Smart Shooter Documentation

Release 6.8

Kuvacode

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1 Windows

How to install and update Smart Shooter on Windows

> **Minimum Requirements**
>
> - Microsoft Windows 10 (64bit) or later

1.1 Installation

Smart Shooter has an install program that configures it for your system. To install, download the file from https://kuvacode.com/smartshooter6, open it, and follow the on-screen instructions.

To uninstall the app, right-click the *Smart Shooter 6* program link that is located in the Windows Start Menu. Alternatively you can go to the **Add or Remove Programs** located in the Windows Control Panel, and click *Remove* next to the **Smart Shooter 6** item in the list.

1.2 Obtaining Updates

New releases of the app will be made available at https://kuvacode.com/smartshooter6. You can install a new version without uninstalling the previous version, and your personal settings will also be preserved.

The app will also automatically notify when a new version is available, and provide the option to install it.

2 macOS

How to install and update Smart Shooter on macOS

> **Minimum Requirements**
>
> - macOS 13.5 (Ventura) or later
> - Intel or Apple Silicon


Smart Shooter 6 Setup
SMART
SHOOTER
By clicking on 'Accept and Install' you are agreeing to the Licenses terms and conditions
Options
Accept and Install

2.1 Installation

Smart Shooter is provided as a stand alone DMG package file. To install, download the file from https://kuvacode.com/smartshooter6, open it, and drag the **Smart Shooter 6** item to your **Applications** folder.



To uninstall the app, simply delete the **Smart Shooter 6** item located in the **Applications** folder.

2.2 Obtaining Updates

New releases of the app will be made available at https://kuvacode.com/smartshooter6. You can install a new version without uninstalling the previous version, and your personal settings will also be preserved.

The app will also automatically notify when a new version is available, and provide the option to install it.

3 License Activation

How to activate your license for Smart Shooter

When Smart Shooter is first installed on a computer, it will operate in a trial mode lasting 30 days. During the trial period the app is fully functional and can be used with up to eight cameras, so this time can be used to evaluate it before making a purchase.

> **Note**
>
> A Smart Shooter license covers a single camera, so the trial allows more than a license does on purpose, to let a multi-camera setup be evaluated first. Additional cameras are bought as add-ons, either alongside the license at the time of purchase, or added later as they are needed. To add them later, open *Help -> Manage License* and click *Upgrade*.

3.1 Activation Code

After purchasing a license for Smart Shooter, you will receive an email containing the activation code, which can be used to activate and unlock the app from trial mode. This email is sent to the same email address that you specified when making the purchase.

A license is for one person to use, and the activation code can be active on one computer at a time.

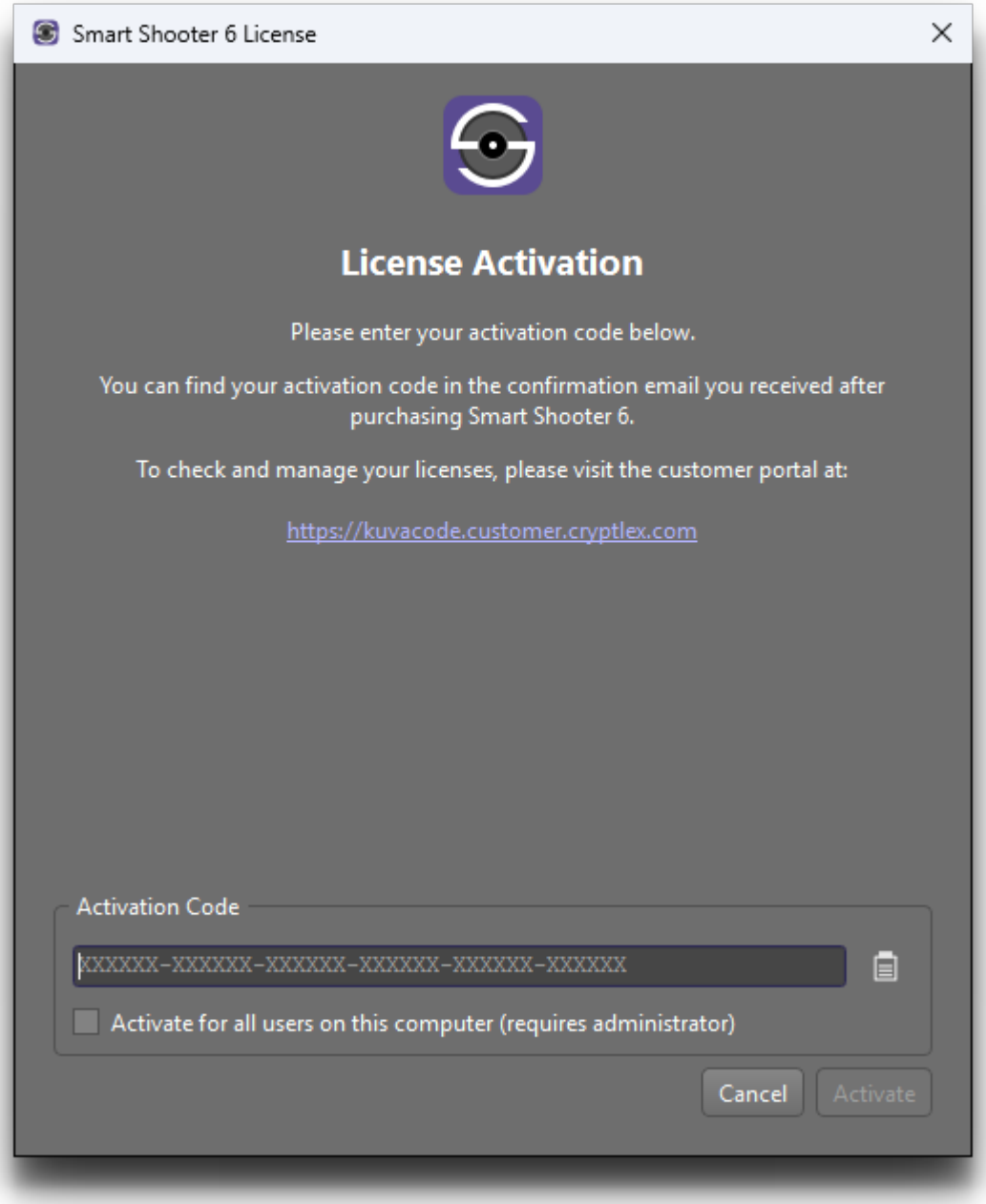
> **Note**
>
> The format of the activation code is 36 hexadecimal digits, for example:
>
> `ABC012-DEF345-FED678-CBA901-ABC234-DEF567`

This code can be entered into the **License** window to unlock the app.

3.2 Deactivating

If you ever need to deactivate the license, open *Help -> Manage License* and click the *Deactivate* button in the dialog that appears. You may need to do this if you want to install the software on another computer and use the same license there.

> **Note**
>
> You can view the license information and manage the activations/deactivations yourself at the customer portal website:
>
> https://kuvacode.customer.cryptlex.com


Smart Shooter 6 License
License Activation
Please enter your activation code below.
You can find your activation code in the confirmation email you received after purchasing Smart Shooter 6.
To check and manage your licenses, please visit the customer portal at:
https://kuvacode.customer.cryptlex.com
Activation Code
XXXXXXX-XXXXXXX-XXXXXXX-XXXXXXX-XXXXXXX-XXXXXXX
Activate for all users on this computer (requires administrator)
Cancel
Activate

3.3 Using More Than One Computer

Each license is associated with a single person. If you need to move Smart Shooter to a different computer, you can do this yourself by deactivating the license on the old computer, and then activating it on the new one.

Sometimes one person needs to use the app on more than one computer at the same time — a studio machine and a laptop for location work, for example. If deactivating and reactivating the license each time doesn't suit the way you work, please get in touch. We can usually increase the number of computers a license can be active on at the same time, so just let us know what you need and why.

If more than one person needs to use Smart Shooter, then each person needs their own license. That way everybody has their own activation code, and can activate and deactivate their own computers without affecting anyone else.

You can see how many computers your license covers, and which ones it is currently activated on, at the customer portal website. To ask us about any of this, please see *Getting Help*.

3.4 Offline Use

An internet connection is only needed for the initial activation. When the activation code is entered, the app saves the license information on the computer, so after that the computer can be disconnected from the network, or used in a fully air-gapped environment, and the app will remain activated and fully functional.

Each time the app is launched, it will try to contact the licensing server if a network connection is available. If the server can't be reached, the app simply carries on using the saved license information, so there is no loss of functionality when working offline.

3.5 Firewall Settings

The app contacts the licensing server over the internet when you enter the activation code, when you deactivate the license, and each time it is launched to check that the license is still valid. If the licensing server can't be reached at launch, the app carries on working as normal, as described in *Offline Use* above. It also contacts the Kuvacode website to check whether a software update is available.

On a corporate or otherwise restricted network these connections can be blocked by a firewall, which will cause the activation to fail. If this happens, ask your network administrator to allow outgoing connections to the servers listed below. All of them are contacted over HTTPS on port 443.

Server	Purpose
`api.cryptlex.com`	Activating and deactivating the license, and checking that it is still valid.
`license.kuvacode.com`	Registering your license details when the activation code is first entered.
`smartshooter6.kuvacode.com`	Checking whether a software update is available.
`kuvacode.com`	Checking whether a software update is available (the check above is redirected to here).
`archive.kuvacode.com`	Downloading the software update itself.

Only outgoing connections are needed, so there is no need to open any ports for incoming traffic.

> **Note**
>
> If your firewall is configured with IP addresses rather than server names, the current addresses used by the licensing server are published by Cryptlex, the licensing provider, at:

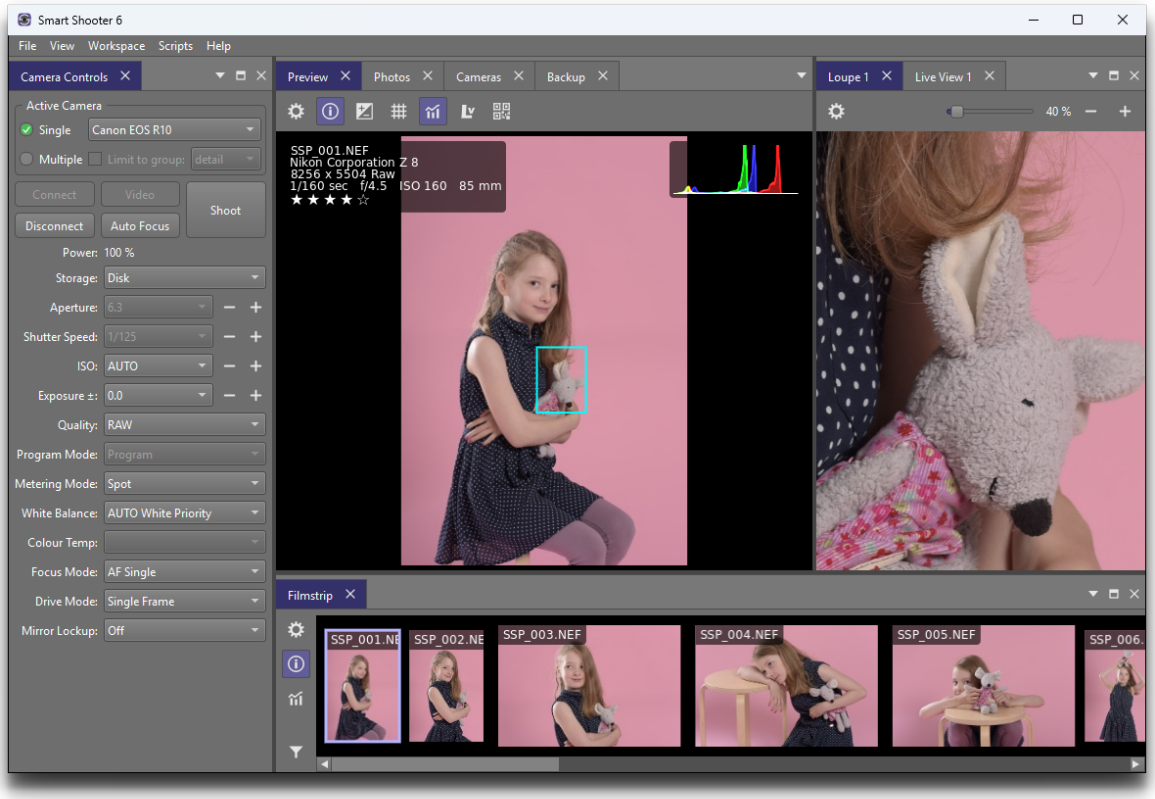
https://cryptlex.com/docs/sdks-and-apis/proxies-and-firewall

4 Application Interface

How to arrange and save your window layout

The Smart Shooter interface is built around a docking system. The main application window hosts a number of dockable panes — the **Cameras**, **Camera Controls**, **Dashboard**, **Photos**, **Filmstrip**, **Preview**, **Live View**, **Loupe**, **Session**, **Barcodes**, **Presets**, **Script Controls**, **Backup**, **Log**, and so on. Each of these can be docked into the main window, floated as its own free-standing window, grouped into tabbed docks, or hidden entirely.

This flexibility is important because the right layout for shooting is rarely the same as the right layout for reviewing photos after the fact. The interface is designed to be arranged for the task at hand, and the result can be saved as a **workspace** so the same layout can be brought back later without re-arranging everything by hand.



4.1 Showing and Hiding Panes

Every pane in the app can be opened or closed individually from the *View* menu. The menu shows the full list of available panes — selecting one toggles it open or closed.

If a layout starts to feel cluttered, the simplest fix is to close the panes you are not currently using. They can be reopened any time from the same menu.

4.2 Docking and Floating

Each pane has a title bar at the top. Dragging the title bar lets you move the pane:

- **Dock** — drop the pane onto one of the dock zones at the edge of the main window (top, bottom, left, right) or onto an existing docked pane to share the same area
- **Float** — drop the pane away from any dock zone to leave it as a free-standing window. Floating panes can be moved to a second monitor, which is useful when working with multiple displays
- **Re-dock** — drag a floating pane's title bar back to a dock zone to attach it again

Docked panes can be resized by dragging the splitter bar between adjacent panes.

4.3 Tabbed Docks

When a pane is dropped onto an existing docked pane (rather than onto a dock zone at the edge), the two panes share the same area and appear as tabs at the bottom of the dock. This is a useful way to keep related panes available without using more screen space — for example, the **Photos** table and the **Filmstrip** can occupy the same area, with a tab to switch between them.

4.4 Workspaces

A **workspace** is a saved snapshot of the current window layout — which panes are open, where they are docked, how they are sized, and which tabs are grouped together. Workspaces let you build a layout once and switch between them as the task changes.

All workspace actions are available from the *Workspace* menu.

Save Workspace
: Save the current layout as a named workspace.

Switch Workspace
: Open a submenu showing all saved workspaces; selecting one restores its layout.

Delete Workspace
: Remove a saved workspace.

Reset Workspace
: Restore the layout to the app's default arrangement. Useful when a layout has been changed in a way that is hard to undo.

> **Tip**
>
> A common pattern is to save two or three workspaces aligned with your most common tasks — for example, one **Capture** workspace that prioritises the **Live View**, **Camera Controls**, and **Preview**, and one **Review** workspace that prioritises the **Filmstrip**, **Preview**, **Loupe**, and **Photos** table. Switching between them is then a single click.

4.5 Default Focus

When the app starts, the **Preview** window is given default focus, so the most recently taken photo and the live view stream are the first thing you see. The **Camera Controls** window is also raised so that keyboard shortcuts such as `F5` (take photo) or `F6` (auto focus) act on the active camera straight away.

4.6 Keyboard Shortcuts

Many actions can be done from the keyboard. Camera actions, such as taking a photo or changing a camera setting, act on the active cameras (see *Active Camera*). Photo actions act on the photos selected in the **Photos** table or **Filmstrip**.

The shortcuts work from any window, including a floating one.

Default Shortcuts

Key	Action
F2	Turn full screen on or off
Esc	Leave full screen
F5	Take a photo
F6	Auto focus
F7	Take a photo on all connected cameras
F8	Run the currently loaded script
F9	Go to the *Barcode* field in the **Session** window
Ctrl+O	Open the **Options** window

On macOS, use the Command key in place of Ctrl. Depending on your keyboard settings, you may also need to hold the Fn key to use the function keys.

Changing Shortcuts

All the shortcuts except Esc can be changed in the **Shortcuts** tab of the **Options** window. It lists every action that can be given a key, grouped as follows:

- **Camera** — take a photo, auto focus, take a photo on all connected cameras, run the script, press and release the shutter button, connect, disconnect and identify the camera, and detect cameras.
- **Camera property** — step each camera setting up or down, such as aperture, shutter speed, ISO and white balance. Each setting has one action to step it up and one to step it down.
- **Live view focus** — the six focus steps of the Live View focus buttons (see *Focus Buttons and Mouse Wheel*).
- **Photo** — view, download, hide or unhide the selected photo, reshoot it with the same name, and activate the selected barcode.
- **Application** — full screen, the **Options** window, the *Barcode* field, and showing each window, such as the **Preview** or **Live View 1**.

Only the default shortcuts above have a key to begin with. To give an action a key, click its box in the *Key* column and press the key. To remove a key, click the clear button in its box. Then press *Apply* or *OK* to keep the changes.

- Each key can only be used once. If the key is already in use, it is refused, and the tab shows which action is using it.

- A key pressed on its own, such as a letter or a number, doesn't work while you are typing in a text field such as the *Barcode* field. The tab warns you when you choose one. Function keys, and keys pressed with Ctrl or Alt, work everywhere.
- *Reset Shortcuts* puts back the default keys, and turns the legacy shortcuts back on.

Legacy Single-Key Shortcuts

Earlier versions of the app used single-letter shortcuts. These are still on by default:

Key	Action
T	Take a photo
Z	Take a photo on all connected cameras
F	Auto focus
R	Run the currently loaded script
A	Select the aperture camera setting
S	Select the shutter speed camera setting
I	Select the ISO camera setting
E	Select the exposure compensation camera setting
Q	Select the photo quality camera setting
M	Select the metering mode camera setting
W	Select the white balance camera setting
Up arrow	Change the value of the currently selected camera setting
Down arrow	Change the value of the currently selected camera setting

These keys can't be changed, and they don't work while you are typing in a text field. To turn them off, untick *Also use the legacy single-key shortcuts* in the **Shortcuts** tab. While they are on, their keys can't be given to other actions.

5 Upgrading from Smart Shooter 5

How to migrate your data from Smart Shooter 5

Smart Shooter 6 can be installed alongside Smart Shooter 5. The two versions will not interfere with each other, and you can continue to use Smart Shooter 5 while evaluating Smart Shooter 6.

5.1 Data Migration

When Smart Shooter 6 is launched for the first time, it will detect any existing Smart Shooter 5 installation and offer to migrate your data. This includes:

- Camera names and serial number associations
- Camera presets
- Application options and settings

> **Note**
>
> The migration is a one-time operation. After the migration is complete, changes made in Smart Shooter 5 will not be reflected in Smart Shooter 6, and vice versa.

5.2 License

Smart Shooter 6 requires a separate license from Smart Shooter 5. Your existing Smart Shooter 5 license will not work with Smart Shooter 6. Please visit https://kuvacode.com/smartshooter6 to purchase a new license.

5.3 What's New

Smart Shooter 6 includes the following major improvements over Smart Shooter 5:

- **New camera support** – Many recent Canon, Nikon, Sony and Fujifilm models, and the Sigma fp and fp L, are now supported. See *Supported Cameras* for the full list
- **Language support** – The application interface can be displayed in 18 languages in addition to English, chosen when the app is first run and changed at any time afterwards
- **New Dashboard window** – A dedicated window for monitoring multiple cameras at a glance, with a tile per camera showing its status and the most recently taken photo
- **Photo ratings** – Apply star ratings to photos and filter the photo views by rating
- **Photo import** – Import photos that are already on a camera's memory card, as well as downloading new photos as they are taken
- **Enhanced Filmstrip** – New photo grid layout mode and orientation controls for organising photos
- **Filtering and sorting** – Filter and sort controls in the Filmstrip, Photos, Cameras and Dashboard windows, for finding photos and cameras quickly
- **Improved macOS camera support** – New native camera backend using Apple's ImageCaptureCore API
- **Database-driven storage** – Camera and photo data is now stored in a persistent database, providing better reliability and faster performance

5.4 What's Changed

Two features that were part of Smart Shooter 5 work differently in Smart Shooter 6:

- **Lightroom Classic plugin** – The plugin has been removed. Changes made by Adobe had already stopped it working with any camera that Lightroom Classic supports natively. Photos can still be brought into Lightroom as they are taken, by pointing Lightroom's own Auto Import at the download folder, as described in Tethered Shooting with Lightroom Auto Import.
- **External API** – The API is now an add-on, bought separately from the license, rather than being included as it was in Smart Shooter 5. Until the license includes it, the **External API** tab in the **Options** window is greyed out. See *External API*.

6 Camera Control

How to control your cameras

The app exposes several ways to monitor and control the cameras, and allows actions to be done across multiple cameras at the same time.

The primary way of control is using the **Camera Controls** window, as shown below. This window serves 3 purposes:

- Which cameras are active; either one specific camera, all cameras, or a group of cameras

- Actions to take on the active cameras
- View current status of the active cameras

6.1 Active Camera

At the top of this window is the **Active Camera** section, which a dropdown list of all the cameras that are currently connected. By changing the selection in this dropdown list, you can switch to controlling/viewing a different camera.

It also contains radio buttons for *Single* and *Multiple*. When *Single* is selected, then any actions taken will affect only the camera that is currently selected in the dropdown list. When *Multiple* is selected, then any actions will affect all connected cameras.

The *Limit to group* checkbox allows a specific set of cameras to be selected. These camera groups can be created by right-clicking a camera in the camera table.

The screenshot below shows a typical working layout, with the **Camera Controls** window on the left and the **Cameras** table in the centre. A camera is selected in the table, and the **Active Camera** dropdown is open to switch which camera is being controlled.

6.2 Keyboard Shortcuts

Taking a photo, auto focus and changing camera settings can also be done from the keyboard, and act on the active cameras. For the full list, and how to change the keys, see *Keyboard Shortcuts*.

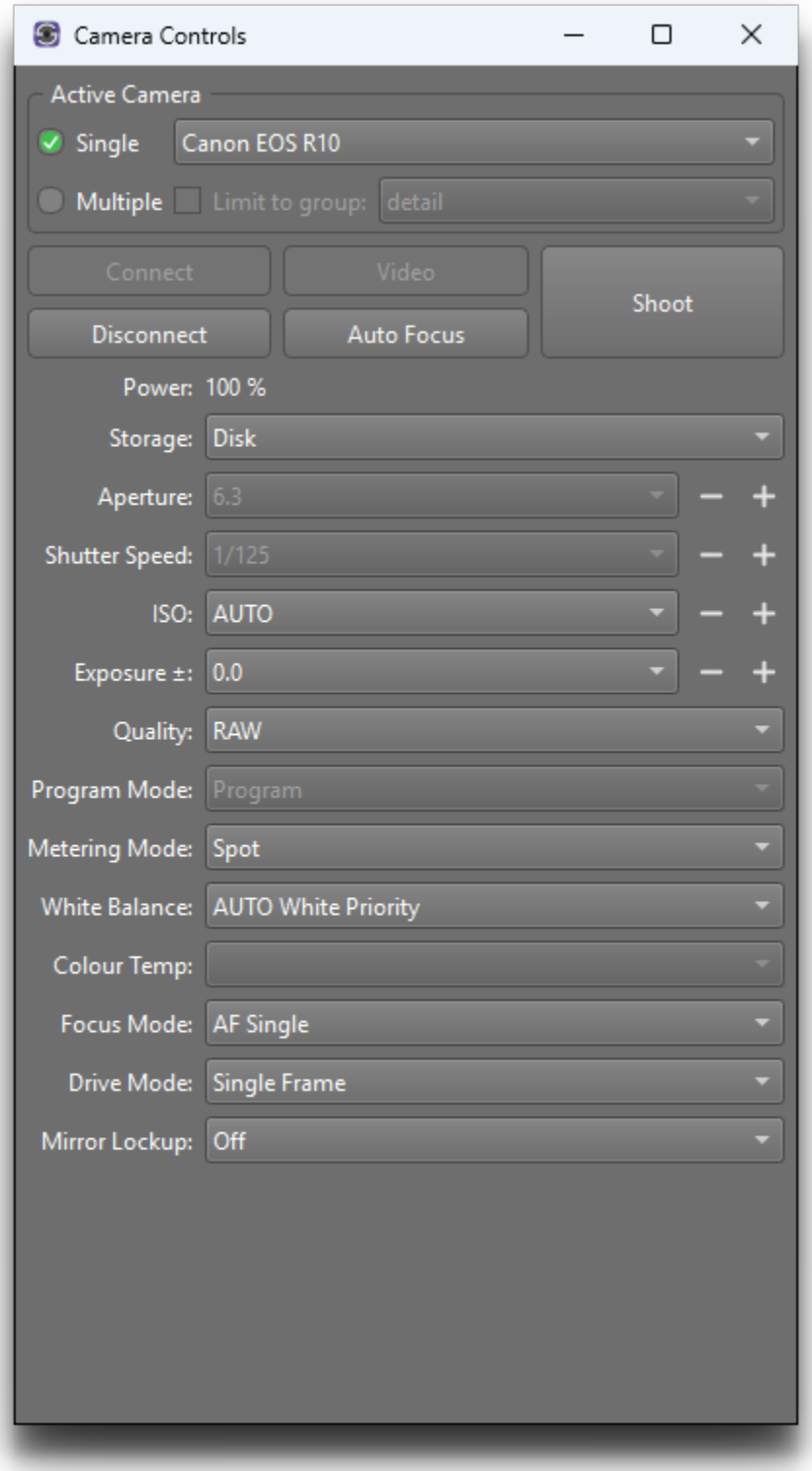
7 Dashboard

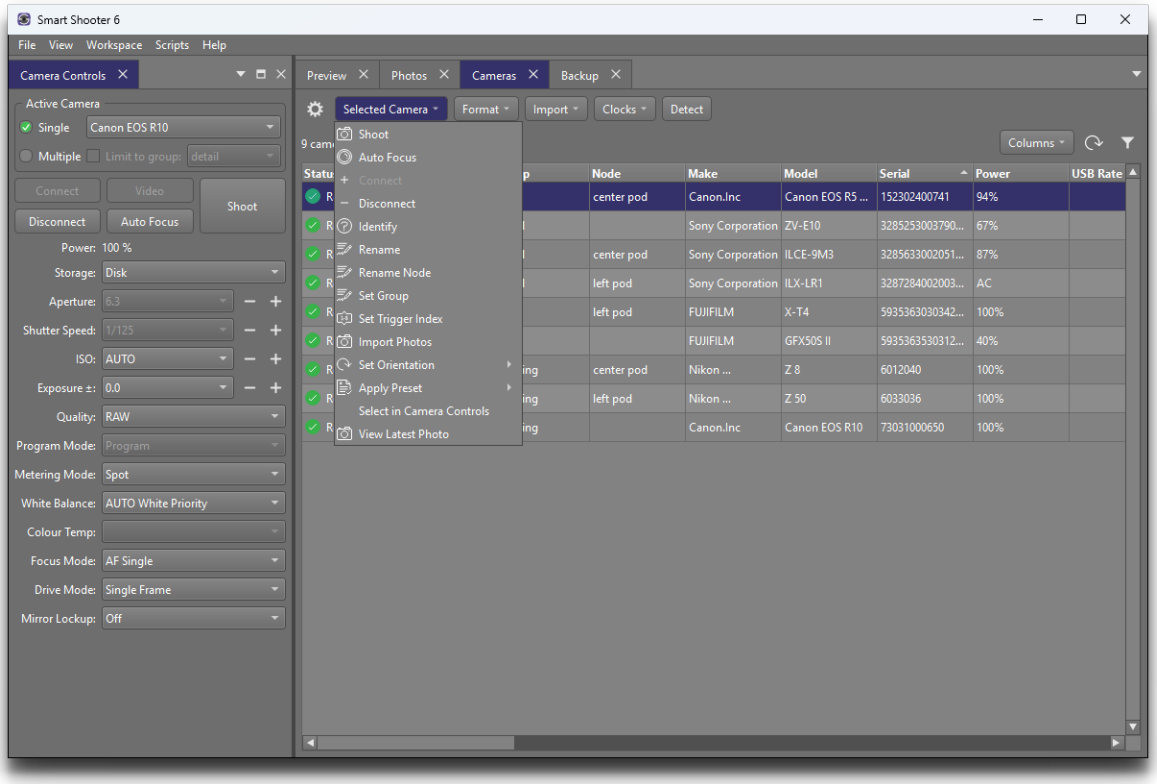
Monitoring multiple cameras at a glance

The **Dashboard** gives a live overview of every connected camera, with each camera shown as its own tile in a grid layout. When shooting with more than one camera, it is the quickest way to see the state of the whole setup at once, without switching between windows.

The Dashboard is not part of the default layout, because Smart Shooter opens with the **Preview** window in focus. Open it from the *View* menu, as described in *Showing and Hiding Panes*. Once open it can be docked, floated or tabbed like any other pane, and kept as part of a saved workspace.

> **Tip**
>
> A common arrangement for multi-camera work is the Dashboard docked on one side of the screen and the **Preview** window on the other, so the overall state of the cameras and the most recent photo are both visible at the same time.


