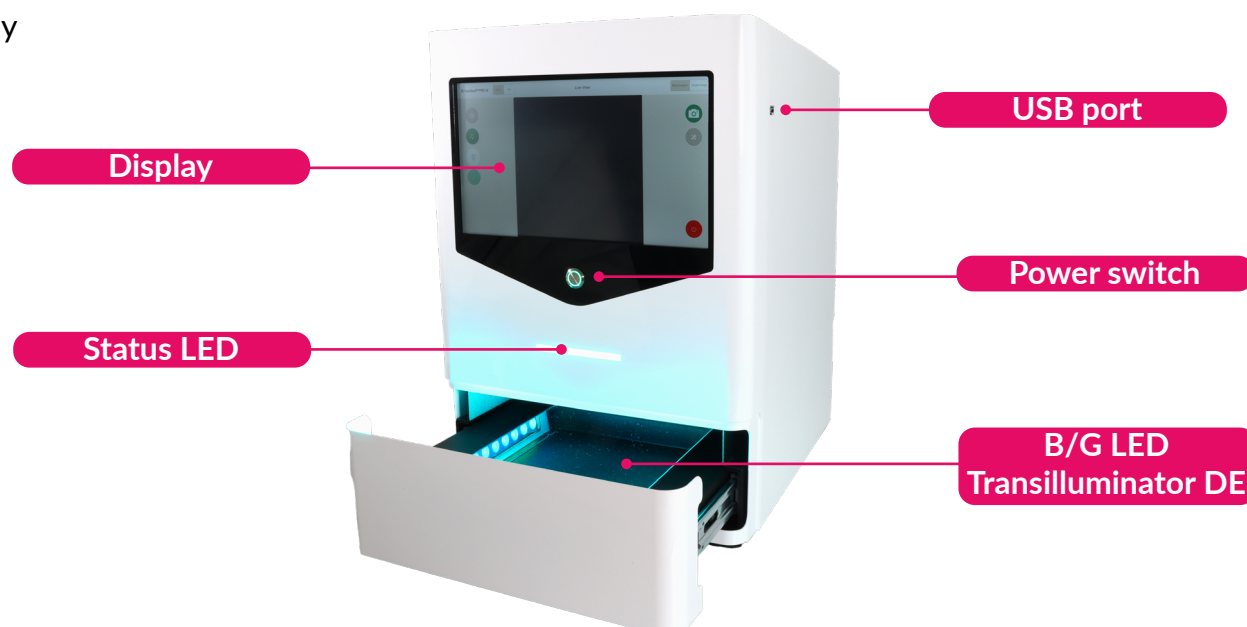
External white light plate	Build-in battery or power supply via USB port
Dimension	29 x 20 x 0.8 cm
View area	22 x 16 cm
LEDs	Daylight LEDs, colour temp.: 5000 K, CRI = 95
Weight	570 g

Unit

Material	Painted metal
Rated Voltage	100-240 V~, 50/60 Hz for the power adapter
Output power adapter	24V, 6A
Dimension (H x L x W)	532 x 443 x 375 mm
Weight	20 kg
Touchscreen	13,3 inch glove compatible touch screen 1920 x 1080
Software	Integrated imaging FAS-X control software
Internal Storage	128 GB
White light	Integrated epi-white LED light
Camera	20 MPixel, f 12 mm
Access	Transilluminator with draw function
Connectivity	LAN, 3x USB 3.0
Accessory	Amber goggles, white light plate

3. Nomenclature

- Blue/Green LED Transilluminator DE
- USB port
- Amber goggles
- White light plate
- Cables:
 - a. Power cable for connecting a power socket with the power adaptor
- Status LED
- Power switch
- Display





Part I: Installation

4. Installation guide - setting up the FAS-X

Place the unit on a level surface with minimal chance of dropping.

4.1. Connecting the cables

1. Connect the 24 V 6 A power adapter to a safety socket.
2. Connect the power adaptor with the power inlet of the FastGene® FAS-X on the back of the equipment (*).

If necessary, connect the network cable to the network input.

You can also use USB ports on the back to connect a mouse and/or keyboard (not included).

Only use the equipped power adapter or an equal one.

3. Switch on the unit by pressing the black switch (#) on the back of the FAS-X. The running blue light is displayed on the front of the FAS-X.



4.2. Status LED

Please refer to the table below to familiarise yourself with the various status LEDs of the FAS-X when you encounter the following conditions/situations:

Conditions/situations	Status LED
1. FAS-X receives electricity but it is turned off	Only white button
2. Booting	Running white light
3. Software is on	Static blue light
4. Blue/Green light is on	Static Blue/Green light
5. White light is on	Static white light
6. Capturing image with Blue/Green light with or without image preview	Running Blue/Green light until the image is saved
7. Capturing image with white light with or without image preview	Running white light until the image is saved

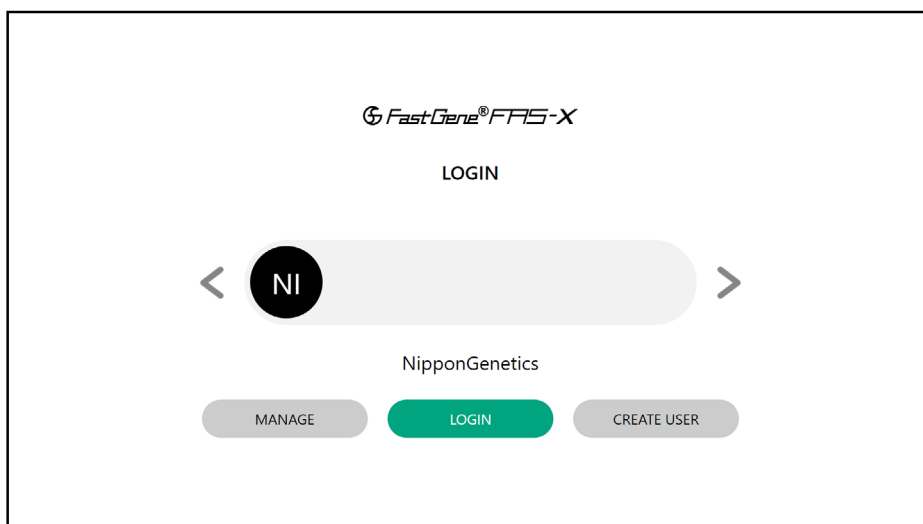
8. Stand by/sleep mode	Pulsating blue light
9. After turning off/deep sleep mode	Running blue light until FAS-X is off. Once the FAS-X is off, the blue light goes off, and the device enters condition/situation number 1 (only white button)
10. Error 1 - any error in the system	Static red light

4.3. Starting the software



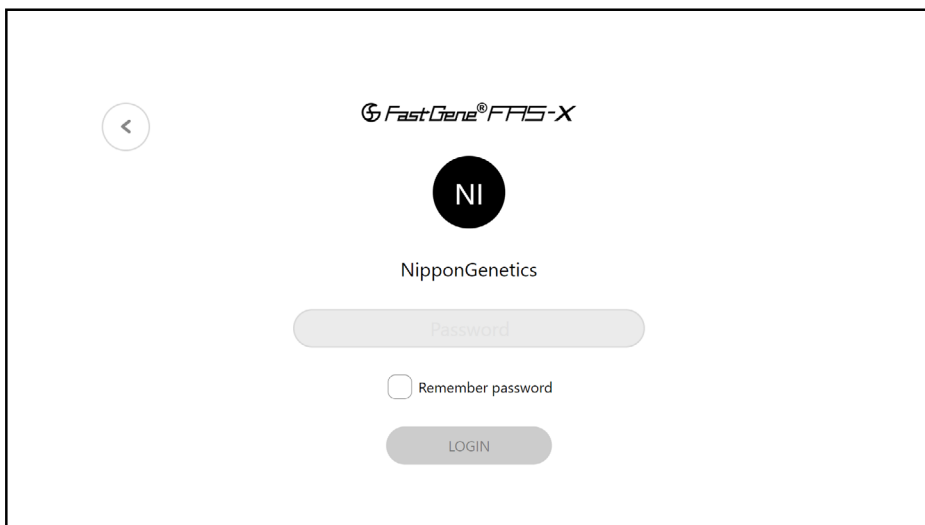
After turning on the black switch (#) on the back of the unit, wait 10 seconds before pressing the power switch (▶) on the front. The software will automatically be launched after the unit is switched on by pressing the power switch (▶) on the front of the FAS-X. The status LED will show a steady blue light. Make sure to press the power switch (▶) firmly for a minimum of half a second. Rapid presses may result in the button failing to respond.

The LOGIN window opens when the FAS-X software is started.



You can log in to the administrator account named *NipponGenetics* or directly create a user account(s) with a unique password. Please note that the space character is not allowed in the user name. It is also possible to create an account without a password.

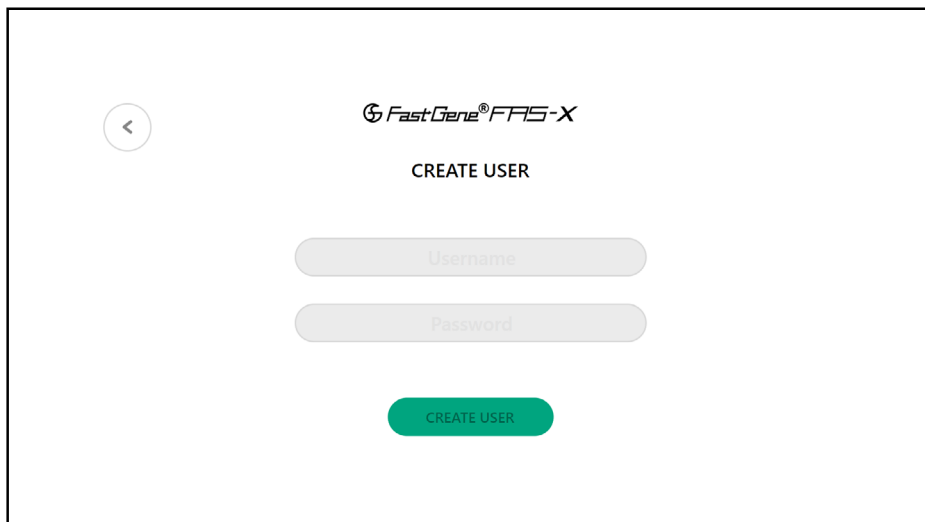
Select *NipponGenetics* account to be able to login. The *NipponGenetics* account login is password protected to prevent unauthorised access to the gel documentation system.



The login screen for NipponGenetics. It features a back arrow in the top left corner. The header displays the 'FastGene® FAS-X' logo. Below the logo is a circular icon with the letters 'NI'. The text 'NipponGenetics' is centered below the icon. There is a password input field labeled 'Password'. Below the input field is a checkbox labeled 'Remember password'. At the bottom is a 'LOGIN' button.

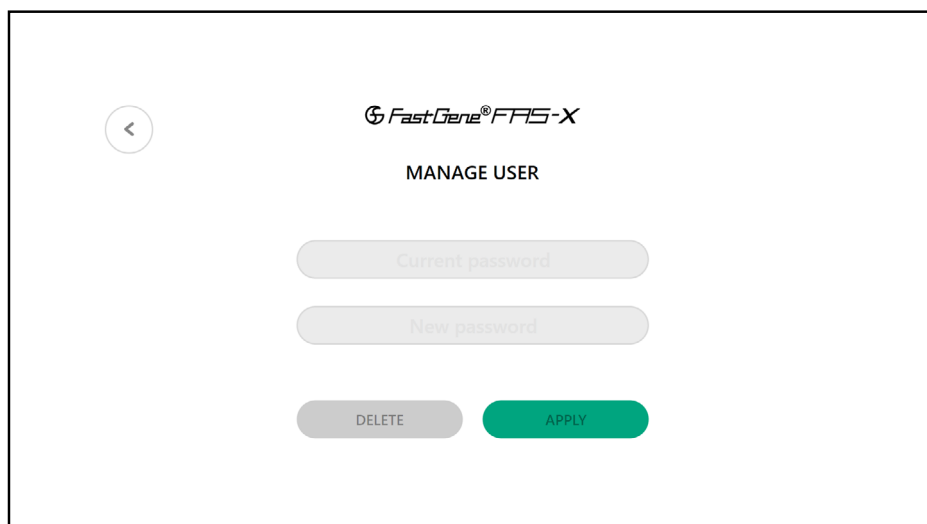
The password is NgE. This can be changed by the person in charge at any time.

To create a new user (s), tap *CREATE USER* to define a user name and a password. There is no limit to the number of user accounts that can be created. Remember that no spaces are allowed in the username.

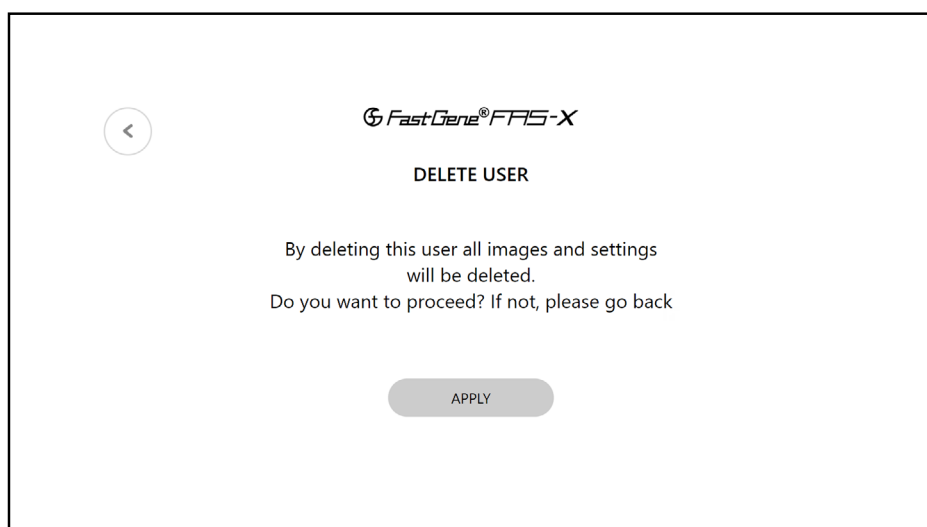


The 'CREATE USER' screen. It features a back arrow in the top left corner. The header displays the 'FastGene® FAS-X' logo. Below the logo is the text 'CREATE USER'. There are two input fields: 'Username' and 'Password'. At the bottom is a green 'CREATE USER' button.

You can change the password or delete the account(s) at any time with the current password using the *MANAGE* option on the *LOGIN* screen.



Note that a password confirmation is a requirement for account deletion. If you don't want to delete the specific user account, you can return to the initial login menu by pressing the head arrow in the upper left corner.



Remember that deleting a user will also delete all images and settings. The system will ask you if you wish to continue.

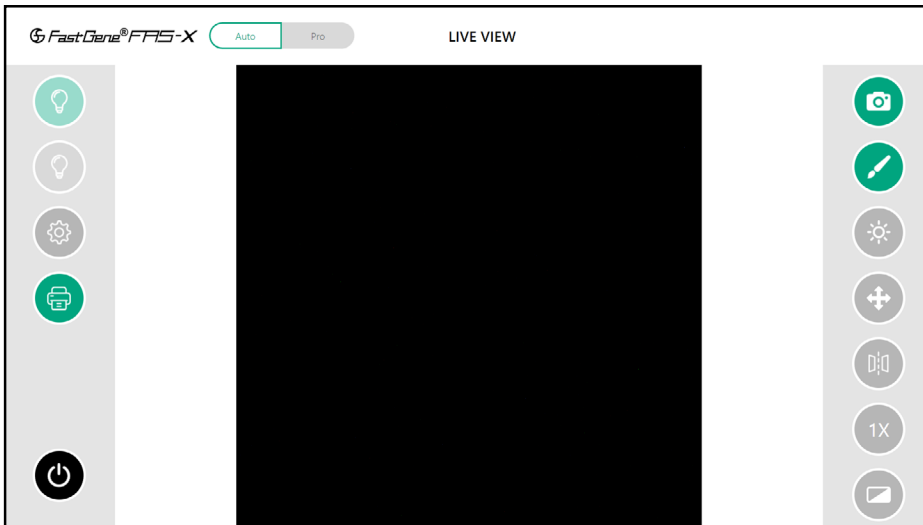
The FAS-X software is supplied with two modes: **Auto** and **Pro** modes.

