



FM Studio

FM Studio: Complete User Manual

Covers: FM Studio (macOS app) and the FM Studio Lightroom Importer (Lightroom Classic plug-in)

Website: <https://www.fredmiranda.com/forum/fm-studio.php>

Audience: Photographers using a Mac. Built for Leica M-series cameras (Wi-Fi, USB, and SD), and works with Nikon, Sony, Canon, Fujifilm, Panasonic, OM System, Hasselblad, and most other USB-equipped cameras over USB Mass Storage or an SD card.

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Part I: FM Studio

1. What FM Studio is

FM Studio is a macOS app that sits between your digital camera and Lightroom (or any folder you choose). It gives you a fast contact sheet of everything on your camera or card, so you can preview and rate photos (1 to 5 stars, just like in Lightroom, and fully synced with it in both directions), review shooting settings, and edit metadata, all before transferring full-resolution RAW, JPEG, or HEIC files. You hand off exactly what you choose, and nothing more.

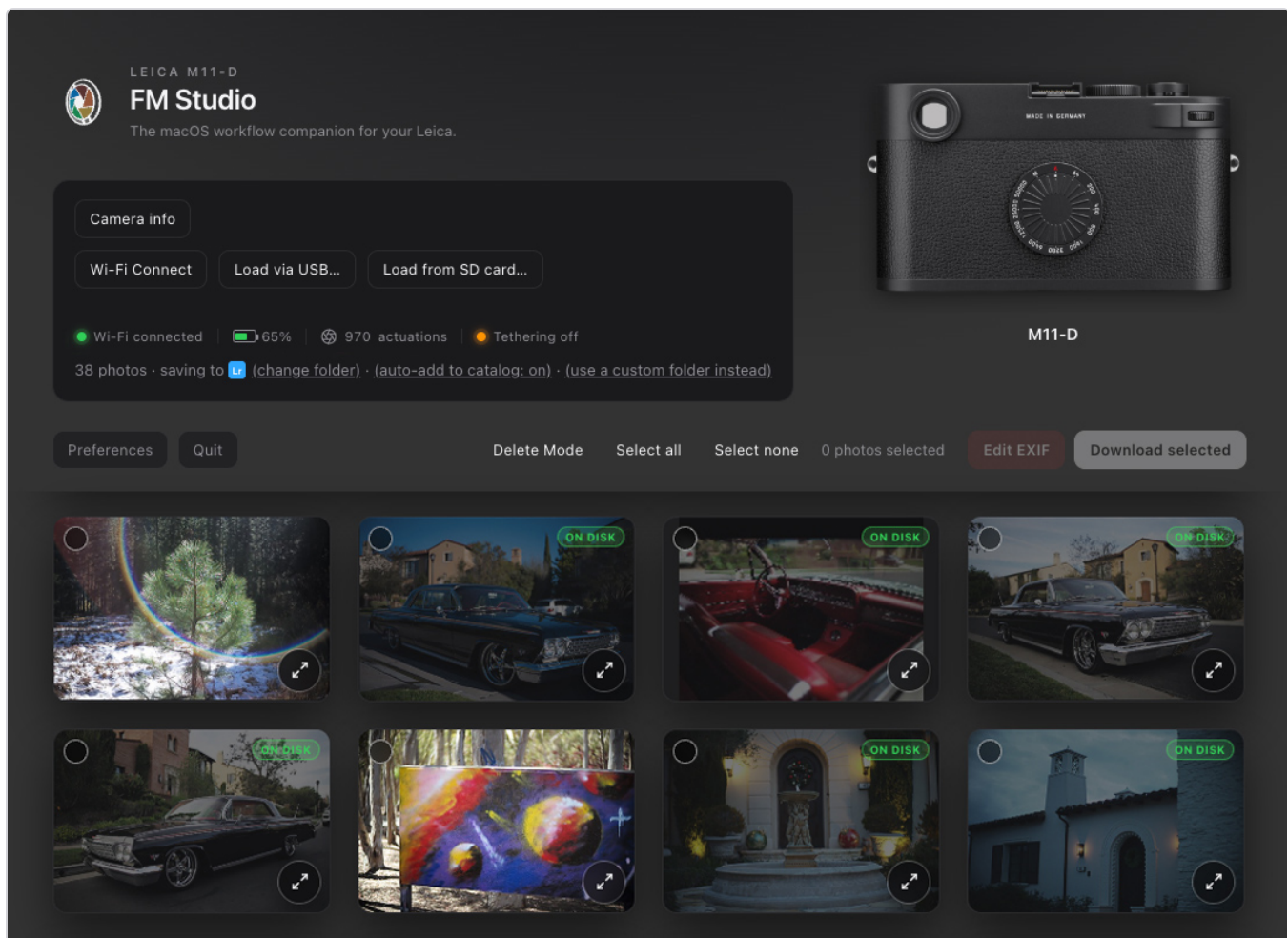
Shooting something other than a Leica? FM Studio still works for you. Leica M10 and M11 bodies get the full experience (Wi-Fi, tethering, camera info, and battery level), while Nikon, Sony, Canon, Fujifilm, Panasonic, OM System, Hasselblad, and other cameras connect over USB Mass Storage or a mounted SD card, so you can browse, filter, rate, edit metadata, and download in the same way.

With FM Studio you can:

- Connect over **Wi-Fi, USB, FlashAir**, or a **mounted SD, CF card**

- Browse a **contact sheet** with real camera-generated previews and the original shooting settings for every frame
- **Filter** by camera model, lens, download status, and file format (DNG / JPEG / HEIC / HIF)
- **Download** selected frames to a folder of your choice, or into **Lightroom-style** Year/Date folders
- Optionally hand completed downloads to **Lightroom Classic** automatically via the companion **FM Studio Lightroom Importer** plug-in. As soon as you download files from FM Studio, they appear in Lightroom when the included plug-in is installed.
- **Batch-edit metadata (EXIF)** before or after a file lands on disk, with saved presets
- **Tether** your camera so large image frames appear in the grid as you shoot (supported cameras only)
- **Safely delete** frames from the camera, or **format** a card entirely, once your keepers are confirmed on disk

FM Studio is independent, third-party software. It is **not affiliated with, endorsed by, or produced by any camera maker it supports**.



FM Studio's main window with a full grid of thumbnails

2. Requirements & compatibility

Item	Detail
Computer	Mac (Apple silicon or Intel)
Operating system	macOS 11 (Big Sur) or later. Built for both Apple silicon and Intel Macs.
Cameras	Built and tested on the Leica M10 and M11 families over Wi-Fi, USB, and mounted SD. Leica SL series / Q3, Nikon, Sony, Canon, Fujifilm, Panasonic, OM System, Hasselblad, and other mirrorless cameras are supported via USB Mass Storage (camera menu may say "Upload", "PC Connect", "Storage", etc.).
Network	For Wi-Fi: your Mac needs to join the camera's own Wi-Fi network (or share a LAN with a camera at a known IP)
Optional	ExifTool , for lens filtering, rich settings captions, and metadata editing. A copy is included with FM Studio, so there is nothing to install. If you already have your own copy (for example from Homebrew), FM Studio uses that one instead
Optional	Lightroom Classic (not the cloud-based Lightroom app) plus the included FM Studio Lightroom Importer plug-in
Account	A fredmiranda.com username and your personal license key (generated on your FM Studio page), used to verify your license online

A note on Bluetooth and USB by camera family

Two conveniences (Bluetooth-assisted Wi-Fi pairing and a physical USB port) aren't available on every body:

- **No Bluetooth-assisted pairing:** M10-family bodies. These can still be used over Wi-Fi, but the password must be entered manually (**Menu → Leica FOTOS**, then wait for the QR code and password to appear). Wi-Fi enables tethering, camera info, and battery level.
- **Bluetooth-assisted pairing:** for M11-family bodies. Click the **Pair Leica M11 series** button. The Bluetooth connection will automatically set up Wi-Fi for your camera. Pair once and the camera will connect automatically in future sessions. Enables tethering, camera info, and battery level.

USB connection:

- **Mass Storage Mode:** (menu may show as Upload, PC Connect, or Storage), and works with most USB-equipped cameras, including Leica, Nikon, Sony, Canon, Fujifilm, Panasonic, OM System, and Hasselblad.
- **USB PTP Mode:** Verified for the Leica M11 series only. Enables tethering, camera info, and battery level.

3. Installing FM Studio

1. Open your license page: <https://www.fredmiranda.com/forum/fm-studio.php>
2. Log in with your fredmiranda.com account.
3. Under **Your license key**, click **Generate my license key** and copy the key that appears. It is shown only once, so keep it somewhere safe (a password manager works well). You will paste it into the app in the next section.
4. With an active license, use **Download FM Studio**.
5. Unzip the archive. It typically contains the FM Studio app, the FM Studio Lightroom Importer plug-in, and this manual.
6. Drag **FM Studio** into **Applications**.
7. FM Studio is signed and notarized by Apple, so it opens normally. The first time, macOS may say the app was downloaded from the internet and ask you to confirm. Click **Open**.

How FM Studio opens and closes. FM Studio shows its gallery in your web browser. If Google Chrome is installed, FM Studio opens in its own Chrome window. Otherwise it opens in your default browser (usually Safari) as a normal tab. Closing the browser window or tab does not quit FM Studio. To quit, use the **Quit** button at the bottom of the page, choose **Quit** from the FM Studio icon in the Dock, or press **Cmd+Q**. If a download or other work is still in progress, FM Studio asks you to confirm before quitting.

4. License activation

Your license is tied to two things: your **fredmiranda.com username** and a **personal license key** that you generate on your FM Studio page (see §3). Both are needed.

1. Launch **FM Studio**. If your license hasn't been verified yet on this Mac, a license screen appears: *"FM Studio needs a valid license linked to your fredmiranda.com account. Enter your username and the license key from your FM Studio page."*
2. Enter your **fredmiranda.com username** (the same one used at checkout) and paste your **license key**, then click **Verify**.
3. You can also do this later from **Preferences → License**.

Keep your key private. Your license key is personal. Anyone who has both your username and your key can use your license, so don't share it or post it online. FM Studio stores it on your Mac in its settings file, readable only by your macOS user account, and never shows it again after it is saved. In Preferences you will see only a reminder that a key is saved, with its last four characters.

Lost your key, or want a new one? Go back to your FM Studio page and click **Generate a new key**. The page shows the new key once. Your old key stops working immediately, so paste the new one into **Preferences → License** on every Mac where you use FM Studio.

How verification works. Clicking Verify always saves the username and key currently typed, then checks them live against your purchase record on fredmiranda.com. Once verified, FM Studio re-checks automatically in the background every 12 hours while the app is open, so you're never interrupted mid-session.