Camera Controls
Active Camera
Single
Canon EOS R10
Multiple
Limit to group:
detail
Connect
Video
Shoot
Disconnect
Auto Focus
Power: 100 %
Storage:
Disk
Aperture:
6.3
Shutter Speed:
1/125
ISO:
AUTO
Exposure ±:
0.0
Quality:
RAW
Program Mode:
Program
Metering Mode:
Spot
White Balance:
AUTO White Priority
Colour Temp:
Focus Mode:
AF Single
Drive Mode:
Single Frame
Mirror Lockup:
Off



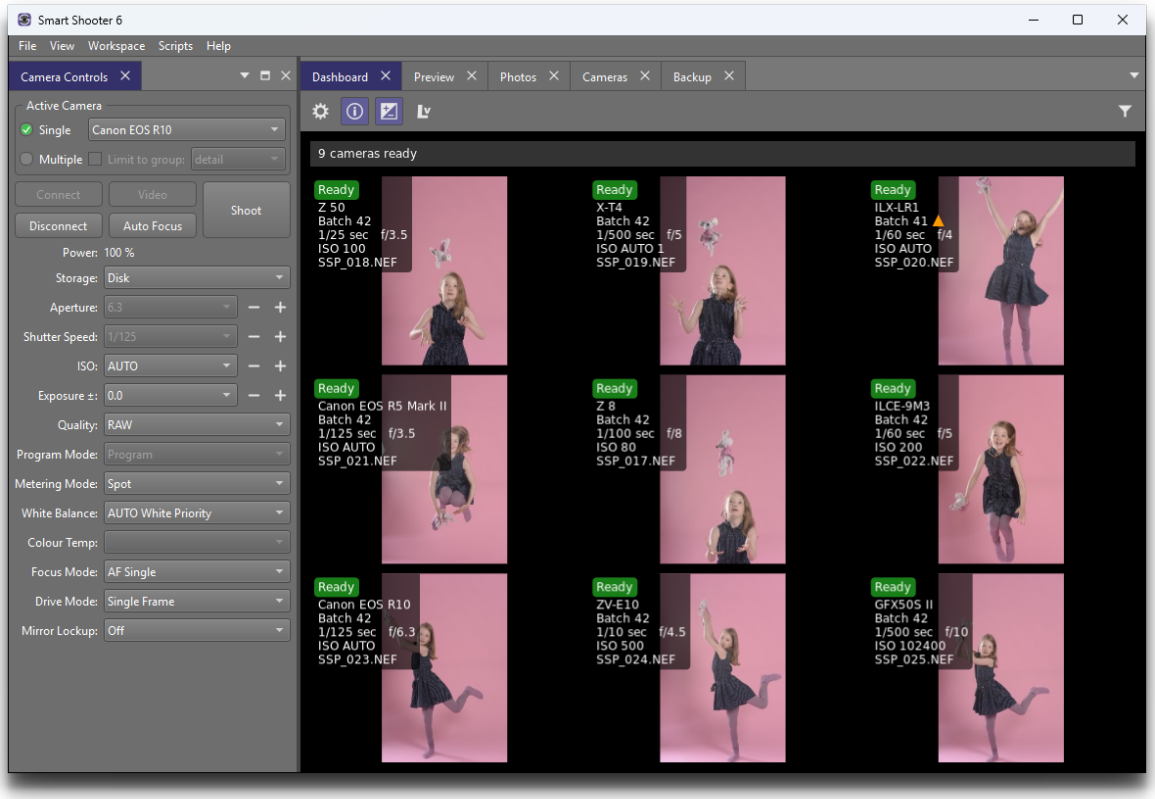
7.1 Camera Tiles

Each tile in the Dashboard represents one connected camera, and shows the information you most often need at a glance:

- A status badge, such as *Ready*
- The camera's name
- The session batch number
- The current exposure settings — shutter speed, aperture and ISO
- The filename of the most recently taken photo
- A thumbnail of that photo

A bar above the tiles summarises the whole set, for example `9 cameras ready`. The tiles are arranged in a grid that automatically reflows to fit the available window size, and as cameras are added or removed the layout adjusts accordingly.

Keyboard shortcuts such as `F5` (take photo) and `F6` (auto focus) act on the active camera rather than on the Dashboard selection. For the full list, and for how the active camera is chosen, see *Keyboard Shortcuts*.


Smart Shooter 6
File View Workspace Scripts Help
Camera Controls
Active Camera
Single
Canon EOS R10
Multiple
Limit to group:
detail
Connect
Video
Shoot
Disconnect
Auto Focus
Power: 100 %
Storage: Disk
Aperture: 6.3
Shutter Speed: 1/125
ISO: AUTO
Exposure ±: 0.0
Quality: RAW
Program Mode: Program
Metering Mode: Spot
White Balance: AUTO White Priority
Colour Temp:
Focus Mode: AF Single
Drive Mode: Single Frame
Mirror Lockup: Off
Dashboard
Preview
Photos
Cameras
Backup
9 cameras ready
Ready
Z 50
Batch 42
1/25 sec f/3.5
ISO 100
SSP_018.NEF
Ready
X-T4
Batch 42
1/500 sec f/5
ISO AUTO 1
SSP_019.NEF
Ready
ILX-LR1
Batch 41
1/60 sec f/4
ISO AUTO
SSP_020.NEF
Ready
Canon EOS R5 Mark II
Batch 42
1/125 sec f/3.5
ISO AUTO
SSP_021.NEF
Ready
Z 8
Batch 42
1/100 sec f/8
ISO 80
SSP_017.NEF
Ready
ILCE-9M3
Batch 42
1/60 sec f/5
ISO 200
SSP_022.NEF
Ready
Canon EOS R10
Batch 42
1/125 sec f/6.3
ISO AUTO
SSP_023.NEF
Ready
ZV-E10
Batch 42
1/10 sec f/4.5
ISO 500
SSP_024.NEF
Ready
GFX50S II
Batch 42
1/500 sec f/10
ISO 102400
SSP_025.NEF

7.2 Toolbar

A toolbar at the top of the Dashboard provides quick access to the view controls:

Options
Opens the Dashboard display options.

Show Info
Toggles the information overlay drawn on each camera tile.

Highlight Camera Warnings
Draws attention to cameras that need it — see the tip below.

Live View Overlay Options
Controls how the live view stream is shown within the tiles (see *Live View in the Preview and Dashboard*).

Show Filters
Shows or hides the filter bar described in the next section.

> **Tip**
>
> The toolbar's **Highlight Camera Warnings** toggle is one of the most useful elements in the Dashboard for live shooting. When enabled, any camera with a problem — a disconnection, a batch number mismatch between cameras, or any other condition that could affect the shoot — is highlighted and flashes in the tile layout, drawing your attention to it.
>
> During a session this means a glance at the Dashboard is enough to spot trouble, without inspecting every camera tile individually.

7.3 Filtering and Sorting

The *Show Filters* button on the toolbar reveals a filter bar above the tiles, for narrowing and ordering the visible set of cameras.

Group
Limits the view to cameras in a specific group. For more on creating and using camera groups, see *Active Camera*.

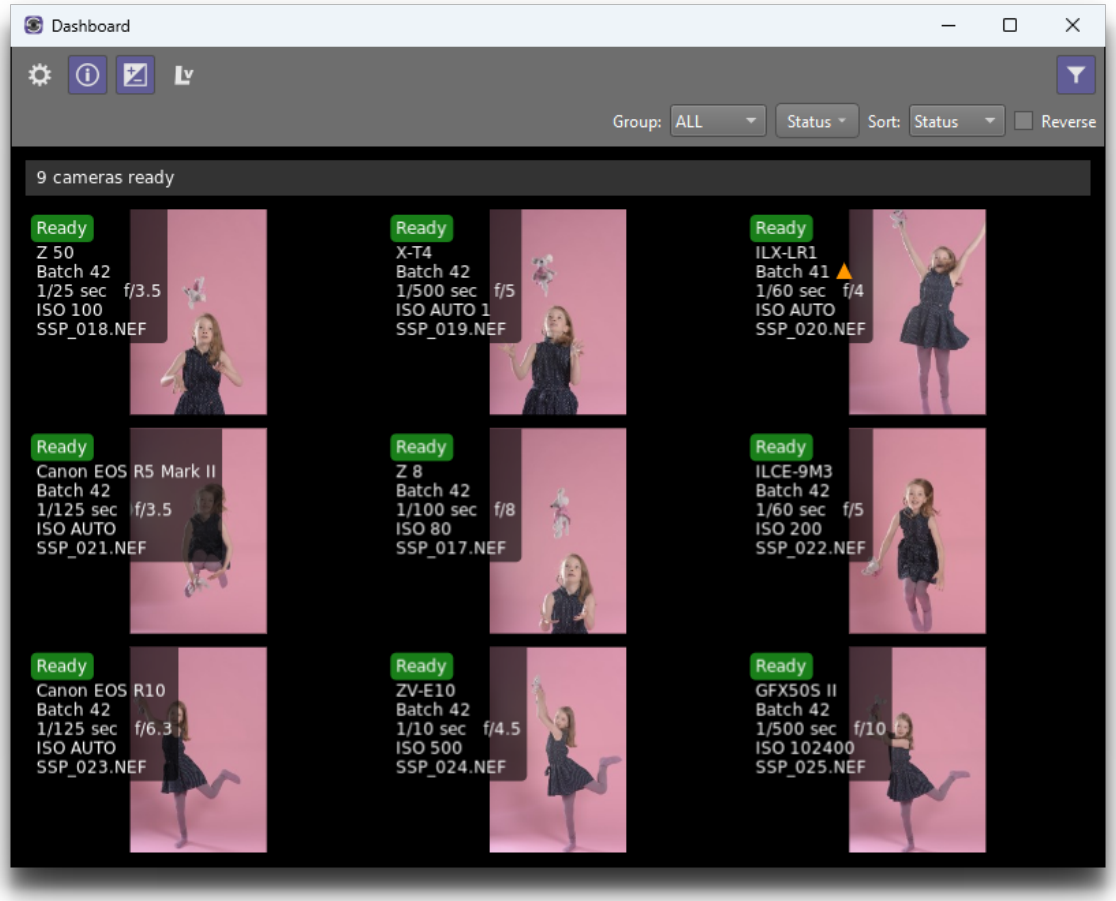
Status
Limits the view to cameras in the selected states, chosen from a drop-down menu.

Sort
Chooses the property the tiles are ordered by. The *Reverse* checkbox alongside it reverses that order.

7.4 Relationship to Other Windows

The Dashboard is the overview. For deeper inspection of any individual camera or photo, the app provides dedicated windows:

- For per-camera live view, focus and zoom, see the **Live View** windows described in *Live View*.
- For the tabular view of every camera and its settings, see the **Cameras** window described in *Viewing Cameras*.
- For full-size photo preview, zoom and per-photo actions, see *Viewing Photos*.


Dashboard
Group: ALL
Status
Sort: Status
Reverse
9 cameras ready
Ready
Z 50
Batch 42
1/25 sec f/3.5
ISO 100
SSP_018.NEF
Ready
X-T4
Batch 42
1/500 sec f/5
ISO AUTO 1
SSP_019.NEF
Ready
ILX-LR1
Batch 41
1/60 sec f/4
ISO AUTO
SSP_020.NEF
Ready
Canon EOS R5 Mark II
Batch 42
1/125 sec f/3.5
ISO AUTO
SSP_021.NEF
Ready
Z 8
Batch 42
1/100 sec f/8
ISO 80
SSP_017.NEF
Ready
ILCE-9M3
Batch 42
1/60 sec f/5
ISO 200
SSP_022.NEF
Ready
Canon EOS R10
Batch 42
1/125 sec f/6.3
ISO AUTO
SSP_023.NEF
Ready
ZV-E10
Batch 42
1/10 sec f/4.5
ISO 500
SSP_024.NEF
Ready
GFX50S II
Batch 42
1/500 sec f/10
ISO 102400
SSP_025.NEF

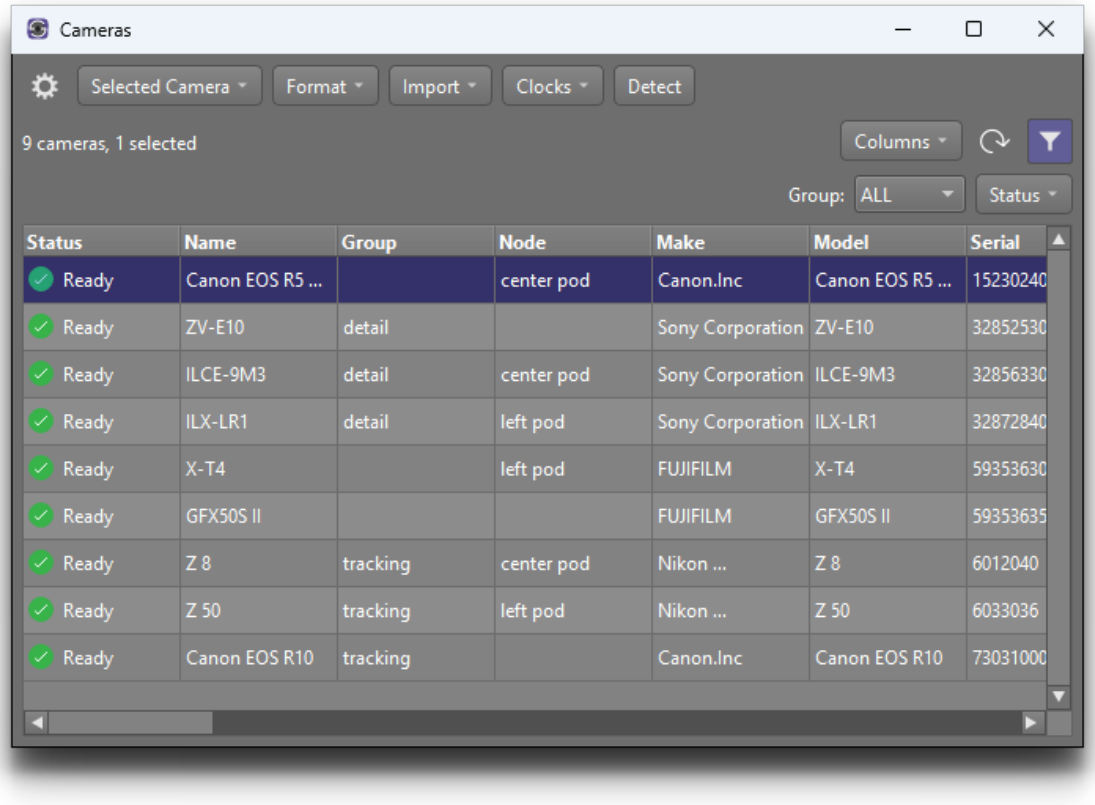
8 Viewing Cameras

Inspecting and viewing individual cameras

Smart Shooter provides two windows for working with cameras beyond the **Camera Controls** window used for configuring settings and triggering (see *Camera Control*): the **Cameras** window for a tabular view of every camera the app knows about, and the **Live View** window for the real-time preview of what a single camera is seeing.

8.1 Cameras Window

The **Cameras** window shows every camera that the app knows about, in a table format. This includes cameras currently connected as well as cameras that have been seen before. Each row corresponds to one camera and shows its name, group, status, settings and other identifying information.



The window is useful when working with several cameras and you need detailed information about each one in a single place — for example, to check that all cameras have the expected aperture setting, or to identify a camera that has lost connection.

Filtering and Sorting

The Cameras window has a filter row at the top of the table that lets you narrow the visible rows. You can filter by:

- **Group** — only show cameras in a particular group
- **Status** — only show cameras with a particular connection status

Column headings can also be clicked to sort the table.

Right-click Actions

Right-clicking a row opens a context menu with actions that apply to the selected camera. The most commonly used are:

- *Rename* — set a custom name for the camera (stored against the serial number, so the name persists across reconnects)
- *Set Group* — assign the camera to a named group, for use with the Camera Controls window's *Limit to group* checkbox
- *Connect* / *Disconnect* — control the connection to the camera
- *Identify* — flash an indicator on the physical camera to help locate it

Selecting multiple rows before right-clicking lets the same action be applied to all of the selected cameras at once.

8.2 Live View Window

The **Live View** window shows a real-time preview from a single camera. This is the most common way to compose a shot, check focus, or verify that a scene looks the way you expect before triggering the camera.

Up to four Live View windows can be open at once, each showing a different camera. For everything the Live View windows can do — focusing, zooming, overlays and camera-specific notes — see *Live View*.

9 Live View

Framing and focusing cameras in real time

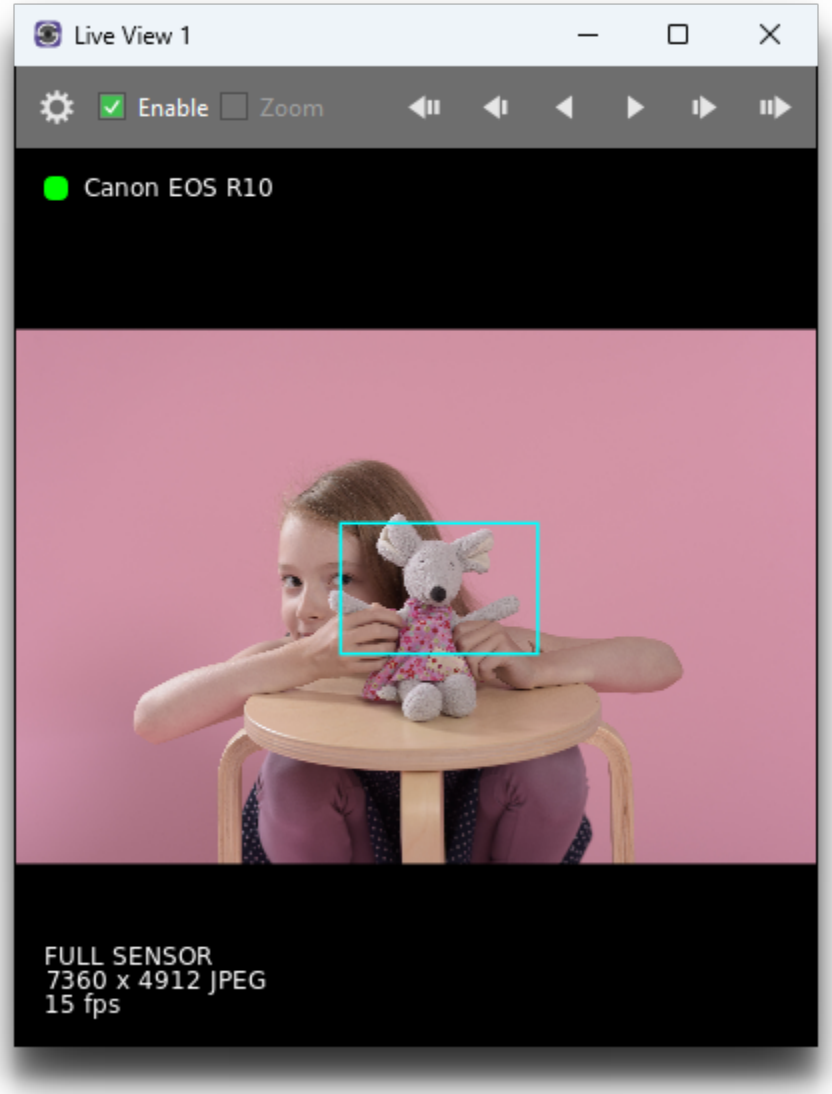
Live View shows a real-time preview of what a camera is seeing. Use it to compose a shot, check and adjust focus, or confirm that each camera is pointing where it should be before you trigger it.

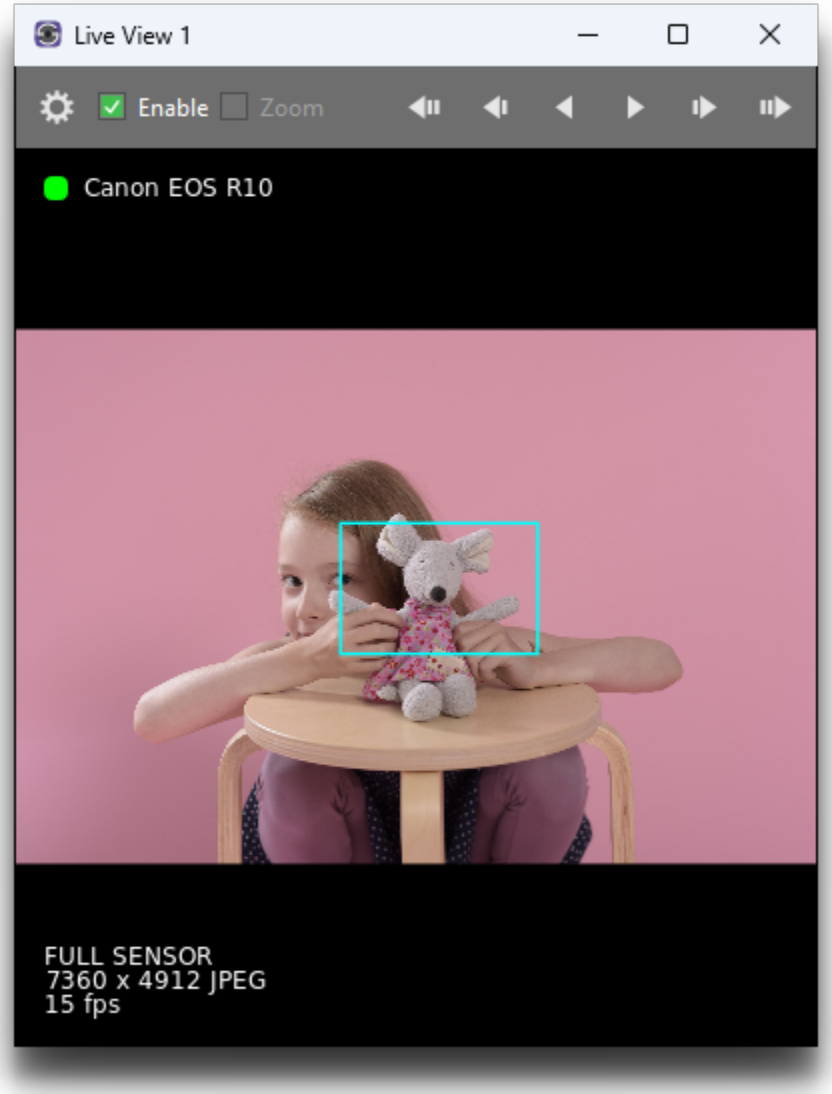
The main place to work with Live View is the **Live View** window, which shows one camera at a time. Live View can also be shown in the **Preview** window and in the **Dashboard** tiles (see *Live View in the Preview and Dashboard*).

9.1 Live View Windows

Smart Shooter has four Live View windows, named **Live View 1** to **Live View 4**. Open them from the *View* menu. Like any other pane they can be docked, floated or tabbed, and kept as part of a saved workspace (see *Application Interface*).

Having more than one open lets you monitor several cameras side by side. Each window has its own camera and its own options, so one window can show a camera at full frame while another is zoomed in to check critical focus.


Live View 1
Enable
Zoom
Canon EOS R10
FULL SENSOR
7360 x 4912 JPEG
15 fps


Live View 1
Enable
Zoom
Canon EOS R10
FULL SENSOR
7360 x 4912 JPEG
15 fps

Choosing the Camera

Click the *Options* button (the cog at the left of the toolbar) to choose which camera the window shows, under *Show Live View From*:

- With *Active Camera* ticked (the default), the window follows the camera selected in the **Camera Controls** window (see *Active Camera*).
- With it unticked, pick a camera from the list and the window stays on that camera, whichever camera is active. The list includes every camera that has been connected before, so a window can stay set to a camera while it is disconnected.

The controls in a Live View window, and the mouse actions described below, only ever affect the camera that window is showing.

9.2 Toolbar

Control	What it does
Options (cog)	Opens the window's options (see *Window Options*)
Enable	Turns Live View on or off on the camera
Zoom	Switches the camera to a zoomed-in Live View (see *Zooming*). Unavailable when Live View is off, or the camera doesn't support zoom
Focus buttons (six arrows)	Move the focus further away (the three buttons on the left) or nearer (the three on the right), in large, medium or small steps. The outermost buttons make the largest steps

The *Enable* and *Zoom* checkboxes show the camera's current state, so they also update if Live View is turned on or off some other way, such as from a script or the External API.

9.3 Focusing

Focus Buttons and Mouse Wheel

The six focus buttons drive the lens's focus motor directly, which is useful for fine-tuning focus by eye, especially with the view zoomed in. With *Focus Live View with mouse wheel* ticked in the window options (the default), you can also turn the mouse wheel over the Live View: scrolling up moves focus further away and scrolling down moves it nearer, by the smallest step.

The focus buttons only work while Live View is on. They are always shown, but they only work on cameras and lenses that support focus control, and some cameras also need a particular focus mode — see *Camera-Specific Notes*.

Cameras don't report where the lens is focused, so each step moves the focus relative to its current position. How far a step moves the focus depends on the camera and lens.

The six focus steps can also be given keyboard shortcuts (see *Changing Shortcuts*). Like the *Auto Focus* button, they act on the active cameras rather than on the camera a Live View window is showing.

Moving the AF Area

The Live View shows the camera's AF (autofocus) area as an outlined box. Hover over it and the outline turns red and is labelled **AF AREA**. Drag the box to move the AF area to a different part of the frame. A movement of less than a few pixels is treated as a click rather than a drag, so the box doesn't move by accident.

When the view is zoomed in, dragging moves the zoomed region instead (see *Zooming*).

Whether the camera then focuses at the AF area depends on its own autofocus settings. It needs an AF mode where you choose the focus point, usually a single-point Live View AF mode. In modes such as face tracking or automatic area selection, the camera may pick its own focus point instead. The right setting varies between cameras.

Double-Click to Focus

Double-click anywhere in the Live View window to move the AF area to that point and focus there. This is quicker than dragging the AF area into place and then pressing **Auto Focus**.

When the view is zoomed in, it only shows the zoomed region, so a double-click recentres the zoomed region on the point you clicked and then focuses.

The AF area is always kept within the camera's sensor, so a double-click near the edge of the frame moves it as far as it can go. If the camera cannot move its AF area, a double-click still focuses at the camera's current AF point.

Auto Focus

Besides double-clicking, you can trigger autofocus with:

- The *Auto Focus* button in the **Camera Controls** window
- The `F6` keyboard shortcut (see *Keyboard Shortcuts*)
- *Auto Focus* in the right-click menu of a camera in the **Cameras** window or a **Dashboard** tile

These act on the active cameras, which may be several cameras at once, whereas a double-click in a Live View window focuses only the camera that window is showing.

While the camera is focusing after a double-click or a turn of the mouse wheel, **FOCUS** is shown briefly at the top-right of the view.

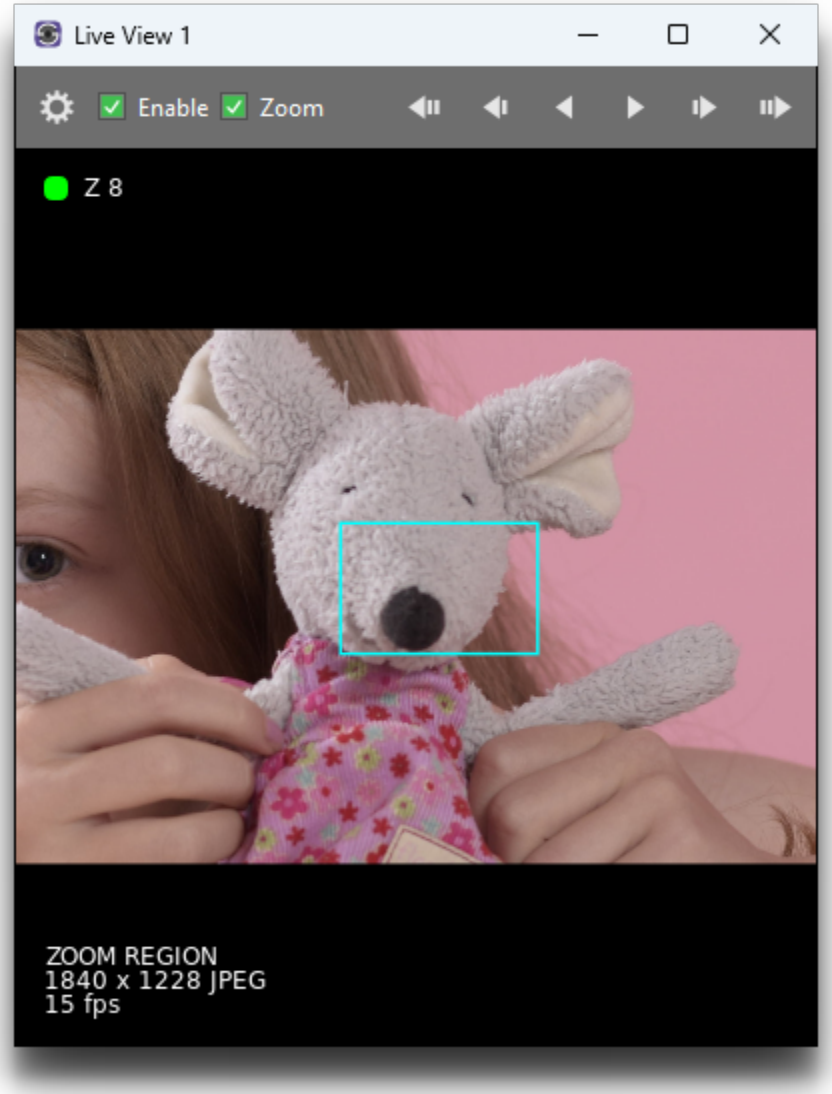
9.4 Zooming

Tick *Zoom* to switch the camera to a magnified Live View of part of the frame, for checking critical focus. The camera decides the resolution of the Live View image, and it is much lower than a photo. When zoomed in, the camera sends a crop of the sensor at finer detail, which makes zoom the best way to focus precisely by eye. The statistics overlay (see *Overlays*) reads **ZOOM REGION** while zoomed and **FULL SENSOR** otherwise.

To look at a different part of the frame while zoomed, either:

- Drag the outlined box. While you drag, the view shows the whole sensor so you can see where the zoomed region will go.
- Double-click a point in the view to recentre the zoomed region on it.

The zoom level varies depending on the camera model, and not every camera supports zoom — see *Camera Support*.


Live View 1
Enable
Zoom
Z 8
ZOOM REGION
1840 x 1228 JPEG
15 fps

9.5 Overlays

The Live View window can draw these on top of the live image:

Live View indicator (top-left)
: The camera's name, with a status light that pulses **green** while Live View frames are arriving, **yellow** while Live View is on but no frame has arrived yet, and **red** while the camera is recording video. It is **grey** when Live View is off. Toggle it with *Show Live View indicator*.

Statistics (bottom-left)
: Whether the view is the full sensor or a zoomed region, the size of the Live View image, and the frame rate it is arriving at. Toggle it with *Show Live View statistics*.

AF area
: The outlined box described in *Moving the AF Area*. It is always shown when the camera reports an AF area.

Grid
: A grid of lines over the live image, to help with composition and lining up cameras. See *Window Options*.

Image overlay
: A semi-transparent image of your choice drawn over the Live View, for example a previous photo to line up a repeat shot. It is not drawn while zoomed in. See *Window Options*.

While the camera is recording video, the elapsed recording time is shown at the top-right.

9.6 Window Options

Click the *Options* button (the cog) to open the window's options. Each of the four Live View windows keeps its own settings.