The **Auto** mode speeds up the process of capturing your images.

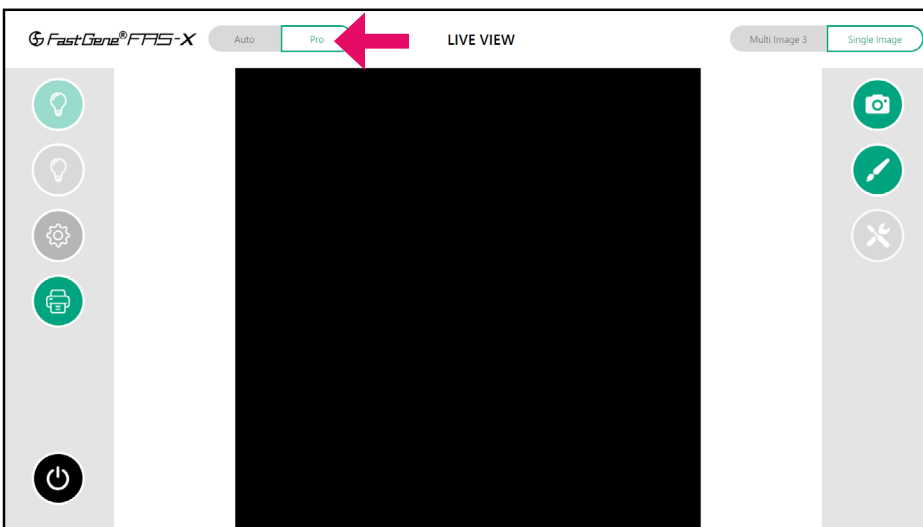


The **Pro** mode gives you more advanced control over the capture settings.

Once logged in, the software will open in Auto mode.



To switch to Pro mode, simply click on the *Pro* button (arrow) in the top right-hand corner of the software.



WELL DONE!

The FAS-X is ready to serve you. Please continue with the IQ/OQ/PQ protocol.



Part II: IQ - OQ - PQ

5. Installation, operation and performance qualification

FastGene® FAS-X gel documentation system (GP-FAS-X)

5.1. Protocol acceptance by customer and list of tests performed

NIPPON Genetics EUROPE recommends signing the IQ, OQ, PQ document when all tests are performed after installation. Operational Qualification should be run if the instrument is not performing according to the specification. This document is used as the final QC protocol of every unit we produce in Germany. Therefore, we use the lane FC (Factory Control) for our tests.

I have reviewed the IQ/OQ/PQ document and agree that it provides the appropriate procedures for the Installation Qualification/Operational Qualification and Performance Qualification of the FAS-X device and software.

Customer Name

Customer Signature

Date

Reviewer Name

Reviewer Signature

Date

The manual can be downloaded either by accessing the link or scanning the QR code:



<https://www.nippongenetics.eu/app/uploads/manual-gp-fas-x.pdf>

Date

5.2. List of serial numbers

Serial No. Device

Serial No. White light plate

5.3. List of components

- FAS-X stand-alone system
- Power cable (see part I - installation)
- Amber goggles
- FastGene® Agarose Gel Band Cutter
- White light plate
- FAT-32 USB flash drive with the manual

5.4. Installation qualification

IQ Check List		FC	Customer	Note
Are all components included		x	<input type="checkbox"/>	
No obvious defects on casing		x	<input type="checkbox"/>	
Check drawer, if it is moving easily		x	<input type="checkbox"/>	
Check B/G drawer for defects		x	<input type="checkbox"/>	
Check the focus of the camera		x	<input type="checkbox"/>	
Check if the drawer can be opened and closed properly		x	<input type="checkbox"/>	
Turn the switch on at the back of the housing and press the bottom at the front – does screen turn on?		x	<input type="checkbox"/>	
FAS-X software opens after switching on		x	<input type="checkbox"/>	
Examination signature		Verification signature		

5.5. Operation qualification

OQ Check List		FC	Customer	Note
Check touchscreen		x	<input type="checkbox"/>	
Check Blue/Green LEDs		x	<input type="checkbox"/>	
Check white LEDs		x	<input type="checkbox"/>	
System time setup		x	<input type="checkbox"/>	
Check that no light is detectable when lights are off (black image): set Pro mode, exposure time to 10 sec and gain 0		x	<input type="checkbox"/>	
Examination signature		Verification signature		

5.6. Performance qualification

PQ Check List		FC	Customer	Note
Place a gel on the drawer		x	<input type="checkbox"/>	
Using the FAS-X software:				
• Take and save an image		x	<input type="checkbox"/>	
• Change zoom in live view		x	<input type="checkbox"/>	
• Change auto exposure level (Auto mode)		x	<input type="checkbox"/>	
• Change exposure time (Pro mode)		x	<input type="checkbox"/>	
• Change gain (Pro mode)		x	<input type="checkbox"/>	
• Activate filters in live view (Pro mode)		x	<input type="checkbox"/>	
• Rotate the live view image (Pro mode)		x	<input type="checkbox"/>	
• Mirror the live view image vertically/horizontally		x	<input type="checkbox"/>	
• Do multi-image and save one of the images		x	<input type="checkbox"/>	
• Edit a previously saved image		x	<input type="checkbox"/>	
Examination signature		Verification signature		



Part III: Manual

6. Operating the system

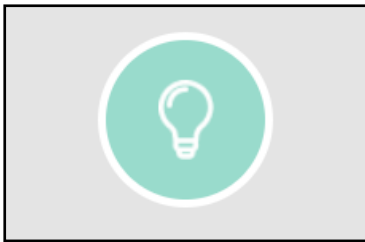
The NIPPON Genetics FAS-X software can control all the parameters necessary to acquire an image with the FAS-X.

All of the following functions can be performed or accessed from the main menu and are similar in both Auto and Pro modes.

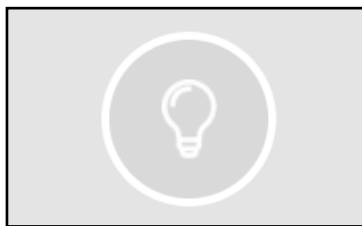
6.1. Light source function

To activate the required light source, click on the green or white bulb. The green bulb activates the Blue/Green LED transilluminator and the white bulb activates the epi-white LED light. Use Blue/Green LED lamp for fluorescent visualization and white LED lamp for colorimetric visualization.

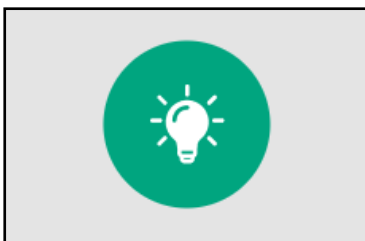
Blue/Green LED lamp off



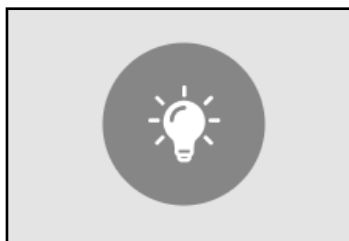
Epi-white LED lamp off



Blue/Green LED lamp on

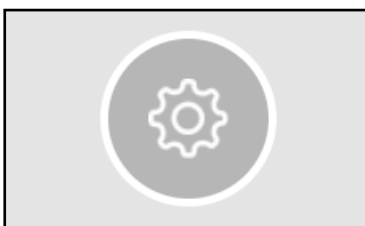


Epi-white LED lamp on



To avoid misuse and to prevent the filter wheel from malfunctioning, please wait approximately 1 second before switching between the lights.

6.2. System settings function

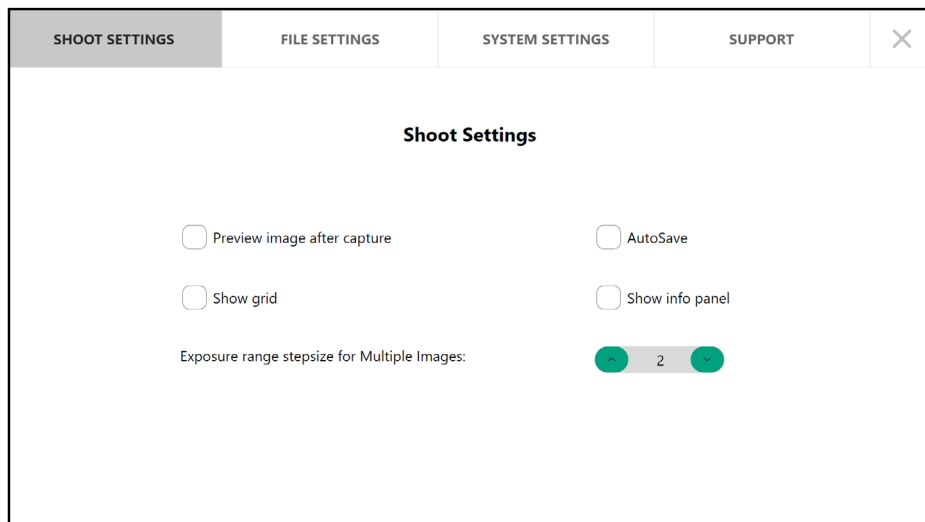


Press the gear icon to get access to the settings menu. Here you change all essential settings of the device:

- shoot settings
- file settings
- system settings
- support

6.2.1. Shoot settings

The shoot settings allow you to configure various parameters related to the camera operation and image capture.



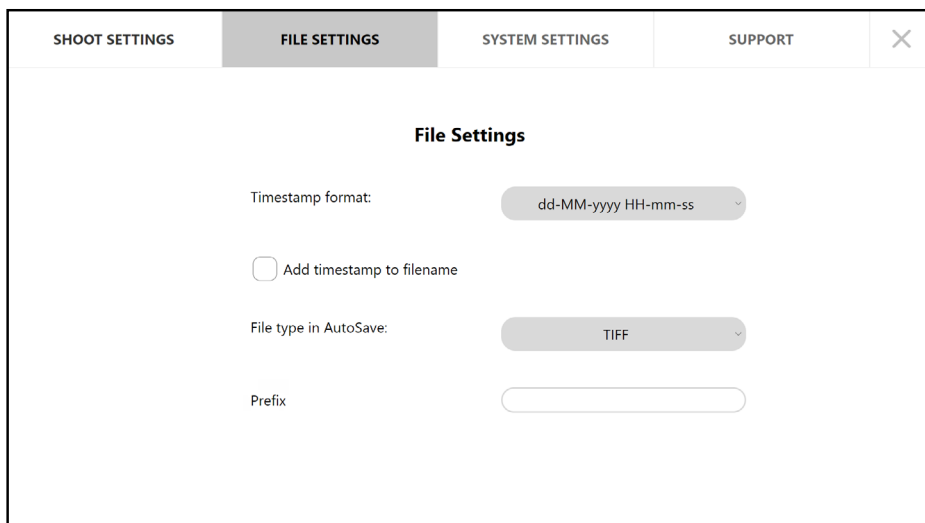
The screenshot shows the 'Shoot Settings' menu with a tabbed interface. The 'SHOOT SETTINGS' tab is selected. The menu contains the following options:

- ☐ Preview image after capture
- ☐ AutoSave
- ☐ Show grid
- ☐ Show info panel
- Exposure range stepsize for Multiple Images: 2 (with up and down arrows)

The *Exposure range stepsize for Multiple Images* refers to the difference in brightness between different images in the multi-image function in the Pro mode (page 43). The exposure difference between the different images is approximately 12% for level 1, 25% for level 2, 50% for level 3 and 75% for level 4. The given exposure time is the midpoint. For example, at 1 second exposure time, level 2 (25%) and multiple-image 3, the images are taken at 0.75, 1, and 1.25 seconds.

Additional features such as *Preview image after capture*, *AutoSave*, *Show Grid* and *Show Info Panel*, can be activated and deactivated for each user at any moment.

6.2.2. File settings

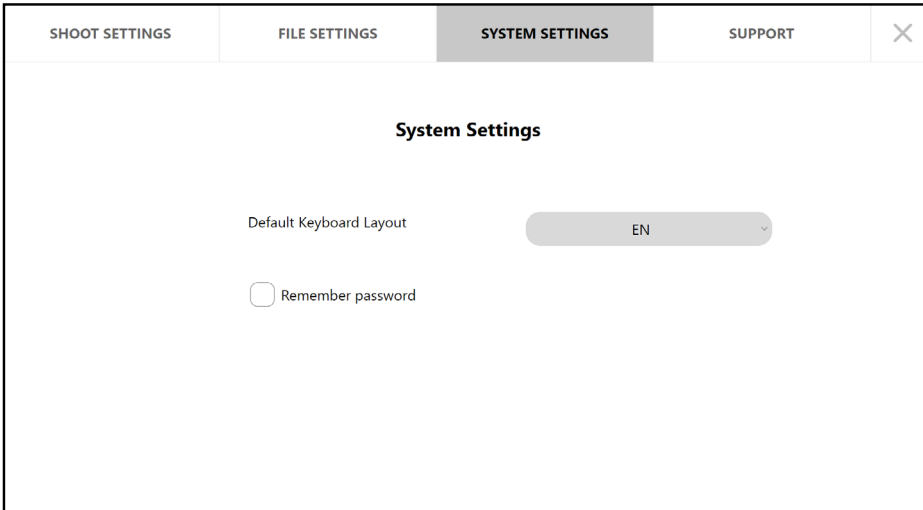


The screenshot shows the 'File Settings' menu with a tabbed interface. The 'FILE SETTINGS' tab is selected. The menu contains the following options:

- Timestamp format: dd-MM-yyyy HH-mm-ss (dropdown menu)
- ☐ Add timestamp to filename
- File type in AutoSave: TIFF (dropdown menu)
- Prefix: (text input field)

File settings refers to the options you can select to customise how your photos are saved and stored, such as selecting the file type, setting a prefix name, or choosing to add the timestamp to your file name.

6.2.3. System settings

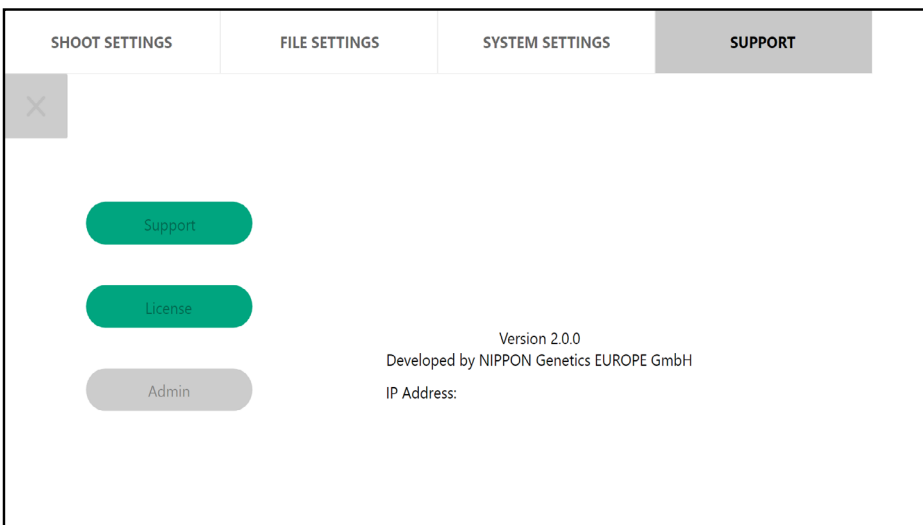


The screenshot shows the 'System Settings' page within a web application. At the top, there is a navigation bar with four tabs: 'SHOOT SETTINGS', 'FILE SETTINGS', 'SYSTEM SETTINGS' (which is highlighted), and 'SUPPORT'. A close button (X) is located on the far right of the navigation bar. Below the navigation bar, the page title 'System Settings' is centered. The main content area contains two settings: 'Default Keyboard Layout' with a dropdown menu currently set to 'EN', and 'Remember password' with an unchecked checkbox.