Working offline. If FM Studio can't reach the license server but you verified successfully within roughly the last three days, it keeps running in an *"offline grace"* state rather than locking you out. That's handy on a plane or somewhere without Wi-Fi. Beyond that window, or if verification has never succeeded, you'll need a working connection to continue.

If verification fails:

- Double-check the spelling of your username. It must match the name on file at checkout.
- Make sure you pasted the whole license key, with no extra spaces. If you are unsure, generate a new key on your FM Studio page and paste that one. FM Studio gives the same generic "could not verify" answer for a wrong username or a wrong key, on purpose, so that nobody can use it to guess either one.
- Confirm your plan hasn't expired; renew or purchase from the FM Studio page.
- If you've since **changed your forum username**, contact support so your purchase record can be updated to match.

License required

License not found. Check your username and license key.

fredmiranda.com username

Fred Miranda

License key

Saved (ends in KEWW). Type here to replace it.

Verify

Purchase / renew

FM Studio License screen

5. macOS permission prompts

Depending on how you connect and which macOS version you're running, you may see:

USB. "Allow accessory to connect?" Choose **Allow**. On a healthy connection this dialog names your camera specifically (e.g. "Leica M11-D"); a generic "USB device" prompt usually means the connection didn't fully enumerate; see [Troubleshooting](#). You can also manage this ahead of time under **System Settings → Privacy & Security → Allow accessories to connect** (options include *Ask for new accessories*, *Always ask*, or *Always* for a Mac you trust).

Wi-Fi. Join the camera's own Wi-Fi network (or the LAN it's on) in macOS's Wi-Fi settings. macOS may also ask for **Local Network** access the first time FM Studio scans for the camera.

Bluetooth (Leica M11 series only) (only if you use the Bluetooth pairing button). FM Studio will ask for Bluetooth access the first time you use **Pair Leica M11 series**. You may also see one or two native macOS pop-ups mid-pairing: a **"Bluetooth Connection"** prompt (click **Connect**) and a **"Use Your Location"** prompt (click **Allow**). Both are described in detail in [§6.5](#).

Location Services (only when using Bluetooth to automatically enable Wi-Fi - M11 series only). FM Studio asks for Location access once, early on. This isn't for geotagging. It exists purely because macOS requires Location authorization before it will let any app join a Wi-Fi network programmatically, which is what powers the Bluetooth-pairing convenience in §6.5. If you skip Bluetooth pairing entirely and always join the camera's Wi-Fi by hand, this permission has nothing to do.

SD or Compact Flash Express (CFe) cards. Grant access if macOS asks about a removable volume.

Other prompts. You may also be asked once for access to a removable drive or your Desktop, Documents or Pictures folders, depending on where you save photos. Choose **Allow** so FM Studio can read your card and save your downloads.

6. Connecting your camera or card

FM Studio works with one active source at a time (Wi-Fi, USB, FlashAir, or a mounted SD card), and you can turn any of these on or off under **Preferences → Sources** (see [§18](#)).

6.1 Wi-Fi (M10, M11 series)

Leica M10 series: On the camera, go to **Menu → Leica FOTOS**, wait for the QR code and password to appear, then on your Mac open the Wi-Fi menu, select the camera's network, and enter that password shown on your camera screen. Tip: check **Auto-Join** when macOS offers it so your Mac connects automatically to your camera next time.

Behind the scenes, Wi-Fi Connect checks a short list of likely camera addresses at once and binds to whichever answers first: two typical M10 addresses, the two typical FlashAir addresses, any **Custom Wi-Fi host** you've saved in Preferences, and finally your Mac's own current Wi-Fi gateway address. Clicking **Wi-Fi Connect** only ever tries Wi-Fi. It will never quietly fall back to USB or SD, so you always know what you're connecting to.

If it can't find the camera, the error message tells you which Wi-Fi network your Mac is currently on, so you can quickly spot if you're still on your home network instead of the camera's.

Camera-side setup, first time:

- **M11 series:** use **Pair Leica M11 series** instead of typing the Wi-Fi password by hand; see [§6.5](#) for the full walkthrough.
- Once your Mac has joined a camera's network successfully, whether by typing the password in by hand or via the Bluetooth shortcut, macOS remembers it and remembers your camera's Wi-Fi password from then on, just like any other saved Wi-Fi network.

6.2 USB

1. Use a **data-capable** USB-C cable (a charge-only cable won't show up as a camera).
2. Plug directly into your Mac and avoid hubs while you're first testing.
3. Choose **Allow** if macOS asks about a new accessory.
4. In FM Studio, click **Load via USB....** The button reads "Looking for camera..." while it connects.

If you want to isolate an OS-level issue from an FM Studio issue, open Apple's **Image Capture** app, if your camera and its thumbnails show up there, USB is healthy at the system level and any remaining issue is specific to FM Studio (see [Troubleshooting](#)).

Remember: some cameras, including the **M10 family**, **do not have a USB port**, so this option won't appear for those bodies.

6.3 FlashAir

1. Insert a supported Toshiba FlashAir card and enable its Wi-Fi per the card's own instructions. This is a great alternative for older cameras without Wi-Fi or USB connection.
2. Join the FlashAir card's Wi-Fi network on your Mac.
3. Click **Wi-Fi Connect** in FM Studio. FlashAir is treated as one of the Wi-Fi candidates, not a separate button.

If your card uses a non-default address, set it as the **Custom Wi-Fi host** in Preferences (accepts a plain IP, or an address starting with `http://`, `https://`, or `flashair`).

6.4 Mounted SD/CFe card

1. Insert the card into a reader and wait for it to mount in Finder.
2. In FM Studio, click **Load from SD card....**
3. If exactly one card with a `DCIM` folder full of photos is found, it loads automatically. If more than one qualifying volume is mounted, you'll be asked to pick one.

Browsing and downloading work the same as any other source. In-camera-style deletion isn't available for a card read this way (see §15). Instead, FM Studio offers a dedicated **Format Card** option for this connection type (see §16.2).

6.5 Bluetooth-assisted Wi-Fi setup

Certain Leica bodies, currently the **M11 series only**, can broadcast their Wi-Fi network name and password over Bluetooth once your Mac is paired with them, the same mechanism Leica's own FOTOS app uses. FM Studio can read those credentials and join the network for you automatically. This is a **one-time convenience per camera**, not something you need on every connect. Once your Mac has joined a camera's Wi-Fi once, it's remembered from then on.

It's especially useful for the **M11-D**, which has no rear screen to read a Wi-Fi password from.

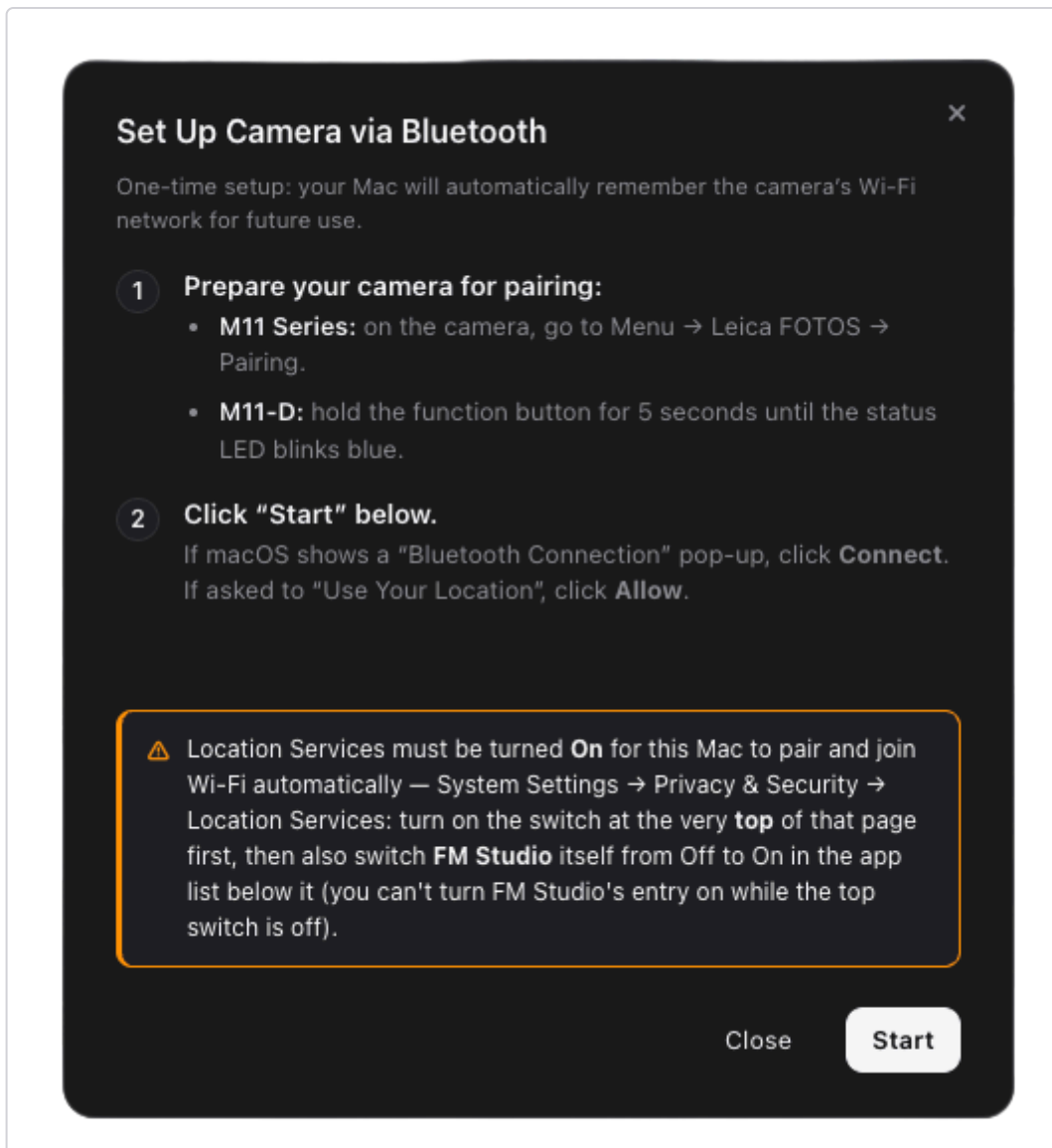
Look for the **Pair Leica M11 series** button in the toolbar (it's automatically hidden for camera families that don't support it such as the M10 series, since those need the manual Wi-Fi join from §6.1 instead). Once you've successfully joined a camera's network this way, the button quietly relabels itself "**Bluetooth setup (done)**". It stays available in case you ever need to pair a second body.