Show Live View From

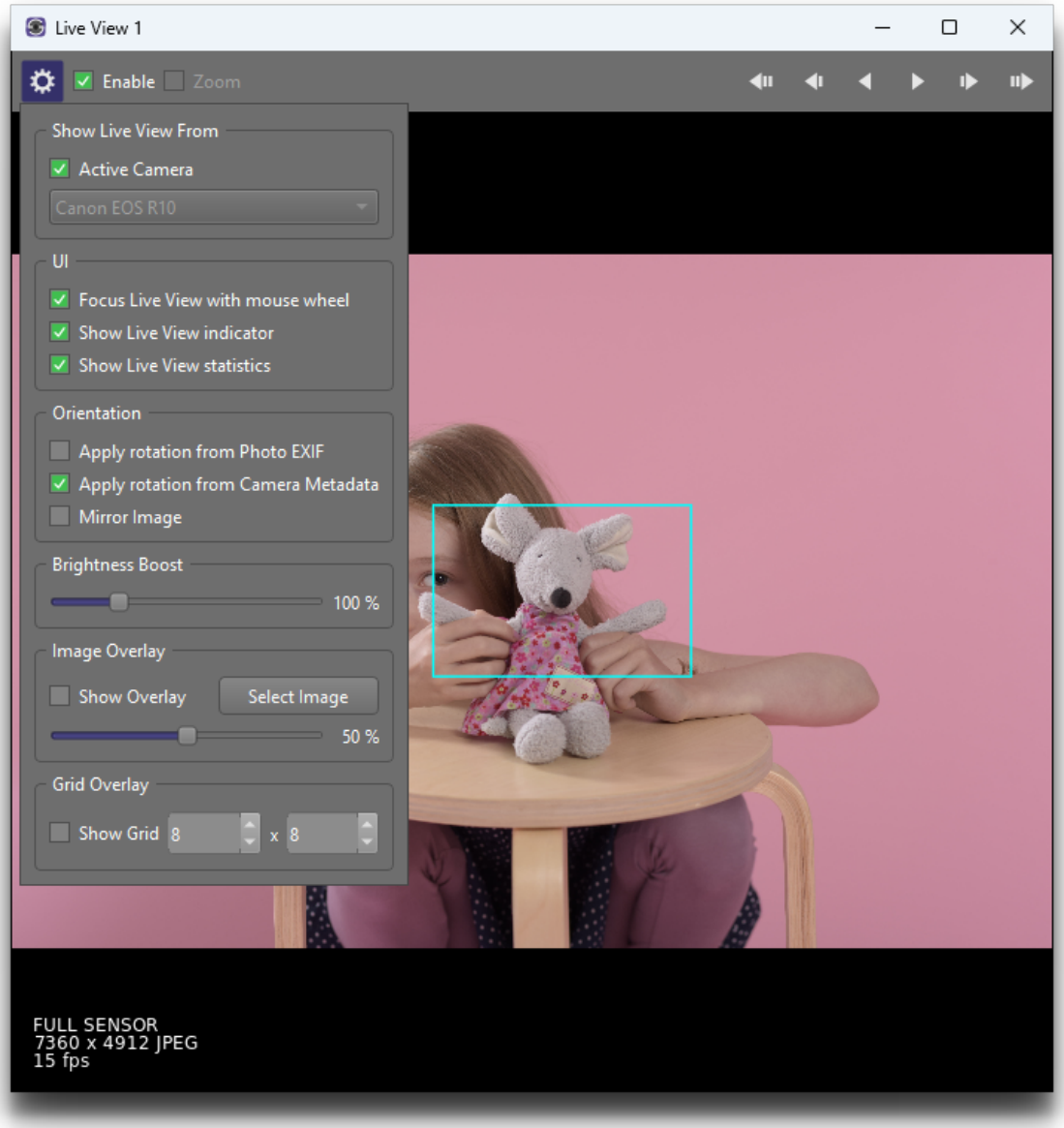
- *Active Camera* (on by default) — follow the active camera. Untick it to pick a camera from the list instead. See *Choosing the Camera*.

UI

- *Focus Live View with mouse wheel* (on by default) — focus by turning the mouse wheel over the view. See *Focus Buttons and Mouse Wheel*.
- *Show Live View indicator* (on by default) — show the camera name and status light.
- *Show Live View statistics* — show the zoom state, image size and frame rate.

Orientation

- *Apply rotation from Photo EXIF* — rotate the view to match the orientation the camera records in its photos.
- *Apply rotation from Camera Metadata* (on by default) — rotate the view by the orientation set with *Set Orientation* in the camera's right-click menu.
- *Mirror Image* — flip the view horizontally.


Live View 1
Enable
Zoom
Show Live View From
Active Camera
Canon EOS R10
UI
Focus Live View with mouse wheel
Show Live View indicator
Show Live View statistics
Orientation
Apply rotation from Photo EXIF
Apply rotation from Camera Metadata
Mirror Image
Brightness Boost
100 %
Image Overlay
Show Overlay
Select Image
50 %
Grid Overlay
Show Grid
8
x
8
FULL SENSOR
7360 x 4912 JPEG
15 fps

Brightness Boost

Brighten or darken the view, from 10% to 400% (100% by default). This only changes how the image is displayed, not the camera's exposure.

Image Overlay

Tick *Show Overlay* and click *Select Image* to draw an image over the view, for example a previous photo to line up a repeat shot. The slider sets how strongly the image shows, from 0 (invisible) to 100 (fully opaque), and starts at 50. The image isn't drawn while zoomed in.

Grid Overlay

Tick *Show Grid* to draw a grid over the view, and set the number of rows and columns (8 x 8 by default). The grid uses the same colour as the grid in the **Preview** window.

9.7 Live View in the Preview and Dashboard

The **Preview** window and the **Dashboard** can show Live View as well as photos. Each has a *Live View Overlay Options* button (marked **Lv**) on its toolbar with these settings:

- *Show Live View Overlay* (on by default) — show Live View when it is available.
- *Transparency* (100 by default) — how strongly Live View covers the photo underneath. At 100 it is fully opaque.
- *Brightness Boost* (100% by default) — brighten or darken Live View, from 10% to 400%, as in the Live View window.
- *Photo Review Time* (4 seconds by default) — how long a newly taken photo is shown before Live View takes over again. While a photo is being reviewed, the indicator reads **LIVEVIEW: REVIEW** with a countdown.

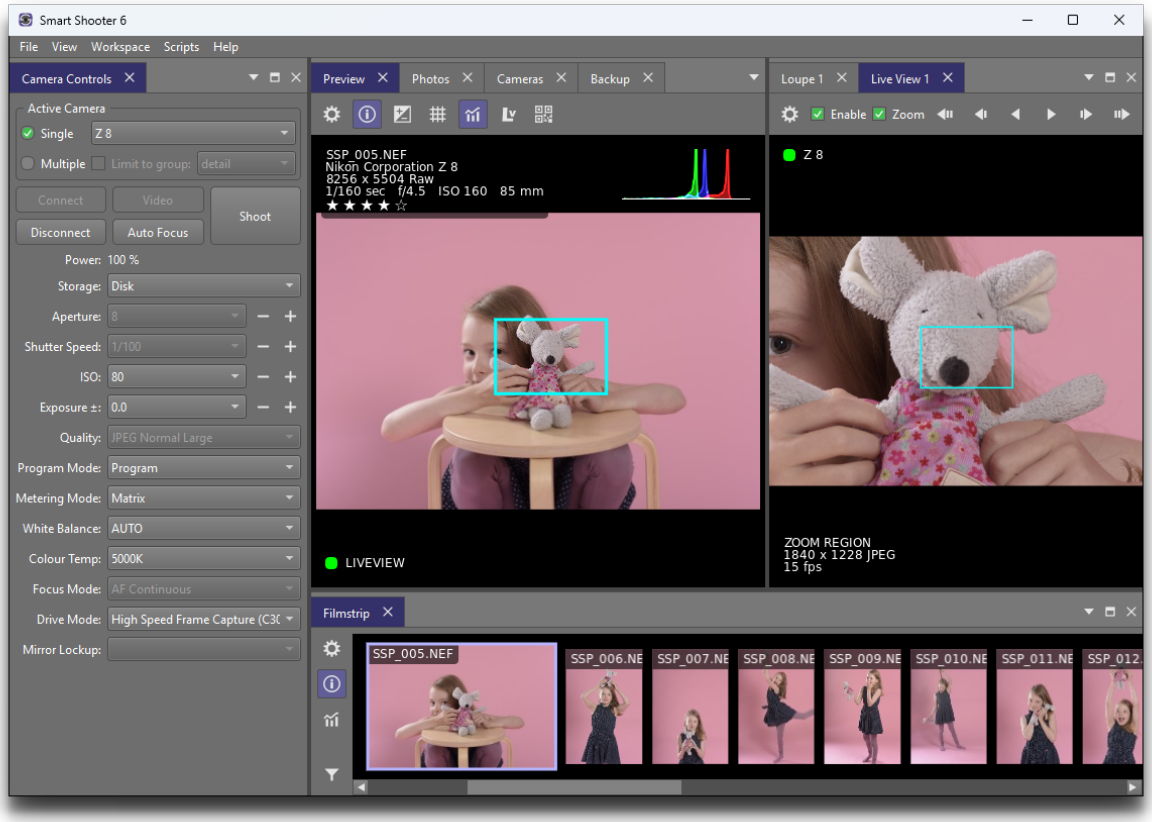
Showing Live View there takes two steps: *Show Live View Overlay* must be ticked, and Live View must be turned on for the camera — from a Live View window, for example.

Preview

The Preview shows Live View from the camera that took the photo being displayed, drawn over the photo, with **LIVE-VIEW** at the bottom-left.

- **Not zoomed:** the AF area is outlined as in the Live View window. Drag it to move the AF area, or double-click a point to move the AF area there and focus.
- **Zoomed:** the Preview always shows the whole sensor, so the zoomed Live View is drawn inside an outlined box at the position of the zoomed region, labelled **LIVE VIEW** when you hover over it. Drag the box, or double-click elsewhere in the photo, to move the zoomed region. A double-click inside the box focuses without moving it.

When Live View is showing, *Scan Image for Barcode* scans the Live View image (see *Barcode Scanning*).


Smart Shooter 6
File View Workspace Scripts Help
Camera Controls
Active Camera
Single Z 8
Multiple Limit to group: detail
Connect Video Shoot
Disconnect Auto Focus
Power: 100 %
Storage: Disk
Aperture: 8
Shutter Speed: 1/100
ISO: 80
Exposure ±: 0.0
Quality: JPEG Normal Large
Program Mode: Program
Metering Mode: Matrix
White Balance: AUTO
Colour Temp: 5000K
Focus Mode: AF Continuous
Drive Mode: High Speed Frame Capture (C3
Mirror Lockup:
Preview
Photos
Cameras
Backup
SSP_005.NEF
Nikon Corporation Z 8
8256 x 5504 Raw
1/160 sec f/4.5 ISO 160 85 mm
LIVEVIEW
Loupe 1
Live View 1
Enable Zoom
Z 8
ZOOM REGION
1840 x 1228 JPEG
15 fps
Filmstrip
SSP_005.NEF
SSP_006.NE
SSP_007.NE
SSP_008.NE
SSP_009.NE
SSP_010.NE
SSP_011.NE
SSP_012

Dashboard

Each Dashboard tile shows Live View from its own camera when Live View is on for that camera. After the camera takes a photo, the tile shows the photo for the *Photo Review Time*, then returns to Live View. The tiles don't respond to dragging or double-clicking; to focus a camera from the Dashboard, right-click its tile and choose *Auto Focus*. See *Dashboard*.

9.8 Camera Support

Which Live View features are available depends on the camera:

Camera	Zoom	Move AF area	Focus buttons	Auto Focus
Canon	Yes	Yes	Yes *	Yes *
Fujifilm	Yes	Yes	Yes *	Yes *
Nikon	Most models	Yes	Most models *	Yes
Sigma	No	No	Yes *	Yes *
Sony	Some models	Zoomed only	Yes *	Yes *

* With conditions — see *Camera-Specific Notes*.

Live View itself is available on every supported camera except the Nikon D3000 and D3100, the Sony a6000 and the Ricoh Theta S. For the full list of supported cameras, see *Supported Cameras*.

9.9 Camera-Specific Notes

Some cameras need particular settings for Live View features to work, or behave differently from the rest. For differences that aren't about Live View, see *Camera Notes*.

All Cameras

- Some cameras limit their exposure settings while Live View is on. For example, the Nikon D7000 can't use shutter speeds slower than 1/30 s in Live View. Turn Live View on before setting the aperture and shutter speed, so that you see the values the camera will actually use.
- The Live View image can be framed slightly differently from the photo the camera takes. This comes from the camera and lens.
- Whether Live View keeps running while the camera records video depends on the model.

Canon

- Canon cameras use the same position for the AF area and the zoomed region, so moving the AF area also sets which part of the frame is magnified when you turn on *Zoom*.
- The focus buttons need the lens's AF/MF switch set to AF.
- *Auto Focus* doesn't work when the camera's *Focus Mode* is MF, for example because the lens's AF/MF switch is set to MF.

Fujifilm

- The focus buttons and *Auto Focus* only work when the camera's *Control Mode* is *App* (see *Fujifilm*).
- The focus buttons only work when the camera's *Focus Mode* is MF. In any other focus mode they have no effect, even though they are not greyed out. The steps are a share of the lens's focus range, and focus stops at the ends of the range.
- *Auto Focus* doesn't work when the *Focus Mode* is MF. Live View pauses briefly while the camera focuses.
- While Live View is on, the camera ignores its own buttons, so you can't shoot or change settings on the camera body. The settings can't be changed from the app either. Turn Live View off to change them.
- Turning zoom on or off briefly restarts Live View.
- The AF area moves in whole focus points, so very small drags are ignored. The size of the box drawn for the AF area is approximate.
- Taking a photo stops Live View on the camera. It is turned back on automatically afterwards (see *Automatic Behaviour*).

Nikon

- The focus buttons need an autofocus lens, with the lens and camera set to AF rather than MF.
- The D3000 and D3100 don't support Live View. The D3200, D3300, D3400 and D3500 support Live View, but not zoom or the focus buttons.
- On the D800 and D800E, set the camera's Live View selector to Live View photography, not movie Live View. Movie Live View shows the image at a different aspect ratio, and blocks RAW and some shutter speeds.
- When not zoomed, dragging moves the camera's AF point. When zoomed, it moves the zoomed region.
- While Live View is on, the camera's Live View AF-area mode is switched to normal-area AF, so that the AF area can be moved. Your own setting is put back when Live View is turned off.
- On some models, *Storage* is set to Disk and can't be changed while Live View is on (see *Nikon*).

Sigma

- *Auto Focus* only works when the camera's *Control Mode* is *App*. The focus buttons work in both modes (see *Sigma*).
- The focus buttons need a lens that the camera can focus electronically. With other lenses they have no effect. The steps are a share of the lens's focus range, and focus stops at the ends of the range.
- Live View zoom isn't available, and the AF area can't be moved from the app.
- Taking a photo stops Live View on the camera. It is turned back on automatically afterwards (see *Automatic Behaviour*).

Sony

- The Sony a6000 doesn't support Live View.
- The focus buttons only work when the camera's focus mode is MF. If they have no effect, set the camera to manual focus.
- Not all Sony models support Live View zoom. On those that don't, the *Zoom* checkbox is unavailable.
- The AF area can't be moved from the app. Dragging only works while zoomed, where it moves the zoomed region. When not zoomed, a double-click focuses without moving anything.
- *Auto Focus* doesn't work when the camera's *Focus Mode* is MF. On models with a focus mode dial on the body, such as the a9 III, the dial decides the focus mode and the app's *Focus Mode* setting has no effect. If *Auto Focus* does nothing, check the dial isn't set to MF.
- Turn Live View zoom off before using a power zoom lens. While Live View zoom is on, power zoom doesn't move.

9.10 Automatic Behaviour

Smart Shooter looks after Live View in the background:

- Many cameras leave Live View when they take a photo. If you turned Live View on, Smart Shooter turns it back on automatically once the shot has finished, and restores the zoom if it was zoomed in.
- Live View frames are paused while a photo is being taken, so the capture isn't slowed down.
- Live View is turned off when a camera is disconnected.

The **Cameras** window has a **Live View** column showing whether Live View is on for each camera (see *Cameras Window*).

> **Tip**
>
> Live View places noticeable load on the camera and the USB connection. If you are working with several cameras, consider only turning Live View on for the cameras you are actively framing, and turning it off on the others.

10 Photo Download

How to control and automate downloading photos

When a new photo is taken, the actual location of the photo file is determined by the **Storage** camera setting. This provides control over where the photo is initially saved, and whether it is automatically downloaded. This setting has four possible values:

Stor-age	Description
Disk	The photo is not saved to the camera's memory card, but instead is immediately downloaded and saved to the local computer disk.
Card	The photo is saved to the camera's memory card, and not automatically downloaded.
Both	The photo is saved to the camera's memory card, and also immediately downloaded and saved to the local computer disk.
JPEG	The photo is saved to the camera's memory card. If the photo is in JPEG format it is also immediately downloaded and saved to the local computer disk.

Once the photo is downloaded it will be automatically viewed in the **Preview** window.

The **Storage** camera setting can be changed in the **Camera Controls** window as shown below.

10.1 Manual Download

For each new photo that is taken, the app will automatically detect this and query the camera for information about this photo. The app will create a new *Photo* entry, which will then be visible in the **Filmstrip** window and the **Photos** table.

For photos that have not been downloaded yet and are currently on the camera's memory card, there are a few ways to begin the download. The screenshot below shows the table of photos. Above the table is the *Download* button, whose menu includes *Download all photos*, which will begin download of all such photos.

The screenshot also shows the context menu when a photo is right-clicked. Selecting the *Download* action from this menu will then download the currently selected photo.

The table has a column labelled **Location**. This shows the current location of each photo. If the photo has not yet been downloaded then the location will be `Camera`. Once a photo has been downloaded and saved to the local computer disk, then the location will be `Local Disk`.

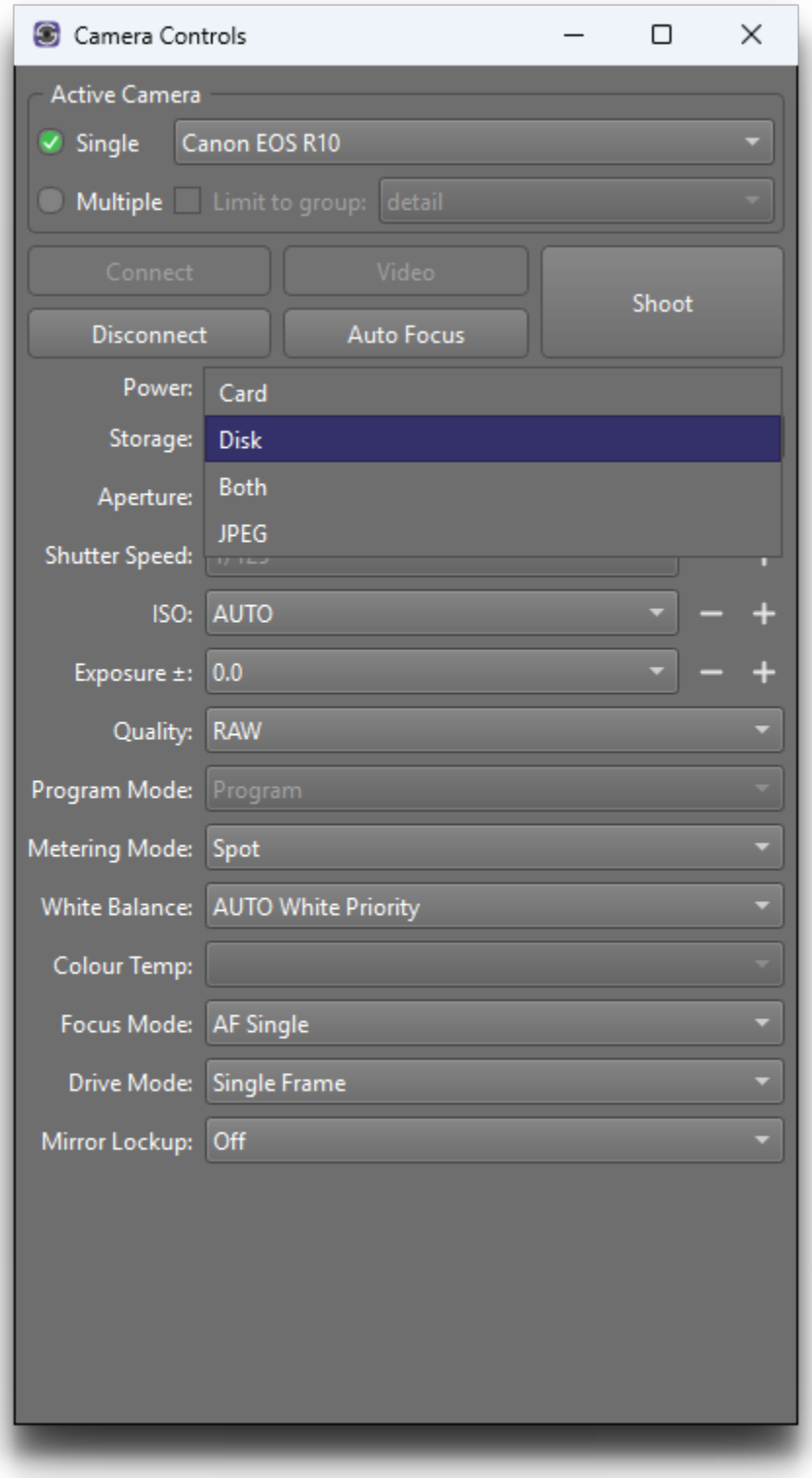
10.2 Shooting RAW + JPEG

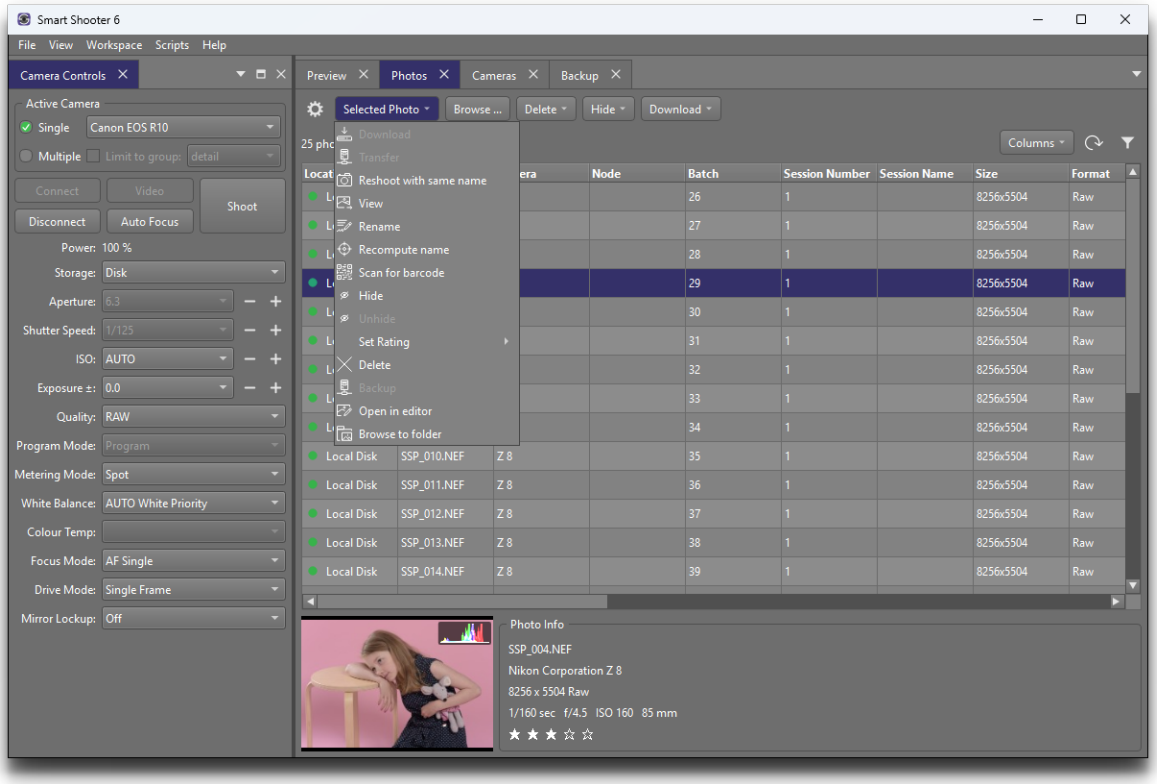
When shooting in dual RAW + JPEG mode, the camera will save each photo as both a RAW file and a JPEG file.

The RAW photo and JPEG photo of a single exposure are assigned the same Sequence number and the same Batch number. So depending on how the options are configured for filenaming — for example whether the filename includes the file extension — the RAW and JPEG photos may be given the same or different filenames. For more information on how this numbering is used for photo filenames, see *Name Policy*.

10.3 Setting a default

When a camera is first connected to the app, the **Storage** mode will be set to a specific value. This defaults to `Disk`, but there is an option to customise this. In the **Cameras** window, click the options (gear) button to open its menu. Under the **Default Camera Settings** section there is a drop down box labelled *Camera Storage*, which sets the default Storage mode applied to each newly connected camera.


Camera Controls
Active Camera
Single
Canon EOS R10
Multiple
Limit to group:
detail
Connect
Video
Shoot
Disconnect
Auto Focus
Power:
Card
Storage:
Disk
Aperture:
Both
JPEG
Shutter Speed:
ISO:
AUTO
Exposure ±:
0.0
Quality:
RAW
Program Mode:
Program
Metering Mode:
Spot
White Balance:
AUTO White Priority
Colour Temp:
Focus Mode:
AF Single
Drive Mode:
Single Frame
Mirror Lockup:
Off



10.4 Adding Metadata to Photos

The app can write extra information into the metadata of each photo as it is downloaded. The information is stored inside the photo file itself, so it stays with the photo even if the file is later renamed or moved, and it can be read by other software that shows EXIF / XMP information.

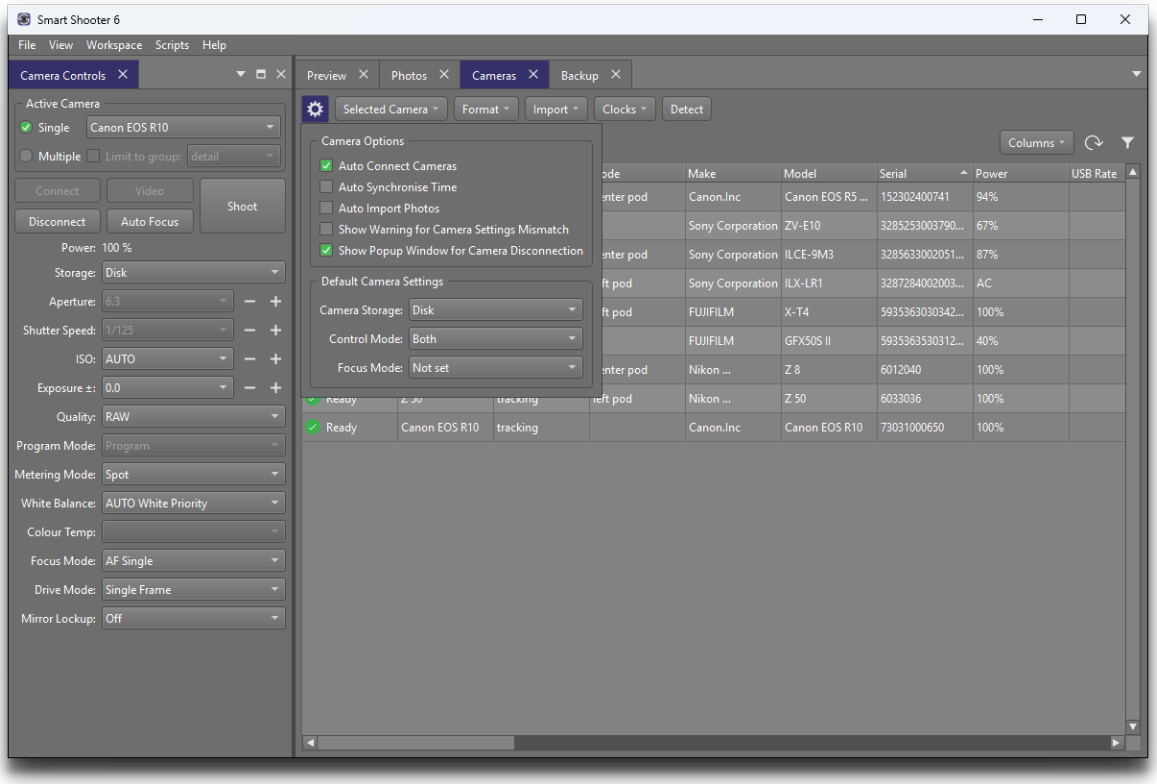
To turn this on, in the **Photos** window click the options (gear) button and tick *Add Metadata to Photos* in the **Photo Metadata** section. This is turned off by default.

Below the checkbox there is a list of the metadata fields that the app can write. For each field, choose what information to put in it from the drop down box:

Value	Description
None	The field is left untouched.
Barcode	The most recently scanned barcode text. For more information, see *Barcode Scanning*.
Session Name	The current Session Name, as set in the **Session** window.
Unique Tag	The current Unique Tag, as set in the **Session** window.
Camera Name	The name of the camera that took the photo.
Camera Group	The name of the group the camera belongs to.

The fields that can be written are *UserComment*, *ImageDescription*, *Copyright* and *Artist*. By default the barcode is written to *UserComment*, and the other fields are set to *None*.

Each value is the one current at the moment the photo is downloaded — the same value that would be used for the matching part of the filename (`[Z]`, `[N]`, `[U]`, `[C]` or `[G]`). For more information, see *Name Policy*.