System settings allows you to choose between German and English keyboard layouts. Additionally, you can enable an option to remember the password of the logged-in account, making your next login faster and more convenient.

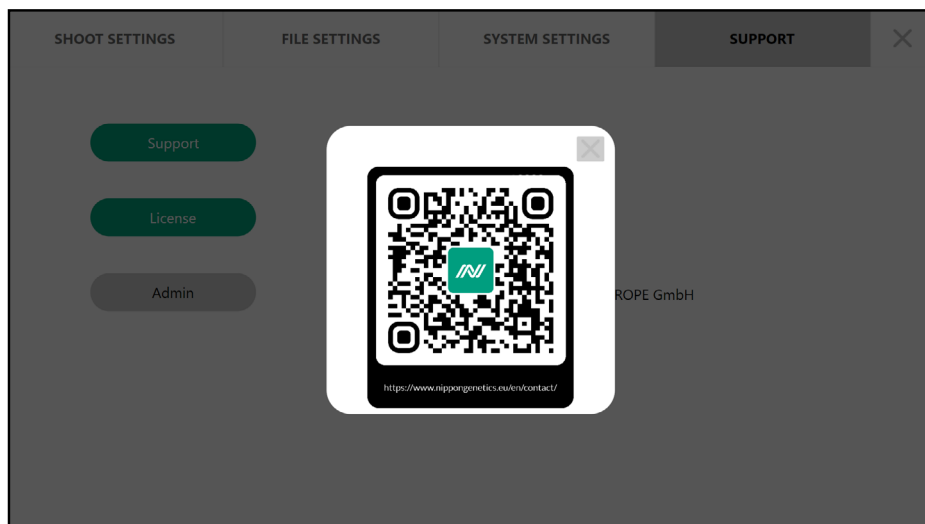
6.2.4. Support

The support section provides the resources about the system and contact for technical support.



The screenshot shows the 'Support' page within the same web application. The navigation bar at the top is identical to the previous page, but the 'SUPPORT' tab is now highlighted. A close button (X) is located on the far left of the main content area. The main content area features three green buttons stacked vertically: 'Support', 'License', and 'Admin'. To the right of these buttons, the text 'Version 2.0.0' is displayed, followed by 'Developed by NIPPON Genetics EUROPE GmbH' and 'IP Address:'.

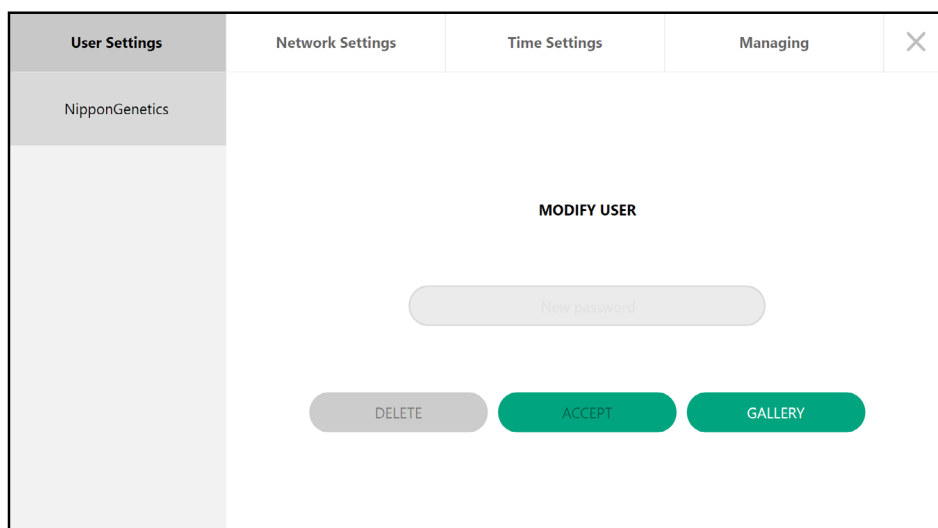
When you press the Support button, the QR code is displayed. Once scanned, it will take you directly to our Contact Us page (<https://www.nippongenetics.eu/en/contact/>). There you will find all the contact forms you need.



The *License* contains information about the current software license. Future software updates will be available via the internet free of charge. Simply copy the updated file to a USB flash drive formatted with FAT-32 and press *Update*. ***We only recommend using the flash drive supplied with the FAS-X. We can't guarantee that other flash drives are recognized by the instrument - even when they are formatted as FAT32.***

The *Admin* button opens the admin panel, which is only available to users with admin rights, namely the NipponGenetics account. It allows you to manage other user accounts, opt for local connectivity for effortless data transfer, set the system time and date, and restore the FAS-X to its default configuration (see the following pages).

6.2.4.1. User settings

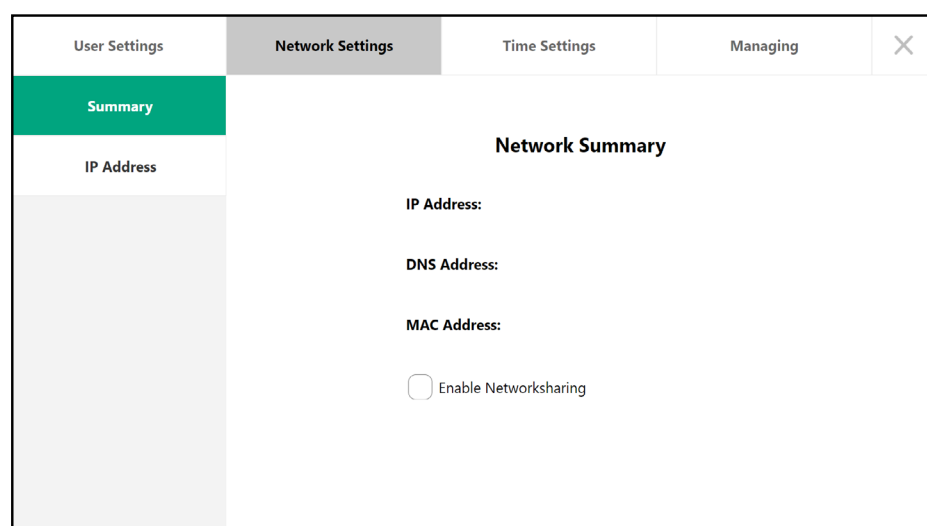


In cases of forgotten passwords or account removal, the administrator can refer to *User Settings* to manage other accounts, including changing password(s). The *GALLERY* (see page 34) option gives you access to the gallery of a selected user.

6.2.4.2. Network settings

The *network settings* offer a summary of the network identifiers (IP address, DNS address, and MAC address) once connected to a local network and the ability to connect locally for potential data sharing.

Summary of the network identifiers



The screenshot shows a window titled 'Network Settings' with a sidebar on the left containing 'User Settings', 'Network Settings' (selected), 'Time Settings', and 'Managing'. The main area is titled 'Network Summary' and contains the following fields:

- IP Address:** (empty field)
- DNS Address:** (empty field)
- MAC Address:** (empty field)
- ☐ Enable Networksharing

The *Enable Networksharing* function, located at the bottom, allows password-protected access to FAS-X files from multiple computers connected to the same local network. The information of each user is protected by a password. This sharing system is compatible with computers running Windows, Linux and Mac OS operating systems.

Once both FAS-X and the computer to be used are connected to the same local network, follow the steps described below. The following guide shows the necessary steps using Windows operating system as an example. (Please note that an Ethernet cable connection is required for the FAS-X.)

1. Access to the *Network Share* in the *Network Settings* via the *Admin* in the *Support* section of the FAS-X settings.
2. In the *Network Share*, tick the box *Enable Networksharing* to enable access to files and images on the FAS-X from a computer connected to the same local network.
3. Define the IP address.

If you want the FAS-X to obtain an IP address automatically from the local router, tick the box *Obtain an IP address automatically* under *IP Address* in the *Network Settings* and press *ACCEPT*. Based on the IP address provided by the local network admin, select either *IPv4* or *IPv6*.

When the automatic function is enabled, the input fields are disabled (greyed out), and the system automatically obtains a free IP address. This address can be either IPv4 or IPv6, depending on the configuration and availability within your network.

User Settings	Network Settings	Time Settings	Managing	✕
Summary	IPv4	IPv6		
IP Address	<input type="checkbox"/> Obtain an IP address automatically IP Address: <input type="text" value="IP"/> Subnet Mask: <input type="text" value="Subnet Mask"/> Default Gateway: <input type="text" value="Gateway"/> <input type="button" value="ACCEPT"/>			

User Settings	Network Settings	Time Settings	Managing	✕
Summary	IPv4	IPv6		
IP Address	<input type="checkbox"/> Obtain an IP address automatically IP Address: <input type="text" value="IP"/> Subnet Mask: <input type="text" value="Subnet Mask"/> Default Gateway: <input type="text" value="Gateway"/> <input type="button" value="ACCEPT"/>			

4. Go to the *Support* in the FAS-X settings. There, the current IP address will be displayed.

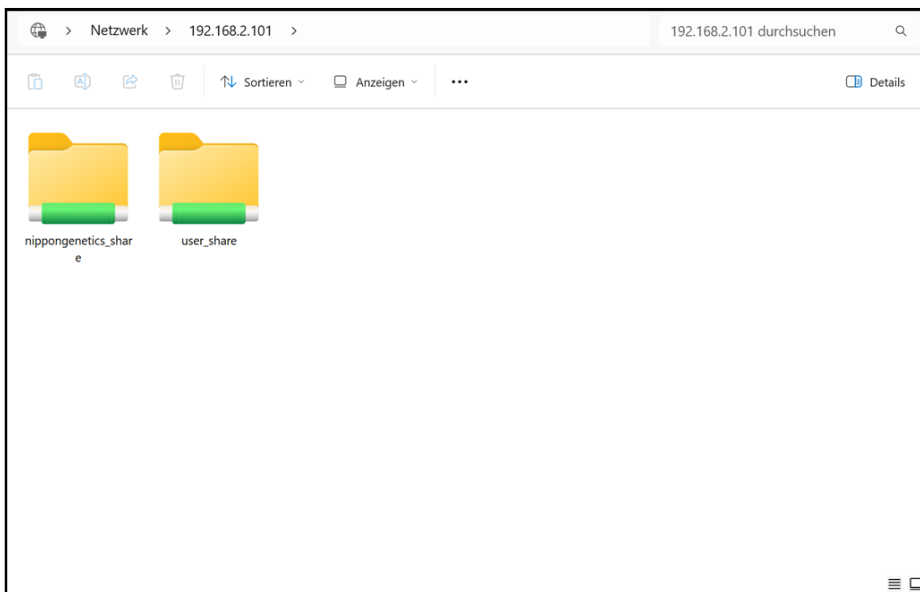
SHOOT SETTINGS	FILE SETTINGS	SYSTEM SETTINGS	SUPPORT	✕
<div>Support</div> <div>License</div> <div>Admin</div> <div> Version 1.0RC7.8.13 Developed by NIPPON Genetics EUROPE GmbH IP Address:192.168.0.2 </div>				

- Open the file browser on the computer connected to the FAS-X and enter the IP address obtained as described above in the address field as follows and press Enter on the keyboard.

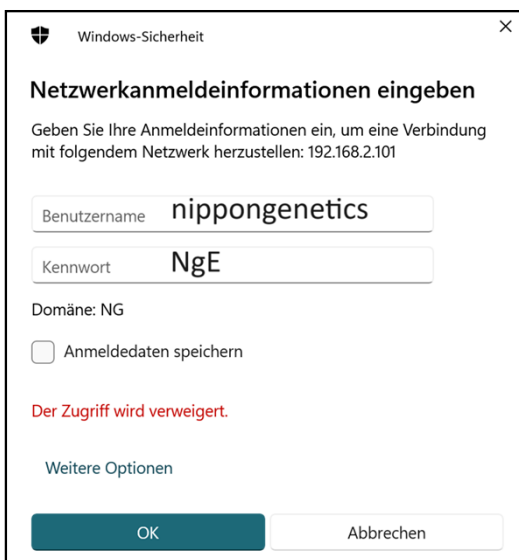


Note: For quick access to your FAS-X, it is recommended to create a shortcut for this IP address. To do this, right-click on an empty space in the file browser and select New followed by Shortcut.

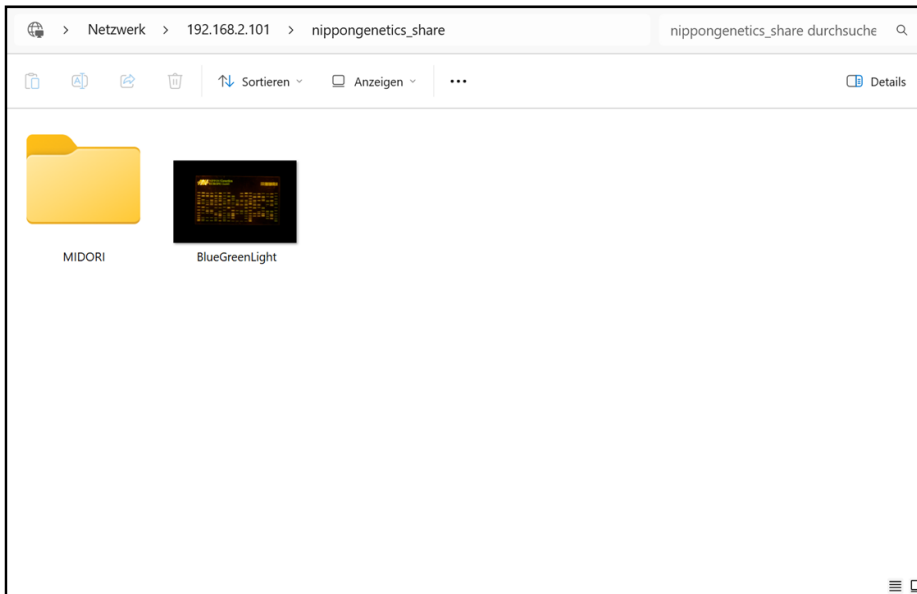
- If the connection to the FAS-X is successful, the list of available users is displayed.



If you want to open *nippongenetics_share*, double-click it. Initially, access will be denied due to the need to have access credentials. Type *nippongenetics* (lower case, without *_share*) as username and its current password, click OK. The screenshot below shows the original password *NgE*, but if the administrator password has been changed, enter the updated password.