Step by step:

1. Click **Pair Leica M11 series**. The setup window walks you through preparing your camera:
 - **M11 series**: on the camera, go to **Menu → Leica FOTOS → Pairing**.
 - **M11-D**: hold the function button for 5 seconds until the status LED blinks blue.
2. Click **Start**.
3. Watch for two possible native macOS pop-ups during this step and respond to them right away: a **Bluetooth Connection** request (click **Connect**), and a **"Use Your Location"** prompt (click **Allow**; see the Location Services note in §5).
4. FM Studio looks for the camera over Bluetooth, connects, and reads its Wi-Fi network name and password.
5. It then tries to join that network on your behalf automatically. If that succeeds, you'll see *"Connected to <network name>. Loading photos..."* and the window closes on its own.
6. If FM Studio got the credentials but this Mac couldn't join automatically (this can happen on some macOS configurations), it shows you the **network name and password in plain text** so you can enter them yourself in the Wi-Fi menu, which is a one-time step. Once you've joined, click **"I've joined — load photos"**.

Before you start, make sure Location Services is on for FM Studio: go to **System Settings → Privacy & Security → Location Services**, turn on the switch at the very top of that page, then find FM Studio in the app list below it and switch its entry on too (you can't turn on FM Studio's own entry while the top-level switch is off). This is required purely so macOS will allow the automatic Wi-Fi join. FM Studio doesn't otherwise use your location for anything.

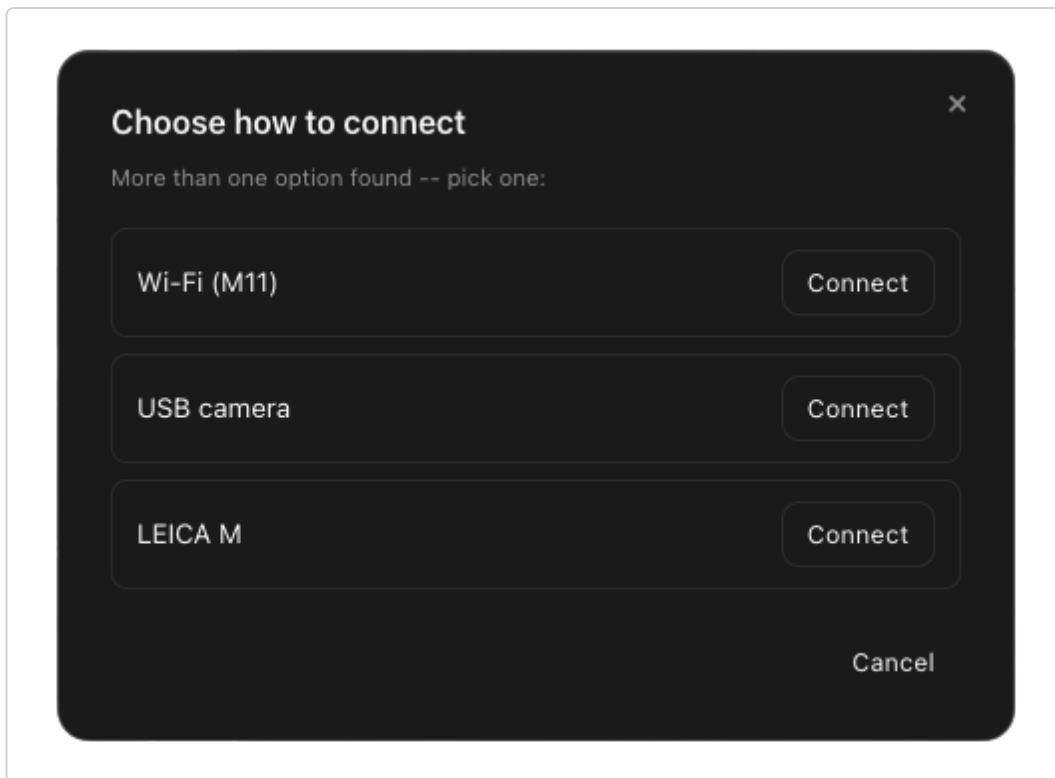
If pairing doesn't find your camera within about 20 seconds, double-check that the camera is powered on with its wireless connectivity enabled, and that you've held the function button (M11-D) or opened the Pairing menu (other models) right before clicking Start.



"Set Up Camera via Bluetooth" window

6.6 When more than one source is found at once

If, say, a camera is connected by USB and Wi-Fi while also having a SD card mounted, FM Studio deliberately won't guess which one you meant. It shows a "**Choose how to connect**" window listing every option it found, each with its own **Connect** button. Pick the one you want; the others are simply ignored for that session. In Preferences, you can remove a connection option so FM Studio runs faster during connection discovery at launch.

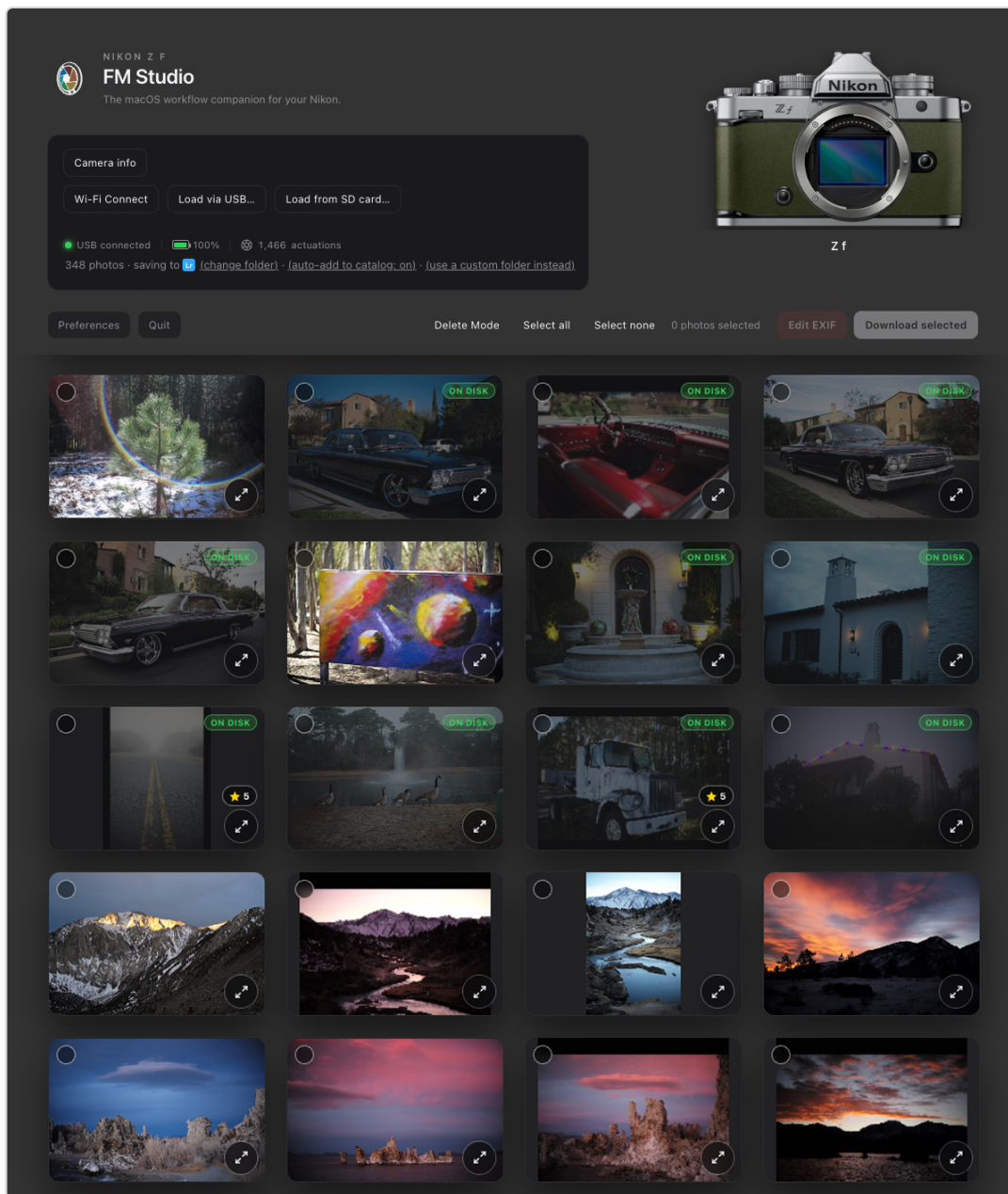


The "Choose how to connect" picker

7. The main window

FM Studio's window is organized top to bottom:

- **Header:** app name, connection status light, battery level (when the camera reports one), and the Tether toggle.
- **Action row:** Preferences, connect buttons for whichever sources are enabled, and (once connected) camera info.
- **Toolbar:** filters (with options of what's shown in the thumbnail grid), the selection count, **Edit EXIF**, **Download selected**, and **Delete Mode**.
- **Grid:** your contact sheet.
- **Progress overlay:** appears during a download, delete, or format job, with a progress bar and, where it makes sense, pause/stop controls.



Full main window, annotated

8. The contact sheet: browsing, selecting, and bursts

Browsing

Thumbnails load in two passes so the grid never feels like it's waiting on you: a fast, small preview from the camera appears almost immediately, then a sharper, higher-resolution preview (pulled from the DNG's own embedded preview, or the JPEG itself) quietly swaps in once it's ready. Everything is cached to disk,

so reopening FM Studio on the same folder doesn't mean waiting through the same fetch twice.

Selecting

- **Click** a photo to select or deselect it.
- **Shift-click** to select a range from your last click.
- **Cmd-click** (or a plain click) to add or remove one photo at a time without disturbing the rest of your selection.
- **Click and drag** anywhere in empty grid space to draw a selection rectangle; every thumbnail the rectangle touches toggles, so you can quickly select or deselect a whole block of frames.
- **Select all** selects every photo currently visible under your active filters (it won't reach into anything hidden by a filter or collapsed inside a burst).
- **Select none** clears the selection.
- **Cmd+A** selects every photo currently visible (the same as **Select all**), and **Cmd+D** clears the selection (the same as **Select none**). The shortcuts are ignored while you're typing in a text field or while a dialog or progress window is open.

The selection count in the toolbar always shows how many photos are selected and their combined file size (e.g. *"3 photos · 128.4 MB selected"*).

Only photos that make sense for the current mode can be selected: outside of Delete Mode, only photos **not yet on disk** are selectable (since Download and Edit EXIF act on those); inside Delete Mode, only photos **already on disk** are selectable, so you can never remove something from the camera without a verified local copy first.