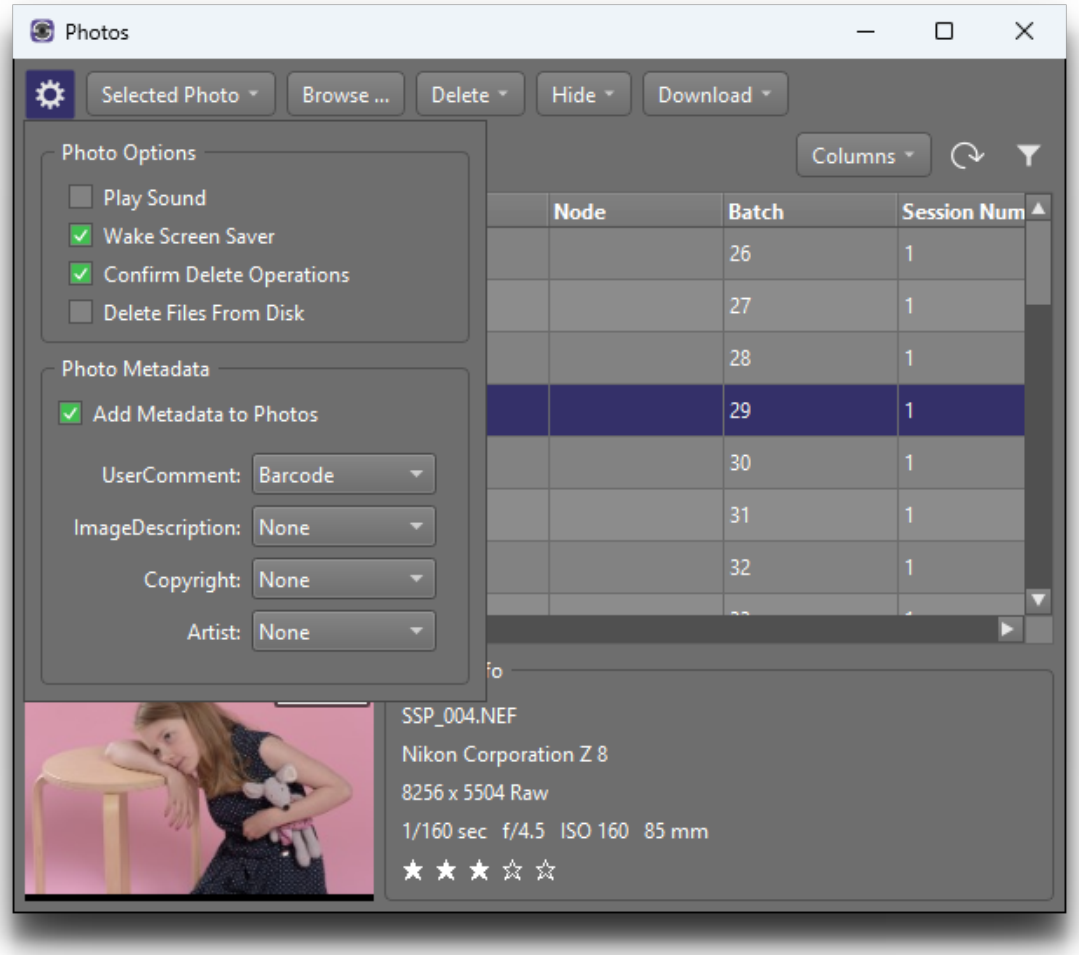
11 Photo Import

Importing existing photos from a camera's memory card

Alongside the regular automatic download of newly-taken photos, Smart Shooter can also import existing photos already on a camera's memory card. This is useful when:

- Photos were taken before the camera was connected to the app, and you want to bring them into the app's photo library
- A camera was previously used in **Card** storage mode (see *Photo Download*), and you now want to pull those photos down to the local computer
- You are setting up the app with a camera that already has photos on it from a prior session

Photo import is distinct from photo download: download happens automatically as new photos are taken, while import is a deliberate action you start to fetch photos that the app did not see being captured.


Photos
Selected Photo
Browse ...
Delete
Hide
Download
Columns
Photo Options
Play Sound
Wake Screen Saver
Confirm Delete Operations
Delete Files From Disk
Photo Metadata
Add Metadata to Photos
UserComment:
Barcode
ImageDescription:
None
Copyright:
None
Artist:
None
Node
Batch
Session Num
26
1
27
1
28
1
29
1
30
1
31
1
32
1
SSP_004.NEF
Nikon Corporation Z 8
8256 x 5504 Raw
1/160 sec f/4.5 ISO 160 85 mm

11.1 Starting an Import

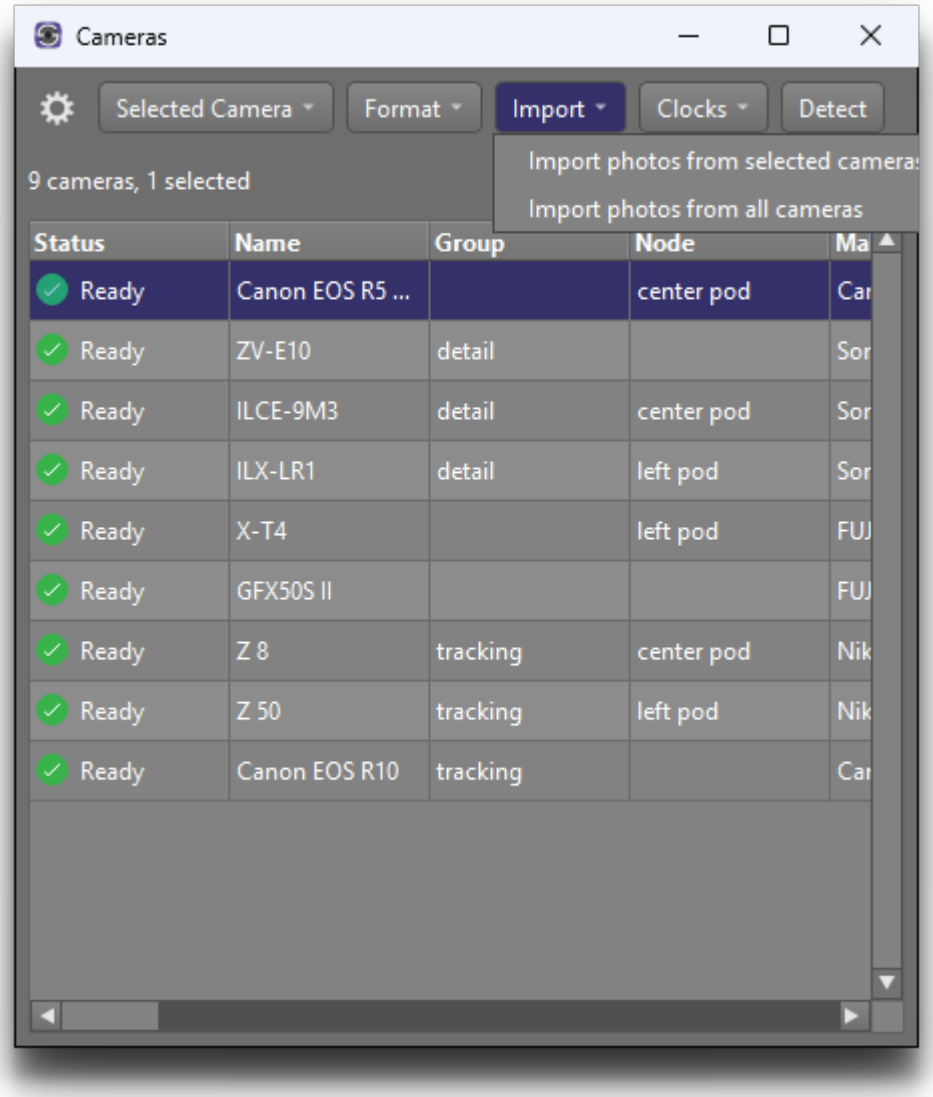
An import can be started in two ways:

- From the **Cameras** window, click the *Import* button in the toolbar. The button has a dropdown with two options:

  Import photos from selected cameras
  : Import from the cameras currently selected in the Cameras table.

  Import photos from all cameras
  : Import from every connected camera.

- From the Cameras table itself, right-click a camera and choose *Import Photos* from the context menu. If several rows are selected before right-clicking, the action applies to all of them.



If you have several cameras connected, this means a single click can pull photos from all of them at once.

11.2 Import Process

Starting an import does not download any image files. Instead, the app queries the camera's memory card and adds an entry to its photo library for each photo found there. These entries appear in the **Filmstrip** and the **Photos** table just like automatically-detected photos, with their **Location** shown as `Camera` to indicate that the file is still on the memory card and has not yet been downloaded.

The image files themselves are downloaded later, in the normal way — for example with the *Download* button's *Download all photos* action or the per-photo *Download* action (see *Manual Download*). Once downloaded, the files are saved to the **Photo Download Folder** and have their filenames computed according to the current name policy (see *Name Policy*).

While the import is running, the affected camera is shown as busy in the **Cameras** window, so you can see that it is not available for triggering until the import completes.

11.3 Ratings and Metadata

EXIF metadata is read when a photo is downloaded, not at import time. So any rating that was set on the camera or by another tool is picked up once an imported photo has been downloaded to the computer, in the same way as for photos that were downloaded automatically. For more on ratings, see *Photo Ratings*.

12 Viewing Photos

Working with downloaded photos

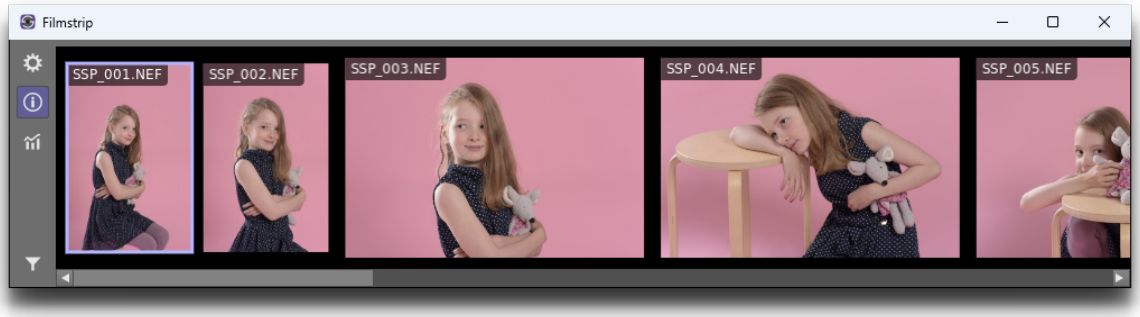
Smart Shooter has four windows dedicated to viewing and working with photos: **Filmstrip**, **Preview**, **Loupe**, and the **Photos** table. Each is suited to a different way of looking at photos, and they are designed to work together — selecting a photo in one window updates the others.

For a quick map:

- **Filmstrip** — thumbnails in a row or grid; the natural starting point for browsing recent photos
- **Preview** — large display of a single photo, with histogram, grid, and other overlays
- **Loupe** — closer detail view of a photo, useful for checking critical focus
- **Photos** — the full database of every photo the app knows about, in table form, with filtering and sorting

12.1 Filmstrip

The **Filmstrip** window shows photo thumbnails arranged in a strip. This is the most-used view for keeping track of recently downloaded photos and quickly stepping through them.



Orientation and Layout

The Filmstrip can be set to either horizontal or vertical orientation, which lets it dock comfortably on different edges of the screen. In addition to the strip layout, it also supports a photo **grid layout mode** that arranges thumbnails in a two-dimensional grid rather than a single row or column.

A toolbar at the edge of the window provides quick access to layout controls and filter toggles.

Filtering and Sorting

The Filmstrip's filter controls let you narrow the visible thumbnails. You can filter by:

- Camera
- Group
- Session and batch number
- Rating (see *Photo Ratings*)
- Image type (e.g. JPEG, RAW)

Sort order can also be adjusted, for example to put newest photos first.

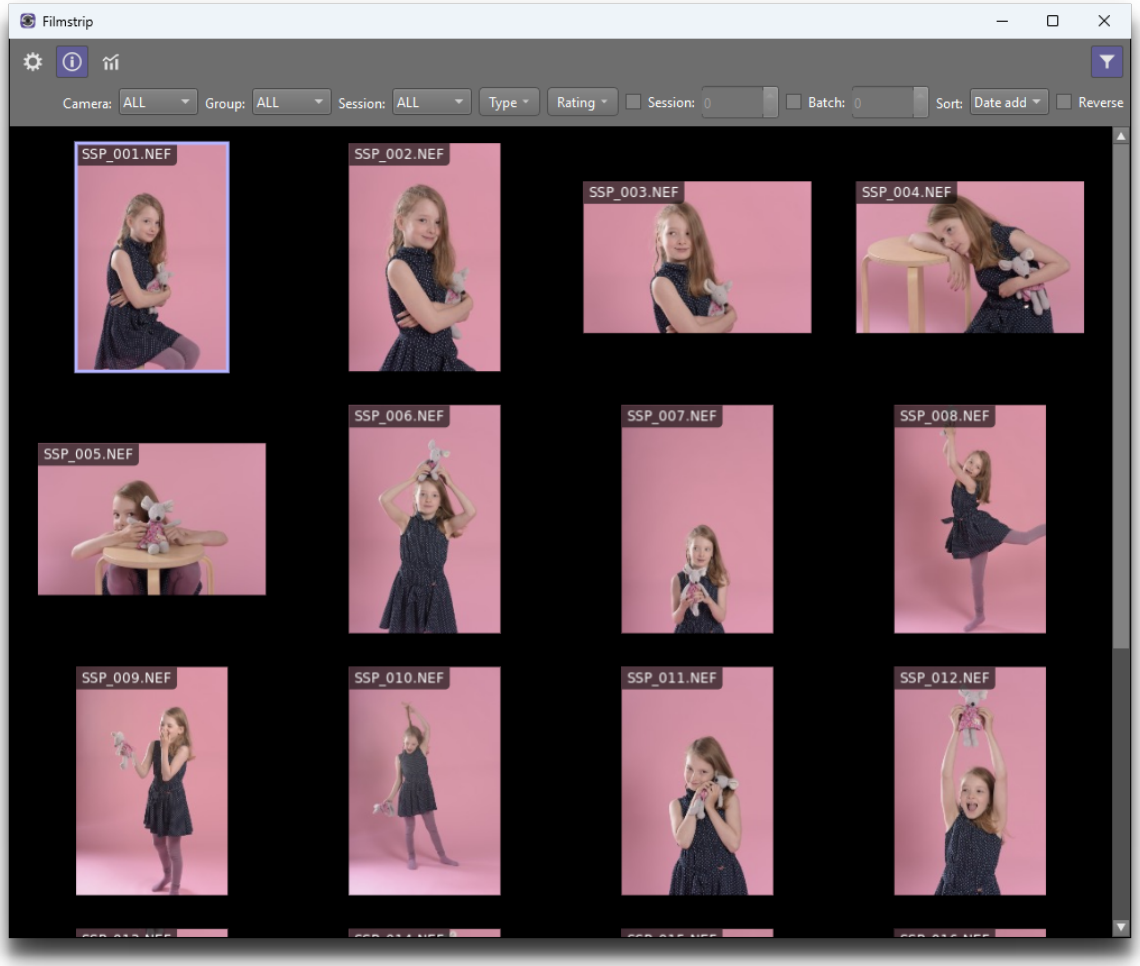
12.2 Preview

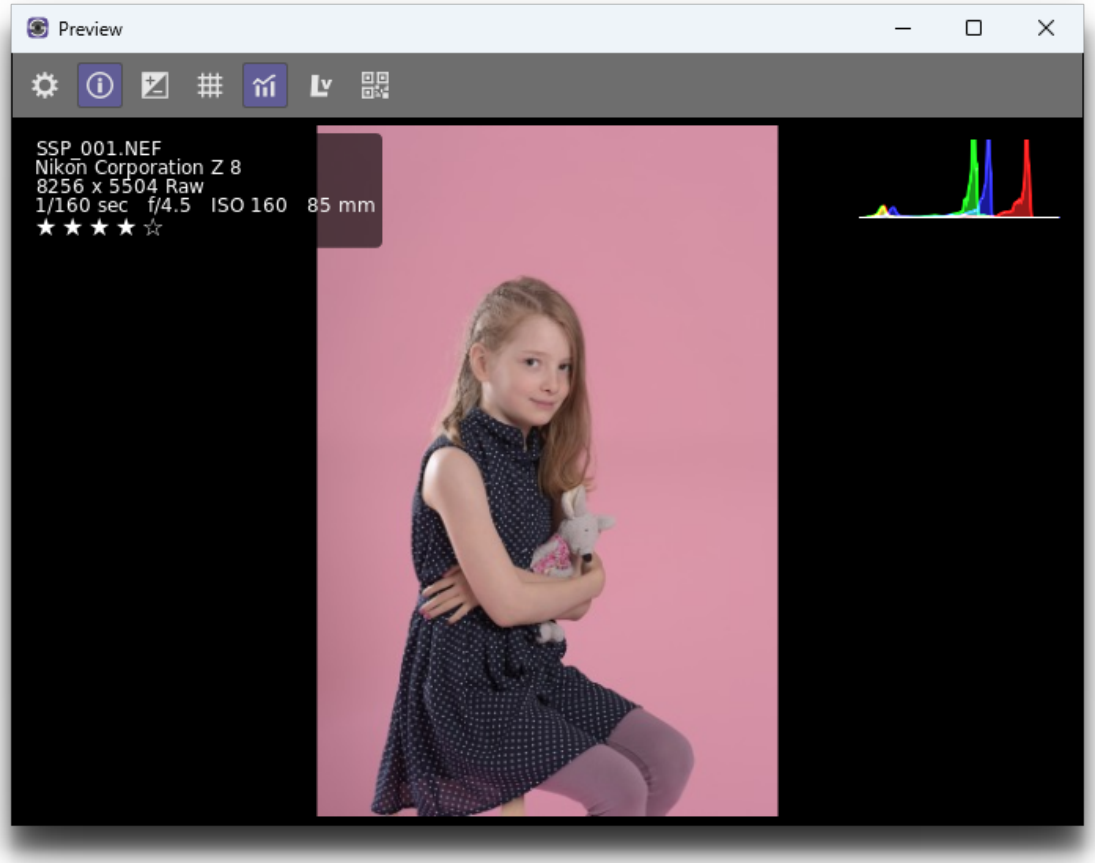
The **Preview** window shows a large, full-frame view of a single photo or live view stream. It is the main place for visually inspecting a photo after capture.

The window can display:

- The most recently taken photo (the default view)
- A specific photo selected from the Filmstrip or Photos table
- Live View from the camera that took the photo

When Live View is showing, you can move the camera's AF area and focus from the Preview. See *Live View in the Preview and Dashboard*.


Filmstrip
Camera: ALL
Group: ALL
Session: ALL
Type
Rating
Session: 0
Batch: 0
Sort: Date add
Reverse
SSP_001.NEF
SSP_002.NEF
SSP_003.NEF
SSP_004.NEF
SSP_005.NEF
SSP_006.NEF
SSP_007.NEF
SSP_008.NEF
SSP_009.NEF
SSP_010.NEF
SSP_011.NEF
SSP_012.NEF


Preview
SSP_001.NEF
Nikon Corporation Z 8
8256 x 5504 Raw
1/160 sec f/4.5 ISO 160 85 mm
★★★★☆

Overlays

A number of overlays can be enabled to help with image inspection:

- **Info overlay** — shows camera name, capture settings (aperture, shutter, ISO, etc.), and filename
- **Histogram** — RGB channel levels for the current image
- **Grid overlay** — composition guide (e.g. rule of thirds)
- **Highlight indicator** — shows areas of the image where the colour is at the edge of the range

These overlays can be toggled individually from the window's toolbar or from the **Options** window.

Photo Menu

Right-clicking the photo in the Preview window opens a context menu with actions that apply to the currently displayed photo, such as viewing details, opening in an external editor, or deleting. This is the same set of actions available from the right-click menu in the Filmstrip and Photos windows.

12.3 Loupe

The **Loupe** window provides a closer detail view of a photo, showing a magnified region. It is most useful for checking critical focus and fine detail that cannot easily be seen at the regular display size.

The Loupe is linked to the Preview window — when both are open, the Loupe shows a magnified view of a region within the Preview, and the Preview shows a rectangle indicating which region the Loupe is focused on. You can drag the rectangle in the Preview to move the Loupe, or use the controls in the Loupe window directly.

Multiple Loupe Instances

The app supports up to two **Loupe** windows open at the same time. This makes it possible to inspect two areas of an image side by side without having to pan back and forth.

12.4 Photos Table

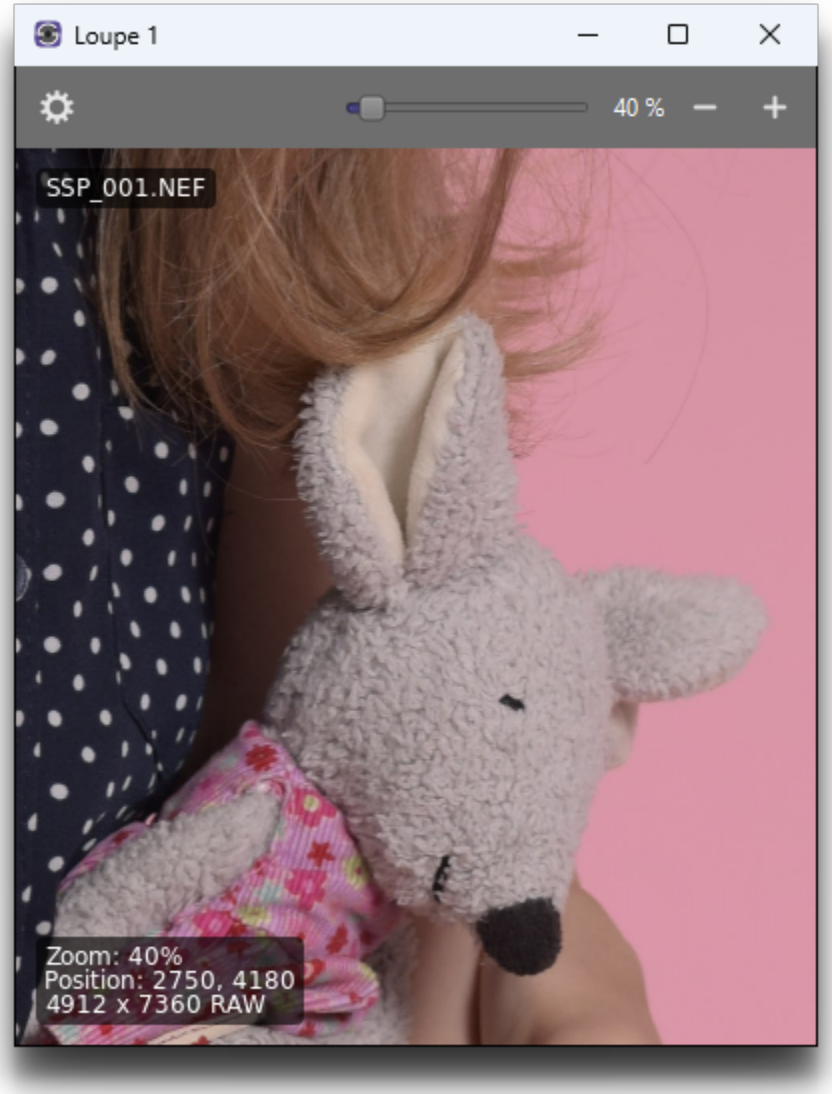
The **Photos** window provides a tabular view of every photo the app knows about. Unlike the Filmstrip — which is geared toward recent photos — the Photos table is for working with the whole photo collection.

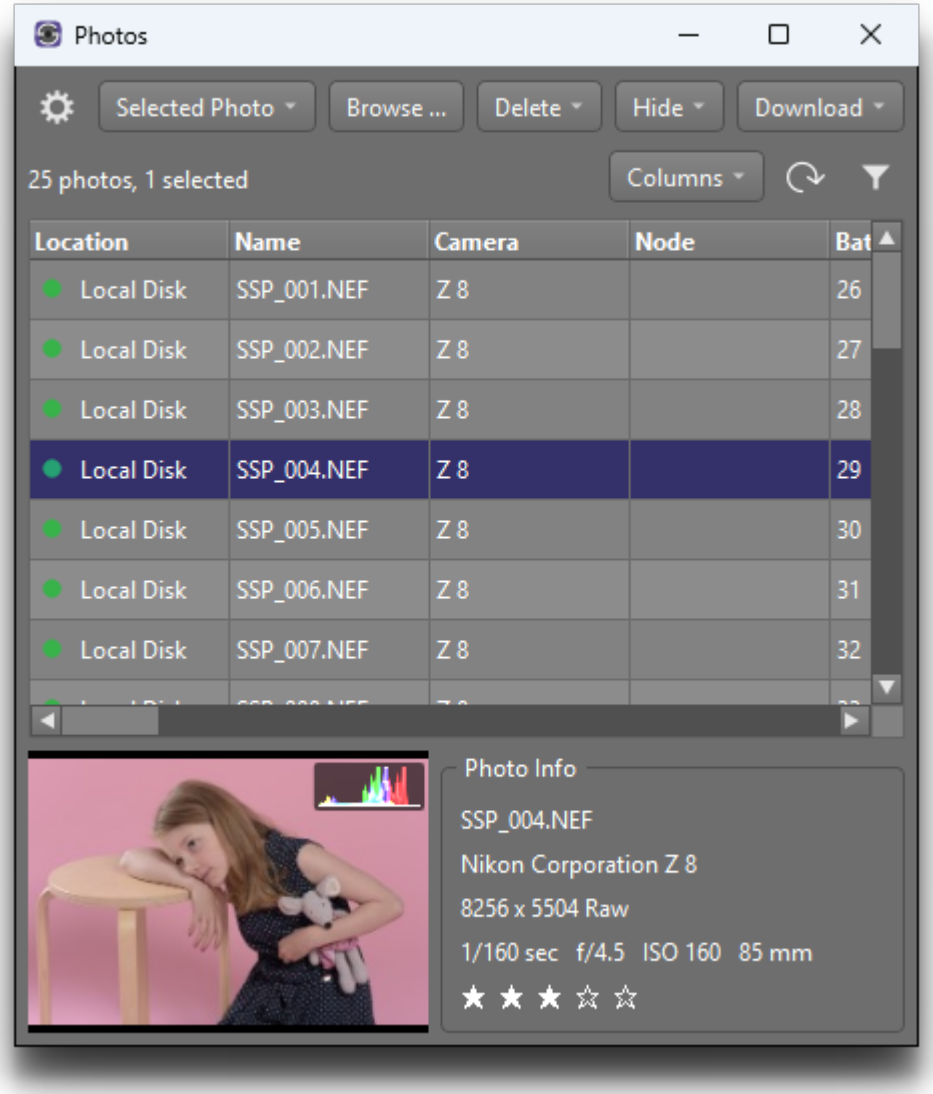
Each row in the table represents one photo, with columns for filename, camera, session, batch, rating, file size, capture time, and other details. Column visibility and order can be customised.

Filter Row

A filter row at the top of the table allows the visible photos to be narrowed by:

- Camera
- Group
- Session and batch number
- Rating (see *Photo Ratings*)
- Image type
- Location (camera memory card or local disk)


Loupe 1
40 %
SSP_001.NEF
Zoom: 40%
Position: 2750, 4180
4912 x 7360 RAW


Photos
Selected Photo
Browse ...
Delete
Hide
Download
25 photos, 1 selected
Columns
Location
Name
Camera
Node
Bat
Local Disk SSP_001.NEF Z 8 26
Local Disk SSP_002.NEF Z 8 27
Local Disk SSP_003.NEF Z 8 28
Local Disk SSP_004.NEF Z 8 29
Local Disk SSP_005.NEF Z 8 30
Local Disk SSP_006.NEF Z 8 31
Local Disk SSP_007.NEF Z 8 32
Photo Info
SSP_004.NEF
Nikon Corporation Z 8
8256 x 5504 Raw
1/160 sec f/4.5 ISO 160 85 mm

Column headings can be clicked to sort.

Bulk Actions

Multiple rows can be selected in the Photos table, and right-clicking opens a context menu with actions that apply to the selection. This includes downloading, deleting, renaming, and changing rating.

12.5 Selection Across Windows

The four photo windows share a unified selection. When you click a thumbnail in the **Filmstrip**, the **Preview** updates to show that photo and the **Loupe** updates to show a magnified region of it. The same selection is reflected in the highlighted row of the **Photos** table.

This makes it natural to set up the windows together — for example, with the Filmstrip and Photos table on one side of the screen for browsing, and the Preview and Loupe on the other for inspection.

13 Photo Ratings

Rating photos to track favourites and reject rejects

Smart Shooter supports a 0 to 5 star rating per photo. Ratings can be set in the app and are read from each photo's EXIF metadata where present. They provide a simple way to flag favourites or rejects during a shoot, and to filter the photo list later when reviewing.

13.1 Setting a Rating

A photo's rating can be set or changed from any of the photo viewing windows:

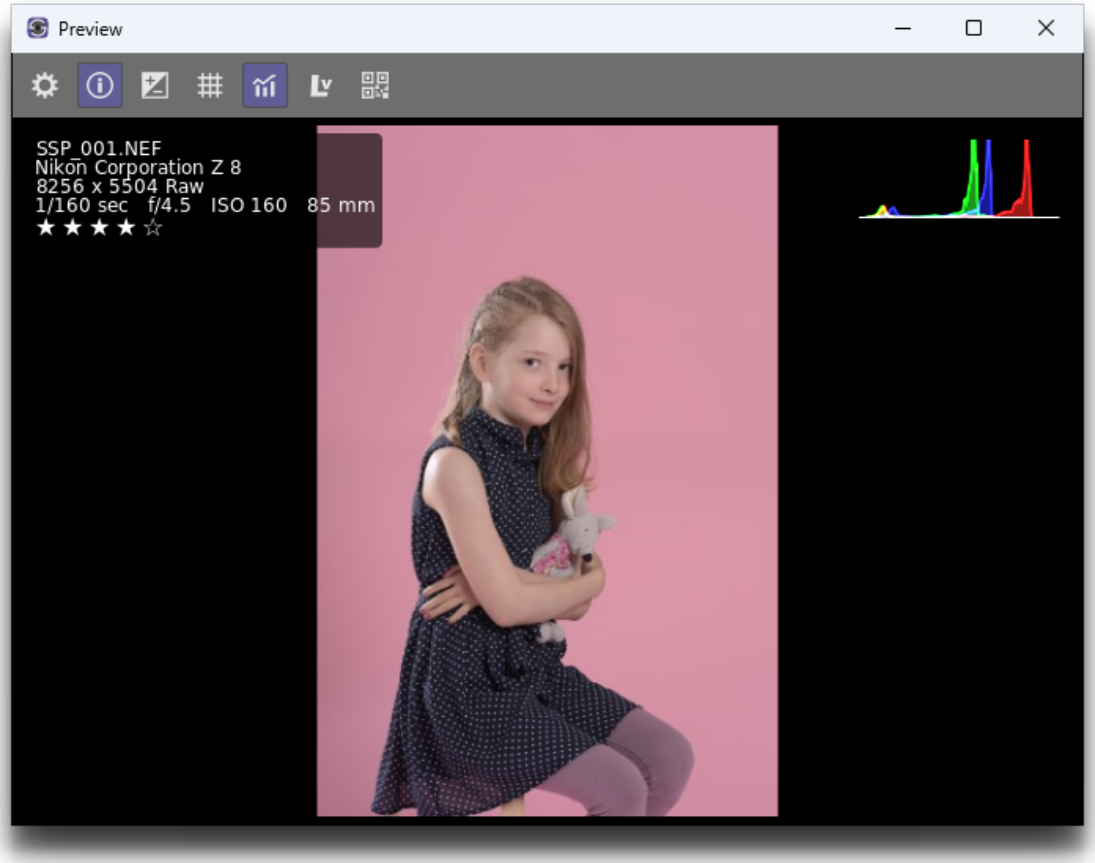
- **Preview** — rating stars are shown alongside the photo and can be clicked to set the value
- **Filmstrip** — rating stars are shown on each thumbnail and can be edited in place
- **Photos** table — the rating column shows the current value and can be edited directly

For more on these windows, see *Viewing Photos*.

A rating of 0 (no stars) is the default for a new photo. The other values are 1, 2, 3, 4 and 5 stars. There is no half-star value.