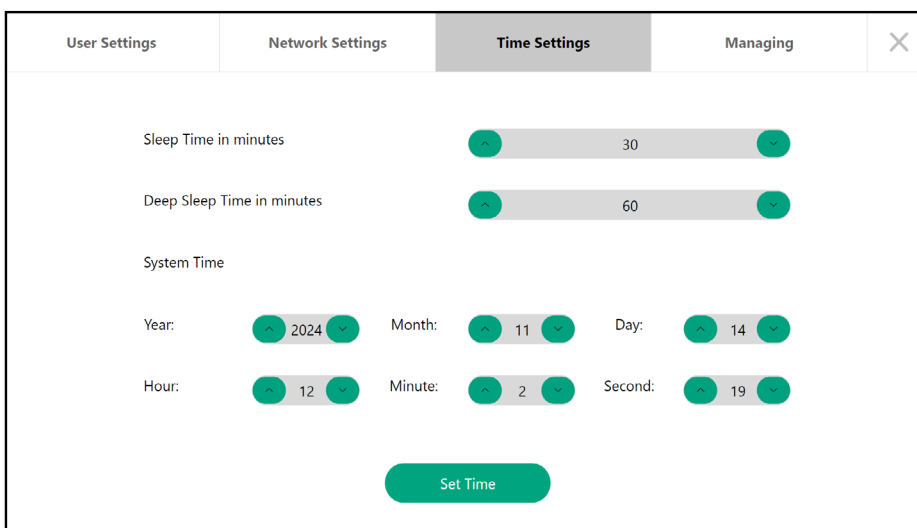
7. You now have access to the user's pictures and folder(s). You can copy the image(s) or folder(s) to your PC.



6.2.4.3. Time settings

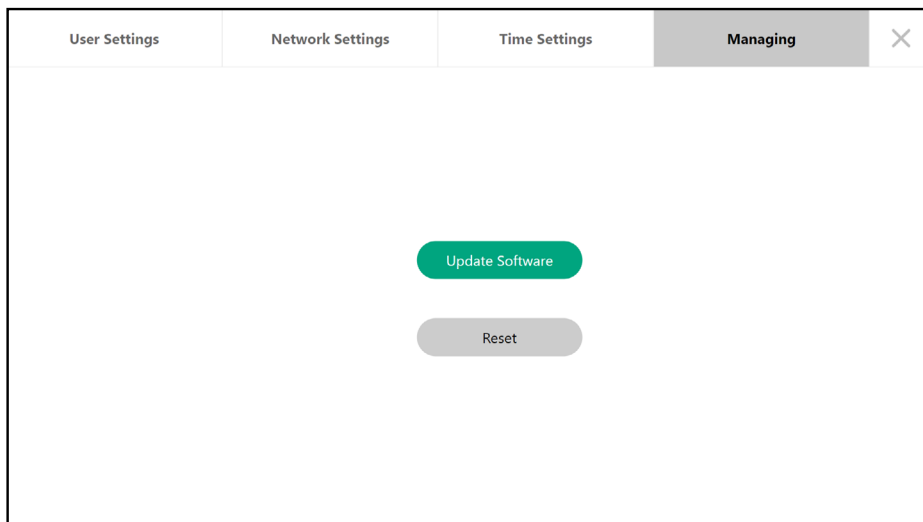
Time settings refer to the configuration and adjustment of various time-related parameters of the FAS-X. These include:

- sleep time (to start the stand-by mode),
- deep sleep time (to shut down the system), and
- date and time of the system.

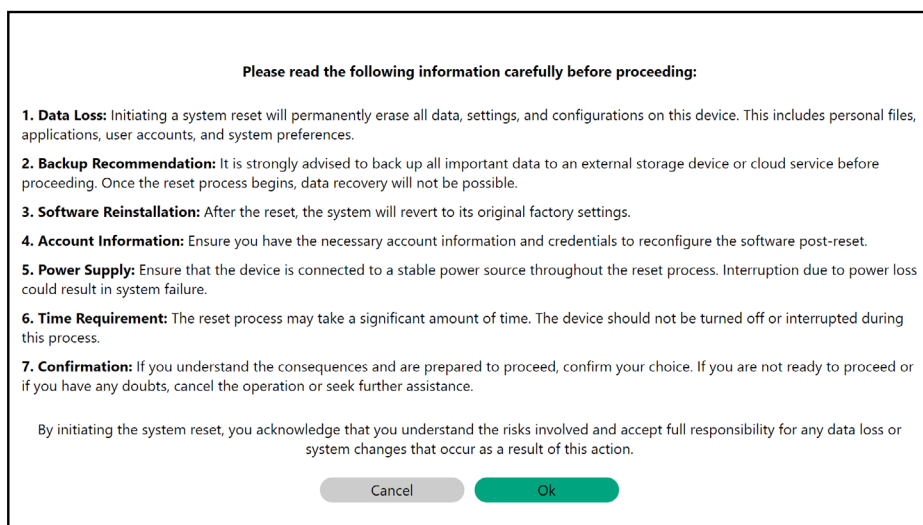


6.2.4.4. Managing

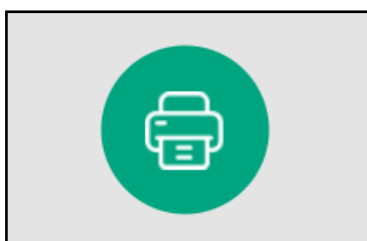
In the *Managing* section, it is possible to update the software, recover raw data, and reset the FAS-X to its original factory settings. To update the software is done through a USB stick with FAT32 formatting.



Please note that the reset function deletes all users and their corresponding settings and images (image below).



6.3. Print function



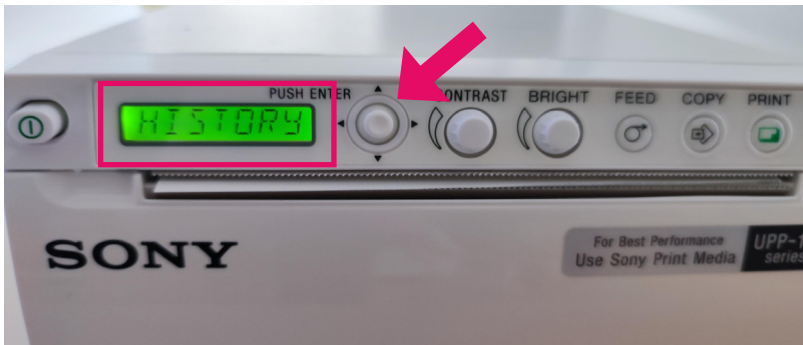
Print the selected image. You can print your image during live sample visualization or from the gallery after saving it. **Please note, this button will only be displayed when a printer is correctly connected to the FAS-X.**

The supported printers are Sony UP-X898MD and Sony UP-D897.

You only need to set up the printer once. Follow the steps recommended by the manufacturer. The following guide is an example of setting up the Sony UP-X898MD.

1. Connect the power supply to the printer.
2. Connect the printer cable to the FAS-X.
3. To set up the printer, the correct driver needs to be selected.

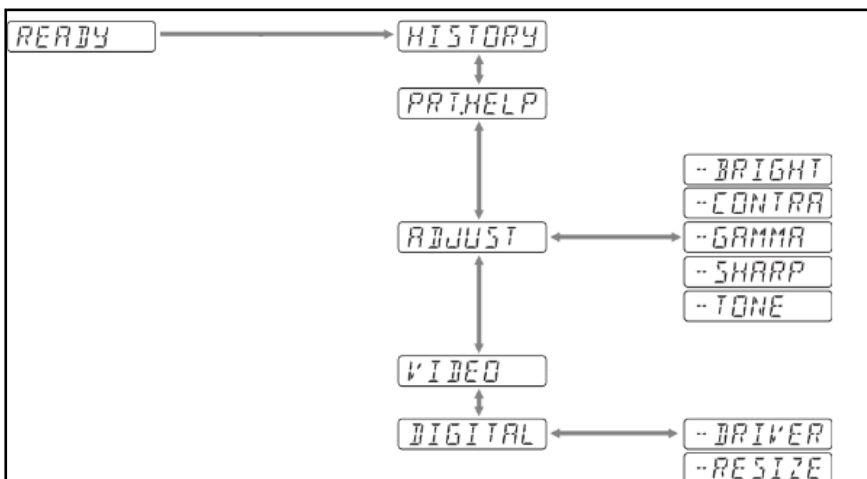
To do this, navigate to the Digital section on the small screen by pressing the button indicated by the arrow (shown below). First press the button and then pull down until you read *Digital*.



You only need the button marked by the arrow to finalize the process.

4. Once you have navigated to *Digital*, press the button to select it and navigate until you read *Driver* (displayed as first option).
5. Select *Driver* by pressing the button.
6. Pull the button down until the **UP-897** driver is found. Press the button to select it.

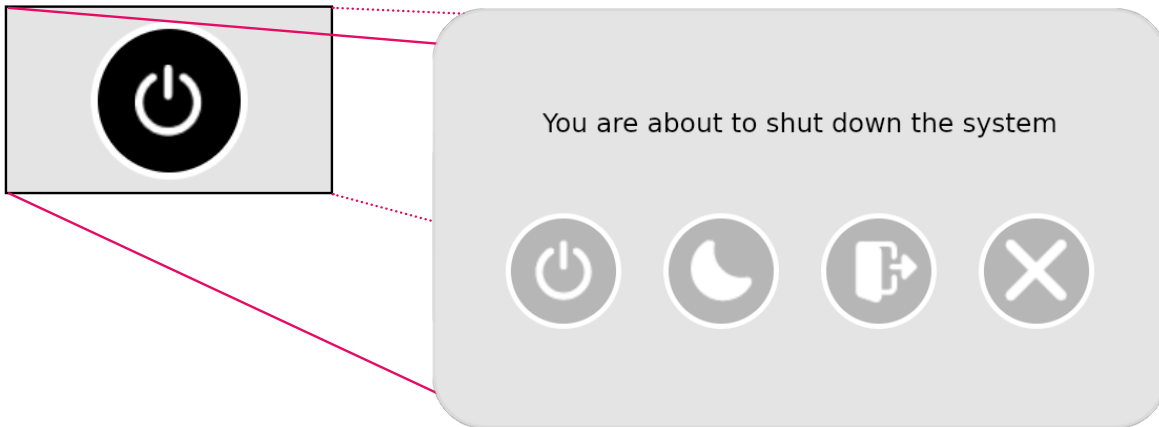
The figure below summarises the steps required to correctly set up the driver for the Sony UP-X898MD:



The driver has been set up correctly and the printer has been successfully installed in the FAS-X.

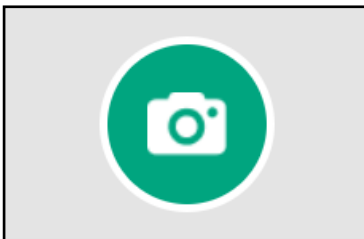
6.4. Shut down function

Press the shutdown button in the software to shut down the unit, put it to sleep, or log out.



If the unit is switched off, wait 15 seconds before switching it on again to let the system completely shut down. In the event of a crash, switch the system off and on again from the back before pressing the front button of the FAS-X.

6.5. Capture image function



For each user, the image is captured and stored locally.

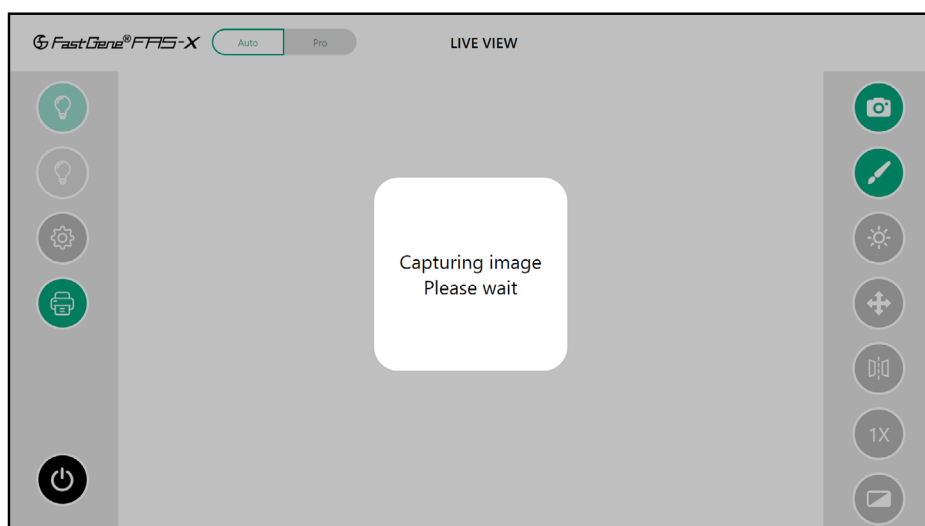
If the *AutoSave* mode is activated (see shoot settings, page 25), the image is automatically saved as soon as it is captured with the current date and time.

If the *AutoSave* mode is inactivated (see shoot settings, page 25), the Save screen will open automatically after the image has been captured. Here you can change the name.

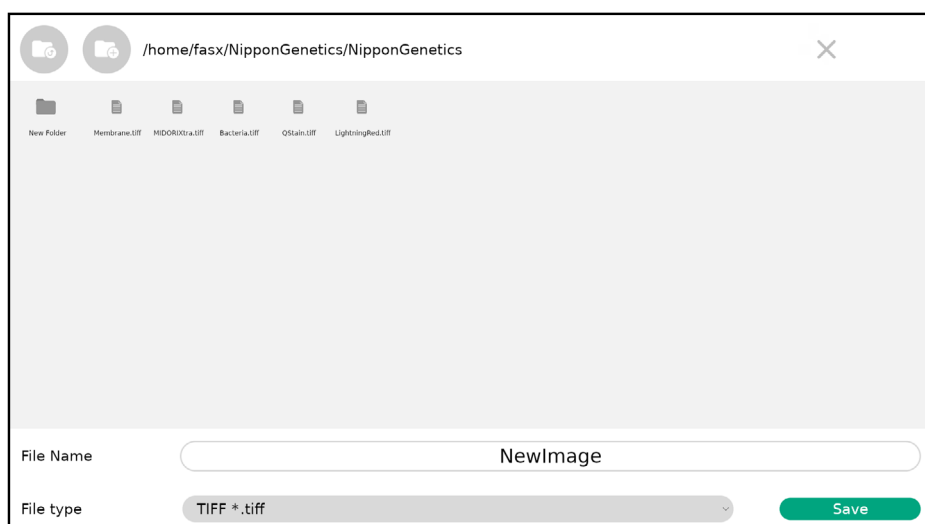
The system also allows for intuitive image manipulation using a two-finger gesture for zooming, moving, and rotating the image.

The process to capture an image is as follows:

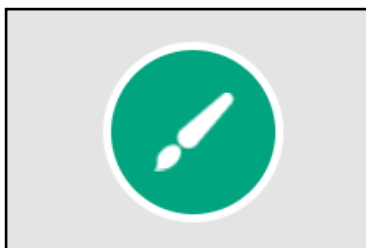
1. position the gel centrally;
2. adjust the zoom/brightness accordingly;
3. capture the image;



4. on the Save screen, name the image and choose the file type. An option to create new folder(s) and save the images in them is also available on the Save screen;
5. click *Save*.

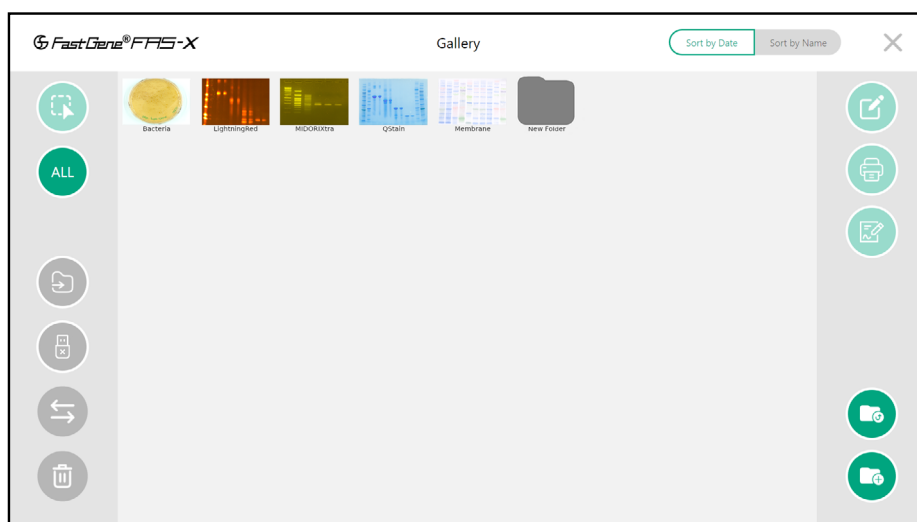


6.6. Gallery function

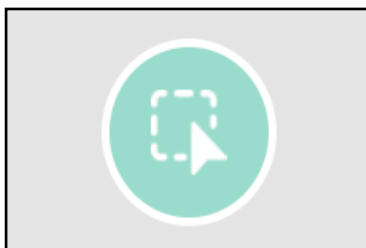


All saved images and their folders are available in the gallery of the respective user account.