Burst grouping

Frames shot within about two seconds of each other are automatically grouped into a burst, the same idea as a contact-sheet tool collapsing a fast drive sequence into one entry, computed live rather than baked in ahead of time. A DNG and its paired JPEG (see [§12, Format filter](#)) count as a single frame for this purpose, not two.

The first frame of a burst shows an expandable badge reading **"1 of N"** with a small arrow; click it (or press Enter/Space when it's focused) to reveal the rest of the burst, each labeled **"2 of N," "3 of N,"** and so on. Collapse it again the same way. Collapsed burst frames don't count toward Select All or drag-selection until you expand the group.

9. Badges and status indicators

Every thumbnail can carry a small set of badges. Here's what each one means:

Badge	Where	What it means
Selection check	top-left	This photo is currently selected (Download / Edit EXIF context)
Delete? / Delete	top-left, Delete Mode only	Whether this photo is staged to be removed from the camera
ON DISK	top-right	This photo already exists in your download folder
EXIF (red, top-right)	top-right	FM Studio's own metadata edit was written to this exact file on disk
C2PA	top-right	The downloaded file still carries its original, camera-signed Content Credentials manifest, untouched. This disappears the moment you edit that file's metadata in FM Studio, since editing necessarily rewrites the file
DNG+JPG	top-left	In "DNG + JPG" filter view, this tile represents a DNG and its paired JPEG together; both will download as a pair
Rating (yellow star, e.g. ★ 4)	bottom-right	This photo's star rating (1–5), set from the grid or the lightbox. See §11 for how to rate, and §10 to filter the grid by minimum rating
Storage badge (e.g. SD, INT, SD+INT)	bottom-left	Which of the camera's storage locations this file actually lives on; see below
Burst badges ("1 of N" / "2 of N"...)	bottom-left	Marks a group of frames shot within about two seconds of each other
Pending EXIF edit (centered, large)	center of tile	You've queued a metadata edit for this not-yet-downloaded photo; it will be written the moment the file downloads
Dimmed thumbnail	n/a	Outside Delete Mode, an already-downloaded photo dims slightly since there's nothing more to do with it here; inside Delete Mode, a <i>not-yet-downloaded</i> photo dims because it can't be selected for deletion

About the storage badge. On cameras with more than one card slot, FM Studio labels each photo by what the camera itself calls that storage location, typically **SD** or **Internal**, rather than a fixed "slot 1/slot 2" numbering, since that's what the camera actually reports. If the very same filename genuinely exists on more than one storage location at once (this happens with simultaneous backup recording to two cards), the badge reads **SD+INT**. Single-slot cameras, FlashAir, and SD-card-reader connections never show this badge, since there's nothing ambiguous to disambiguate.

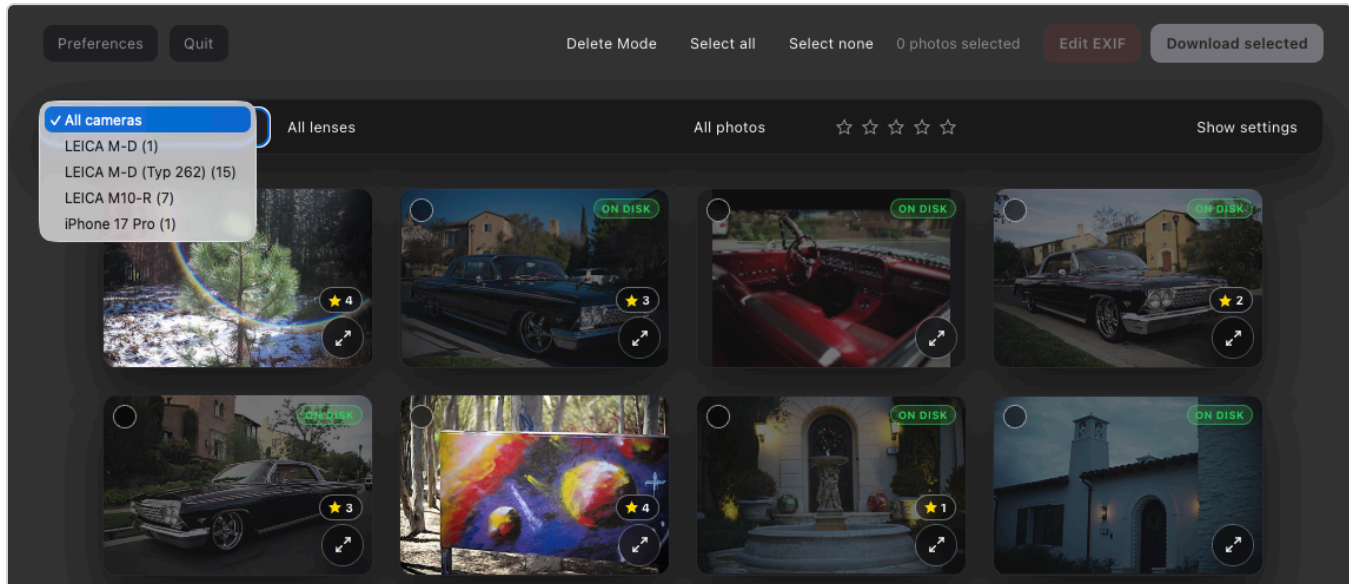
Hovering any thumbnail (or turning on **Show settings** in the toolbar to keep it always visible) also reveals a small caption with the filename and a compact settings summary, e.g. "1/250s · f/2.8 · ISO 400."

10. Filters

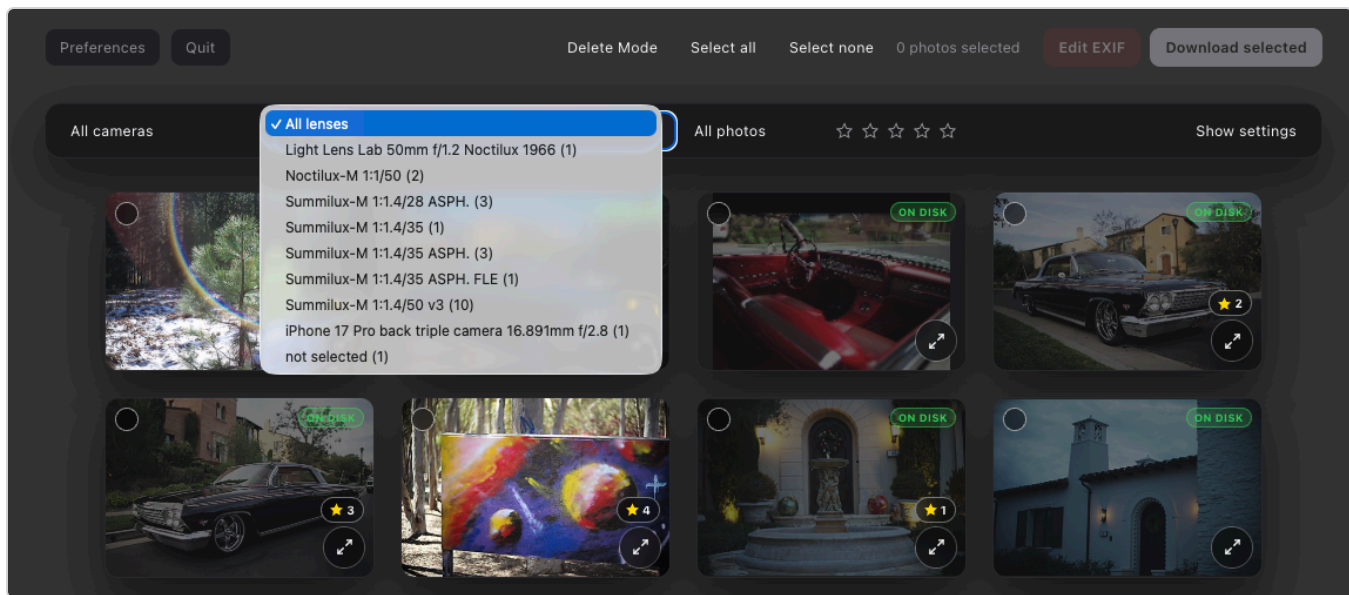
The toolbar's filter row lets you narrow the grid down:

- **Camera model:** appears once more than one camera model is present in your photos' metadata; otherwise it just shows a single, non-interactive label with a count.
- **Lens:** same idea, built from each photo's lens metadata.
- **Download status:** **All photos**, **Not downloaded**, or **On disk**.
- **File format:** appears once your card contains at least one JPEG-like file (a DNG-only card never shows this control). Choose **DNG + JPG** (the default; a DNG and its paired JPEG, HEIC, or HIF show as one tile and download together), **DNG Only**, **JPEG Only**, or **HEIC/HIF Only**. **JPEG Only** and **HEIC/HIF Only** are independent choices, and each only appears when your card actually has that exact file type on it. Your last choice here is remembered the next time you open FM Studio; if it no longer applies to what's on the current card, FM Studio falls back to **DNG + JPG**.
- **Rating** (star row): Click a star to show only photos rated that many stars and up. Click the same star again to clear the filter. This mirrors Lightroom's own minimum-rating filter.

Filters combine together (camera model **and** lens **and** status **and** format), and **Select all** always respects whatever's currently showing. It will never quietly reach into something a filter has hidden.



Filter row with Camera models options



Filter row with Lens options

11. The Lightbox (full-size preview)

Click the expand icon on any thumbnail (bottom-right corner) to open a larger preview.

How the image loads. The lightbox first shows your existing thumbnail as a placeholder, then fetches a larger, camera-embedded preview automatically. If you want to look even closer, click **"See larger preview"** to load the camera's largest embedded preview (roughly 2112px on the long edge); this is a manual step by design, so you're only pulling the bigger file over Wi-Fi when you actually want to. Click the image (or the button again) to toggle back down.

Use the arrow buttons, or your keyboard's Left/Right arrow keys, to move between photos without closing the lightbox. Press Escape, or click outside the image, to close it.

Rating your photos. Click a star in the row below the image to rate the photo 1 to 5. Click that same star again to clear it back to 0. You can also just press a number key, **0–5**, to set that exact rating on whatever photo is currently showing, the same keybinding Lightroom Classic itself uses, or press **Space** to toggle a full 5-star rating on and off.