13.2 Reading from EXIF

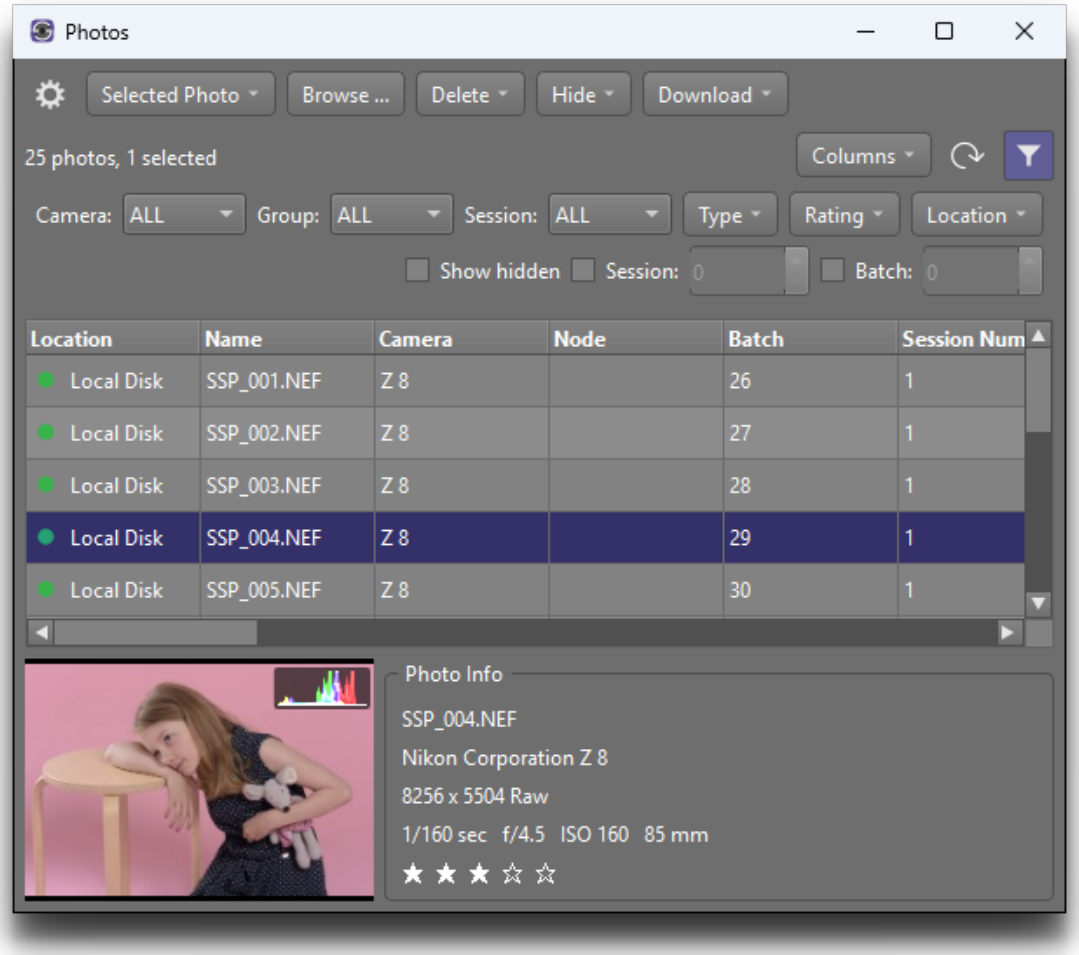
When a photo is downloaded or imported, the app reads any rating that is already present in the photo's EXIF metadata and uses it as the photo's initial rating in Smart Shooter. This means ratings applied by the camera or by another tool — for example, an in-camera rating button — will be preserved.


Preview
SSP_001.NEF
Nikon Corporation Z 8
8256 x 5504 Raw
1/160 sec f/4.5 ISO 160 85 mm
★★★★☆

13.3 Filtering and Sorting by Rating

Once ratings have been applied, they can be used to narrow or order the photo list:

- The **Filmstrip** filter controls include a rating filter, useful for stepping through only your favourites.
- The **Photos** table can be filtered by rating from the filter row, and the rating column can be clicked to sort.
- The rating filter combines with the other filters (camera, group, session, etc.), so for example you can list 4+ star photos taken by a specific camera in a specific session.

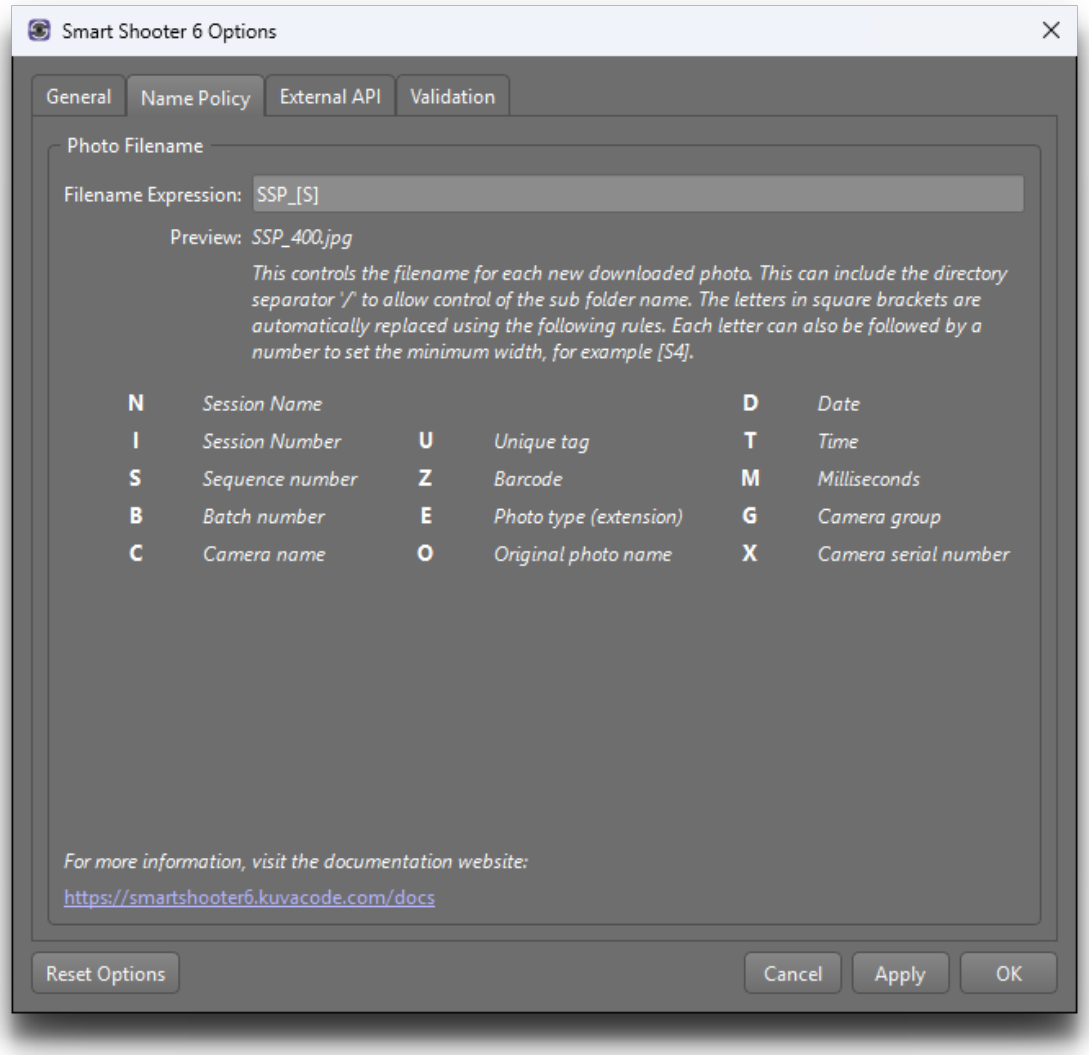


For more on filtering in the photo windows, see *Viewing Photos*.

14 Name Policy

How to customise the filename when saving photos

Whenever the app detects that a new photo has been taken, it will assign that photo a unique filename. The actual filename to use is computed dynamically by the app, and is controlled by the current name policy. These options can be customised in the **Options** window under the **Name Policy** tab, as shown in the screenshot below.



14.1 Filename Expression

The filename expression is the text that specifies how each new filename is computed. This text may contain special identifiers, as letters inside a pair of square brackets. These parts are automatically extracted and replaced with dynamic information, by following some rules for each letter.

For example, if the text contains `[D]` then this part of the filename will be replaced with the current date. The full set of rules is shown in the table below.

Letter	Meaning	Description
N	Session name	A bit of text, that can be changed easily in the app's UI.
I	Session number	A number that can be manually incremented and decremented by clicking a button in the app's UI.
S	Sequence number	A number that is automatically incremented after each new photo is taken. Using this ensures that each photo has a unique filename. When the camera saves RAW + JPEG files for one exposure, both files use the same number.
B	Batch number	A number that is associated with each camera, and automatically incremented whenever that camera takes a new photo. So effectively this is a per-camera sequence number. When the camera is set to save each photo to RAW + JPEG files with a dual format quality setting, this number will increment just once per exposure, so the RAW and JPEG files will use the same number.
C	Camera name	Name of the camera that took the photo.
X	Camera serial number	Serial number of the camera that took the photo.
O	Original photo name	If the camera itself generated a filename, this contains it.
E	Photo file extension	The file extension of the photo, in upper case and without the dot (for example JPG, NEF, CR2 etc). Use **e** for lower case. See *File Extension*.
U	Unique tag	A unique bit of text, that can be changed easily in the app's UI.
Z	Barcode	The text from the last barcode that was scanned by the app. If the barcode is a vCard, see *Barcode vCard Fields*.
D	Date	The current date in the format YYYYMMDD.
T	Time	The current time in the format HHMMSS.
M	Milliseconds	The millisecond part of the current time as a number between 000 and 999. This is always three digits, and a minimum width number has no effect.
G	Camera Group	The name of the group that the camera belongs to.

Note

If the filename computed is not unique, it may clash with an existing photo file that has already been saved. If this happens, the app has a safety mechanism to ensure no files are overwritten, see *Overwriting Files*. So if the final

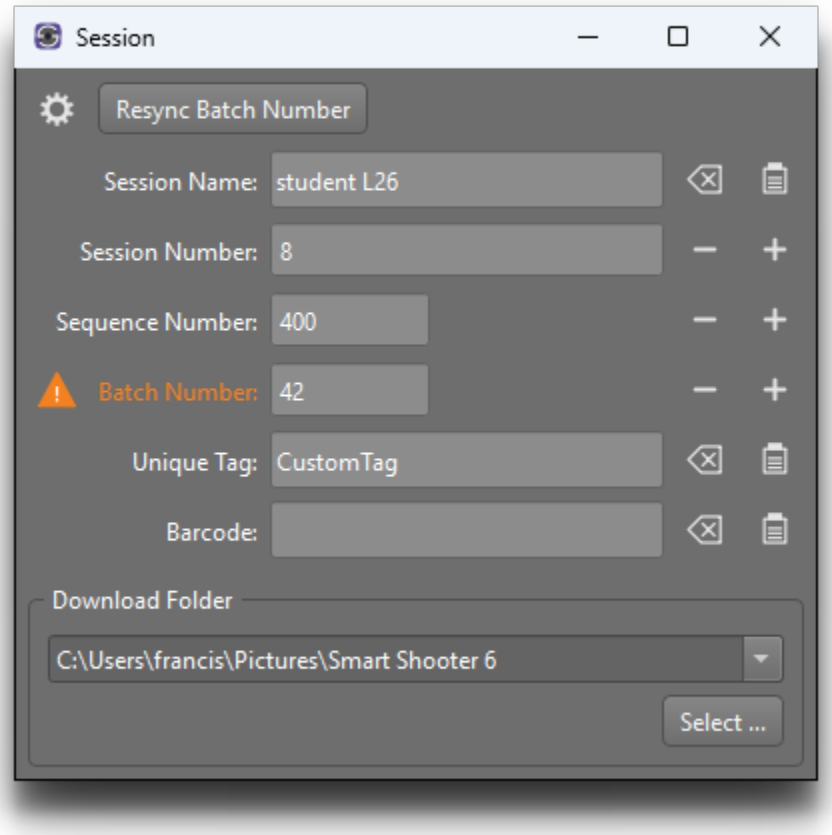
filename has an unexpected _1 or _2 suffix, this is the reason.

14.2 Quickly Changing Filename Options

The app UI has a dedicated **Session** window where this information can be quickly checked and edited, as shown in the screenshot below.

This allows you to change the `[N]` Session Name text and `[U]` Unique Tag text, and set the `[I]` Session number, `[S]` Sequence number and `[B]` Batch number, either by typing a new value or with the + and - buttons. These changes take effect immediately and will be reflected in the filename for any subsequent photos that are taken.

If the connected cameras have different batch numbers, a warning is shown next to the Batch number. Clicking **Resync Batch Number** brings them back in sync, using the highest batch number of the connected cameras.



This window also shows the current **Barcode** information. The app has the ability to scan photos for barcodes or QR codes, and extract the text from them. Such barcode text can then be used as part of the filename by using `[Z]`. For more information on how the barcode scanning works, see *Barcode Scanning*.

14.3 Session Options

The **Options** button in the **Session** window opens the session options, which control when these values are changed automatically:

- **Reset Sequence Number** resets the `[S]` Sequence number to 1 when the app starts, when the session changes, or both.
- **Reset Batch Number** does the same for the `[B]` Batch number.
- **Clear Text Fields** clears the Session Name, Unique Tag and Barcode when the app starts, or when the session changes.
- **Autofill From Clipboard** copies any new text on the clipboard into the Session Name, the Unique Tag, or both.
- **Allow spaces in filename** keeps space characters in the filename, instead of replacing them with `_`. See *Invalid Characters*.

The session changes whenever the Session Name, Session Number, Unique Tag, Barcode or Download Folder is changed in the **Session** window, including when a new barcode is scanned. **Clear Text Fields** only reacts to some of these: changing the Session Name clears the Unique Tag and Barcode, and changing the Session Number clears the Session Name, Unique Tag and Barcode.

14.4 Using Subdirectories

The filename expression can also include the directory separator `/`. This allows one or more subdirectories to be included in the final filename. The final filename will always be relative to the current **Download Folder**, which can be set in the **Session** window or the **Options** window.

14.5 Using Camera Generated Name

Although the `[O]` Original photo name should contain the filename that was generated by the camera, it only does this when using the `Card` Storage mode. If the Storage mode is set to `Disk` or `Both`, then the camera will not provide information about the filename it generated, and hence the app will end up using text such as `IMG_0000` instead.

14.6 Setting Camera Names

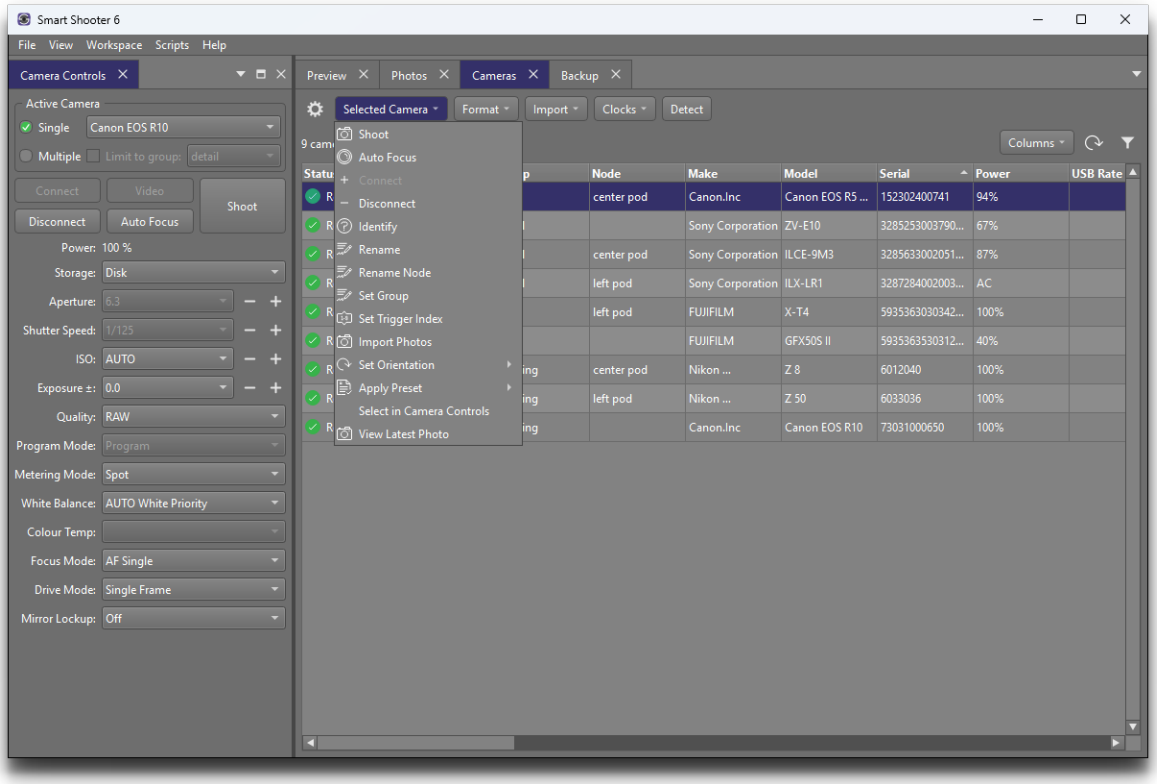
The `[C]` camera name is extremely useful when using multiple cameras, as this allows the filename of each photo to contain the name of the camera that took the photo. For each camera that is connected, the app will store a name for the camera. This name is associated with the camera's serial number. The name can be customised in the camera table UI, by right-clicking the camera as shown below:

14.7 Formatting Options

Each letter in square brackets can be followed by an optional number, which will then control the minimum width of the replacement text. For numbers, the number will be padded with extra leading `0`'s. For text, it will be padded with extra trailing `_`'s (underscore).

For example, if the current sequence number is 23, then `[S]` will be replaced with `23`, whereas `[S4]` will be replaced with `0023`. If the camera is named "left", then `[C6]` will be replaced with `left__`.

The `[D]` and `[T]` (date and time) letters can also take an extra character, which is then used as a separator between the date or time components. For example, if the current date is 20th August 2011, then `[D]` will be replaced by `20110820`, whereas `[D-]` will be replaced by `2011-08-20`.



14.8 Extended formatting for date/time

The `[T]` letter also has an extended option, to allow extra customisation of how the date/time is generated. After the `T` character you can specify an arbitrary string, which is then passed to the standard strftime() function for formatting. For example `[T%A %d %B %Y]` will pass the string `%A %d %B %Y` to strftime(), which will format it as `Saturday 20 August 2017`.

> **Note**
>
> For more information on what can be handled by strftime():
>
> http://www.cplusplus.com/reference/ctime/strftime/

14.9 File Extension

The file extension is added to the end of the computed filename automatically, so the filename expression does not need to include it. By default the app uses the extension of the file sent by the camera, so whether it is upper or lower case depends on the camera (for example `.JPG` or `.jpg`).

To choose the case yourself, end the filename expression with `.[e]` for lower case or `.[E]` for upper case. For example, `[D]_[S4].[e]` gives `20110820_0128.jpg`, even if the camera sent `IMG_0001.JPG`.

`[E]` and `[e]` can also be used elsewhere in the filename expression, for example `[E]/[S4]` saves RAW and JPEG files into separate subdirectories, such as `NEF` and `JPG`. In that case the extension is still added to the end of the filename as usual.

14.10 Barcode vCard Fields

A barcode or QR code can contain a vCard, which is a contact card with fields such as a name, email address and phone number. If the last barcode scanned is a vCard, then `[Z]` on its own is replaced with the text `VCARD`, rather than the whole card.

To use a single field from the vCard, put the name of the field after the `Z`. For example, `[ZFN]` is replaced with the contact's full name, and `[ZEMAIL]` with their email address. So if the full name is "Jane Smith", then `[ZFN]_[S4]` gives `Jane_Smith_0128.jpg`.

- Field names are not case sensitive, so `[Zfn]` is the same as `[ZFN]`.
- If the vCard contains the same field more than once (for example several `TEL` phone numbers), the first one is used.
- If the vCard does not contain the field, or the barcode is not a vCard, the field is replaced with nothing.
- Use `FN` rather than `N` for the name. The `N` field holds the parts of the name separated by `;` characters, and these are kept in the filename.
- A field cannot be combined with a minimum width number.

14.11 Invalid Characters

Any invalid characters in the computed filename will be replaced with an _ (underscore) character. This includes the `:` (colon) character.

The space character is also replaced, unless **Allow spaces in filename** is turned on in the *Session Options*. When it is turned on, spaces are kept, and text is padded with spaces instead of _'s (see *Formatting Options*).

14.12 Examples

The following table shows some examples of the filename expression, and what the resulting computed filename would be. This assumes the photo taken is a JPEG saved with a `.jpg` extension, that the current sequence number is 128, the current batch number is 23, the camera that took the photo is named "centre", the current unique tag is "modelX", and that the current date is 20th August 2011.

Filename Expression	Computed filename
SSP_[S4]	SSP_0128.jpg
[D]/[U]_[S4]	20110820/modelX_0128.jpg
[D]_[U]/[C]_[B]	20110820_modelX/centre_23.jpg

14.13 Overwriting Files

The app has a safety mechanism so that it will never overwrite an existing file. This guards against the accidental loss of photos. Whenever the app is about to save a photo, it first checks whether there is an existing file with the same filename. If it finds an existing file, then it will append a `_1` to the end of the filename and then try again. If that new filename also already exists, then it will append a `_2`, and try again, and continue to try with incrementing number suffixes.

15 Backup

Automatic backup of photos to a secondary location

Smart Shooter can automatically copy each downloaded photo to a secondary backup location. This provides a layer of redundancy that protects against accidental deletion or disk failure at the primary download location.

Each new photo is copied automatically as it is downloaded, and existing photos can also be backed up retroactively via a manual action in the **Backup** window.

15.1 Backup Window

The **Backup** window shows the current backup configuration and the status of recent backup activity.

From this window you can monitor:

- The current backup destination
- The most recent backup operations
- Any errors or warnings (for example, if the backup location is full or unreachable)

15.2 Configuration

Backup is configured from inside the **Backup** window itself: click the options (gear) button at the top of the window to open the backup settings popup, where you set the backup destination and toggle whether photos are backed up automatically as they are downloaded.

When the backup is enabled, each photo that is saved to the local **Photo Download Folder** is also copied to the configured backup location. The copy happens automatically and asynchronously, so the download itself is not blocked waiting for the backup to complete.

> **Tip**
>
> A common configuration is to set the backup destination to a different physical disk from the primary download folder. This means a single disk failure cannot lose both copies.
>
> For more critical capture scenarios, the backup destination can be a network shared folder, in which case the photos end up on another machine altogether.

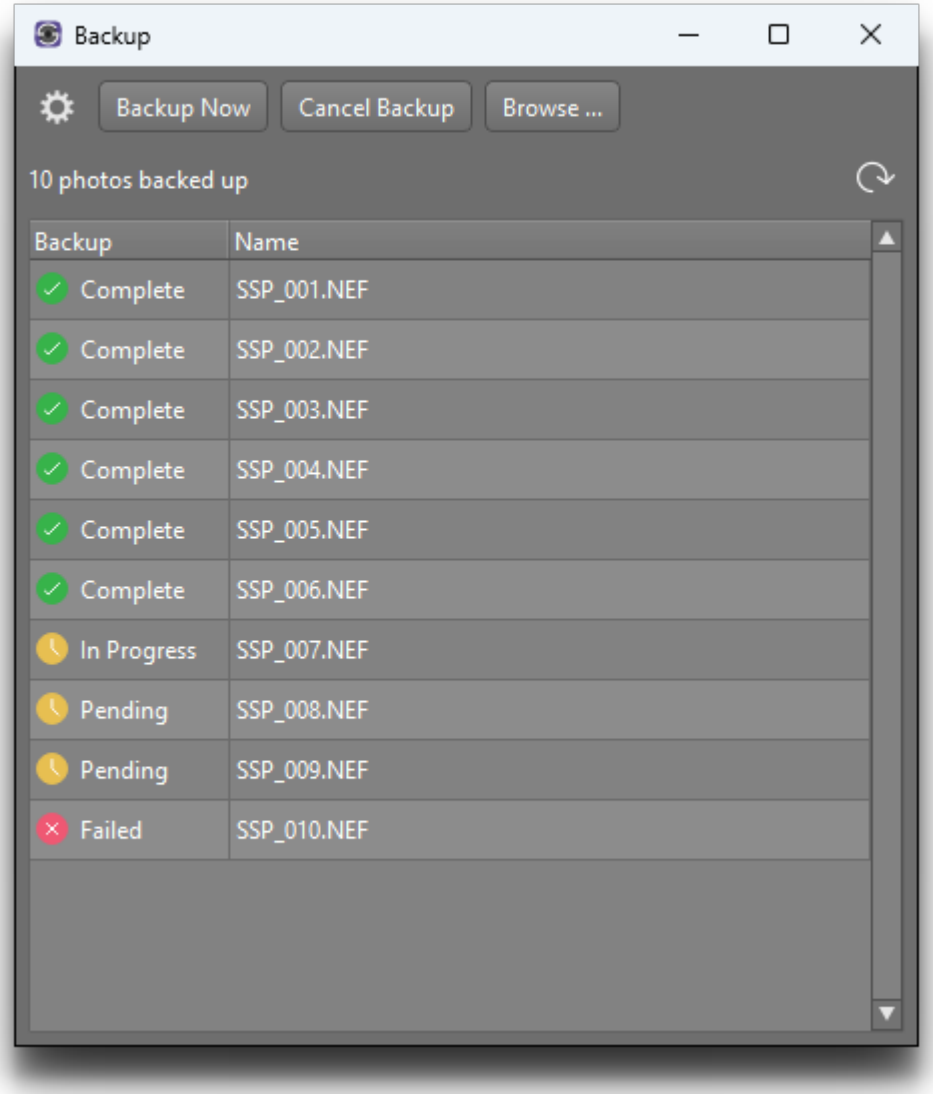
16 Barcode Scanning

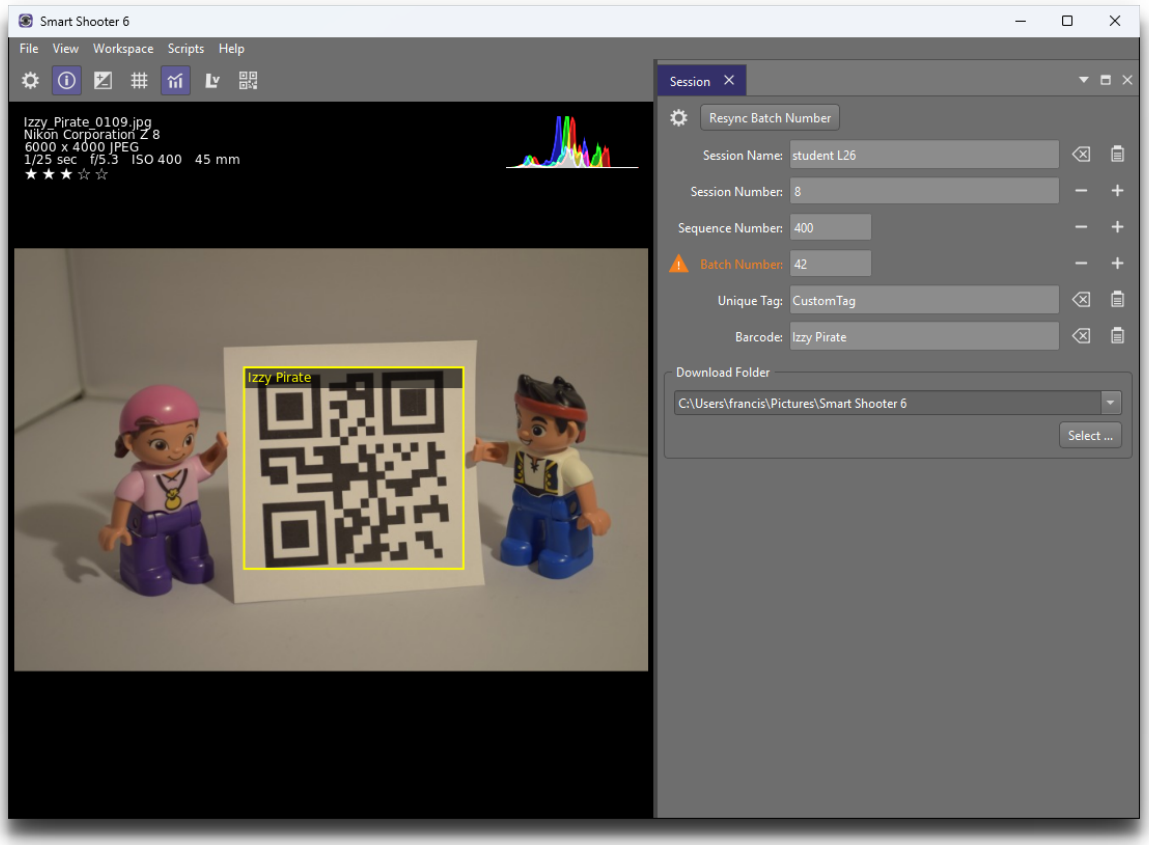
How to scan your photos for barcode information

Smart Shooter has the ability to scan a photo and detect if it contains a barcode or QR code, and extract the text information from it. This text can then be used as part of the filename when saving the photo.

When a barcode is successfully scanned, it is saved and shown in the **Barcodes** table, and also populates the *Barcode* text box in the **Session** window.

The next time the app has to compute a photo filename, it will use this barcode text to replace the `[Z]` parts of the filename expression. For more information on how the filename expression works, see *Name Policy*.


Backup
Backup Now
Cancel Backup
Browse ...
10 photos backed up
Backup
Name
Complete
SSP_001.NEF
Complete
SSP_002.NEF
Complete
SSP_003.NEF
Complete
SSP_004.NEF
Complete
SSP_005.NEF
Complete
SSP_006.NEF
In Progress
SSP_007.NEF
Pending
SSP_008.NEF
Pending
SSP_009.NEF
Failed
SSP_010.NEF


Smart Shooter 6
File View Workspace Scripts Help
Izzy_Pirate_0109.jpg
Nikon Corporation Z 8
6000 x 4000 JPEG
1/25 sec f/5.3 ISO 400 45 mm
Izzy Pirate
Session
Resync Batch Number
Session Name: student L26
Session Number: 8
Sequence Number: 400
Batch Number: 42
Unique Tag: CustomTag
Barcode: Izzy Pirate
Download Folder
C:\Users\francis\Pictures\Smart Shooter 6
Select ...

The screenshot above shows a demonstration. The QR code in the photo contains the text `Izzy Pirate`. After the photo was taken, it was automatically downloaded and then scanned for a barcode. The text was extracted and then put in the *Barcode* text box in the **Session** window. The filename used when saving the photo, `Izzy_Pirate_0109.jpg`, contains the same text.