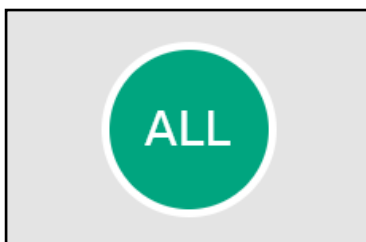
In the gallery section, you can easily manage your own data: delete the selected image(s)/folder(s), create new folder(s), move folder(s), edit images with the *Image Editor*, annotate images with the annotation tools, print your image(s) directly and move the images to the folder(s) you have created.



6.6.1. Select

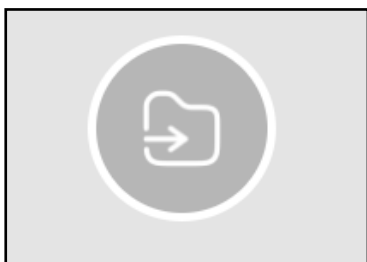


When clicked on, this function will become active thus allowing you to select the image(s)/folder(s).



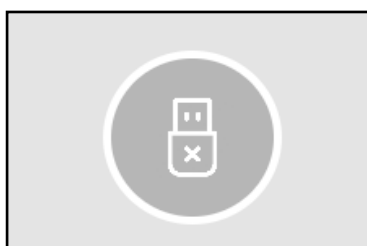
This will select all images in the gallery (not folders). Press twice to deselect your selection.

6.6.2. Move



Move files or folders to a different destination within the gallery.

6.6.3. Eject USB



Safely disconnect a USB device (such as a USB flash drive, external hard drive, or other removable storage device). **Important: If you remove your storage device without ejecting it securely, you risk losing your data.**

6.6.4. Copy



Copy the selected images and folders to the USB flash drive.

6.6.5. Delete



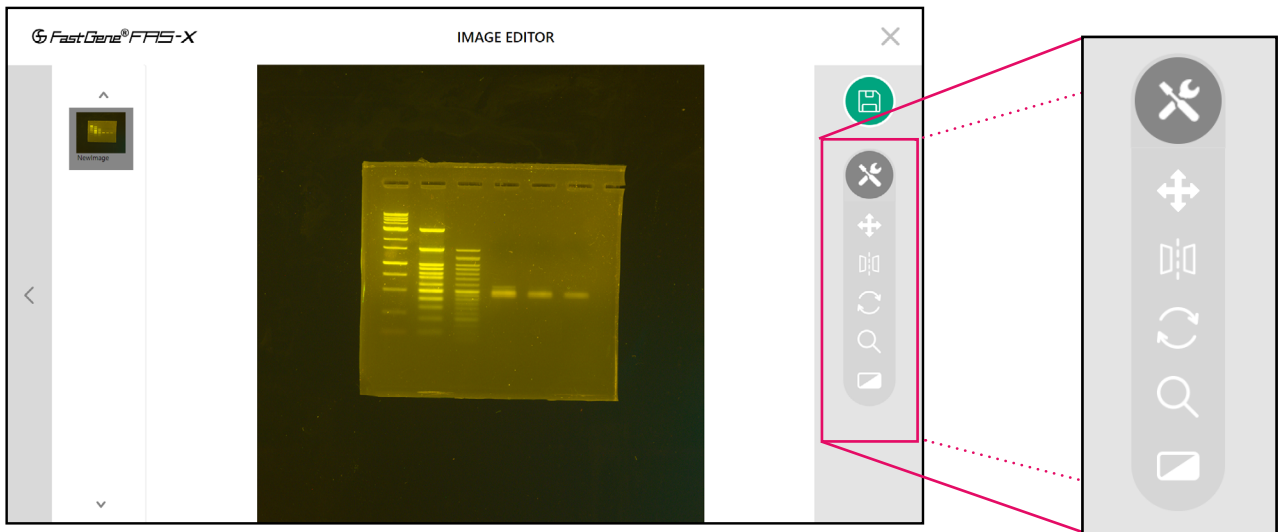
Delete selected images and folders.

6.6.6. Image editor



Edit the selected image by adjusting image properties.

Open the *Image Editor* when the image to be edited is selected.



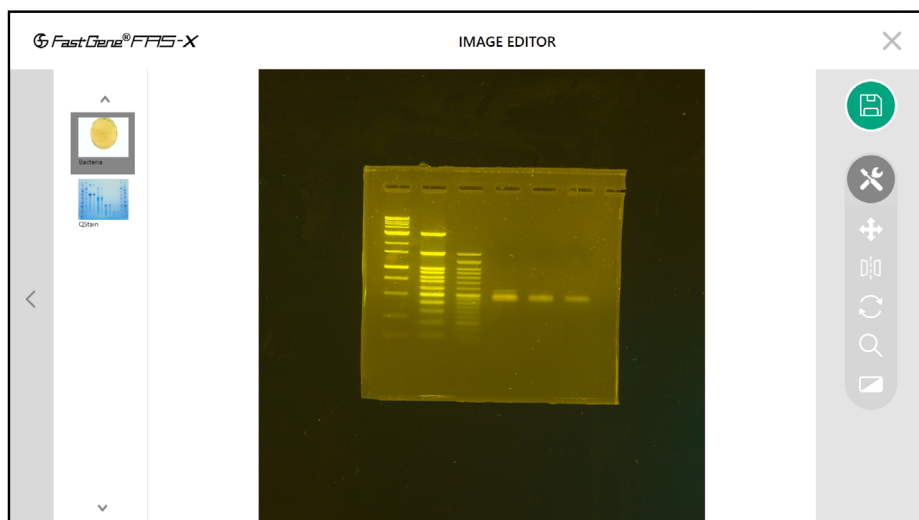
Here you can find and use the same image settings - such as movement, flipping, rotating, zooming and filters - as during the capture process (see Operation in Auto mode and Operation in Pro mode sections). This allows you to fine-tune the settings of the image for a better analysis. Keep in mind that the original data is retained, enabling you to reset both the applied image settings and filters. The same applies to when capturing an image with the filters on; you can deactivate them later in the *Image Editor*.

Don't forget to press the *Save* button. You can save the image as new, keeping the original, or replace the original with the modified image by overwriting it. All modified images are stored in the gallery.

Editing multiple pictures is also possible. To begin, simply select all the images you want to edit in the gallery, and then proceed to open *Image Editor*. The selected images will be displayed on the left (as shown on the image below). Edit each image individually as mentioned previously.

Note: To avoid losing edits, save each edited image before proceeding to the next one. Edits are discarded if you navigate away without saving. The recommended workflow is:

1. Edit the first image and save;
2. Move to the second image, edit, and save;
3. Repeat for each subsequent image.

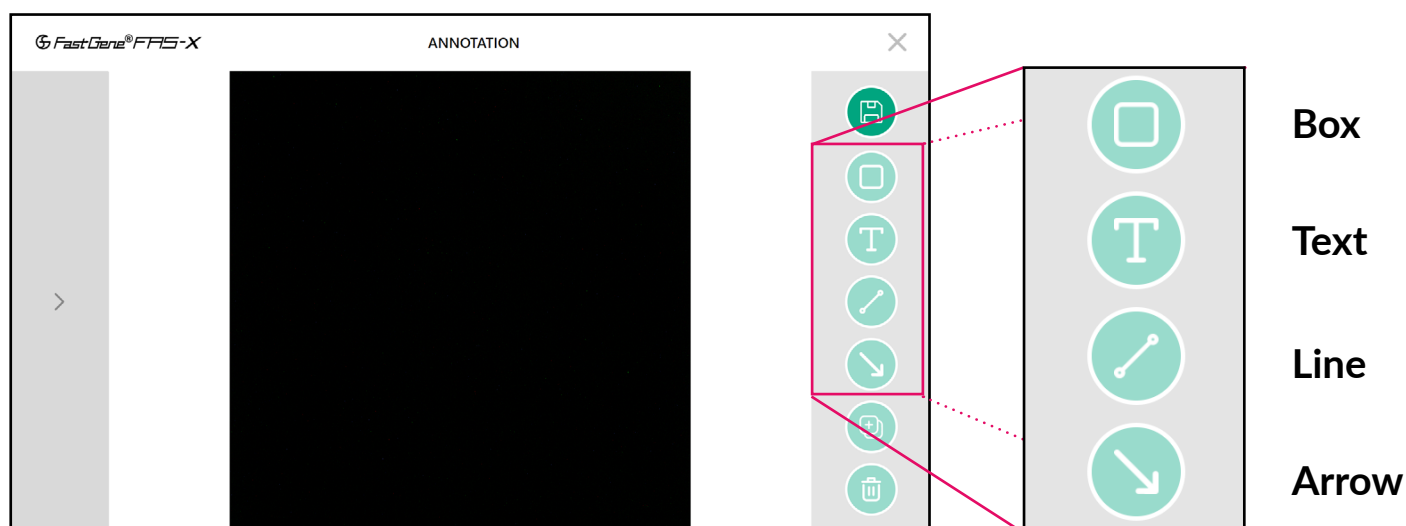


6.6.7. Annotation



You can open any previously captured image in the gallery and add annotations directly to it. Highlight bands, add text, or include notes to make your analysis more organized and comprehensive.

The annotation functions allow you to annotate the image with four tools: box, text, line, arrow.

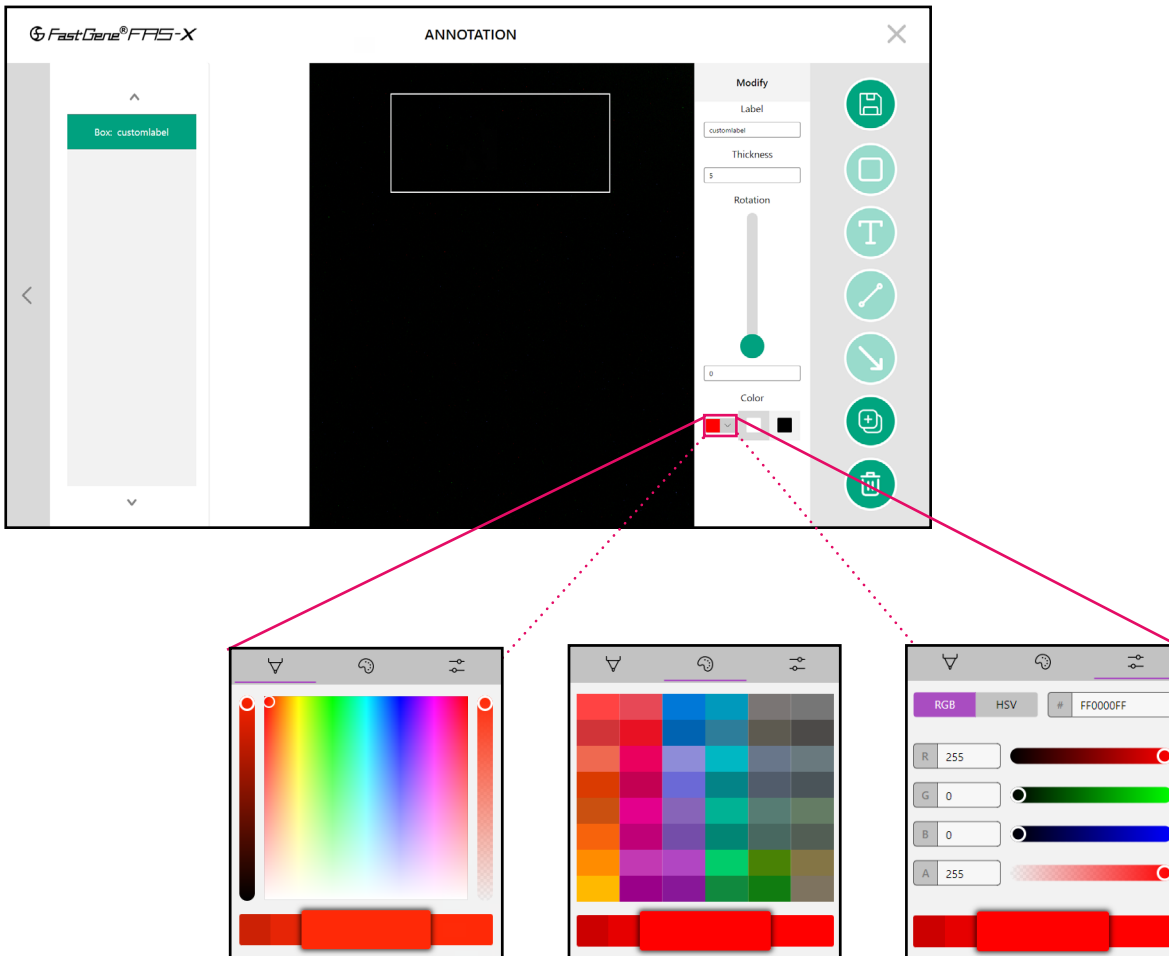


The tools offer a variety of similar features.

6.6.7.1. Box tool



The box tool is designed to help you highlight specific bands or entire lanes on your image with ease.



Its functions include:

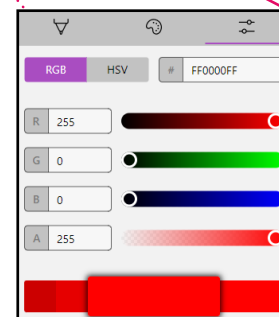
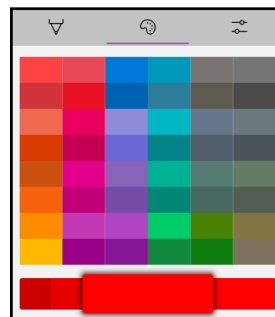
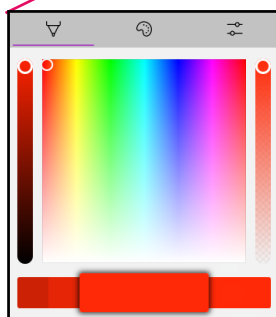
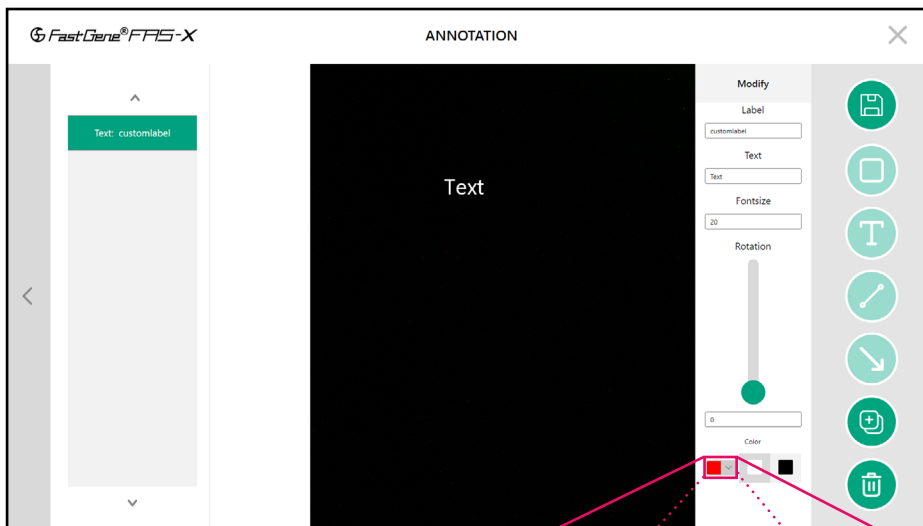
- Labeling and sorting elements, or assigning custom names to each annotation in the left panel;
- Adjusting the box thickness;
- Choosing from a selection of custom colors, including quick access to black and white options for easy selection.