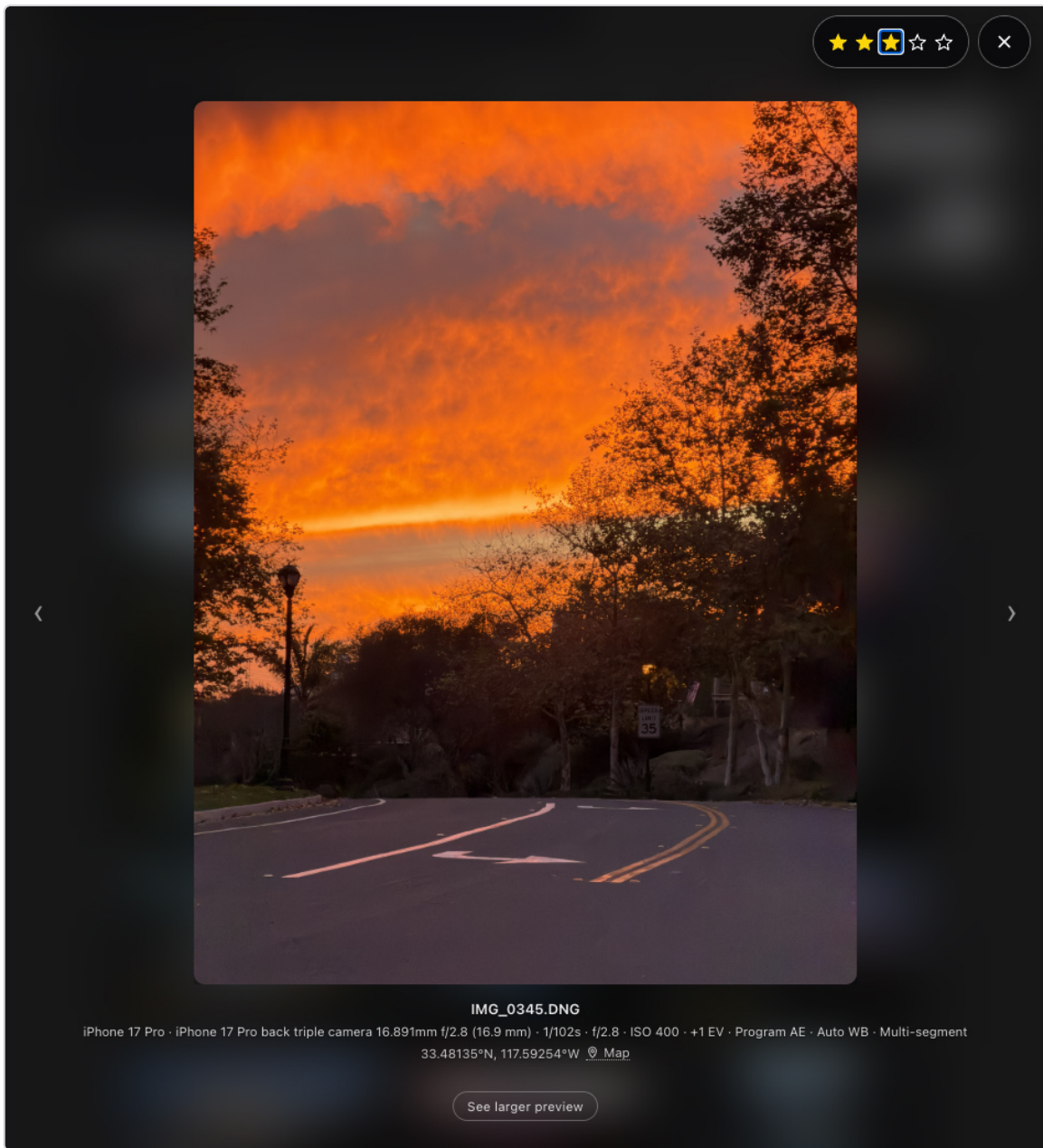
Ratings are **synced with Lightroom automatically, in both directions**. Rate a photo in FM Studio and the same rating shows up in Lightroom, even on a file already imported into your catalog, so no re-import is needed. Change a rating in Lightroom instead, and FM Studio picks it up too. Rate a photo before it's even downloaded and FM Studio remembers it, writing the rating into the file the moment it lands on disk.

Rating from the grid. You don't have to open the lightbox to rate. Hover over any thumbnail to reveal a row of five stars under its filename (or turn on **Show settings** to keep them always visible), then click a star to rate that photo right there. Click the same star again to clear the rating. If the photo is half of a DNG + JPG pair, the rating is applied to both files.

The caption line under each photo builds itself from whatever metadata that photo actually has, in this order: camera model, lens and focal length, shutter speed, aperture, ISO, exposure compensation, exposure program, white balance, and metering mode. Anything not present in the file's metadata is simply skipped rather than shown as blank.

Location (GPS). If a photo carries real GPS coordinates, the lightbox shows them as plain text (e.g. *41.40338°N, 2.17403°E*) with a small **Map** link beside them. Clicking **Map** opens that exact location in Google Maps in your browser. There's no inline/embedded map inside FM Studio itself. The link simply hands the coordinates off to Google Maps for you. Photos without real GPS data (or a camera reporting an empty 0,0 fix) simply don't show a location line at all, rather than showing a false "middle of the ocean" coordinate.

There is no full raw-EXIF dump view in FM Studio. The caption line above is a deliberately curated summary of the settings photographers actually want to see at a glance, not the complete metadata block.



The Lightbox open on a photo, showing the caption line and the Map link

12. Downloading photos

1. Select the frames you want (see §8).
2. Check the **File format** filter if you only want DNGs, JPEGs, HEIC/HIF, or everything together.
3. Click **Download selected**.
4. Watch the progress overlay; pause, resume, or stop at any point.

5. When it finishes, the overlay closes on its own and your grid refreshes to show the new **ON DISK** badges.

If you've selected a DNG in "DNG + JPEG" view, FM Studio automatically brings its paired JPEG along in the same batch (and vice versa) if that partner isn't already downloaded, so you never have to select a dual-capture pair twice.

Destination modes

Custom folder. Everything downloads flat into one folder you choose. This is the default, initially set to a folder on your Desktop, and it's remembered the next time you open the app.

Lightroom-style folders. Turn this on from the small folder link in the header (next to your current destination) to file downloads the same way Lightroom Classic's own "Organize: By date" import option does, under a base folder of your choice (commonly `~/Pictures`), each photo lands in `Year/Year-Month-Day/`, based on that specific photo's own capture date. Because each file's own date decides its folder, a single download batch spanning midnight, or mixing older leftover shots with new ones, will correctly land across more than one date folder. That's expected, not a bug.

Switching between Custom folder and Lightroom-style folders, or changing either folder, immediately re-checks which photos already exist at the new destination, so your **ON DISK** badges always reflect wherever FM Studio is currently pointed.

Catalog import (optional). With Lightroom-style folders turned on, you can also turn on **auto-add to catalog**, which queues each finished download for the separate **FM Studio Lightroom Importer** plug-in to pick up automatically (see [Part II](#)). A photo is only ever queued once it's fully, safely written to disk in its final folder, and once any pending metadata edit for it has already been applied, so the plug-in never sees a partial file or stale metadata.

Format filter (DNG / JPEG / HEIC / HIF)

Use the **File format** filter (see [§10](#)) *before* downloading a large selection, if you only need one file type: DNG, JPEG, or HEIC/HIF. It simply controls what gets pulled across, and has nothing to do with reformatting the card itself.

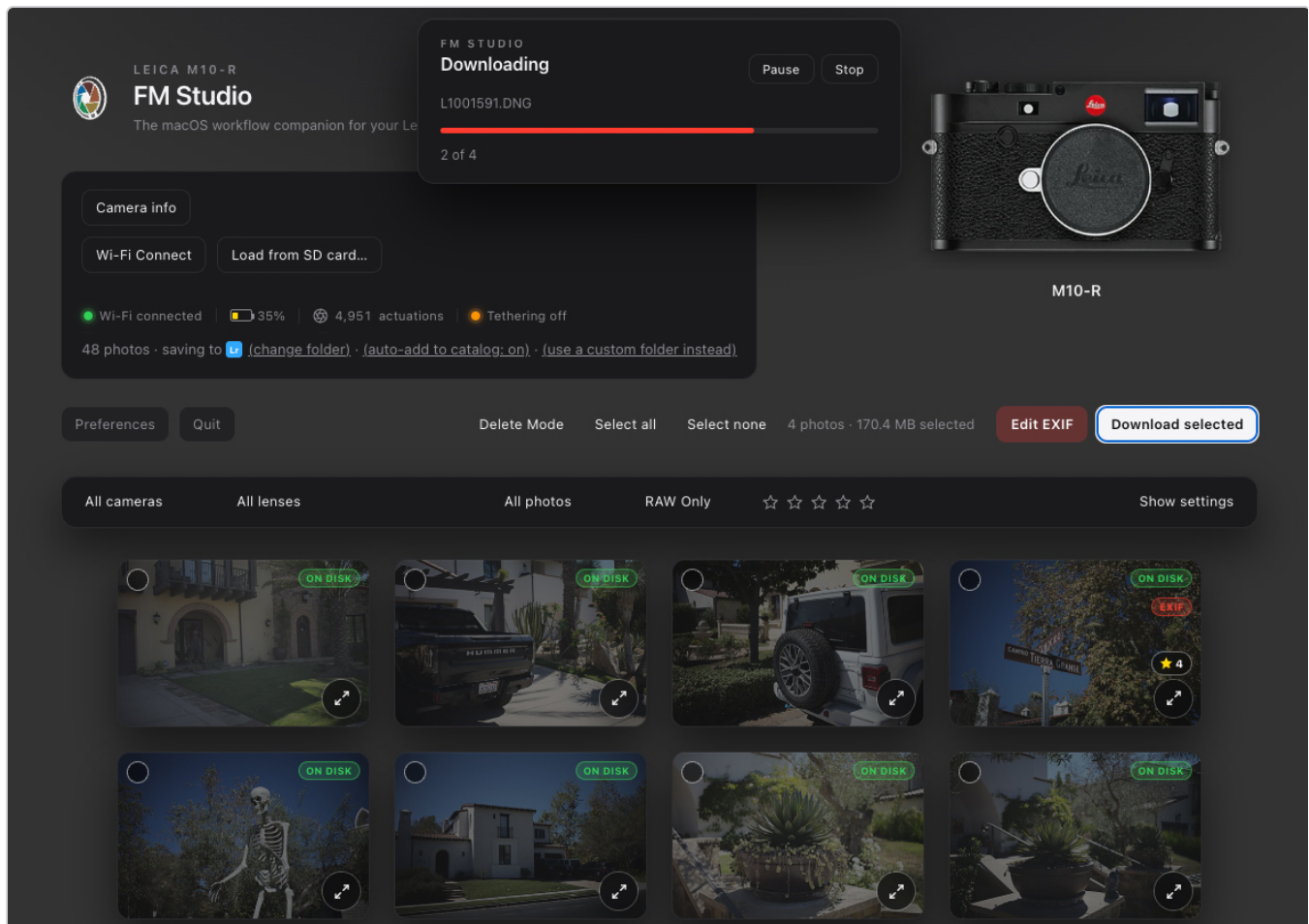
Already-on-disk logic

FM Studio decides "is this photo already downloaded?" by checking whether a file with that exact name already exists at the current destination, not by comparing file size. This is intentional: once Lightroom (or FM Studio's own metadata editor) rewrites a file's metadata, its size on disk legitimately changes slightly, and a size-based check would wrongly conclude the photo "isn't downloaded yet" and silently re-transfer and overwrite your edited file. A filename match is what keeps that from happening.