16.1 Automatic Scanning

You can configure the app to automatically scan any new photos for a barcode. If you are using multiple cameras, this automatic scanning can be restricted to only scan photos taken by certain cameras. The screenshot below shows these in the **Barcodes** window.

Whenever a barcode is automatically scanned, it will affect the filename of that particular photo, and then all subsequent photos until another barcode is scanned.

Automatic scanning is also performed for liveview images, so a barcode can be extracted directly from the liveview stream even before a photo is taken.

16.2 Manually Scanning

The barcode scanning can be triggered manually at any time by pressing the  button at the top of the **Preview** window. The app will try to scan a barcode from whichever image is visible at that time, and this can include a previously taken photo or a liveview image.

16.3 Saving the Barcode in Photo Metadata

As well as using the barcode in the filename, the app can write the barcode text into the metadata of each photo as it is downloaded. This means the barcode stays with the photo even if the file is later renamed, and it can be read by other software that shows EXIF / XMP information.

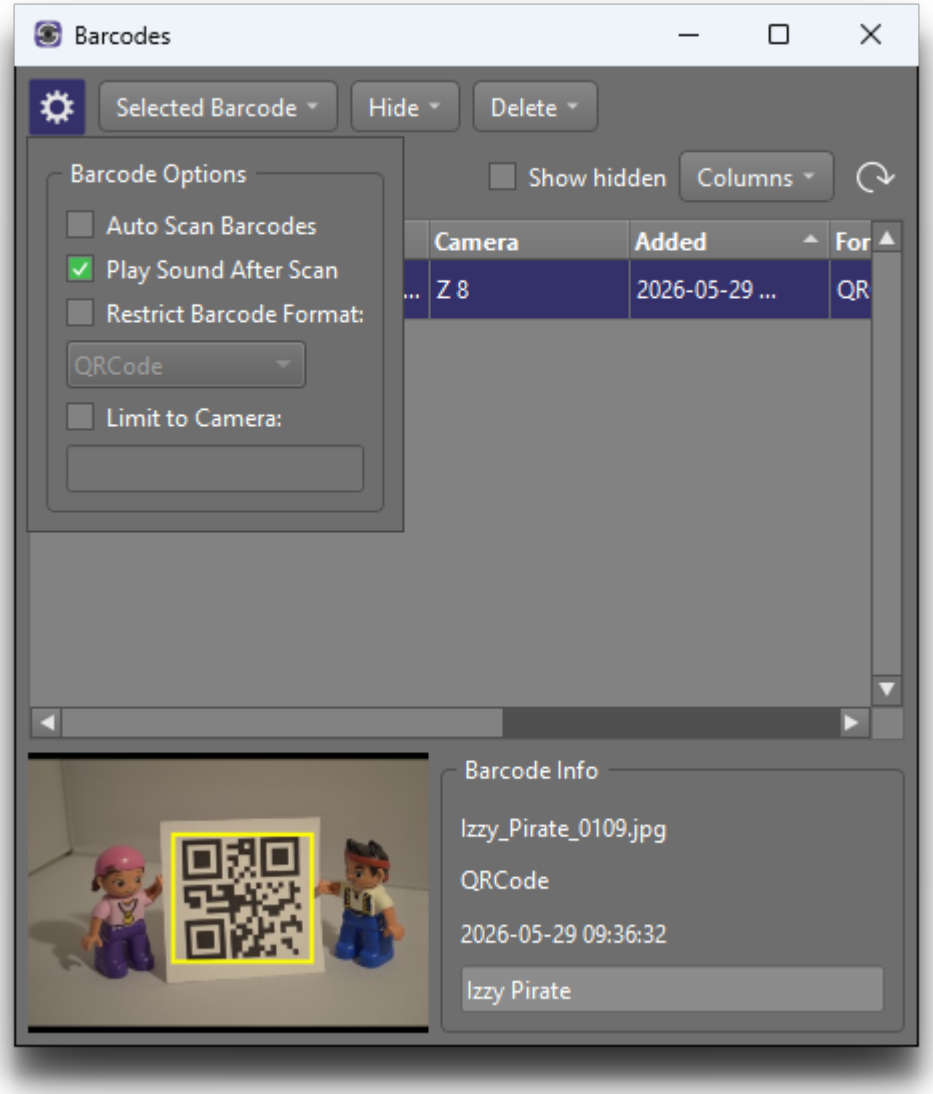
To turn this on, in the **Photos** window click the options (gear) button and tick *Add Metadata to Photos* in the **Photo Metadata** section. This is turned off by default.

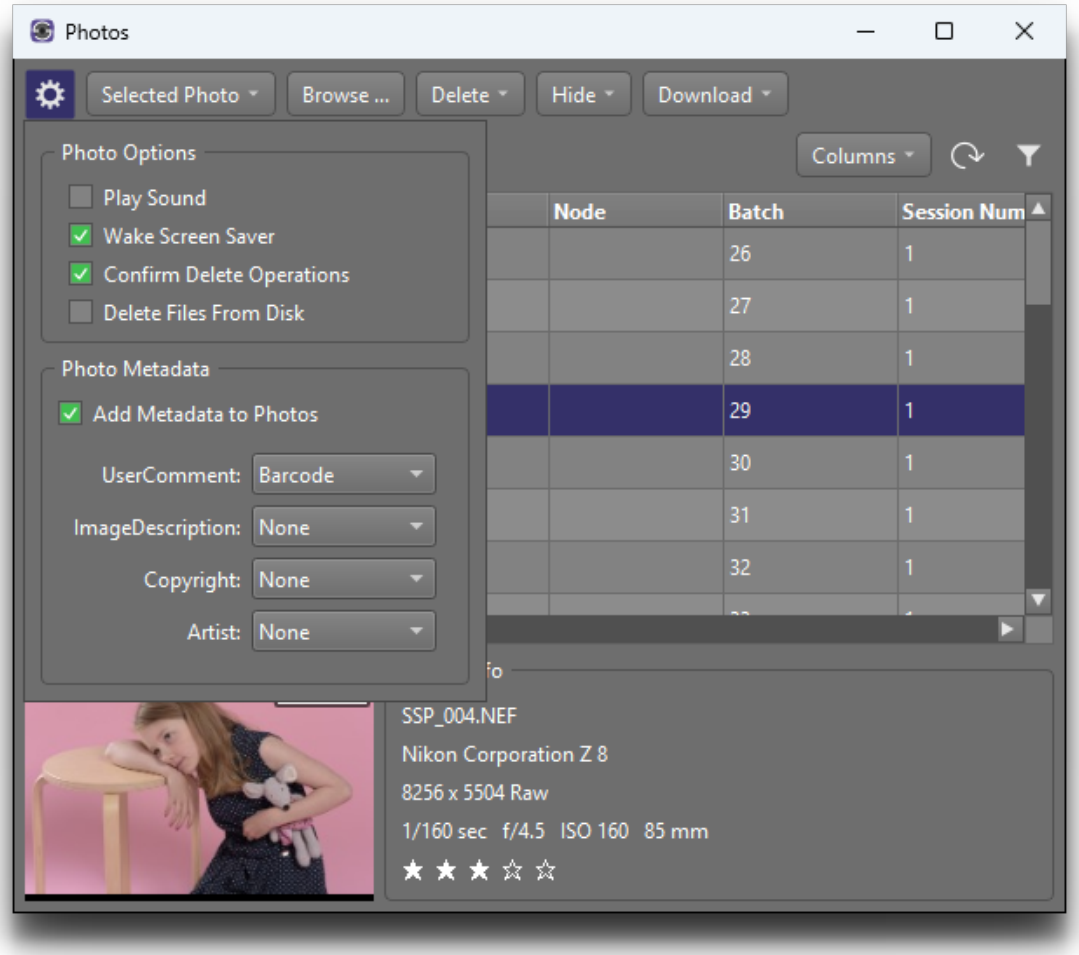
Below the checkbox there is a list of the metadata fields that the app can write, and for each one you can choose what information to put in it:

- *UserComment*
- *ImageDescription*
- *Copyright*
- *Artist*

By default the barcode is written to the *UserComment* field, and the other fields are left untouched. Each field can be set to *Barcode*, *Session Name*, *Unique Tag*, *Camera Name* or *Camera Group*, or to *None* to leave that field alone.

The metadata is added using the barcode that is current at the moment the photo is downloaded — the same value that would be used for `[Z]` in the filename. For more information on the other values that can be added, see *Adding Metadata to Photos*.


Barcodes
Selected Barcode
Hide
Delete
Barcode Options
Auto Scan Barcodes
Play Sound After Scan
Restrict Barcode Format:
QRCode
Limit to Camera:
Show hidden
Columns
Camera
Added
For
Z 8
2026-05-29 ...
QR
Barcode Info
Izzy_Pirate_0109.jpg
QRCode
2026-05-29 09:36:32
Izzy Pirate


Photos
Selected Photo
Browse ...
Delete
Hide
Download
Columns
Photo Options
Play Sound
Wake Screen Saver
Confirm Delete Operations
Delete Files From Disk
Photo Metadata
Add Metadata to Photos
UserComment:
Barcode
ImageDescription:
None
Copyright:
None
Artist:
None
Node
Batch
Session Num
26
1
27
1
28
1
29
1
30
1
31
1
32
1
SSP_004.NEF
Nikon Corporation Z 8
8256 x 5504 Raw
1/160 sec f/4.5 ISO 160 85 mm

16.4 Supported Barcode Types

The following barcode symbologies are supported:

- Aztec
- Codabar
- Code 39
- Code 93
- Code 128
- DataBar
- DataBar Expanded
- Data Matrix
- EAN-8
- EAN-13 / UPC-A
- ITF (Interleaved 2 of 5)
- MaxiCode
- PDF417
- QR Code
- UPC-E

Smart Shooter uses the ZXing open source library for detecting barcodes. Their website is: https://github.com/zxing-cpp/zxing-cpp

16.5 Using an External Barcode Scanner

It's also possible to use an external barcode scanner with the app. As long as this is also connected to the same computer, and can be configured to enter text in a UI text box, you can have it fill in the *Barcode* text box of the **Session** window.

Press `F9` to go to the *Barcode* field before scanning. Many scanners can also send a key after the barcode. If you set this to a key that has a keyboard shortcut, such as `F5` to take a photo, a single scan can fill in the barcode and then trigger the shortcut. Use a function key or a key with Ctrl or Alt for this, as keys pressed on their own don't work while the *Barcode* field has focus (see *Keyboard Shortcuts*).

17 Script Controls

Running Python scripts inside the app to automate cameras

Smart Shooter has a built-in Python interpreter that can run scripts against the connected cameras. This is the natural way to automate repeated capture patterns — time-lapse, focus stacking, bracketing, delayed trigger, and so on — without needing a separate program.

For automation driven from outside the app, see the External API described in *External API*. The two mechanisms are complementary:

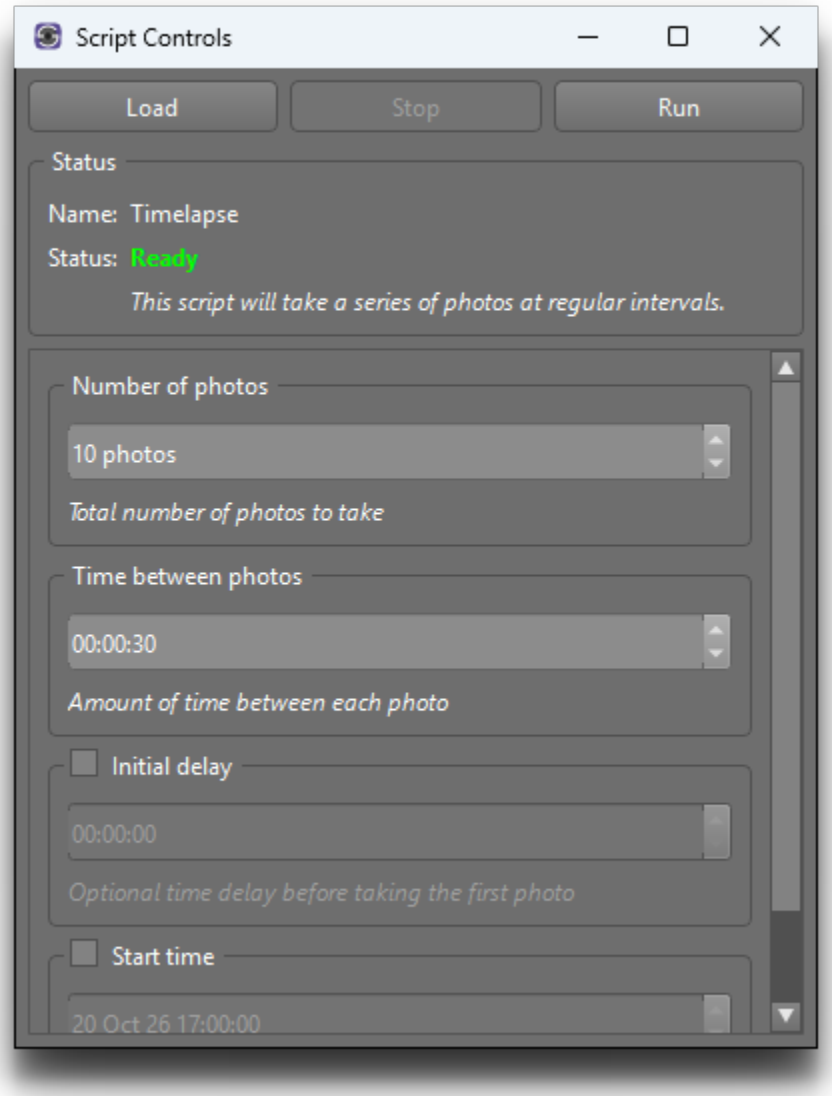
- **Script Controls** — run a script *inside* the app, with no external program required. The script has direct access to the in-app camera and photo APIs.

- **External API** — drive the app from *outside* via ZeroMQ, from a program that may be in any language.

Many automation tasks can be done with either approach; scripts are usually quicker to set up because there is no separate process to manage.

17.1 Script Controls Window

The **Script Controls** window is the place to load, configure, and run scripts.



Loading a Script

A script is loaded from the *Scripts → Load Custom Script…* menu item. The app will prompt for the script file (a `.py` file) and then read it.

Once loaded, the script appears in the **Script Controls** window along with any parameters it defines.

Parameters

Scripts can declare parameters that the user can set from the UI before running. The **Script Controls** window automatically generates the appropriate input widgets for each parameter — for example, number boxes for numeric parameters and text boxes for text parameters. This allows the same script to be reused with different values without editing the source.

Running

The script can be started from the *Run* button in the window, or from the keyboard shortcut `F8` (see *Keyboard Shortcuts*). It runs against the currently active cameras (see *Active Camera*), so scripts can be designed once and then applied across single cameras, all cameras, or a specific group depending on the active selection.

Output and status messages from the script appear in the **Log** window. A running script can be interrupted from the **Script Controls** window.

17.2 Auto-Loading

An option in the **Options** window controls whether the app automatically loads a previously used script on startup. This is useful when the same script is used as part of a regular workflow, so it is ready to run without manually loading each time.

17.3 Script API

Scripts have access to a Python API for interacting with cameras and photos. The API surface includes functions for triggering cameras, changing camera settings, downloading photos, and waiting for events.

> **Tip**
>
> For documentation of the script API, including the available functions and example scripts, see the public git repo:
>
> https://github.com/kuvacode/smartshooter-api/tree/v6

18 External API

Integrating Smart Shooter with an external system

Smart Shooter can be integrated with an external system by using the **External API** feature. This provides two key channels of communication:

- Publisher of event information
- Server for handling command requests

The External API uses the ZeroMQ library for managing the communication transport layer. See http://zeromq.org for more information on how to use ZeroMQ from your system. This also defines the programming model for using the event publisher and request/reply server, as these are implementated as ZeroMQ socket endpoints.

All messages passed over the External API are encoded in JSON format. See http://json.org for more information on how to handle this type of message format.

> **Tip**
>
> Sample python code for the External API is available at:
>
> https://github.com/kuvacode/smartshooter-api/tree/v6

18.1 Listening to Events

The event publisher will broadcast messages about important events that happen inside the app. This includes:

- When a new photo is taken
- When a photo changes state (downloaded/deleted/renamed etc)
- When a new camera is detected
- When a camera changes state
- When a camera property changes state

Below is an example of a listener application written in Python. This can be run from the command line, and simply prints out each message that is received from the app's publisher endpoint.

```
#!/usr/bin/env python3
#
# Copyright (c) 2015-2019, Kuvacode Oy
# All rights reserved. No warranty, explicit or implicit, provided.
#

import zmq

def main():
    context = zmq.Context()
    sub_address = "tcp://127.0.0.1:54543"
    sub_socket = context.socket(zmq.SUB)
    sub_socket.setsockopt(zmq.SUBSCRIBE, b"")
    sub_socket.connect(sub_address)
    print("Opened listener to: {0}".format(sub_address))
    while (True):
        raw = sub_socket.recv()
        json_msg = raw.decode("utf-8")
        print("Received: {0}".format(json_msg))

if __name__ == '__main__':
    main()
```

downloads/smartshooter_listen.py

For example, the text below shows the output from this after a new photo has been taken:

```
Opened listener to: tcp://127.0.0.1:54543
Received: {
  "msg_type": "Event",
  "msg_id": "PhotoUpdated",
  "msg_seq_num": 187,
  "msg_user_id": 0,
  "msg_result": true,
  "NetworkAddress": "192.168.1.52",
  "NetworkEndpoint": "tcp://192.168.1.52:54442",
  "PhotoSelection": "Single",
  "PhotoKey": "5752505c-07f1-4cd3-ab47-d70b4f8a5d02",
  "CameraKey": "Nikon Corporation|D5300|4337807",
  "PhotoLocation": "Local Disk",
  "PhotoOriginalName": "DSC_0000.NEF",
  "PhotoComputedName": "SSP_30.nef",
  "PhotoDateCaptured": "20190530 19:53:07.000",
  "PhotoOrigin": "ui",
  "PhotoFormat": "Raw",
  "PhotoOrientation": "None",
  "PhotoAperture": "5",
  "PhotoShutterSpeed": "1/10",
  "PhotoISO": "400",
  "PhotoFocalLength": "52.0",
  "PhotoWidth": 6000,
  "PhotoHeight": 4000,
  "PhotoFilesize": 24755185,
  "PhotoIsImage": true,
  "PhotoSequenceNum": 30,
  "PhotoBatchNum": 141,
  "PhotoHash": "095A4317"
}
```

18.2 Sending Requests

The request/reply server inside the app can handle requests to do various actions such as:

- Connect/Disconnect camera
- Take photo
- Download/rename/delete photo
- Change camera property
- Auto focus camera
- Change sequence/batch number

Tip

For further documentation see the public git repo:

https://github.com/kuvacode/smartshooter-api/tree/v6

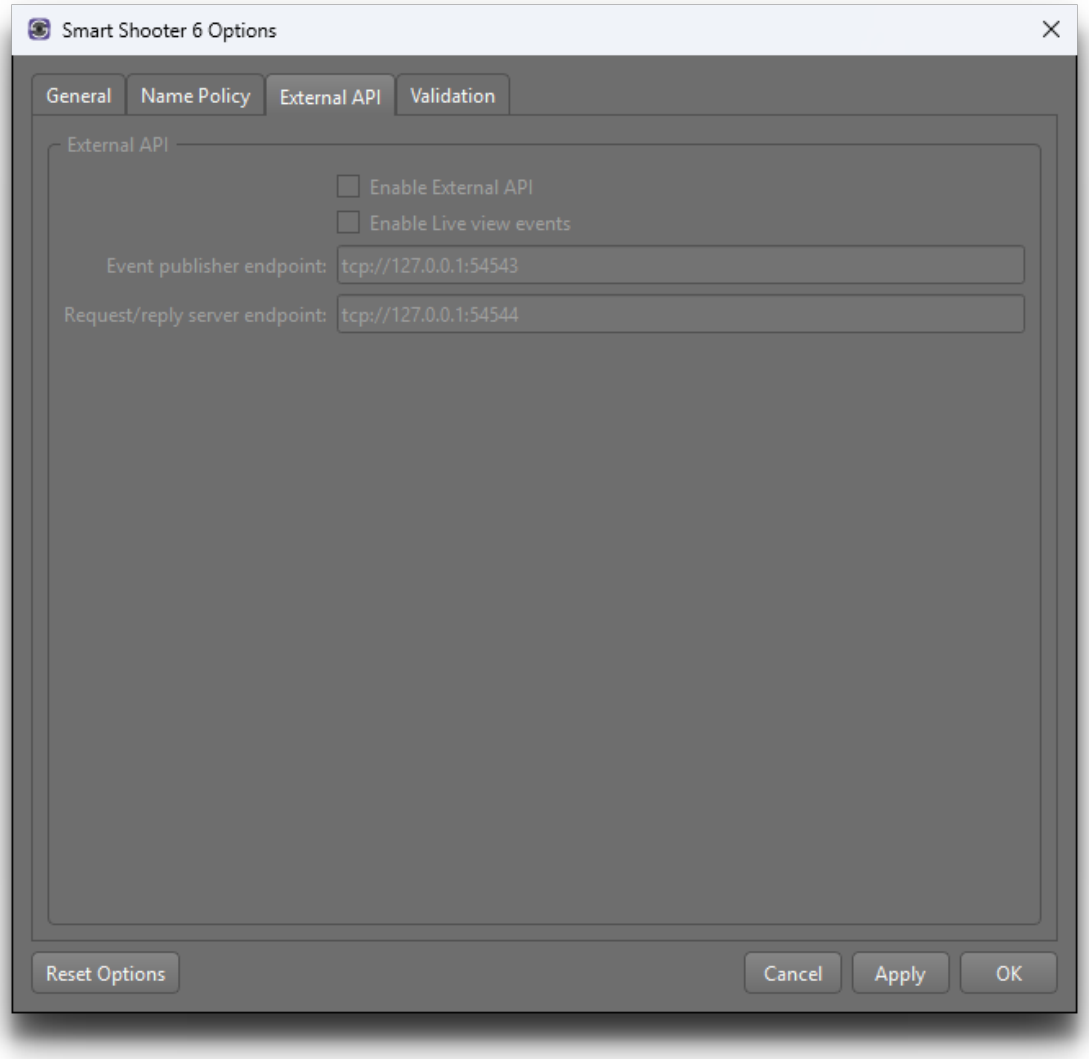
And in particular the API documentation stored here:

https://github.com/kuvacode/smartshooter-api/blob/v6/external_api.rst

18.3 Configuring the External API

> **Note**
>
> The External API is an add-on, bought separately from the Smart Shooter license. Until the license includes it, the **External API** tab in the **Options** window is greyed out and its settings cannot be changed.

By default the External API is disabled. To enable it, go to the **External API** tab in the **Options** window and enable the checkbox, as shown below. This also allows customisation of the ZeroMQ endpoints that are used for the event publisher and request/reply server, so that it can be opened up for access from other computers on a network.



19 Supported Cameras

For settings needed on the camera, and features that work differently on particular camera makes, see *Camera Notes*.

19.1 Canon

Canon M6 Mark II
Canon M50
Canon M50 Mark II
Canon M100
Canon M200
Canon R
Canon Ra
Canon R1
Canon R3
Canon R5
Canon R5 C
Canon R5 Mark II
Canon R6
Canon R6 Mark II
Canon R6 Mark III
Canon R7
Canon R8
Canon R10
Canon R50
Canon R100
Canon RP
Canon 1D C
Canon 1D Mark III
Canon 1D Mark IV
Canon 1D X
Canon 1D X Mark II
Canon 1D X Mark III
Canon 1Ds Mark III
Canon 5D
Canon 5D Mark II
Canon 5D Mark III
Canon 5D Mark IV
Canon 5Ds
Canon 5Ds R
Canon 6D
Canon 6D Mark II
Canon 7D
Canon 7D Mark II
Canon 40D
Canon 50D
Canon 60D
Canon 60Da
Canon 70D
Canon 77D / 9000D

continues on next page

Table 1 – continued from previous page

Canon 80D
Canon 90D
Canon 100D / Rebel SL1 / Kiss X7
Canon 200D / Rebel SL2 / Kiss X8
Canon 250D / Rebel SL3 / Kiss X10 / 200D Mark II
Canon 350D
Canon 400D
Canon 450D / Rebel XSi / Kiss X2
Canon 500D / Rebel T1i / Kiss X3
Canon 550D / Rebel T2i / Kiss X4
Canon 600D / Rebel T3i / Kiss X5
Canon 650D / Rebel T4i / Kiss X6i
Canon 700D / Rebel T5i / Kiss X7i
Canon 750D / Rebel T6i / Kiss X8i
Canon 760D / Rebel T6s / 8000D
Canon 800D / Rebel T7i / Kiss X9i
Canon 850D / Rebel T8i / Kiss X10i
Canon 1000D / Rebel XS / Kiss F
Canon 1100D / Rebel T3 / Kiss X50
Canon 1200D / Rebel T5 / Kiss X70
Canon 1300D / Rebel T6 / Kiss X80
Canon 2000D / Rebel T7 / Kiss X90 / 1500D
Canon 4000D / Rebel T100 / 3000D

19.2 Fujifilm

Fujifilm GFX 50r
Fujifilm GFX 50s
Fujifilm GFX 50s II
Fujifilm GFX 100
Fujifilm GFX 100 II
Fujifilm GFX 100s
Fujifilm X-H1
Fujifilm X-H2
Fujifilm X-H2S
Fujifilm X-S10
Fujifilm X-T1
Fujifilm X-T2
Fujifilm X-T3
Fujifilm X-T4
Fujifilm X-T5

19.3 Nikon

Nikon Z5
Nikon Z5 II
Nikon Z6
Nikon Z6 II
Nikon Z6 III
Nikon Z7
Nikon Z7 II
Nikon Z8
Nikon Z9
Nikon Z30
Nikon Z50
Nikon Z50 II
Nikon Zf
Nikon Zfc
Nikon ZR
Nikon D3
Nikon D3s
Nikon D3X
Nikon D4
Nikon D4s
Nikon D5
Nikon D6
Nikon DF
Nikon D200
Nikon D800
Nikon D800E
Nikon D810
Nikon D810A
Nikon D850
Nikon D700
Nikon D750
Nikon D780
Nikon D600
Nikon D610
Nikon D300
Nikon D300s
Nikon D500
Nikon D7000
Nikon D7100
Nikon D7200
Nikon D7500
Nikon D5000
Nikon D5100
Nikon D5200
Nikon D5300
Nikon D5500
Nikon D5600
Nikon D3000
Nikon D3100
Nikon D3200

continues on next page

Table 2 – continued from previous page

Nikon D3300
Nikon D3400
Nikon D3500
Nikon D40
Nikon D60
Nikon D80
Nikon D90
Nikon S2800
Nikon S3600
Nikon S6700
Nikon S9100

19.4 Ricoh

Ricoh Theta S

19.5 Sigma

Sigma fp
Sigma fp L

19.6 Sony

Sony a6000
Sony a6100
Sony a6300
Sony a6400
Sony a6500
Sony a6600
Sony a6700
Sony a1
Sony a1 II
Sony a7
Sony a7 II
Sony a7 III
Sony a7 IV
Sony a7 V
Sony a7C
Sony a7C II
Sony a7CR
Sony a7R
Sony a7R II
Sony a7R III
Sony a7R IV
Sony a7R V

continues on next page

Table 3 – continued from previous page

Sony a7S
Sony a7S II
Sony a7S III
Sony a9
Sony a9 II
Sony a9 III
Sony FX3
Sony FX30
Sony ILX-LR1
Sony UMC-R10C
Sony ZV-E1
Sony ZV-E10
Sony ZV-E10 II

20 Camera Notes

Settings and limitations that differ between camera makes

Most cameras work the same way in the app. This page lists what is different for each camera make: settings needed on the camera, settings the app changes or adds, and features that aren't available. For Live View features, see *Camera Support*.

20.1 Canon

- **Storage** – **Storage** offers **Disk**, **Card**, **Both** and **JPEG**. On a camera with two card slots, **Both** saves to the slot selected on the camera. If there is no memory card in the camera, **Storage** stays at **Disk**. While the camera records video, **Storage** is switched to **Card** until recording stops.
- **Self-timer and bulb** – While the shutter speed or mode dial is set to Bulb, a 2 or 10 second self-timer drive mode is switched to single frame. The original drive mode is put back when the camera is no longer set to Bulb.
- **Not supported** – Power zoom. Bulb exposures, video recording, and reading or setting the camera's clock are only available on some models.

20.2 Fujifilm

- **Control Mode** – Fujifilm cameras have a *Control Mode* setting in the **Camera Controls** window, set to *Camera* or *App*. The app sets it to *Camera* when the camera connects, and back to *Camera* when it disconnects. The app can take photos and use Live View in both modes: in *Camera* mode it takes control of the camera just for the shot, or while Live View is on, and then hands it back. The differences are:
  - The camera settings can only be changed from the app in *App* mode, and not while Live View is on.
  - *Auto Focus* and the Live View focus buttons only work in *App* mode (see *Fujifilm*).
- **Exposure settings** – Except in manual exposure mode, only the setting that the exposure mode leaves free can be changed: *Aperture* in A mode, and *Shutter Speed* in S mode.
- **Release priority** – The first time the app takes control of the camera, it sets the camera's AF-S and AF-C RELEASE/FOCUS PRIORITY settings to RELEASE, so that the camera doesn't refuse a shot from the app when it judges the scene out of focus. The original settings are put back when the camera is disconnected in the app, but not if the USB cable is unplugged first.

- **Storage** – Only **Disk** and **Both** are available. If there is no memory card in the camera, **Storage** stays at **Disk**. On some models **Storage** is fixed at **Disk**.
- **Not supported** – Bulb exposures, video recording and power zoom. Reading or setting the camera's clock is only available on some models.

20.3 Nikon

- **Connecting** – When a Nikon camera connects, any photos still waiting in the camera's memory buffer, and not yet saved to the memory card, are discarded.
- **Storage** – **Storage** offers **Disk**, **Card**, **Both** and **JPEG**. If there is no memory card in the camera, **Storage** stays at **Disk**. While the camera records video, **Storage** is switched to **Card** until recording stops.
- **Live View** – On some models, turning Live View on sets **Storage** to **Disk** and stops it being changed until Live View is turned off. **Storage** then stays at **Disk** until you change it.
- **Not supported** – Power zoom. Bulb exposures, video recording, and reading or setting the camera's clock are only available on some models.

20.4 Ricoh

These notes apply to the Ricoh Theta S.

- **Storage** – The camera always saves photos to its own memory, and **Storage** only decides what the app does with them:
  - **Disk** – The photo is downloaded, and then deleted from the camera.
  - **Both** – The photo is downloaded, and kept on the camera.
  - **JPEG** – Only JPEG photos are downloaded, and kept on the camera.
  - **Card** – The photo is not downloaded.
- **Not supported** – Live View, *Auto Focus*, bulb exposures, video recording and power zoom.