6.6.7.2. Text tool



The text tool allows you to add text directly onto your image. Its features include:

- Labeling and sorting elements, or assigning custom names to each annotation in the left panel;
- Rotating the text using the slider or by entering a specific value;
- Customizing the text size;
- Choosing text color from a palette of custom options, including black and white for quick selection.



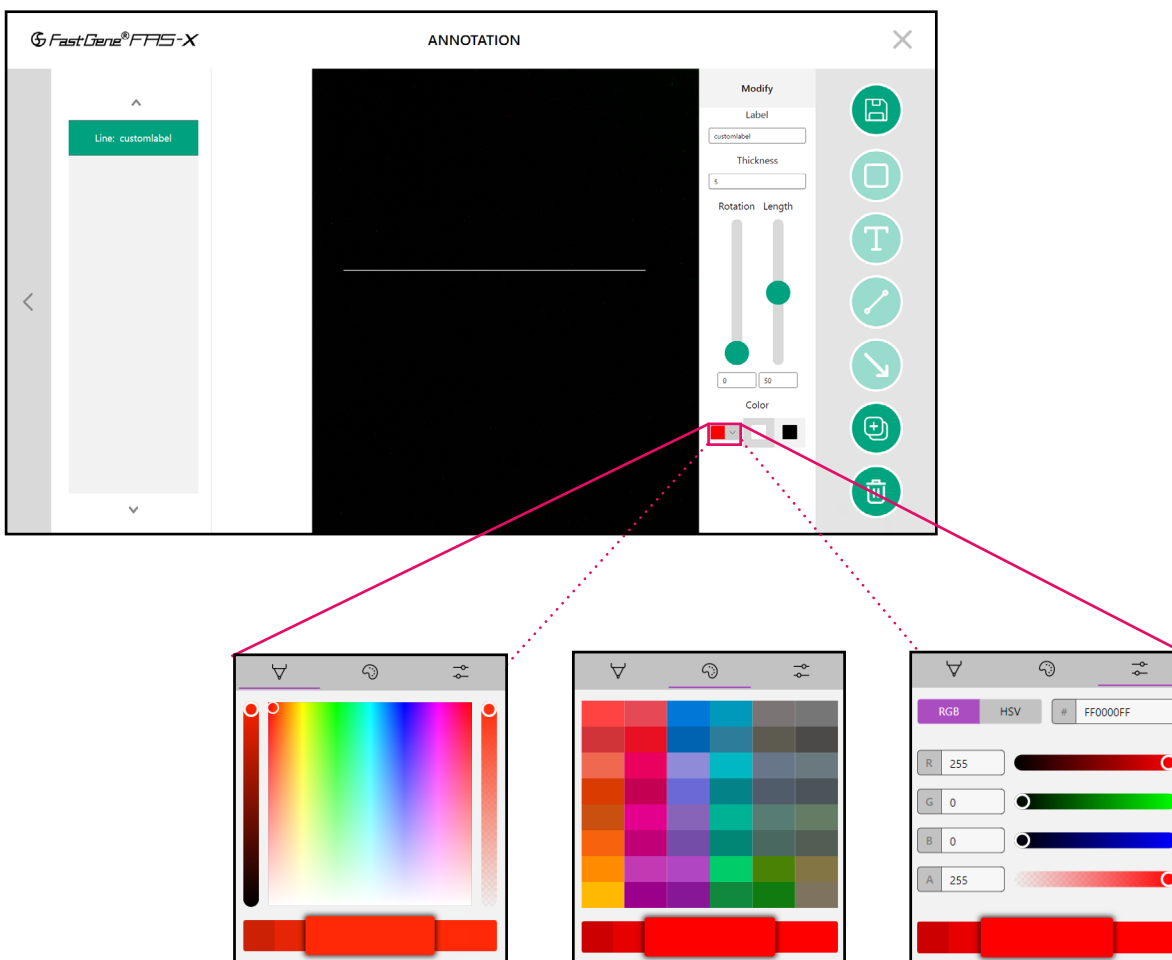
Please note that font size adjustment is a feature available exclusively in the text tool.

6.6.7.3. Line tool



The line tool is designed to let you draw and customize lines on your image. Its features include:

- Labeling and sorting elements, or assigning custom names to each annotation in the left panel;
- Adjusting the thickness of the line;
- Rotating the line using the slider or by entering a specific value;
- Customizing the line's color with a selection of custom options, including black and white for quick access;
- Changing the length of the line to suit your needs.



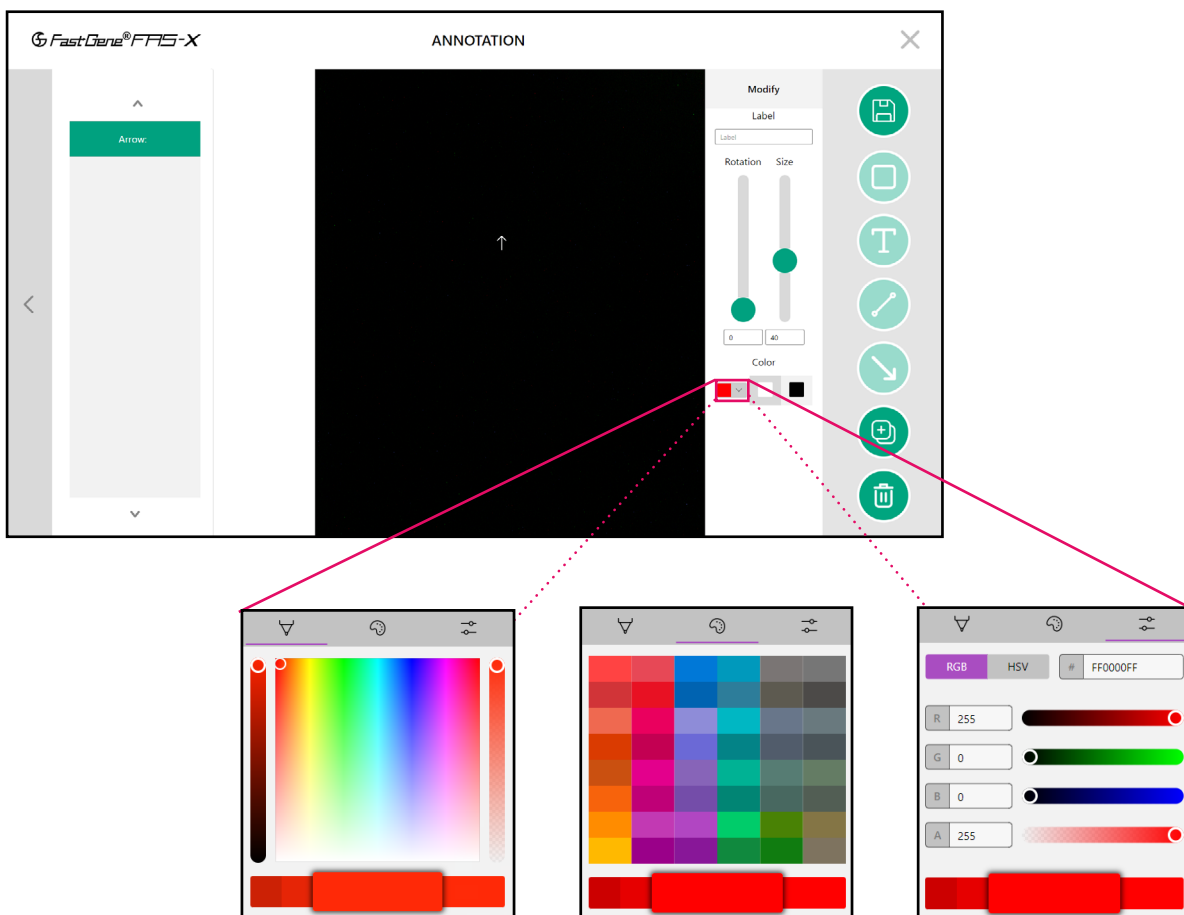
Please note that length adjustment is a feature available exclusively in the line tool.

6.6.7.4. Arrow tool



The arrow tool is designed to add arrows to your image. It offers the following features:

- Labeling and sorting elements, or assigning custom names to each annotation in the left panel;
- Adjusting the thickness of the arrow;
- Rotating the arrow using the slider or by entering a specific value;
- Customizing the arrow's color with a selection of custom options, including black and white for quick access;
- Adjusting the size of the arrow.



Please note that arrow size adjustment is a feature available exclusively in the arrow tool.

After adding element(s) to the image, you can access the element overview by tapping the dark grey area with the arrow on the left side. All added elements will appear in this list panel, with the currently selected element highlighted in green. You can duplicate or delete the selected element

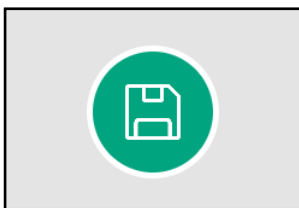
using the two buttons located on the right panel below (figure below):



Duplicate element

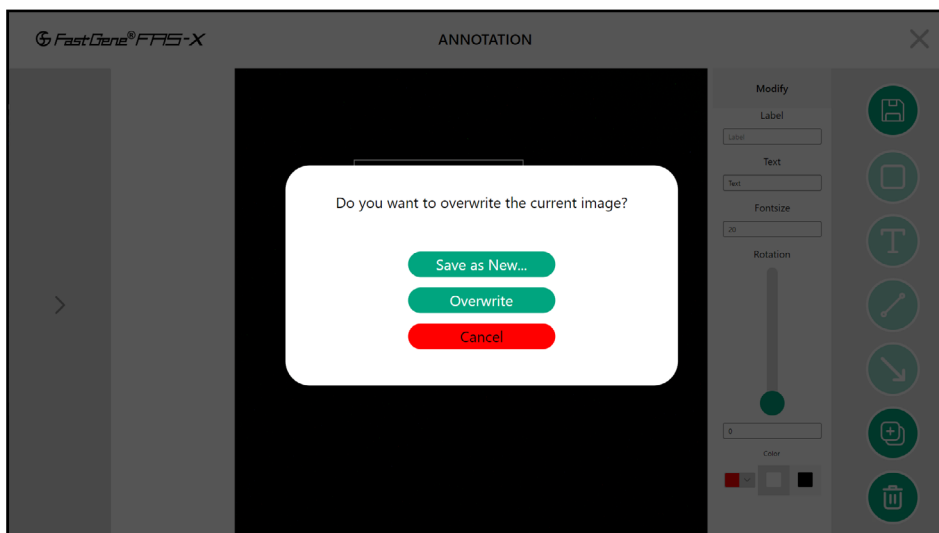
Delete element

Once you complete the annotation process, you can save the image by clicking the save button located at the top right corner of the panel.

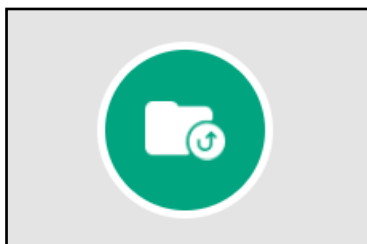


Save

The software will prompt you to choose whether to save the annotated image as a new file or overwrite the existing one.

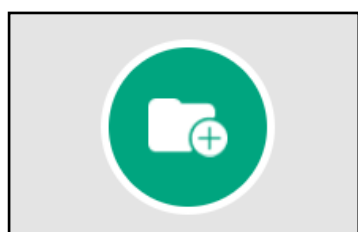


6.6.8. Back to the parent folder



Once inside a folder, you can return to the parent folder.

6.6.9. Create new folder

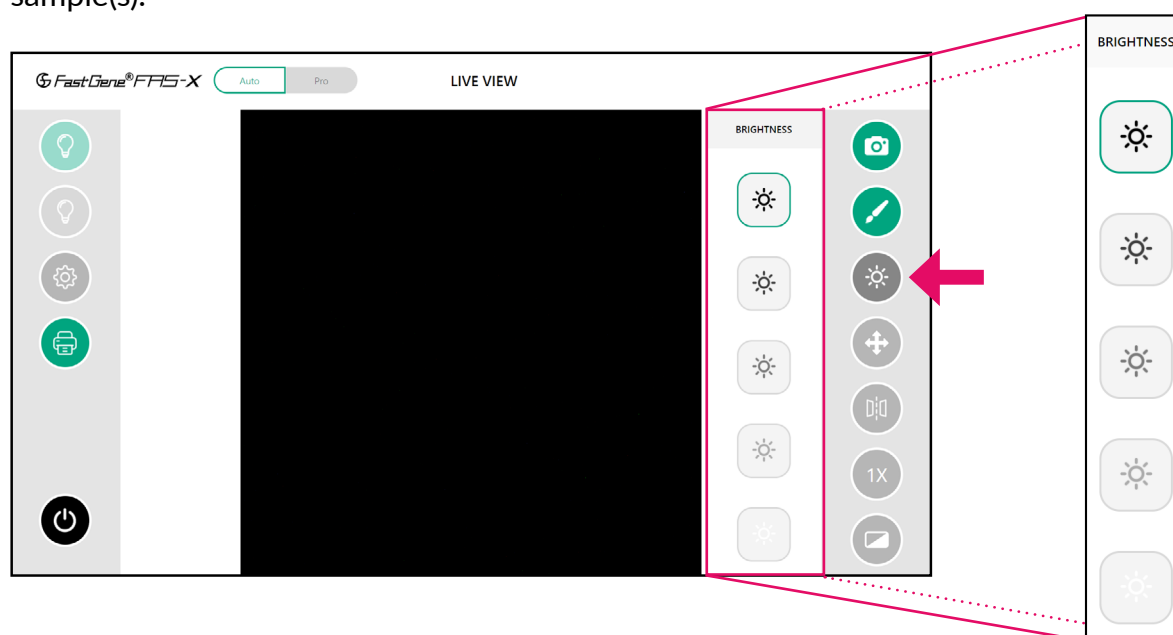


Create new folder(s).