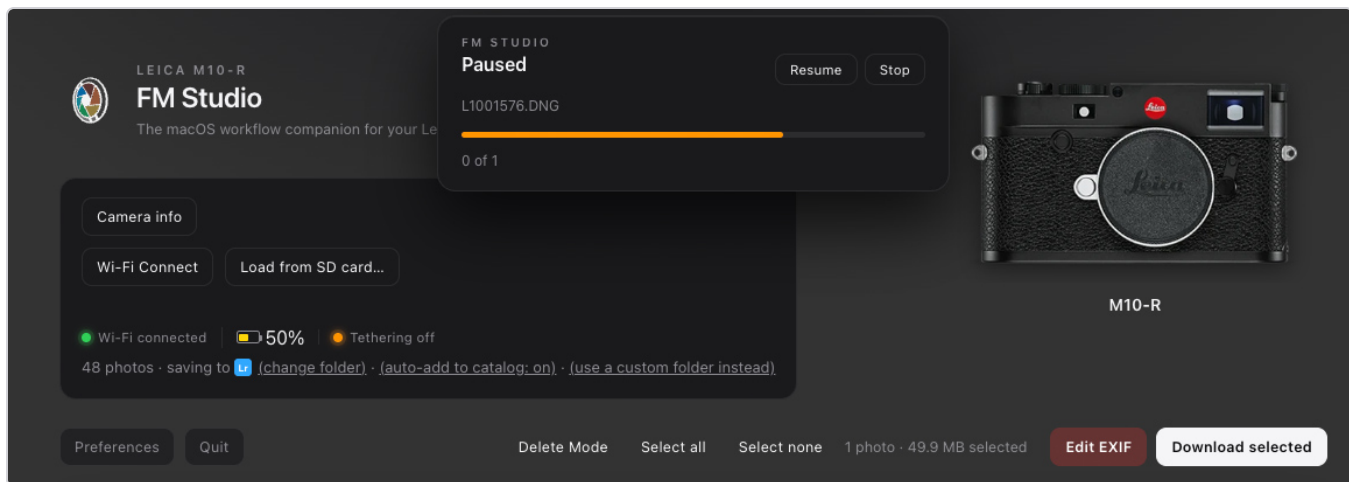
Pause, resume, and stop

Pausing a download only takes effect between files (or between chunks of a large file), so nothing already transferred is ever lost, and resuming picks up from exactly where it left off. Stopping cleanly discards any partial file rather than leaving a corrupt, half-downloaded file under its real name, so you'll never mistake a broken transfer for a complete one.

If the Wi-Fi link drops mid-download, FM Studio automatically retries a few times and reconnects before giving up on that one file; a single failed file doesn't stop the rest of your batch from completing.



The download progress overlay, mid-transfer



The download progress overlay, transfer Paused

13. Editing metadata (EXIF)

Select one or more photos and click **Edit EXIF** to open the batch metadata editor. It's available on not-yet-downloaded photos in the normal browsing view; anything you set here is written into the file automatically the moment that photo finishes downloading (or immediately, if the photo happens to already be on disk).

Editable fields:

- **Lens model** (free text, with its own dedicated preset library; see below)
- **Focal length** (with common presets: 21, 24, 28, 35, 50, 75, 90, 135mm; it will auto-fill itself by reading the focal length straight out of whatever you type into Lens model, e.g. typing "Summicron 35mm f/2" auto-fills 35, unless you've already typed your own value into Focal length)
- **Aperture** (common presets: f/1, 1.4, 2, 2.8, 4, 5.6, 8, 11, 16, 22)
- **Camera model** (Allowed by not recommended)
- **ISO** (common presets: 64, 100, 200, 400, 800, 1600, 3200, 6400, 12500)
- **Exposure time** (common presets from 1/8000s to 1s)

Leave any field blank to leave that piece of metadata untouched. A clear warning in the editor reminds you that editing metadata rewrites the file, which removes its original camera-signed Content Credentials (the **C2PA** badge disappears once you do this; see §9).

Presets. Every field remembers your last several entries under a "Recent" list you can pick from again (or remove with the × next to each one). **Lens model** additionally has its own richer, separate preset library: save a lens once and it stays available going forward, and you can **Export** your saved lenses to a file to back them up or bring them to another Mac, then **Import** them back later (importing merges by lens name, so re-importing an updated preset for a lens you already saved simply replaces the old one).

Click **Apply to selected** to stage your edits, or **Clear pending edits** to remove staged edits you haven't downloaded yet (this only clears *staged* changes; it won't undo an edit that's already been written to a file on disk).

Metadata editing depends on **ExifTool**, which is included with FM Studio (see §18). Browsing and downloading work perfectly well without it, but lens filtering, the rich settings caption, and metadata editing itself all need it.

Edit EXIF (1 photo selected) ✕

Blank fields are unchanged. EXIF updates apply automatically upon download.

Note: Editing EXIF removes the original camera Content Credentials.

Lens model
e.g. Summicron-M 35mm f/2 ▼

Focal length (mm)
e.g. 50 ▼

Aperture (f/)
e.g. 2.8 ▼

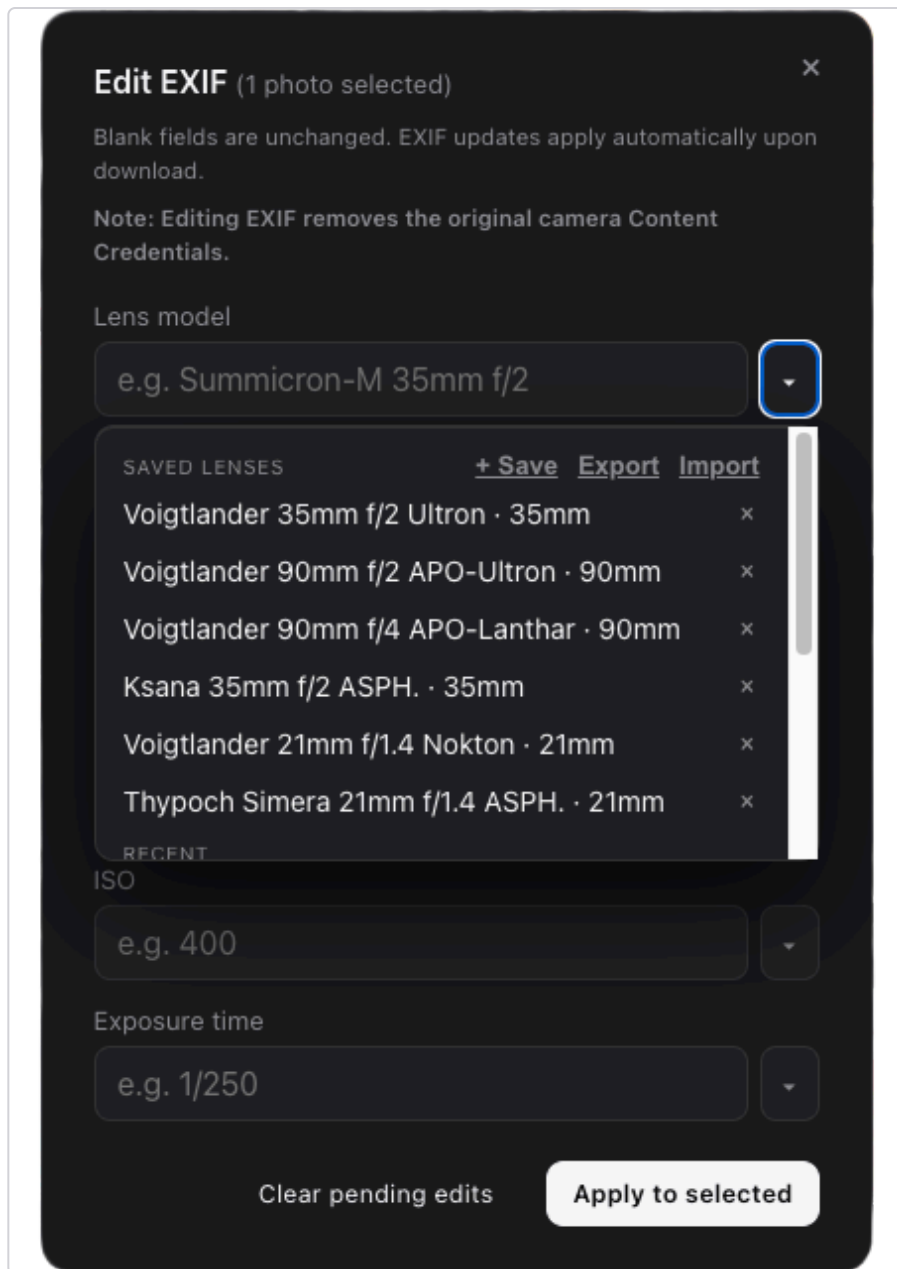
Camera model
e.g. LEICA M11 ▼

ISO
e.g. 400 ▼

Exposure time
e.g. 1/250 ▼

Clear pending edits Apply to selected

The Edit EXIF window showing all options



Lens model field's "Saved lenses" dropdown with Export/Import buttons

14. Tether mode

Turn on **Tether** from the header once you're connected, and FM Studio keeps watching for new photos as you shoot, over Wi-Fi (Leica M10 and M11 series) or USB (M11 series), whichever you're using.

Tethering can't turn on until FM Studio has finished its very first pass over the card (fetching an initial small thumbnail for everything already on it); if you click it too early, it shows "**Tethering not ready yet...**" and switches itself on automatically the moment that initial pass completes, with no need to click again.

New frames appear at the very front of the grid as you shoot, so the newest shot always reads as "the first picture," with a brief highlight so you don't miss it. Tethering doesn't survive a restart of FM Studio by design: every fresh launch starts with it off, so you always have to consciously turn it back on for a new session.

For the most reliable tethering, stay on a strong Wi-Fi connection (or use USB), and avoid letting your Mac sleep mid-shoot.