20.5 Sigma

These notes apply to the Sigma fp and fp L.

- **Control Mode** – The **Camera Controls** window has a *Control Mode* setting, set to *App* or *Camera*. It starts as *App*, where the app takes photos, focuses and changes the camera settings. In *Camera* mode you take photos with the camera's own shutter button and the app downloads them, but the app can't take photos or focus, and the camera settings can't be changed from the app.
- **Storage** – Only two **Storage** values are available:
  - **Disk** – The photo is downloaded and saved to the local computer disk, and not saved to the camera's memory card.
  - **Buffer** – The photo is held on the camera and not downloaded yet, so that a batch of photos can be shot first. When **Storage** is set back to **Disk**, the photos held on the camera are downloaded, in the order they were taken.

  Card and **Both** aren't offered, because the camera would overwrite photos already on its memory card with the new ones. When a Sigma camera connects, the app sets it to save photos to the computer, and **Storage** starts as **Disk** whatever the *Camera Storage* default is (see *Setting a default*). Photos held with **Buffer** are discarded if the

camera is disconnected before **Storage** is set back to **Disk**, and *Identify* and *Reshoot* don't work while **Storage** is **Buffer**.

- **Not supported** – Bulb exposures, video recording, and formatting the memory card or deleting photos from it. The camera's clock can be set from the app, but not read. In Live View, zoom isn't available and the AF area can't be moved (see *Sigma*).
- **Fast bursts** – During fast continuous shooting the camera can occasionally stop taking photos, and the app then shows an error for the camera. Unplug the USB cable and plug it back in to recover. Disconnecting and reconnecting in the app is not enough.

20.6 Sony

The Sony UMC-R10C works differently from the other Sony models, and is covered separately at the end.

- **Connecting** – The camera's USB connection must be set to PC Remote.
- **Storage** – **Storage** offers **Disk**, **Card** and **Both**, but not **JPEG**. On some older models the app can't change where photos are saved, so **Storage** is fixed at **Disk**.
- **Not supported** – Bulb exposures and video recording. On some models the camera's clock can't be read or set from the app.
- **UMC-R10C** – **Storage** offers **Disk** and **Card**. Bulb exposures (with the shutter speed set to Bulb), video recording and power zoom are available. Connecting can take a few seconds longer than for other cameras.

21 Getting Help

21.1 Discussion Forums

This is a place to ask general and technical questions, report bugs, request new features, or just share information with other users. They are monitored by the team and so any open questions will receive a response:

https://discourse.kuvacode.com

21.2 Email

To contact us directly, our email address is:

techsupport@tethertools.com

You can use this for inquiries, sales, and support issues.

21.3 Log Files

The Smart Shooter application records a log file about what the app is doing, and what errors it encounters. When reporting issues, it's useful to provide the log as this helps diagnose whats going wrong.

There are two log files called:

```
smartshooter6_log.txt
smartshooter6_history.txt
```

To locate where these are stored, click `Help -> Locate Log File` in the app's top menu bar. This will open a file browser window in the correct directory.

On Windows, this will be somewhere like:

```
C:\Users\francis\AppData\Roaming\Smart Shooter 6
```

On macOS, this will be somewhere like:

```
/Users/francis/Library/Application Support/Smart Shooter 6
```

22 Release Notes

22.1 v6.8

17th November 2026

- Add support for the Sigma fp and fp L
- Fix the Select Image button in the Live View options failing to open the file picker on Windows
- Show the options popup again after choosing an overlay image or a colour from it
- Turn off the Dropbox warning by default, and hide its option on Windows, where it has no effect
- Improve External API replies to failed requests, which now say why in a new msg_error field
- Reject External API SetOptions requests with an unknown option or a wrongly typed value, instead of reporting success
- Fix an External API license activation reporting success when the current license could not be deactivated first
- Install the Microsoft Visual C++ runtime silently from the Windows installer

22.2 v6.7

31st October 2026

- Add Live View autofocus, focus buttons, and zoom and pan on Fujifilm cameras, in App control mode
- Add customisable keyboard shortcuts, with a new Shortcuts tab in Options
- Support system-wide license activation on macOS
- Improve the photo info layout, showing the same details in the same order in the info panel, overlays and Dashboard, with units on each value
- Fix the license being lost when the app starts without a network connection
- Fix long exposure shutter speeds showing as raw fractions such as 1199/10 in the photo info
- Fix Fujifilm shutter speeds showing as "1/-11" in Program and Aperture Priority modes
- Fix Fujifilm shots in manual focus occasionally failing and leaving the camera unresponsive
- Fix Fujifilm cameras being left in PC priority when connected while busy
- Fix menus and popups not appearing in full screen on Windows
- Fix the first character of a barcode scan being dropped after clearing the Barcode field

22.3 v6.6

9th October 2026

- Add double-click on Live View to move the AF area to that point and autofocus
- Fix characters occasionally going missing from text drawn over the live view, preview and filmstrip
- Fix English counts reading “25 photo(s)” instead of “25 photos”
- Fix Smart Shooter 5 and 6 uninstalling each other when both are installed on the same Windows computer

22.4 v6.5

22nd September 2026

- Add configurable Photo Metadata options, replacing the Canon-only Copyright write
- Deprecate the AddBarcodeToMetadata External API field in favour of AddMetadataToPhotos
- Let a click on the main window bring the app back to the front
- Fix Default Storage Mode option not being applied on Nikon cameras
- Fix Nikon Live View zoom region not being draggable
- Fix Brazilian Portuguese and Chinese translations not being loaded
- Let users request another activation when the activation limit is reached
- Improve the license dialog page shown when the activation limit is reached

22.5 v6.4

7th August 2026

- Add option to activate a license for all users of a Windows computer
- Improve camera detection to ignore Nikon cameras that are charging or powered off
- Fix a crash that could occur when switching the camera connection backend

22.6 v6.3

2nd July 2026

- Fix trial camera limit so trials support the full number of cameras

22.7 v6.2

23rd June 2026

- Add support for displaying the application interface in 18 languages, in addition to English:
  - Chinese (Simplified)
  - Chinese (Traditional)
  - Czech
  - Danish

  - Dutch
  - Finnish
  - French
  - German
  - Italian
  - Japanese
  - Korean
  - Norwegian Nynorsk
  - Polish
  - Portuguese (Brazilian)
  - Russian
  - Spanish
  - Swedish
  - Turkish
- Add language selection dialog, shown on first run and when changing language
- Add new built-in app updater for Windows
- Fix swapped Is Image / Is Saved column header labels

22.8 v6.0

2026

Smart Shooter 6 is a major new release. The headline new features are:

- Add support for many new Canon, Nikon, Sony, and Fujifilm cameras:
  - Canon 1D X Mark III, M50, M50 Mark II, M100, M200, R1, R5 C, R5 Mark II, R6 Mark II, R6 Mark III, R8, and R100
  - Fujifilm X-H2S and X-S10
  - Nikon Z5 II, Z6 III, Z30, Z50 II, Zf, Zfc, and ZR
  - Sony a1 II, a7 V, a7C II, a7CR, a9 II, a9 III, ILX-LR1, ZV-E1, and ZV-E10 II
- Add persistent database for camera and photo data storage
- Add new macOS camera backend using the ImageCaptureCore API
- Add new Dashboard window for multi-camera monitoring
- Add support for importing existing photos from camera memory card
- Add support for viewing and editing photo ratings, including reading ratings from photo EXIF data

Additional changes in this release:

- Add action to Camera menu for viewing latest photo
- Add photo grid layout mode to Filmstrip window
- Add toolbar to Filmstrip window

- Add option to force Filmstrip into horizontal or vertical orientation
- Add filtering and sorting controls to Filmstrip, Photos, Dashboard, and Cameras windows
- Add Photo menu popup to Preview window
- Add draggable Loupe rect to Preview window
- Add options popup to Loupe window
- Show barcode rect in Preview and Filmstrip windows
- Add support for deleting barcodes
- Add camera name to the info overlay in the Preview window
- Add dropdown and history for photo download folder
- Add buttons to Session window for clearing the text fields
- Add option to automatically clear session text fields when app starts
- Add option to control the conversion of spaces to underscores in photo filenames
- Add option to enable/disable photo auto view behaviour
- Add button for pasting code into License window
- Add new SetActiveCamera request to External API
- Set default macOS camera transport mode to ImageCaptureCore
- Improve info overlay in Filmstrip window
- Improve algorithm used for RGB histogram calculation
- Improve layout of Session window
- Harmonise naming of Photo Download Folder
- Optimise default layout for small screen sizes
- Optimise handling of large messages in Log window
- Support extended ISO values on Sony cameras
- Persist image thumbnail cache across runs
- Save and restore the currently selected and viewed photo
- Fix identification of Mark II Canon R models
- Fix photo download for Canon R5 Mark II
- Fix Capture operation on Fujifilm X-T5
- Fix Liveview overlay aspect ratio in Preview window
- Fix issue with camera selection mode from liveview widget
- Fix issue with camera preset deletion removing the wrong preset
- Fix rendering issues with floating windows that contain GL content
- Fix initial state of Storage dropdown menu in Camera Controls window
- Fix Shoot action incorrectly triggering continuous shooting
- Disable the camera preset setting checkbox if setting is not available
- Remove image from view when its photo is deleted

- Remove secondary confirmation prompt for photo delete operation
- Remove support for Lightroom Plugin feature
- Remove menu item for sending feedback email

22.9 v5.10

30th March 2026

- Fix broken Intel Mac support in macOS application

22.10 v5.9

24th March 2026

- Fix Live View operation on Fujifilm XT-5
- Fix issues with Fujifilm capture sequence
- Improve performance of Fujifilm camera communication during Live View
- Add External API field to control the conversion of spaces to underscores in photo filenames

22.11 v5.8

12th January 2025

- Fix issue with Microsoft C++ DLL mismatch with windows installer
- Add option to disable the popup for confirming photo deletion

22.12 v5.7

3rd January 2025

- Improve download performance during Nikon continuous shooting mode
- Improve responsiveness of image decoding during high speed shooting
- Improve performance of image cache cleanup
- Improve messaging in Delete Photos confirmation window
- Add option to Photo Delete action to leave files in download directory
- Optimise photo views to avoid unnecessary image decoding
- Fix handling of Aperture setting on Fujifilm cameras
- Fix flickering of photo histogram
- Fix issue with photos being shown with wrong image resolution
- Fix issue with stuck loop during Sony powerzoom movement
- Update External API activation requests to ignore duplicate activation code

22.13 v5.6

31st October 2024

- Add support for changing camera settings on Fujifilm cameras
- Fix download error during app update process on Windows
- Keep Camera Controls UI in sync when camera setting change fails
- Ensure that the values for Quality camera setting are alphabetically sorted in UI

22.14 v5.5

6th July 2024

- Add popup warning about camera connection issues with Dropbox
- Add popup warning about performance impact of automatic barcode scanning
- Fix keyboard navigation in Filmstrip window
- Fix possible instability caused by window drawing order

22.15 v5.4

10th May 2024

- Add support for Fujifilm GFX 100, GFX 100 II, and GFX 100s
- Add photo review timer for live view overlay
- Add UI to verify installation of Lightroom plugin
- Show Live View indicator in Preview window
- Reduce size of UI elements on standard DPI displays
- Remove docs for [A] filename expression token from Options window
- Fix display of Live View zoom region for Sony a6700
- Fix issue with session options not being saved and restored after restart
- Fix hang in LR plugin when stopping tethered connection
- Fix issue with shutdown failure when there are floating windows

22.16 v5.3

26th March 2024

- Fix crash on macOS caused by GUI framework
- Fix issue with detection of Sony cameras on Windows

22.17 v5.2

14th March 2024

- Add support for Sony a6700
- Add Download Folder field to Session window
- Add option for showing grid overlay in Live View window
- Fix support for transparent PNG image overlay
- Fix window state save/restore behaviour after restart on macOS
- Fix possible crash when saving barcode info to photo EXIF
- Fix URL for Lightroom Plugin docs

22.18 v5.1

14th September 2023

- Add support for Nikon Z8
- Add support for Canon R50
- Add support for PNG overlay images
- Add support for "JPEG" storage mode for Canon and Nikon cameras
- Add support for "Both" storage mode for Fujifilm cameras
- Expose Live View image data to External API
- Fix issue with overlay image being unloaded while still visible
- Fix photo backup when copying from subdirectories of the photo download directory
- Correctly detect photo capture when using Card storage with Sony cameras

22.19 v5.0

12th June 2023

- Added Support for New Cameras
- Sony a7R V
- Sony FX3
- Sony FX30
- Fujifilm GFX 50r
- Fujifilm GFX 50s
- Fujifilm GFX 50s II
- Fujifilm X-H1
- Fujifilm X-H2
- Fujifilm X-T1
- Fujifilm X-T2

- Fujifilm X-T3
- Fujifilm X-T4
- Fujifilm X-T5
- Features
- Switch to new docking system for UI windows
- Support saving custom UI workspace layouts
- Support photo backup to secondary location
- Improve support for HiDPI displays
- Add native support for Apple Silicon
- Remove PRO version and enable all features as standard
- Reduce battery usage of photo display windows
- Increase macOS minimum version to 11.0 (Big Sur)
- Switch to per-camera licensing model for multi-camera support
- Add dedicated Barcode window
- Allow saving barcode info to photo EXIF metadata
- Allow barcode scanning to be restricted to specific type
- Application UI
- Add dedicated Loupe window
- Add dedicated Filmstrip window
- Add dedicated Live View window
- Add image thumbnail to Photos table UI
- Add image thumbnail to Barcode table UI
- Add column for Power Zoom position to Camera table
- Add Barcode column to Photos table
- Add support for showing overlay image in Live View window
- Add reset button to background colour option
- Add button to launch QR Code Generator app
- Add link to download QR Code Generator app
- Add info on origin of barcodes
- Add visual highlight of photo barcode location
- Add option to play sound after photo is taken
- Add option to play sound after barcode is scanned
- Add sound effect for camera lost event
- Add barcode format to scanned barcode information
- Set tab order for UI controls
- Make Shoot button more prominent in Camera Controls window

- Lighten background colour of UI tables
- Improve histogram rgb channel levels
- Improve scrollbar behaviour of Filmstrip window
- Improve UI of Delete photo window
- Improve UI of Memory Card Format window
- Improve UI for License window
- Improve UI for Camera Lost Warning window
- Improve UI of Presets UI window
- Improve UI for Sony power zoom
- Enable keyboard movement in Filmstrip window
- Allow vertical orientation of Filmstrip window
- Allow scrolling filmstrip with mouse wheel
- Allow per window live view options
- Allow multiple instances of Live View window
- Show visual indicator when tool buttons are toggled on
- Make license window flash when trial is ending
- Update app style sheet and icons
- Update macOS dmg with background image and icon
- Improve Windows installer package
- Use checkerboard pattern for dummy photo areas
- Rename Capture window to Preview window
- Rename Filename Options window to Session window
- Move camera options to Cameras window
- Move barcode options to Barcode window
- Move session options into popup menu
- Remove camera power icons from UI
- Remove Photos sub-menu from top menu bar
- Remove live view controls from Camera Controls window
- Remove option to enable/disable photo display
- Remove Recent Photos window
- Remove Card Preview feature
- Fixes
- Automatically close camera lost warning when camera is reconnected
- Add confirmation prompt when deleting camera preset
- Increase movement during Sony power zoom wide/tele commands
- Fix bug with use of barcode camera filter expression

- Fix error when reading Sony power zoom position
- Ignore Apple devices from USB detection
- Ignore non-camera USB devices on Windows
- Ensure mousewheel focus only happens when liveview is enabled
- Ensure camera lost warning is shown again when another camera is lost
- Ensure main window is focused when license window closes
- Support connection to Sony cameras using Sony PTP driver on Windows

22.20 v4.26

3rd October 2022

- Add support for Nikon Z6 II
- Add support for Nikon Z7 II
- Add support for Nikon Z9
- Fix support for Nikon image quality * modes

22.21 v4.25

6th August 2022

- Add support for Sony a7 IV
- Add support for Sony ZV-E10
- Add support for Canon R7
- Add support for Canon R10
- Add support for Liveview zoom/position on Sony cameras
- Add support for direct shutter button control on Sony cameras
- Fix crash caused by bug with texture loading in UI layout logic
- Fix issue with shutter button control during continuous highspeed shooting
- Fix issue with Sony triggering during MF focus mode
- Fix incorrect loupe size when loading photo thumbnails
- Disable Lightroom plugin install button for mac app store version
- Remove barcode metadata checkbox from options UI

22.22 v4.24

28th March 2022

- Fix issue with photo quality setting being ignored on Sony cameras

22.23 v4.23

27th October 2021

- Adjust Sony live view focus sensitivity
- Ensure Nikon cameras are disconnected gracefully
- Ensure Recent Photos list auto-scrolls to end when new photo is added
- Fix clickable UI area for camera live view popup menu
- Fix typo in tooltip for focus step buttons
- Improve log message for failed license activation request

22.24 v4.22

7th May 2021

- Add support for Sony a1
- Add support for Canon R5
- Add support for Canon R6
- Add support for Canon 90D
- Add support for Canon 850D / Rebel T8i / Kiss X10i
- Add support for full control of camera settings on Sony a7R4, a7C, a1
- Add support for Pixel Shift mode on recent Sony cameras
- Add display option to enable/disable filmstrip and tool panels
- Add photo filename validation feature
- Adjust Sony live view focus sensitivity
- Allow Colour Temp setting to be part of stored camera preset
- Fix Storage mode setting for recent Sony cameras
- Fix intermittent failure of live view on Sony cameras
- Fix video download on Canon EOS R
- Fix quick loupe for live view on Sony cameras
- Fix issue with background image being hidden until first photo is taken
- Ensure Lightroom retains focus when plugin is launched from within Lightroom
- Ensure empty files are removed if video download fails
- Ensure live view is marked as not-supported on the Sony a6000

22.25 v4.20

29th January 2021

- Add support for Sony a7C and a7S III
- Add full support for Canon CR3 file format
- Add support for live view focus with Sony Alpha cameras
- Add support for controlling power zoom on some Sony Alpha cameras
- Fix live view on Sony a7C and similar models
- Fix issue with dropped replies for External API requests

22.26 v4.19

11th November 2020

- Improve barcode scanning accuracy for small 1D type barcodes
- Fix broken video file downloads on Canon cameras
- Add support for setting custom White Balance colour temperature on Nikon and Sony cameras
- Add link to Lightroom plugin install instructions
- Ensure invalid External API requests are correctly rejected
- Update message in trial ended notification window

22.27 v4.18

5th October 2020

- Add support for Lightroom tethering plugin
- Add support for Nikon D6
- Add support for Nikon D780
- Add support for Nikon Z 5
- Add support for Nikon Z 50
- Add support for Canon RP
- Add support for Canon M6 Mark II
- Add system tray icon to mac app
- Add command line option to start minimised to system tray
- Improve accuracy of barcode scanning
- Prepare support for macOS Big Sur and Apple silicon
- Do not exit app when minimised to system tray and main window is closed
- Fix incorrect msg_seq_num on External API replies

22.28 v4.17

1st July 2020

- Fix issue with flickering liveview on Sony cameras
- Fix use of Windows network shares in Photo Download Directory
- Fix deadlock issue after barcode scan triggers photo renaming
- Add help menu item for submitting feedback email
- Show full product SKU in License window
- Decrease tolerance for over/under exposure warning

22.29 v4.16

24th May 2020

- Add PRO upgrade link to Help menu and About window
- Add button to License window for rechecking license
- Add license type and order ID to License window
- Make PRO features visible but disable for standard version
- Fix issue with UI focus when trying to change/edit camera from camera table

22.30 v4.15

22nd April 2020

- Improve reliability of Sony capture when AF is enabled
- Improve latency of Sony AF capture
- Improve highlight graphics for filmstrip photos
- Fix Sony auto focus functionality
- Fix camera status when Sony MF capture fails
- Fix issues with Sony photo download during highspeed continuous shooting
- Fix crash when value for script parameter contains empty text
- Detect Sony storage mode setting from camera
- Add option to enable/disable Capture display
- Add system tray icon to windows app
- Add option to start app minimised to system tray
- Add highlight for current camera in Cameras display panel
- Add StorageID, PersistentID, and OriginalPath to External API photo info
- Add GetCamera request message to External API
- Add option to persist photo info after app restart
- Support restore of photo info from previous session

- Allow app to be activated/deactivate via External API
- Allow Camera Controls current camera to be selected from Cameras display panel
- Ensure any outstanding Sony autofocus requests are cancelled before disconnect
- Restore camera selection mode after app restart

22.31 v4.14

19th February 2020

- Improve image quality of previews and thumbnails in photo display window
- Add option to disable Live View focus with mouse wheel
- Add support for bugsplat crash reporting on mac
- Add error code descriptions to cryptlex license window UI
- Ensure correct texture level is chosen in photo preview window
- Ensure Quick Loupe uses fullsize photo
- Ensure control characters (ie. newline) are stipped from photo filename
- Ensure PhotoFilename field is sent to external API event stream
- Fix issue with Sony camera properties getting out of sync
- Fix issue with Sony capture requests returning early failure
- Fix issue with histogram when two display windows are used
- Fix error when running Bulb Timelapse script
- Fix crash when loading background image

22.32 v4.13

16th January 2020

- Fix issue with photo detection and download on Sony a7R4
- Fix issue with sticky UI controls on mac
- Fix crash when using multiple display windows on mac
- Add mappings for more Sony a7R4 camera settings
- Show trial ID in trial/license window
- Ensure log file is updated on regular interval

22.33 v4.12

31st December 2019

- Fix issue with update window getting stuck in background on mac
- Fix issue with Live View FPS controls
- Fix issue with photo names contained absolute files paths
- Fix External API fields for CameraNumDownloadsComplete and CameraNumDownloadsFailed
- Add option for setting default Live View FPS
- Add rate limiter to photo viewer to avoid backlog of loading/decoding operations
- Stop sendling LiveviewUpdated message to External API

22.34 v4.11

15th November 2019

- Add support for photo quality settings on Sony cameras
- Add option to hide on-card photos from filmstrip
- Add new OptionsUpdated External API message
- Add UI to allow formatting memory cards in specific cameras
- Change 'Delete All' button to only delete known photos and not download directory
- Improve UI for hiding/unhiding photos
- Fix support for RAW+JPEG mode on Sony cameras
- Ensure large log file does not persist once app is restarted
- Ensure app update checks do not happen while activation window is still visible
- Ensure OptionsInfo and DownloadPath are added to External API synchronistion reply
- Ignore folders created by camera on memory card
- Ignore duplicate photos when shooting to dual memory card slots
- Avoid possible app hang when handling USB communication errors on Windows

22.35 v4.10

28th October 2019

- Switch to new Cryptlex licensing system
- Add option to disable automatic rotation using photo EXIF
- Add option to apply photo rotation using camera metadata
- Add option to auto fill Session Name or Unique Tag when clipboard text changes
- Add checkbox for pausing output text in log window
- Add single 'Manage License' item to help menu
- Fix USB host controller detection and balancing on Windows

- Fix orientation of live view loupe when display mirroring is enabled
- Fix possible hang when closing application

22.36 v4.9

29th September 2019

- Add Sony support for cameras in the a6xxx range, a9, and a7 variants
- Add support for changing Sony camera properties
- Add support for live view on Sony cameras
- Add UI buttons for incrementing/decrementing camera properties
- Add script for direct shutter button control for Canon cameras
- Fix colouring of UI text for script status
- Fix photo rendering for GPUs that have limited max texture size
- Fix issue with [E] filename token when shooting RAW+JPEG
- Replace warning icons with coloured text in Camera Controls window
- Allow parallel downloads from cameras connected through same USB host controller

22.37 v4.8

29th August 2019

- Add support for Canon 250D / Rebel SL3 / Kiss X10
- Add new zxing barcode scanner engine
- Add buttons for pasting clipboard into filename options text fields
- Fix issue with support for cardless operation with Canon cameras
- Fix misleading names used in PTP property log messages
- Show Card/Disk status for filmstrip thumbnail placeholder
- Replace Client Presentation Mode option with Card Preview dropdown menu
- Change behaviour of barcode text field to accept external scanner input
- Track Session Name and Session Number information with each photo
- Improve GUI table perf by disabling automatic column resizing
- Separate photo location and hidden status
- Allow photos to be unhidden

22.38 v4.7

25th July 2019

- Fix possible crash when recovering from failed camera connection
- Fix possible crash when sending External API event messages
- Fix issue with rejected download requests when camera already has capture request pending
- Fix issue when changing UniqueTag via External API
- Fix issue with migrated camera names being overridden with default model name
- Add placeholder text for thumbnails of photos that have not yet been downloaded
- Add link to documentation website in Help menu
- Add link to documentation website in Options window
- Ensure Client Presentation Mode only downloads JPEGs when shooting RAW+JPEG
- Ensure session num UI gets updated after options update
- Ensure log file is flushed when handling bugsplat report
- Show totals for photo/camera/nodes in UI tables
- Reduce use of GPU when Capture tab is not visible
- Update UI to improve layout of photo and camera tabs
- Update UI to improve layout of Options window
- Add ability to purge files from photo download directory
- Filter out noisy Nikon ExposureIndicateStatus messages from log

22.39 v4.5

24th May 2019

- Fix live view near focus command on Nikon cameras
- Fix possibly crash in photo rendering code
- Avoid duplicate text when using [E] extension in filename expression
- Default to using 'SSP_[S]' when computed filename is empty

22.40 v4.4

28th April 2019

- Add persistant storage of script parameter values
- Add camera rotate button to live view UI
- Add option to disable live view status indicator
- Add option to enable/disable update check during startup
- Add icon colour highlight to indicate when display options are enabled/disabled
- Fix incorrect display of photo shutter speed info

- Fix issue with update checking
- Fix issue with maximised window state not being applied after restart

22.41 v4.3

12th April 2019

- Fix bug in behaviour of “Default Storage Mode” option
- Fix possible hang during shutdown if Live View is active
- Fix issue causing scripts to fail for Canon cameras when using Disk storage mode
- Fix issue causing scripts to fail for Nikon cameras when using Both storage mode
- Fix issue with Focus Stacking script that caused focus movement to be ignored
- Fix issue with old photos being shown if new photo is taken with same filename
- Fix issue with automatic barcode scanning incorrectly triggering file rename
- Allow scrolling through filmstrip using mouse wheel
- Improve performance of barcode scanning

22.42 v4.2

5th April 2019

- Fix Camera Controls UI redraw issue on mac
- Fix crash and communication issues on mac with Nikon D500 and D850
- Fix crash on start up when Canon cameras already have pending photos to download
- Fix issue with drag movement of Live View AF region
- Allow select/view photo from filmstrip when using multi-camera display
- Filter out non-PTP USB devices (such as phones)

22.43 v4.1

31st March 2019

- Fix crash when camera settings get out of sync on Canon cameras
- Fix crash on mac when using Nikon D3xx range of cameras
- Fix issue with non-script files being shown in Scripts menu list

22.44 v4.0

28th March 2019

- Added Support for New Cameras
- Add support for Canon R
- Add support for Nikon Z6
- Add support for Nikon Z7
- Add support for Nikon D3500
- Add support for Sony a6300
- Add support for Sony a6500
- Add support for Sony a7R III
- Add support for Ricoh Theta S
- Application UI
- Add button to display toolbar for fullscreen mode
- Add button to imgui UI to quick swap window types
- Add photo browser gui
- Add pulse indicate to liveview window
- Add quick loupe for liveview
- Add separate option to enable/disable liveview quick loupe
- Add Smart Shooter icon to Camera Controls window
- Add visual indicator for elapsed video recording time
- Add visual indicator of liveview resolution and FPS
- Allow customisation of quick loupe window size
- Allow double click on filmstrip to start photo download
- Allow filmstrip navigation with keyboard
- Allow loupe window zoom using right mouse drag
- Allow loupe zoom reset with middle mouse click
- Allow sequence/batch num spin box to be reset by entering 0
- Change warning icons from PNG to SVG
- Customise About window with extra Tether Tools info
- Disable multiply display windows on mac (not yet working)
- Ensure UI does not display liveview image from previous session
- Fix issue with GUI state not being restored after restart
- Hide Barcode button from context menu for standard licenses
- Hide multicamera selection controls for standard license
- Highlight loupe rect when loupe window is hovered
- Hook up liveview focus to mouse wheel

- Improve layout of Display Options UI
- Improve pan/zoom of loupe window
- Improve UI layout for Camera Presets window
- Improve UI layout of Script Controls window
- Improve UI looks for groupbox and tooltip widgets
- Improve UI looks of loupe window
- Improve UI of Filename Options window
- Improve visibility of UI cursor when editting text
- Make “New Display” into modeless window
- Make Recent Photos panel hidden by default
- Remove Display Mode selection from UI
- Remove icons from top menu bar
- Remove unused “Restart Required” dialog from options window
- Rename ‘Display’ tab to ‘Capture’
- Reword tooltips in display window button
- Switch UI to SVG icons
- Update UI layout of Filename Options window
- Update with new icon and logo graphics
- Update wording from Liveview to Live View
- Camera Fixes
- Add checks to enable features for Nikon D3xxx cameras
- Add handling of Canon CR2 and CRAW image format
- Add identifiers for remaining current Canon DSLR cameras
- Add property mappings for more Canon program modes
- Correctly finish pending bulb tasks during camera disconnect
- Do not show ‘Unknown’ when photo format is not known
- Ensure Canon liveview status gets updated after enable/disable
- Ensure computed filename is never empty string
- Ensure duplicate download operations are discarded
- Ensure photo format is populated from filename extension if unknown
- Extract extra EXIF metadata from photo during save
- Fix camera hotplug detection on mac
- Fix crash on start up if camera already has download pending
- Fix issue with auto connect not applying to multiple cameras
- Fix issue with stale camera properties after reconnect
- Fix possible crash when camera property goes out of sync

- Fix possible photo save errors, if filename expression option gets set to empty text
- Force liveview support feature for Nikon D3400 and D3500
- Gracefully download pending canon photos after unexpected failures
- Gracefully stop video when disconnecting from camera
- Improve handling of Nikon continuous shooting mode
- Improve perf of Nikon liveview update logic
- Support check/sync clock operation on Canon cameras
- Support extra photo metadata from EXIF
- Changes to External API
- Add command line options to enable External API
- Add image orientation to photo object
- Add tracking of liveview frames with CameraLiveviewNumFrames
- Convert External API to synchronous reply behaviour
- Ensure CameraName is sent for first update of new camera
- Gracefully handle exit() call from python camera scripts
- Implement support for PhotoOrigin API field
- Remove UTF8 BOM from json encoder output
- Rename BulbInterval field to BulbTimer
- Rename CameraLiveviewFocus field to CameraLiveviewFocusStep
- Switch to python language for embedding scripting
- Unify API using for External API and embedded python scripting
- Add Client Presentation Mode feature
- Add support for [S] session name and [I] session num filename tokens
- Add tracking of elapsed video recording time
- Add trigger index to camera metadata
- Allow control of camera operation order using trigger index
- Change custom script loading ability to PRO feature
- Delete camera presets file if all presets are deleted
- Enable high DPI mode for windows installer
- Ensure UTF8 BOM is written when saving text files
- Remove ability to send feedback from within app
- Remove JPEG camera storage mode
- Remove liveview recording feature
- Remove Nullsoft branding from windows installer
- Remove option for reseting sequence number when directory is empty
- Remove option to disable filename generation