6.7. Operation in Auto mode

6.7.1. Exposure adjustment function

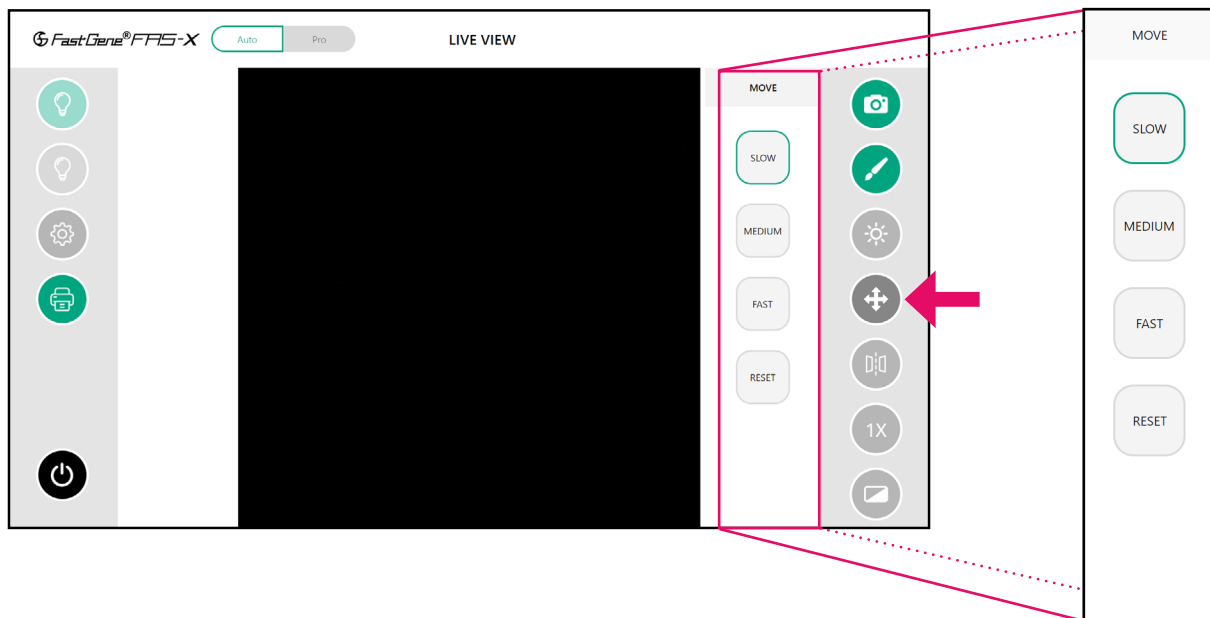
In Auto mode, you can adjust the brightness (5 different levels) according to the signal intensity of your sample(s).



The strongest sun symbol represents the longer exposure time, while the weakest sun represents the shortest exposure time. **Note that the same sun symbol will have different exposure times for white LED and Blue/Green LED.**

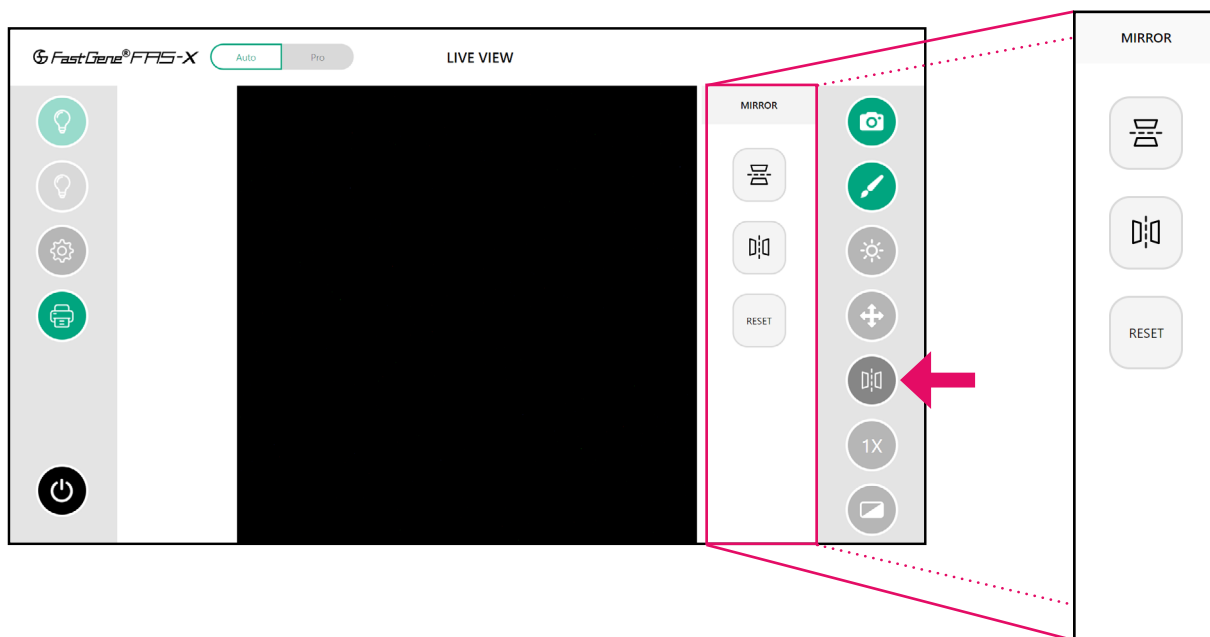
6.7.2. Move function

Use the *Move* function to position the bands of interest in the centre of the display after zooming in. Here it is possible to choose the movement speed adequate to your needs.



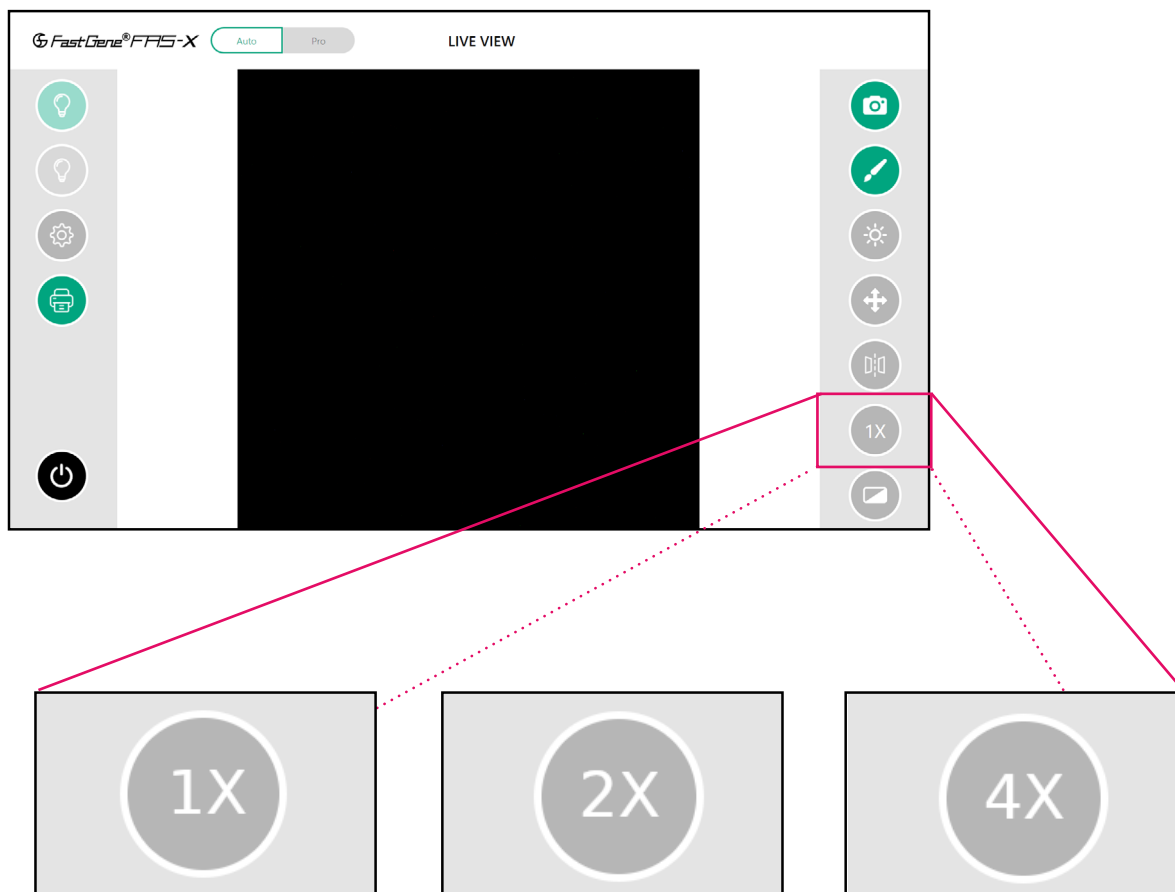
6.7.3. Mirror function

This function allows you to flip the image horizontally or vertically. Additionally, you have the option to reset the mirroring.

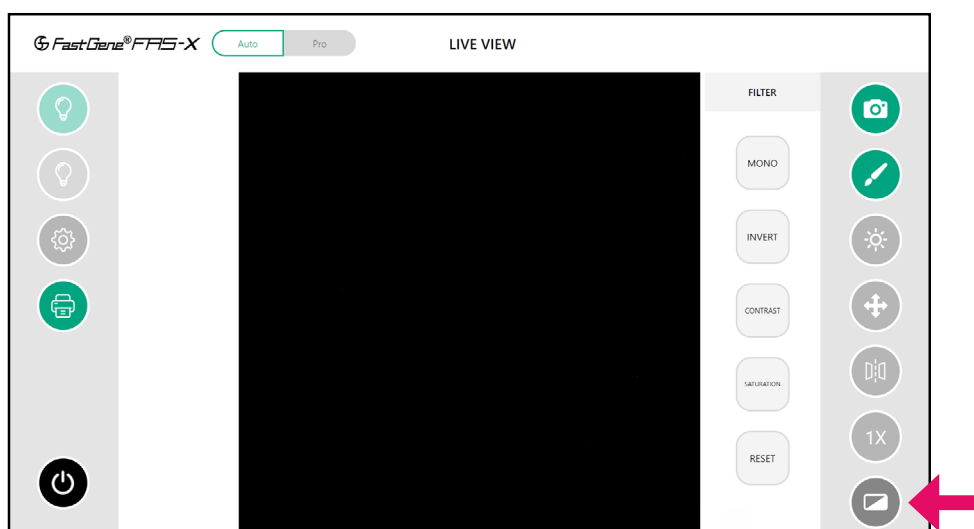


6.7.4. Zoom adjustment function

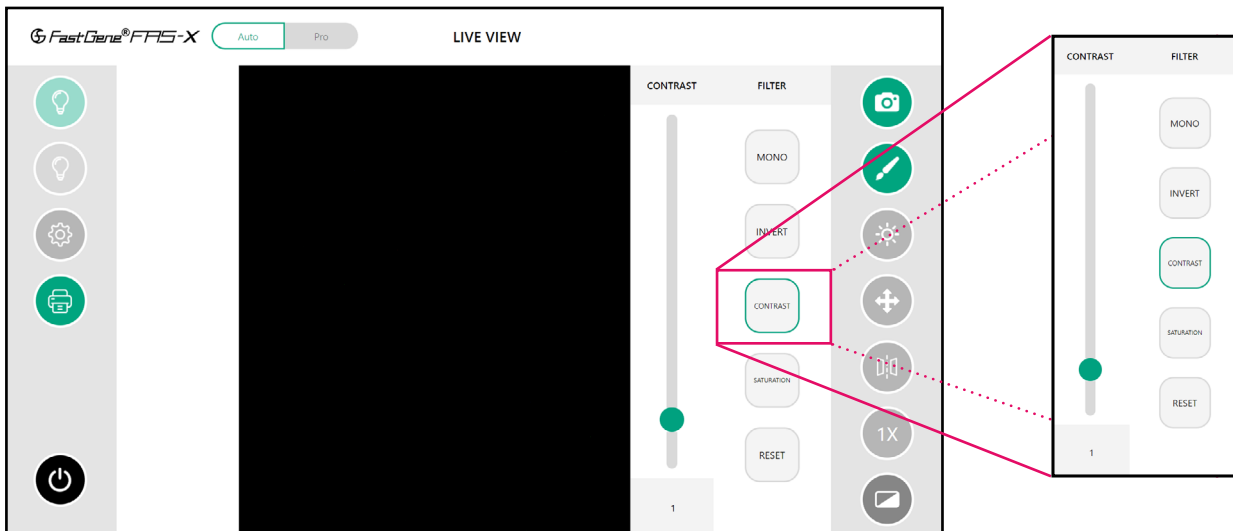
In the Auto mode, there are three different zoom levels: 1x, 2x, and 4x. The default zoom is set to 1x. Tap once to zoom in to 2x and twice to zoom in to 4x. Reverse the process to zoom out.



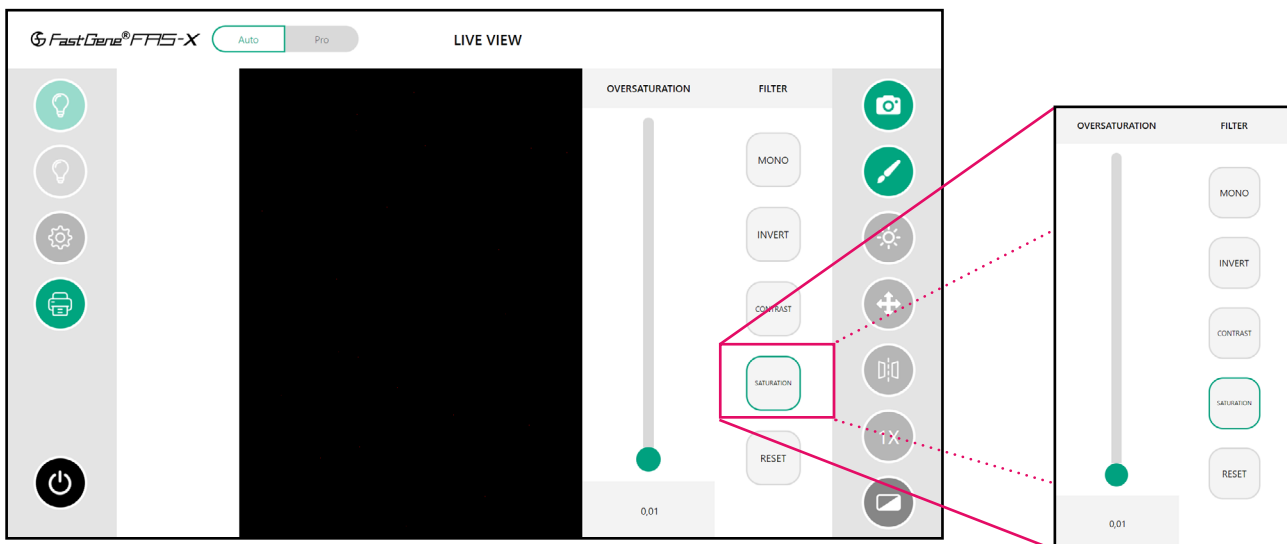
6.7.5. Filter function



It is possible to change the image from colour to greyscale with the *Mono* option. The *Invert* option reverses the colors or tones in an image, switching light areas to dark and vice versa. The *Contrast* option allows you to adjust the difference between the light and dark areas of your gel image using the slider or simply by typing the numbers.



The *Saturation* ensures that the brightest areas of an image, such as intense bands or spots, are displayed without distortion or oversaturation, allowing accurate visualization and preventing overexposure that could obscure critical details.

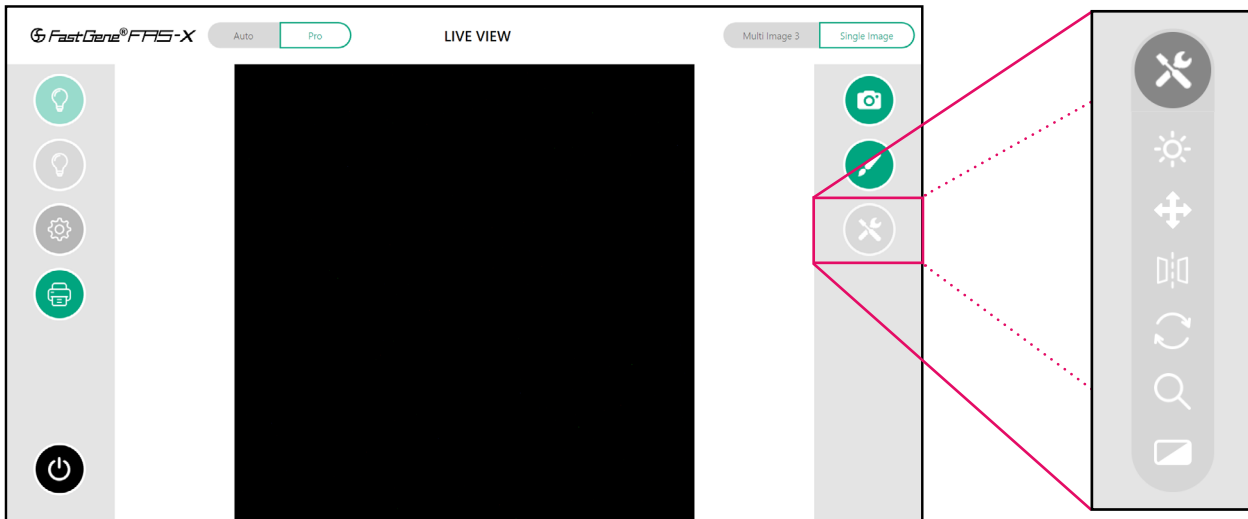


The *Reset* button located at the bottom will restore the applied filters.