15. Safe delete from camera (Delete Mode)

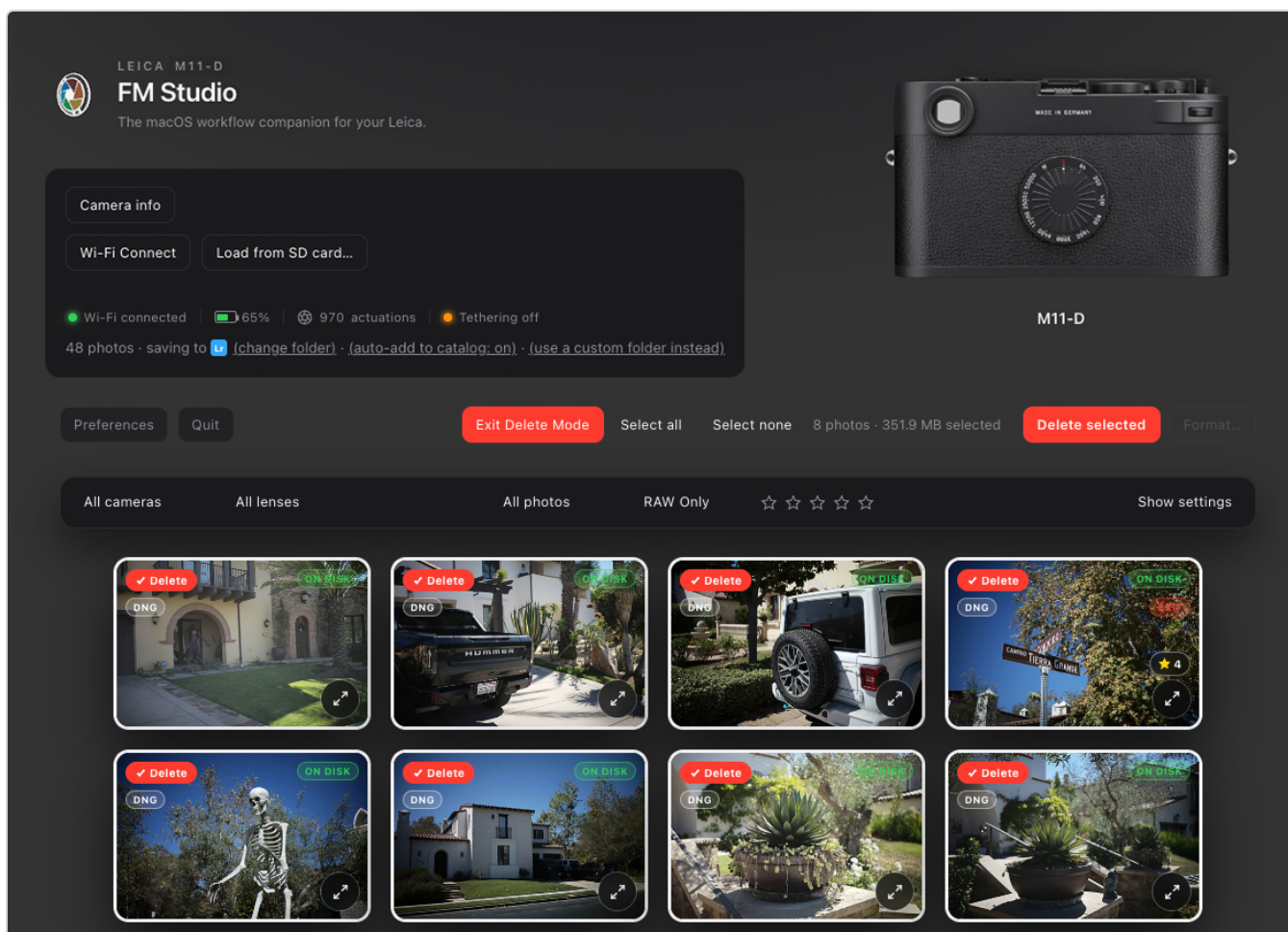
Recommended sequence: download your keepers → confirm they show **ON DISK** → turn on Delete Mode → select only what you're comfortable removing → delete → optionally double-check the card in-camera.

Click **Delete Mode** to switch the grid into deletion mode. Only photos already confirmed **on disk** become selectable; anything not yet downloaded dims and can't be picked, so you physically can't remove a photo from the camera without a verified local copy already existing. Selected photos show a **Delete** badge instead of the usual selection check.

Click **Delete selected** to review a confirmation dialog listing exactly what's about to be removed, its total size, and a clear warning that this cannot be undone. If you're confident in the workflow, there's a "**don't show this warning again**" checkbox for future deletions.

Progress shows live as each file is removed from the camera. If anything fails to delete, you'll see exactly which files and why, so you're never left guessing whether the card is actually clear.

Note that a card loaded via a Mac card reader (rather than a live camera connection) doesn't support this same in-camera-style deletion. For that connection type, use **Format Card** instead once you're done (see next section).



Delete Mode is active, and several photos are staged for deletion. Note that the Leica M10 and M11 camera series actually show your shutter count (actuations)!

16. Format: erasing storage directly from FM Studio

Once every photo FM Studio knows about is confirmed **on disk**, a **Format** option becomes available right inside Delete Mode, with no need to dig into a camera menu or reach for a separate disk utility. It's disabled the rest of the time, with a tooltip reminding you why: *"Every photo must show On Disk before formatting is available."*

Formatting is meant to be the **last step of your workflow, not a shortcut around it**: download → verify everything is safely on your Mac → then, if you want a completely clean card for your next shoot, format it. Photos already downloaded to your Mac are never touched by either version of this feature.

Which version of Format you see depends on how you're connected:

16.1 Formatting a live camera (Wi-Fi or USB)

Click **Format...** to open **Format Camera Storage**. FM Studio lists every storage location your camera reports, along with how many photos and how much space each one is using. Click **Format** next to a single location, or, on a dual-slot body where both cards actually contain photos, click **Format Both** (or **Format All**, if a camera ever reports more than two) to erase everything in one pass. An already-empty card is never offered alongside a full one, since there's nothing to gain from formatting it too.

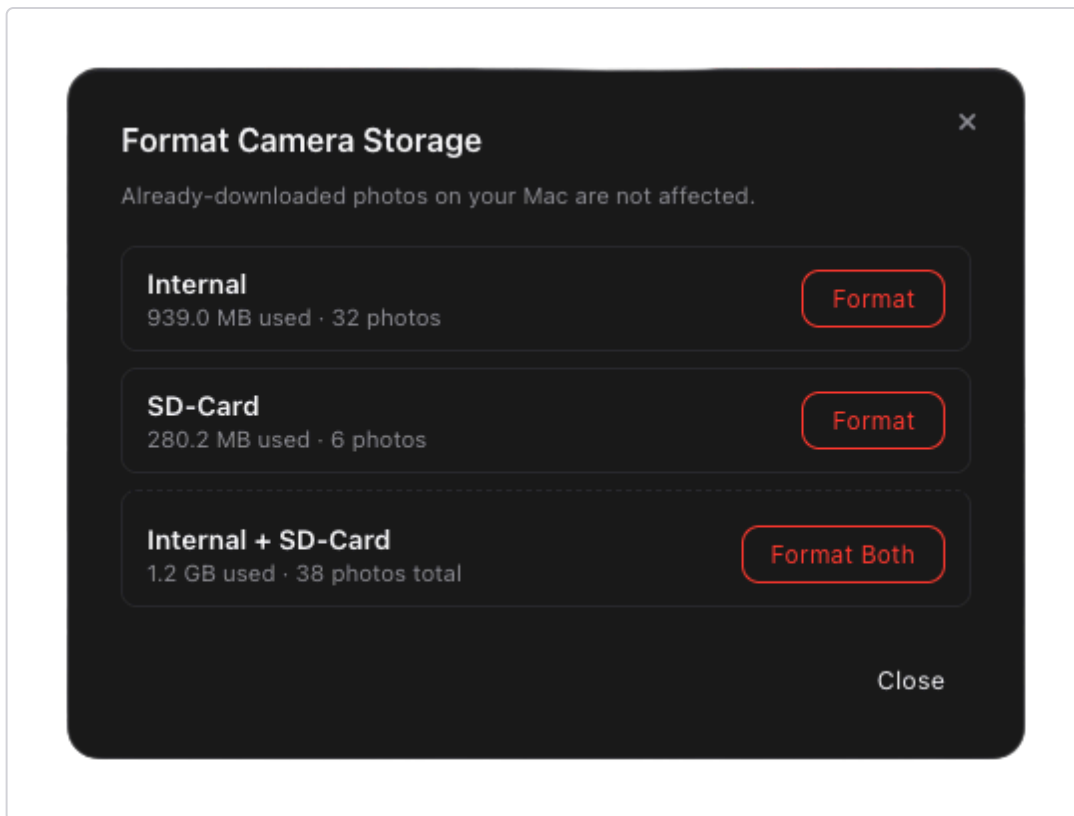
Confirm the warning (which spells out exactly what's about to be erased and how much space that represents), and FM Studio sends a genuine format command to the camera itself, the same operation the camera's own menu would trigger. For a "Format Both" job, the status line updates as each card finishes in turn: *"Internal Memory done — formatting SD Card... do not disconnect the camera."*

16.2 Formatting a card in a Mac card reader

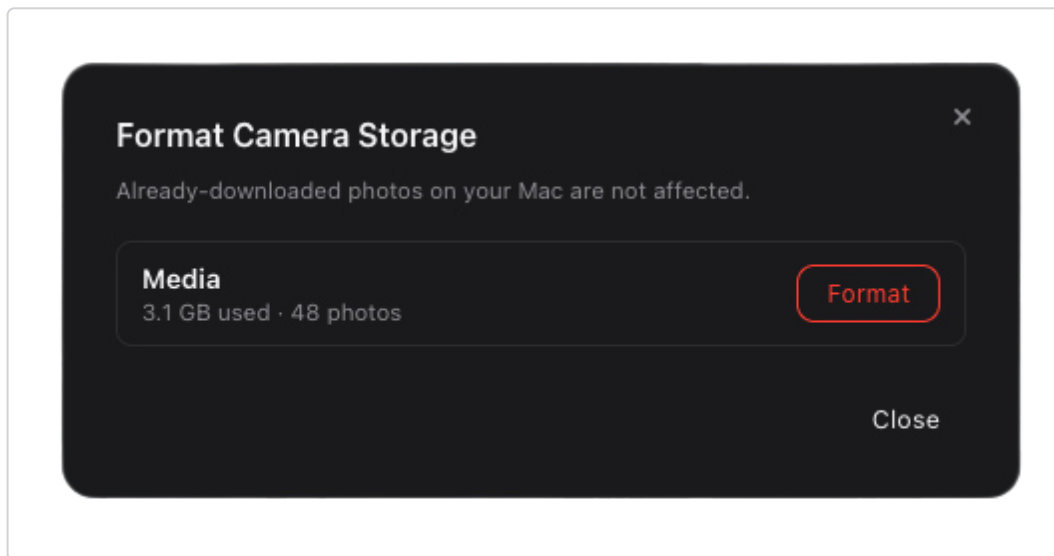
If you're browsing a card mounted through a card reader rather than a live camera, click **Format Card...** instead. This works differently under the hood: rather than sending a camera command, it uses your Mac's own disk utility to format the physical disk.