- Remove Options Presets feature
- Remove rebranding feature
- Remove support for [N] camera index token in filename expression
- Rename executable for windows uninstaller
- Rewrite camera communication on mac to improve reliability
- Rewrite camera communication to optimise download performance
- Set smart shooter trial mode sku to PRO
- Sort execution of camera operations by trigger index
- Update app to allow running in CLI mode
- Update license texts for 3rdparty libraries
- Update mac minimum version to Mac OS X 10.12 (Sierra)
- Use simplified smartshooter logo for windows installer background

22.45 v3.38

8th December 2018

- Fix detection of Canon 6D Mark II model name
- Fix auto focus on the Canon 6D Mark II and other Canon cameras
- Fix mirror lockup state for Canon 6D Mark II and other Canon cameras
- Fix mappings for ISO, Drive Mode, and White Balance camera properties on Canon cameras
- Fix use of MRAW and SRAW image formats on Canon cameras
- Fix possible photo save errors, if Filename Expression option gets set to empty text
- Fix mac support for generic PTP cameras
- Allow Photo Download Directory to be set from External API
- Add Microsoft .NET v4.0 package to windows installer
- Remove ability to send feedback from app

22.46 v3.37

21st May 2018

- Fix possible app hang on windows, during handling of unexpected camera disconnection
- Fix possible crash on mac, if camera gets disconnected while downloads are pending
- Improve scheduling of download threads for multi-camera parallel downloads
- Enable USB fast poll when camera battery is fully charged

22.47 v3.36

11th February 2018

- Fix auto focus for Canon 750D and other newer Canon cameras
- Fix focus stacking script for some older Nikon Cameras
- Add filename expression token [X] for camera serial number

22.48 v3.35

24th January 2018

- Fix error when trying to set camera group for multiple cameras
- Fix support for Nikon D3400 liveview
- Search default data path if camera database file is not found
- Add new 'Group' camera selection mode to External API
- Update External API docs for CameraSelection and PhotoSelection fields

22.49 v3.34

26th November 2017

- Fix issue with default storage mode not being applied after camera reconnection
- Fix failure to launch Windows app, caused by missing MSVC DLL
- Play intermittent beep when lost camera connection is detected

22.50 v3.33

15th November 2017

- Add support for Nikon D850
- Add ability to set per-camera display rotation
- Fix ability to shoot with older Canon cameras such as the 450D and 40D
- Fix resync of batch number when triggering multiple cameras
- Fix incorrectly disabled Connect/Disconnect buttons in Camera Controls UI

22.51 v3.32

9th September 2017

- Fix crash during camera disconnect after synchronising clocks
- Fix crash during exit if images are still being loaded

22.52 v3.31

27th August 2017

- Add support for Canon 200D / Rebel SL2 / Kiss X8
- Add option to disable auto rotation of images
- Add UI to allow selection of GRID network interface/adapter
- Fix crash when camera is disconnected but photo save operation is still pending
- Fix hang when using some Nikon cameras in Mac
- Fix issue with some Nikon cameras disconnecting after failed capture
- Fix intermittent failures with 'MoveFocus' script command, used by focus stacking script
- Fix some minor issues with Nikon D7500 camera properties
- Fix issue where video size was reported incorrectly in the UI
- Fix issue with GRID network connection changes being ignored
- Fix deletion of photos from camera for simulated Disk storage mode (Nikon D3xxx cameras)
- Attempt to recover photo status after camera disconnect/reconnect
- Improve UI visibility for display options menu
- Ensure photo display fading only happens if next download is underway

22.53 v3.30

9th August 2017

- Fix hang when download failure causes a camera disconnection
- Fix incorrect filename when reshooting photo
- Update to External API to ZeroMQ v4.2.2

22.54 v3.29

7th August 2017

- Fix bulb mode for Canon 5D Mark III
- Fix issue with corrupt camera communication on Mac version
- Fix issue of excessive memory usage during video downloads
- Fix crash when enabling/disabling External API
- Add support for strftime() formatting with [T] filename token
- Add support for camera groups
- Update Camera Controls UI to support camera groups
- Ensure display window does not try to load/view video files
- Override Canon drive mode setting during bulb mode
- Support External API relay of custom messages between GRID nodes

- Support External API shutter button control with Canon cameras

22.55 v3.28

1st June 2017

- Add support for Canon 77D / 9000D
- Add support for Canon 800D / Rebel T7i / Kiss X9i
- Improve performance of photo file saving
- Improve download performance for continuous shooting
- Fix liveview for some Canon cameras such as the 7D and 5D Mark II
- Attempt to save photo to backup location when photo download/save fails
- Increase limit on max GRID network transfers to 99
- Ensure backslashes are converted correctly for filenames on Mac
- Ensure restart prompt is not shown when closing Options/Preferences window

22.56 v3.27

1st May 2017

- Switch to DevMate for licensing system
- Remove use of Canon EDSDK for camera communication

22.57 v3.26

15th March 2017

- Improve performance with multi-camera asynchronous downloads
- Balance downloads across detected USB host controllers
- Add individual tracking of camera busy status
- Add automatic detection of physical camera USB attach/detach
- Recover USB connection state after camera plug/unplug
- Rename ‘Refresh List’ button to ‘Detect’
- Remove JPEG previewer script
- Change UI labels for supported cameras option
- Fix option for resetting sequence/batch number after barcode scan

22.58 v3.25

31th January 2017

- Add warning popup for unexpected camera disconnection
- Add prototype for Canon EDSDK replacement
- Add USB download rate to information shown in camera table
- Improve UI for Log window
- Improve UI for Camera Controls window
- Fix UI layout of Options window on high DPI displays
- Fix photo scale when 1:1 pixel display ratio is requested
- Fix intermittent crash after camera becomes disconnected
- Fix possible buffer overflow/crash during camera detection on windows
- Stop excessive camera communication traffic with Nikon D3xxx models
- Ensure restart prompt is only show once when changing options
- Ensure camera trigger requests are rejected when mirror lockup is enabled
- Disable shoot action in camera context menu when mirror lockup is enabled
- Cleanup and reduce logging during camera detection

22.59 v3.24

16th November 2016

- Fix error causing early expiration of trial version
- Fix intermittent hang caused by race condition with excessive logging
- Fix intermittent hang during shutdown, due to race condition with log messages
- Add support for easy bug/crash reporting using Bugsplat
- Reduce External API traffic message to trace level
- Remove unnecessary log warnings about unmapped Canon properties
- Stop duplicate work when setting names during camera connection

22.60 v3.23

5th November 2016

- Add support for Canon 5D Mark IV
- Add display option for always showing the most recent photo
- Optimise GRID photo saving when using shared NAS storage
- Update to Canon EDSDK v3.5

22.61 v3.22

12th September 2016

- Add support for Nikon D5
- Add support for Nikon D500
- Add JPEG only option for GRID network photo syncing
- Add button to force resynchronise of camera batch numbers
- Synchronise batch number when triggered multiple cameras
- Optimise file operations for computing photo hash when saving files
- Improve accuracy of liveview zoom region size/position
- Improve performance of downloads from multiple Nikon cameras
- Fix ability to change camera settings from the camera table
- Fix/avoid crash in Microsoft Windows runtime on certain CPUs

22.62 v3.21

17th April 2016

- Fix crash with Canon cameras on Mac OS X 10.11 (El Capitan)
- Add support for Canon 80D
- Add support for Canon 1300D / Rebel T6 / Kiss X80
- Add support for Canon 1D X Mark II
- Fix positioning of liveview zoom with rotated display
- Only rotate displayed photos if orientation if not specified in photo file
- Update to Canon EDSDK v3.4

22.63 v3.20

3rd April 2016

- Support utf-8 text
- Update code signing certificate for compatibility with latest Windows requirements
- Add filename expression token [E] for photo file extension
- Add warning message for when Graphics card does not support OpenGL

22.64 v3.19

9th February 2016

- Fix error when saving photos to sub-directories of photo download directory
- Fix crash when reading JPEG image if file contains bad data
- Fix crash if script interpreter cannot be initialised
- Fix crash on mac due to missing liblzma library
- Keep history of previous log file contents (up to 8mbyte limit)

22.65 v3.18

23rd January 2016

- Fix issue of data file corruption after crash
- Fix crash on mac when opening photo in external editor app
- Fix layout of mac DMG package contents

22.66 v3.17

20th December 2015

- Fix crash when deleting and then taking photo with the same filename
- Fix crash when UI has to resize scroll bars
- Detect JPEG orientation from Nikon photos
- Ensure Canon storage mode is not forced to Disk on first connection

22.67 v3.16

1st November 2015

- Detect orientation of JPEG images and auto-rotate display
- Add ability for applying presets to custom camera selection

22.68 v3.15

7th September 2015

- Fix ability to resume Nikon liveview after camera trigger
- Ensure Nikon liveview AF area mode is set to 'Normal' to allow UI focus positioning

22.69 v3.14

30th August 2015

- Add 'JPEG' camera Storage mode to allow selectively only downloading JPEG photos
- Improve performance of External API message communication

22.70 v3.13

8th August 2015

- Allow trigger during liveview for Nikon D3200 and D3300
- Add Auto Focus action to camera context menu UI
- Ensure External API reports cameras from all GRID nodes
- Ensure External API receives event messages from all GRID nodes
- Relax restriction on valid IP host addresses for GRID nodes

22.71 v3.12

13th July 2015

- Allow editing of camera settings directly from camera table UI
- Fix inconsistent camera status and settings when running scripts
- Ensure camera power information is updated across GRID network
- Ensure node remove requests are set to all GRID nodes
- Improve method for GRID node synchronisation
- Gracefully handle GRID nodes that have clashing IP addresses
- Only warn for GRID node mismatch against connected nodes
- Only save GRID node addresses that were active or manually added

22.72 v3.11

21st June 2015

- Add DOF Preview functionality for supported Nikon cameras
- Fix problem with how GRID logic handles network unavailable conditions
- Fix mouse input handling for retina displays

22.73 v3.10

1st June 2015

- Add support for Nikon D7200
- Add support for Canon 5DS and 5DS R
- Add support for Canon 750D / Rebel T6i / Kiss X8i
- Add support for Canon 760D / Rebel T6s / 8000D
- Add support for Canon 1D Mark III and 1Ds Mark III
- Add ability to manually add GRID node by IP address
- Improve reliability and performance of GRID networking
- Save GRID node adddresses in database file
- Allow quick view of photos when changing selection in Recent Photos window
- Fix problem with saving UI state of Filename Options window
- Fix memory leak during External API usage

22.74 v3.9

14th May 2015

- Fix issue with Nikon liveview mode continuously activating mirror/shutter
- Add option to customise spacing between photos in display window
- Move UI for display options to display window toolbar

22.75 v3.8

6th May 2015

- Add support for camera Drive Mode setting
- Add support for customising the liveview refresh rate
- Add option to reset sequence/batch number when Unique Taq or Barcode is changed
- Add possible fix for Canon communication relibility issues on Windows
- Add UI for customising logging levels in Log window
- Add internal support for half pressing shutter release button
- Split UI for Camera Presets and Filename Settings into separate windows
- Improve UI for managing the display's background image
- Ensure Nikon Storage mode is set to Card when starting video recording
- Ensure Camera Controls UI is consistent with the current camera status
- Fix app hang on Windows after failed Nikon USB transfers
- Fix Storage mode settings for Nikon D200, D40, D60, D80
- Fix Image Quality settings for Nikon D200, D40, D60, D80

- Save and restore the enabled log levels with app options

22.76 v3.7

23rd March 2015

- Allow re-ordering of UI table columns
- Fix error when loading decimal numbers for script UI
- Improve reliability of Canon camera management on Windows
- Reduce text width for UI table column names

22.77 v3.6

11th March 2015

- Add support for Nikon D5500
- Add External API feature
- Add ability to select multiple cameras or photos and apply actions to them
- Add ability to hide photos from list, without deleting them
- Add Refresh List action to camera context menu
- Improve accuracy of camera clock syncing to (to +-100ms from local time)
- Improve detection of barcodes during automatic barcode scanning
- Improve reliability of camera detection on Mac
- Improve detection of duplicate Nikon cameras on Windows
- Extend actions available in photo context menu
- Ensure photo delete operations affect all copies across GRID network
- Fix issue with double filename extensions when using [O] in filename expression
- Fix UI layout issues with Options window
- Remove Reset Sequence/Batch number buttons from Options window
- Deprecate [N] token from filename expression

22.78 v3.5

1st February 2015

- Fix identification and communication problems with Canon 100D / SL1
- Fix ability to stop script once it's already running
- Fix changing of camera settings across multiple cameras
- Fix missing DLLs in Windows 32-bit installer
- Update Mac OS X minimum version to 10.7 (Lion)
- Force camera Storage mode setting to Disk if no memory card is inserted

- Ensure formatting is only requested for valid memory cards
- Ensure Connect/Disconnect buttons reflect camera status
- Add camera information for number of memory cards inserted
- Add visible warning for GRID node version mismatch
- Stop printing of duplicate MTP camera device information

22.79 v3.4

20th January 2015

- Fix batch number increments across grid network
- Fix crash during photo status updates
- Add batch number column to photo table
- Allow secondary display windows to go full screen

22.80 v3.3

18th January 2015

- Add UI warning for camera batch number mismatches
- Add new EnableDOF/DisableDOF camera script commands
- Add Windows DLL for VC++ OMP redistributable
- Add UI button to force refresh of table information
- Improve behaviour of UI photo transfer progress bar
- Improve handling of Canon video recording state
- Improve network logic for managing/closing duplicate node connections
- Ensure accuracy of clock syncing is not affected by application latency
- Track photo sequence and batch number correctly for grid nodes with not connect cameras
- Fix bug where Nikon D3xxx photo downloads would save zero sized files
- Allow UI table columns to be hidden
- Ensure UI for camera and photo table resizes correctly to information
- Reduce noise of logging for camera messages

22.81 v3.2

3rd December 2014

- Add support for Canon 7D Mark II

22.82 v3.1

23rd November 2014

- Add support for Nikon D750
- Add preliminary support for Nikon Coolpix cameras
- Add button to show/hide camera and photo names in the display window
- Add warning indicator for when multi-camera settings are mismatched
- Add option to set a default camera autofocus mode
- Add ability to enable/disable Mirror Lockup on Canon
- Add button for anticlockwise photo rotation
- Improve UI for adding camera presets
- Allow camera presets to include all available camera settings
- Support display autorotate for RAW photo orientation
- Ensure busy icon is shown whilst local camera operations are pending
- Convert semicolons to underscores in photo filenames
- Harmonise text used for camera autofocus modes
- Harmonise text used for Canon exposure compensation settings
- Show columns for camera settings in the camera table
- Add filename expression token [M] for milliseconds
- Allow filename expression [D] and [T] (date/time) to include a separator character
- Allow SetActiveCamera script function to take camera name as parameter

22.83 v3.0

2nd November 2014

- Smart Shooter GRID - networked multi-computer control of multi-camera arrays
- Switch to 64 bit for Windows version
- Switch to 64 bit for Mac version
- Add support for Nikon D810
- Add support for Nikon D3300
- Add support for Live View on Nikon D3200 and D3300
- Add new UI for listing cameras and photos
- Add ability to scan barcodes directly from captured images
- Add ability to recompute photo filename after capture
- Add ability to save and load camera settings as presets
- Add ability to synchronise camera clocks
- Add ability to format camera memory cards

- Add ability to alter brightness of Liveview image
- Add Liveview only display mode
- Add camera and photo name labels to display window
- Add UI context menus to display window for camera/photo actions
- Improve and optimise performance of display drawing
- General improvements to UI appearance
- Set default Storage mode to Disk
- Ensure mouse wheel does not change dropdown menu selections
- Ensure camera database names are available before connecting to camera
- Support Retina display resolutions on Mac
- Harmonise names used for Canon and Nikon image quality settings
- Support TIFF and PNG background images
- Fix crash on some AMD Radeon HD graphics cards

22.84 v2.18

25th May 2014

- Add support for Nikon D4s
- Add support for changing focus mode on Nikon
- Add confirmation prompt for Options reset button
- Fix capture on Nikon D3x
- Fix problem with 'FULL PC' message on some Canon cameras
- Fix long running memory leak and crash for Nikon on Windows
- Fix for possible image download corruption for Nikon on Windows

22.85 v2.17

27th April 2014

- Add support for Canon 1200D
- Improve Nikon photo download speed on Windows
- Fix crash on mac caused by old 'disable asynchronous camera communication' option
- Always show last known aperture/shutter speed for Canon

22.86 v2.16

10th April 2014

- Fix long running memory leak and crash on Mac
- Fix crash/hang on Mac when communicating with cameras during reconnection
- Fix duplicate phantom Canon cameras listed on Mac
- Add option to disable loading of script during start up

22.87 v2.15

26th March 2014

- Support for Nikon Df
- Support for Nikon D5300
- Support for bulb mode shooting on Nikon
- Fix crash during reconnection of Nikon cameras
- Fix long running increase in memory usage due to infinite log history
- Improve accuracy of time intervals in camera script loops
- Improve information about Nikon shutter speed setting
- Add delayed trigger script
- Add multicamera option to focus stacking script
- Add new WaitUntil camera script function

22.88 v2.14

4th December 2013

- Support for Canon 70D
- Support for Nikon D610
- Fix problem with unusable camera settings when live view is enabled
- Ensure Nikon live view zoom is set to 1:1 pixel ratio
- Ensure live view is resumed after using TakePhoto script command
- Enable prompt for feedback on Mac app store
- Fix URL used for latest version check

22.89 v2.13

3rd November 2013

- Ensure live view is resumed after taking a photo
- Fix bug where incorrect photo was displayed when selecting from Photos window
- Fix failure to close app when exiting with live view enabled
- Add script for delayed trigger of camera
- Add option to time lapse script to support multiple cameras

22.90 v2.12

12th September 2013

- Major update to Nikon camera communication on Mac (for improved reliability)
- Support for Nikon D7100 (mac and windows version)
- Support for Nikon D3000, D3100, and D3200 (mac and windows version)
- Fix inconsistency of options presets after startup
- Fix issue with persistent storage of Application Name option
- Fix crash when using identify camera button in camera database
- Rename 'Customer Text' to 'Unique Tag' in UI

22.91 v2.11

5th August 2013

- Support for Canon 100D and 700D
- Support for Nikon D7100 (windows version only)
- Add new camera setting for auto focus mode
- Add ability to reshoot a specific photo with the same filename
- Add ability to delete a specific photo
- Add presets for photo download/filename options
- Add filename expression variable for customer text
- Fix issue causing failure to start when asynchronous camera communication is disabled
- Fix issue causing failure to start when running over Windows remote desktop
- Fix crash on Windows when Nikon cameras are unexpectedly disconnected
- Fix problem with consistency of camera name database during camera connection
- Fix problem with consistency of camera name after edit
- Improve UI for Script Controls window
- Add slave camera script
- Allow manual memory card formatting on some Nikon models whilst tethered

22.92 v2.10

5th June 2013

- Support for Nikon D3000, D3100, and D3200 (windows version only)
- Support multiple simultaneous Nikon cameras (windows version only)
- Support for Nikon video recording (windows verison only)
- Fix for Canon video recording
- New camera database for assigning custom names to each camera
- Fix batch numbering scheme for photo file names

22.93 v2.9

26th April 2013

- Improve process for registering license information

22.94 v2.8

3rd April 2013

- Add support for Canon 6D, 5D Mark III, 1D C, 650D/Rebel T4i
- Add ability to control multiple cameras at once
- Add ability to start/stop video recording for Canon cameras
- Sort camera drop down list alphabetically
- Add display indicator for connection status of multiple cameras

22.95 v2.7

8th March 2013

- Add preliminary support for Nikon D5200
- Add minimum width specifier for photo naming policy
- Add Z keyboard shortcut for multi shot
- Fix problem starting app on Mac OS X 10.5

22.96 v2.6

30th January 2013

- Redesign and improve how photo filenames are generated
- Add ability to disable automatic photo display
- Add setting for default display mode
- Reduce memory usage of application by disabling image caching
- Fix failure to start on some Windows XP machines

- Use camera name stored in Canon cameras
- Add simple script for shutter speed bracket

22.97 v2.5

14th January 2013

- Fix problem with blank live view display with Nikon D600
- Fix rare connectivity problem with some Nikons on windows
- Add option to store each photo in a sub directory separately for each connected camera

22.98 v2.4

19th December 2012

- Add ability to set a background display image
- Add ability to upload log file to support server
- Add option for fixing compatibility with problematic Nikon cameras on Mac
- Fix display problem with Intel HD 3000 graphics cards, as used by some Macs

22.99 v2.3

20th November 2012

- Add support for Nikon D600
- Add option for automatically connecting cameras
- Add option for setting a default Storage mode
- Add option for fade transition when waiting for new photo to load
- Fix problem when using optional script parameters

22.100 v2.2

12th September 2012

- Fix for issues with Nikon D800 live view
- Fix for issue with Canon auto focus during live view
- Fix for error with focus stacking script
- Live view is turned back on after taking photo
- Live view scale and position are restored
- Easier exit from full screen mode

22.101 v2.1

13th August 2012

- Add icon for windows uninstaller
- Ensure application adjusts layout to fit screen size
- Try and set Canon disk space to avoid PC FULL message on camera
- Ensure update window shows the correct current version

22.102 v2.0

6th August 2012

- Application has been redesigned to be more user friendly, with dark styling to minimise distraction from the photos themselves
- Graphics system has been rewritten to improve performance and add support for multiple windows and multiple monitors
- Script interface has been updated so that its more intuitive to load scripts and control script parameters, and includes built-in scripts for timelapse, HDR, HDR timelapse, and focus stacking
- Improvements to reliability of camera communication, with faster photo download and preview
- Support for Nikon D4, D800, and D800E
- Support for Canon 650D, 5D Mark III, and 1D X (windows version only).

22.103 v1.1.14

14th February 2012

- Updated to latest Nikon SDK

22.104 v1.1.13

8th February 2012

- Fixed issue with bulb mode shooting on some recent Canon cameras

22.105 v1.1.12

2nd February 2012

- Fixed issue with Nikon camera connection reliability on mac
- Fixed issue with Canon autofocus when shooting with live view

22.106 v1.1.11

3rd September 2011

- Fixed issue with Live View zoom on Nikon
- Allow application to start again if it has previously not closed correctly

22.107 v1.1.10

3rd September 2011

- Fixed issue with JPEG decoder
- Fixed issue with Nikon D40x

22.108 v1.1.9

29th August 2011

- Added auto focus support for most Canon cameras
- Improved performance of live view mode

22.109 v1.1.8

31st July 2011

- Added shortcut keys for some of the camera settings
- Added logic to check only one instance of the application is running
- Added full screen mode
- Fixed crash when using buggy OpenGL drivers (naughty Intel 965/963 Graphics Media Accelerator!)

22.110 v1.1.7

23rd June 2011

- Added support for Nikon D5100
- Fixed problem with bulb shooting on Canon 600D/Rebel T3i and Canon 1D Mark IV
- Fixed issue parsing TCL script parameters that contain certain characters, such as ':'
- Added example script for timelapse shooting with bulb exposures

22.111 v1.1.6

14th May 2011

- Fixed issue causing failure to start with some OpenGL drivers
- Fixed issue for Nikon camera communication that caused failure after 100 photos
- Added 15 use limit for trial version

22.112 v1.1.5

14th April 2011

- Added support for Canon 600D (Rebel T3i) and Canon 1100D (Rebel T3)
- Reduced since of Mac version by stripping out redundant code
- Fixed rare crash on Mac related to loading rogue Qt plugins

22.113 v1.1.4

4th April 2011

- Added option to wake screensaver when a new photo is taken
- Fixed bug that caused crash if the return result of a script was too long
- Added TCL example script for delayed shooting timer

22.114 v1.1.3

15th March 2011

- Improved reliability of Canon photo download
- Added new TCL functions ‘GetPhotoDetails’ and ‘GetCameraDetails’
- Added log output for TCL function return values
- Disabled bulb shooting button for Nikon
- Fixed bug with photo filenames for Nikon
- Added TCL example script with SmartShooter stub functions

22.115 v1.1.2

22nd February 2011

- Added new icon and title graphics
- Improved reliability of ‘Reset Layout’ menu option
- Updated Nikon camera modules to latest version

22.116 v1.1.1

8th February 2011

- Fixed compatability with OpenGL v1.1 and above
- Added ability to specify photo filename sequence number
- Added support for minidumps for crash analysis in Windows

22.117 v1.1.0

31st December 2010

- Added support for Nikon D40, D60, and D80
- Added ability to save GUI layout for next time program is run
- Ensured GUI layout adapts to small screen sizes (such as Macbook Air 11″)
- Fixed minor issues with GUI rendering on Mac
- Added HDR timelapse example scriptsFixed problem with TCL script interpreter

22.118 v1.0.702

26th December 2010

- Added support for Nikon D7000

22.119 v1.0.690

20th December 2010

- Added ability to rotate photo display
- Added preliminary support for Nikon D200
- Standardised names for aperture and shutter speed values between Nikon and Canon
- Improved logging information to help when writing scripts

22.120 v1.0.598

11th December 2010

- Added customisable photo filename prefix for Nikon
- Added ‘MultiShot’ ability to take a photo with all connected cameras at once
- Fixed live view display when multiple cameras have live view enabled
- Fixed aperture controls when using Canon 1D Mark IV in Bulb shooting mode

22.121 v1.0.588

24th November 2010

- Fixed compatability with Mac OS X 10.4 (Tiger) and 10.5 (Leopard)

22.122 v1.0.582

19th November 2010

- Added Auto Focus functionality (Nikon only at the moment)
- Set log viewer window to float by default
- Fixed issue that caused the view 1×1 button to scale the photo incorrectly
- Fixed crash when a photo download attempt fails

22.123 v1.0.560

10th November 2010

- Improved reliability of script commands
- Fixed issue with Nikon live view stopping after photo is taken
- Added support for Nikon D3x

22.124 v1.0.546

6th November 2010

- Fixed crash on certain graphics hardware when loading large photos
- Fixed issue causing error dialog to be shown when trial is exited
- Added optional Microsoft Visual C++ 2005 runtime installer (required by Nikon image library)

22.125 v1.0.538

3rd November 2010

- Improved performance of Nikon live view
- Added Depth of Field (DOF) preview option for Canon live view
- Set log file size limit to 10MB
- Updated install package so example scripts are more obvious
- Added missing DLL for Nikon NEF library
- Fixed problem with Canon unknown image quality settings on Mac OS X

22.126 v1.0.525

30th October 2010

- Fixed crash with graphics cards that do not support OpenGL v2

22.127 v1.0.522

28th October 2010

- Added support for Nikon D300 and D300s
- Added support for Canon D60
- Added error reporting dialog in case application closes unexpectedly

22.128 v1.0.512

22th October 2010

- Added support for Nikon D90 and Nikon D5000
- Added indicator for camera battery status
- Added context menu to launch external file browser for photo file
- Fixed issue with image histogram: blue and green channels were incorrectly swapped
- Reduced trial photo limit to 30 photos

22.129 v1.0.483

6th October 2010

- Added histogram display for the photo colour channels
- Added option to highlight areas of the photo where the colour is at the edge of the colour range
- Added option to display a grid line overlay
- Added option to auto run the current script whenever a new photo is taken
- Added option to open photo in an external editor application
- Added context menu to the Photo List window
- Added command line parameter to specify a script to run immediately after start up: SmartShooter.exe -r myscript.tcl
- Improved performance when synchronising camera settings

22.130 v1.0.462

22th September 2010

- Added ability to take photos with bulb exposure timer
- Added tool tips to user interface

22.131 v1.0.451

20th September 2010

- Added ability to record each Live View frame as a JPEG image
- Added ability to download all photos
- Added option to set the background colour
- Fixed crash on Mac when validated license

22.132 v1.0.440

19th September 2010

- Added mouse cursor icons to photo display
- Added button to view photo at 1:1 pixel to screen ratio
- Improved Photo List interface

22.133 v1.0.432

16th September 2010

- Fixed problem when loading a new script

22.134 v1.0.426

15th September 2010

- Added ability to change White Balance and Metering Mode
- Fixed problem with ISO range control when using Canon 5D Mark II
- Fixed notification message when a new camera is detected

22.135 v1.0.417

12th September 2010

- Improved performance of Live View
- Mac version: Fixed crash whilst processing RAW photos

22.136 v1.0.412

10th September 2010

- Improved reliability of Live View
- Added user defined parameters to camera script controls

22.137 v1.0.377

24th August 2010

- Fixed crash in JPEG loader

22.138 v1.0.371

17th August 2010

- Improved performance of JPEG processing
- Added functionality for registering a license
- Removed beta license expiry

22.139 v1.0.350

18th May 2010

- Added support for Mac OS X (Intel)

22.140 v1.0.341

17th May 2010

- Improved GUI interface
- Added ability to interrupt and stop a running script

22.141 v1.0.290

30th March 2010

- Fixed possible problem on some Canon EOS cameras with Live View operation
- Fixed bug which caused some values for Exposure Compensation setting to be missing
- Improved performance of log window

22.142 v1.0.284

29th March 2010

- Added ability to change position of live view zoom
- Added keyboard shortcuts for moving and zooming the display

22.143 v1.0.278

24th March 2010

- Added Exposure Compensation setting
- Fixed handling of camera disconnection
- Fixed crash during manual photo download

22.144 v1.0.272

18th March 2010

- Updated trial expiry date

22.145 v1.0.268

17th March 2010

- Correctly positioned live view output when zoom is enabled
- Added log viewer for diagnostics

22.146 v1.0.253

7th March 2010

- Added option for viewing full RAW image
- Fixed crash when camera settings change

22.147 v1.0.219

13th February 2010

- Added controls for live view focus
- Simplified interface layout

22.148 v1.0.214

11th February 2010

- Added Aperture setting
- Added Shutter Speed setting
- Added ISO setting
- Added Image Quality setting

22.149 v1.0.201

7th February 2010

- Changed RAW photo display to use preview JPEG data
- Improved photo download speed
- Saved options to hard disk
- Converted interface to docking layout

22.150 v1.0.140

11th January 2010

- Fixed option to set photo download directory

22.151 v1.0.134

10th January 2010

- Disabled TEST camera
- Set log directory to Windows application data folder
- Made interface layout DPI aware

22.152 v1.0.121

6th January 2010

- First release!