6.8. Operation in Pro mode

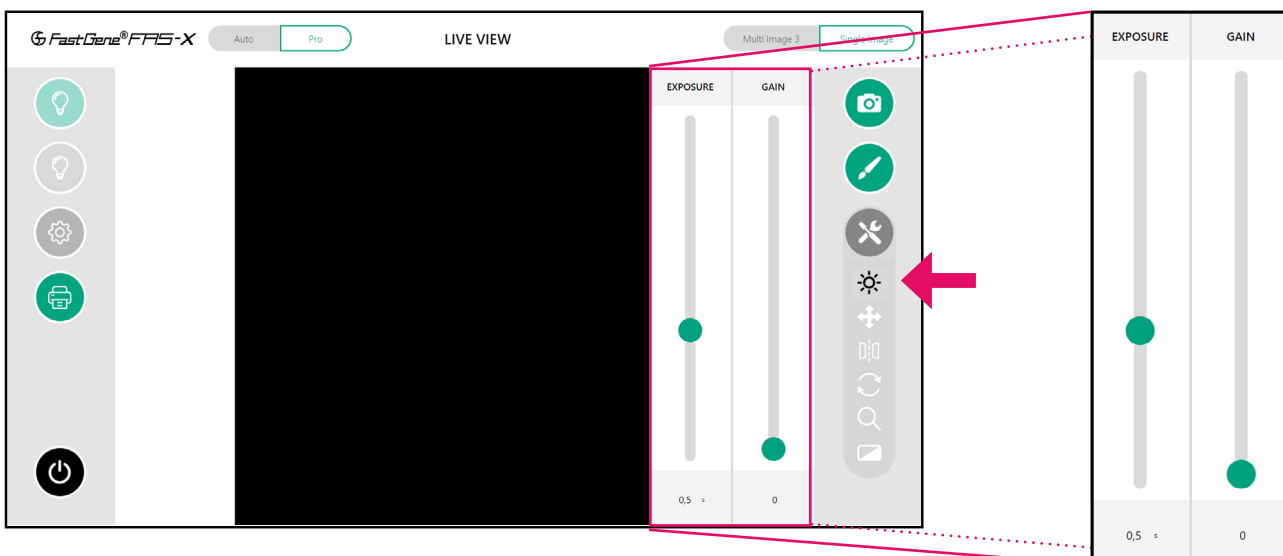
To operate in Pro mode, switch from Auto to Pro mode in the top left corner.

To access the exposure time, move, mirror, rotate, zoom, and filter options tap on the tools icon to expose them.



6.8.1 Exposure adjustment function

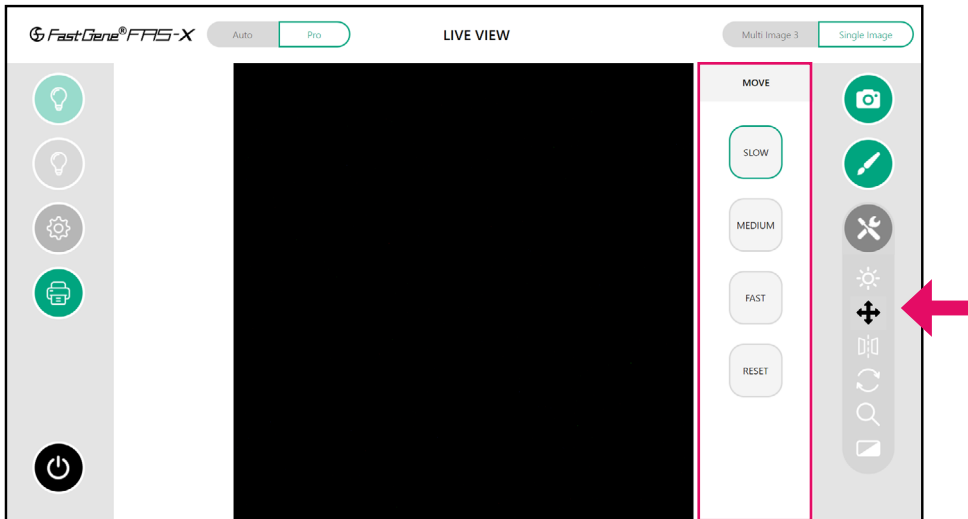
In Pro mode, the exposure time of the sensor is shown in seconds.



The exposure time range is 13 μ s to 10 seconds. You can change the values by manually entering a number in the numeric field or using the slider to increase or decrease the exposure time. The gain can be changed in the same way.

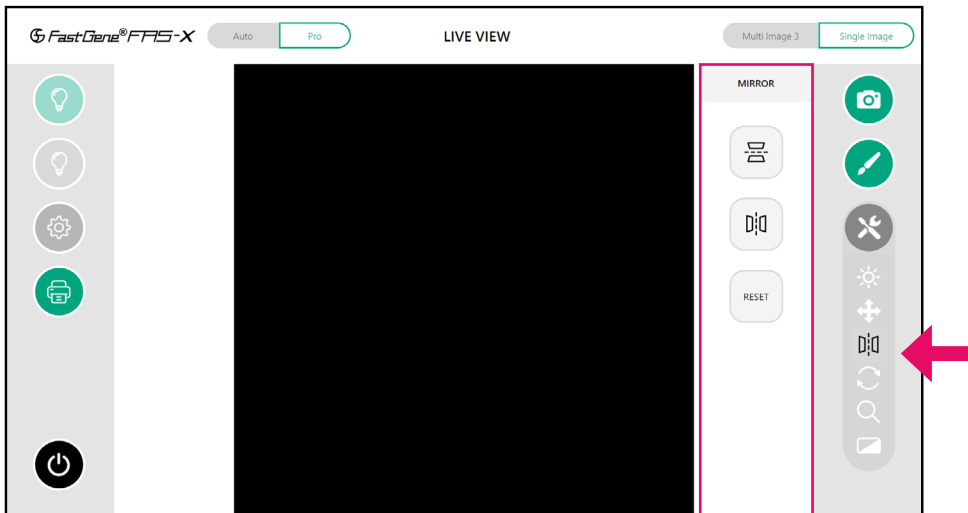
6.8.2. Move function

Similar to Auto mode, in Pro mode, you can equally adjust the movement mode (slow, medium or fast) to position the bands of interest in the centre of the screen.



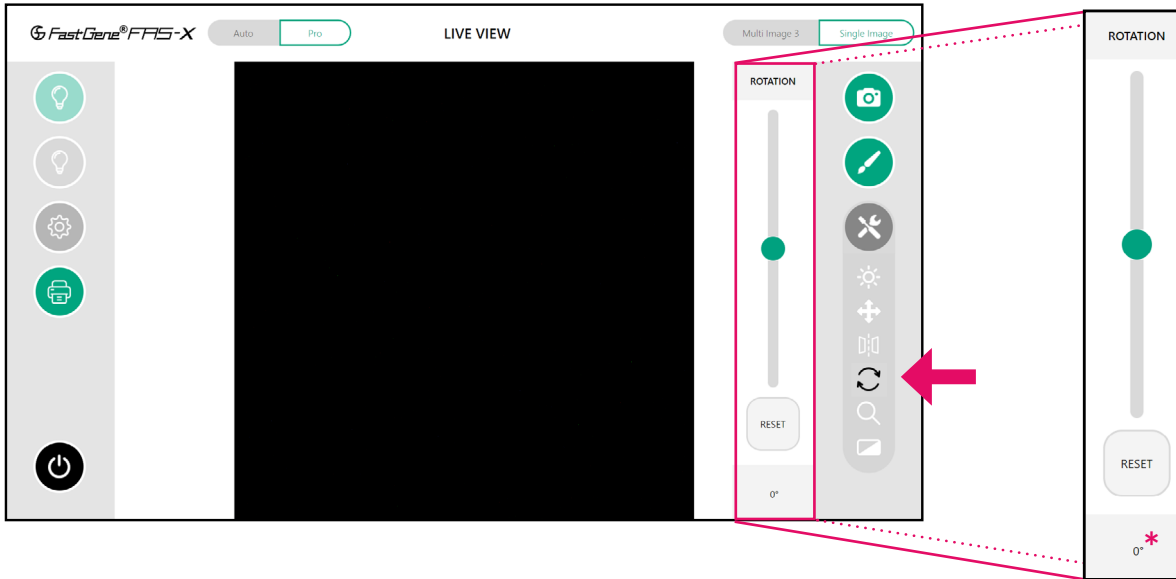
6.8.3. Mirror function

Just like in Auto mode, in Pro mode you can mirror the picture horizontally or vertically. Resetting the mirror filter is also possible.



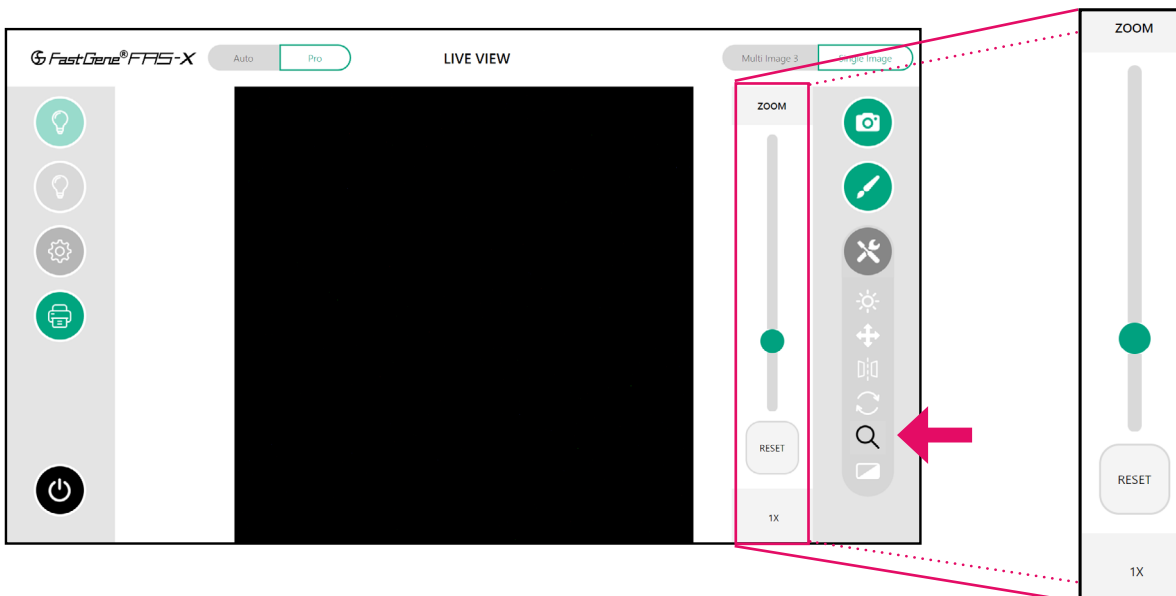
6.8.4. Rotate function

The *Rotate* function is exclusive to Pro mode. If the object is not placed in the correct orientation, you can rotate the image by using the slider, touch screen or by entering in the desired angle*.



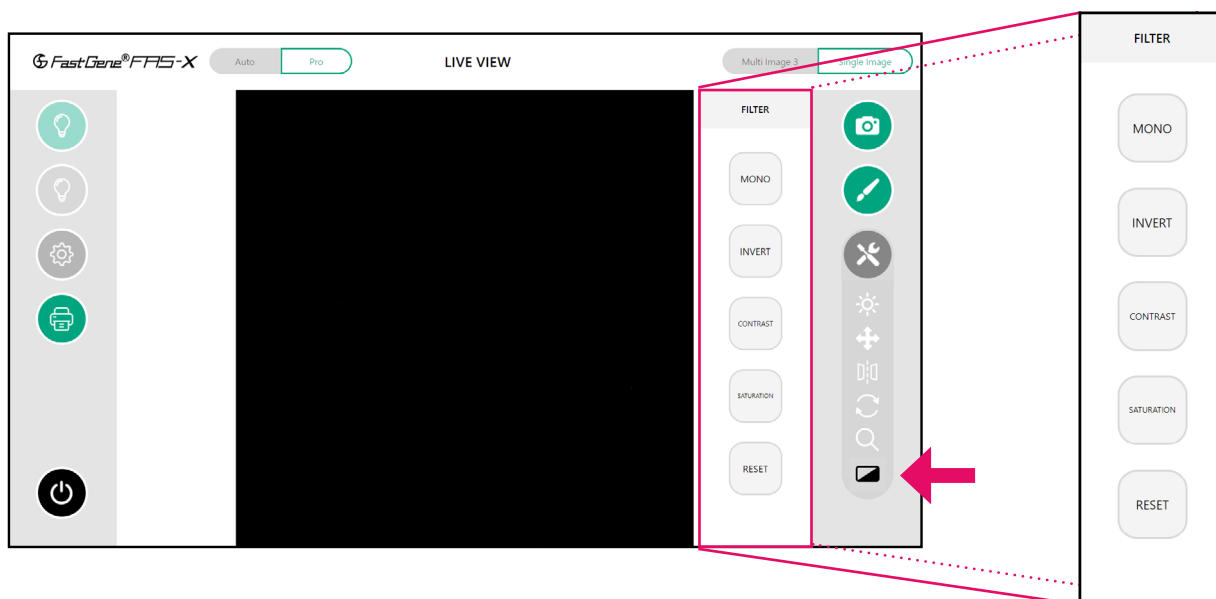
6.8.5. Zoom adjustment function

Unlike Auto mode, which offers pre-defined zoom levels, Pro mode allows you to digitally zoom in and out using the button to slide up and down, or type in a value.



6.8.6. Filter function

Like in the Auto mode, you can further edit the live view image by changing the image from color to greyscale (Mono), inverting (Invert) the grey values, adjusting the saturation (Saturation), or enhancing the contrast (Contrast) of your gel image as needed. The Reset button will deactivate these filters.



6.8.7. Multi-image recording function

The functionality of Pro mode extends to multi-image recording (3 or 5 images) with different exposure times. This allows to scan and easily select the perfect exposure. The steps of the exposure times can be set in the settings menu (see page 25).



7. Excision of DNA bands

7.1. Excise the DNA band

1. Open the drawer to access the transilluminator.
2. Please wear the amber goggles to identify the desired bands and to protect your eyes from potentially too intense Blue/Green light.
3. Turn on the Blue/Green light by pressing the green light button in the software (see above).
4. With the aid of a scalpel or the FastGene® Agarose Gel Band Cutter, excise the DNA band of interest.



8. Heat protection and sleep mode

To save energy and prevent the system from running continuously, you can set a sleep time in the *Settings* menu (see page 31) that will start the stand-by mode after the given time. To wake up the unit, press the power switch. In addition, the Blue/Green transilluminator will switch off after 30 minutes of inactivity to protect the transilluminator from overheating. Please wait 5 minutes to turn it on again.

9. Contact details

Please contact us for additional information: info@nippongenetics.eu

Please contact our support: support@nippongenetics.eu

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