1. FM Studio lists every removable-looking disk connected to your Mac (it never lists, or lets you touch, whatever disk your Mac itself is started up from, so there's no risk of accidentally formatting your own startup disk).
2. Pick your card from the dropdown. It shows the card's identifier, its volume name, and, where FM Studio can determine it, its type and capacity (e.g. *"SDXC, 64.0 GB"*). If the selected disk doesn't look like a typical card reader, a warning appears asking you to double-check before continuing.
3. Type the card's own name to confirm (or its disk identifier, for a card with no name); the **Format** button stays disabled until what you've typed matches exactly, case-sensitively. This is a deliberate second safety gate on top of picking the right item from the dropdown.
4. Click **Format**. FM Studio unmounts the card and lays down a fresh filesystem: FAT32 for cards 32GB and under, exFAT above that, matching what cameras and the SD Association itself expect.

This is a **quick format**: it recreates the filesystem rather than overwriting every byte on the card, so it typically finishes in moments rather than tens of minutes, and matches what the great majority of photographers need day to day. If you specifically want a slow, full-surface secure overwrite of a card, a dedicated tool built for that (such as the official SD Card Formatter) remains a better fit for that particular job.



Format Camera Storage, with two storage locations listed



Format Camera Storage, with one location listed

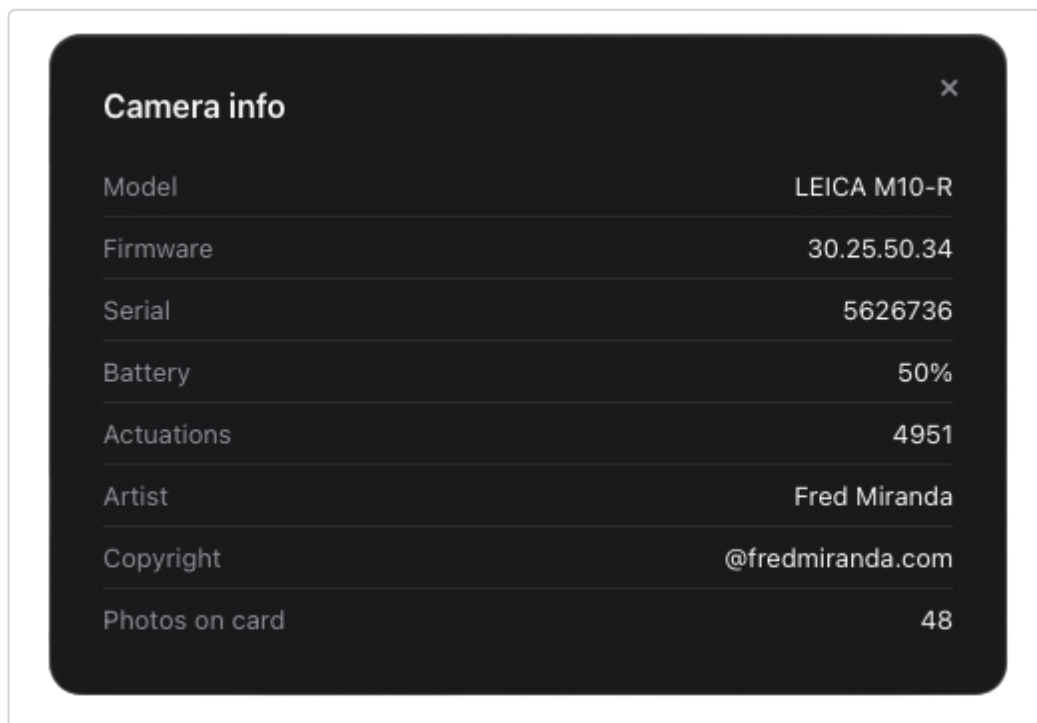
17. Camera status, storage, and shutter actuations

Click the camera info button to see everything your camera is currently reporting: model, firmware version, serial number, battery percentage, remaining storage on each card (free space and photo count), and, where the camera provides them, the copyright and artist fields embedded in its own settings.

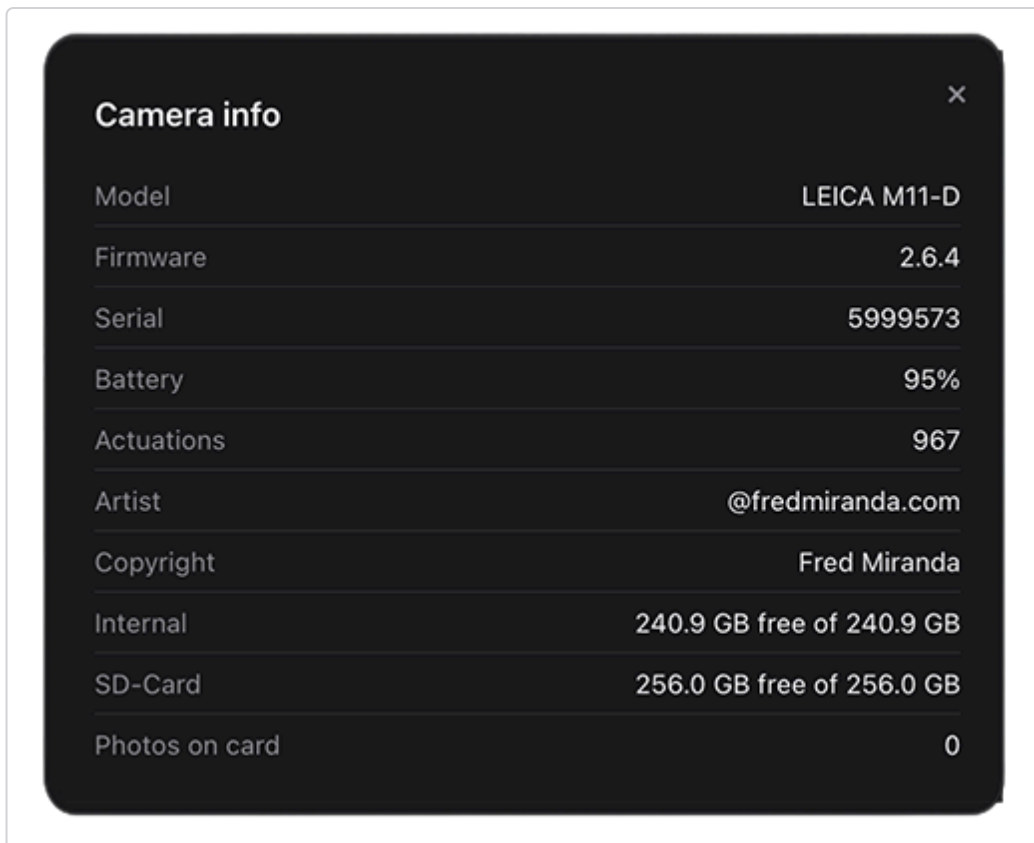
True shutter actuation count (Leica M10 and M11 series). FM Studio reads the number of shutter actuations the camera itself has recorded: the real count of shots, not an estimate from file numbers or from the photos on the card. It stays accurate through card swaps, formats, and deleted files, and it appears in the camera info window as **Actuations**. FM Studio only reads the number; nothing is changed on the camera.

- **M10-family bodies** (M10, M10-P, M10-R, M10-D, M10 Monochrom): connect over **Wi-Fi**, then open the camera info window.
- **M11-family bodies:** connect over **USB** with the camera set to **PTP** mode or **Wi-Fi**, then open the camera info window.

On other cameras, FM Studio shows the actuation count only when the body itself reports one (for example, the Nikon Zf, which stores it in its photo metadata).



The camera info window, showing battery, storage, and Actuations on an M10-R



The camera info window, showing battery, storage, and Actuations on an M11-D

18. Preferences

Open **Preferences** from the action row.

Appearance. Choose **Dark**, **Light**, or **Auto** (follows your Mac's own appearance setting).

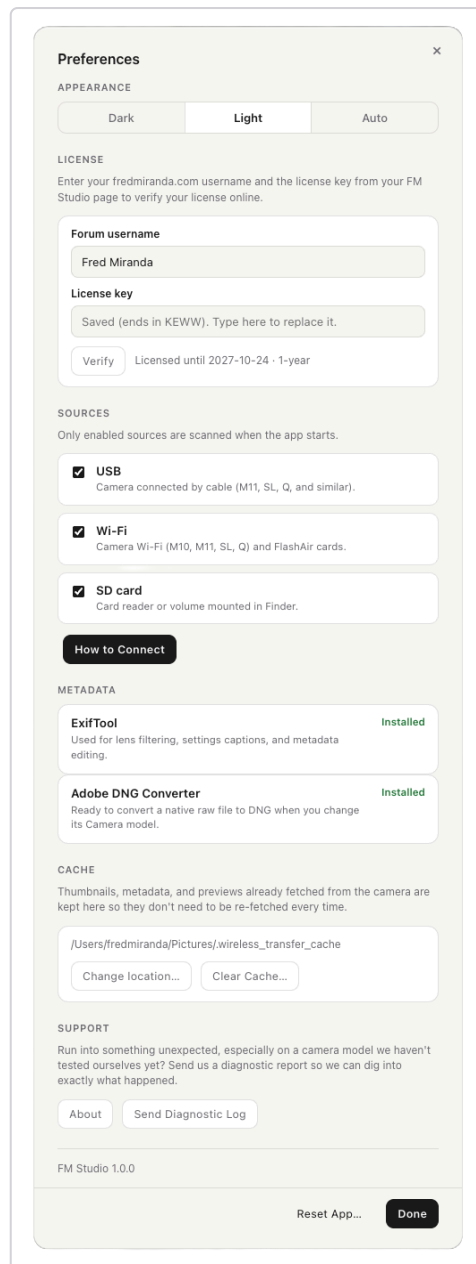
License. Your fredmiranda.com username, your **License key** field and a **Verify** button (see §4), plus a status line showing whether you're licensed, until when (or "lifetime"), and which plan. If a newer version of FM Studio is available, a note appears here too.

Sources. Turn **USB**, **Wi-Fi** (which also covers FlashAir), and **SD card** on or off. Only enabled sources are scanned when the app starts, so turning off ones you don't use can make startup a little faster. At least one source must stay on. There's also an optional **Custom Wi-Fi host** field here, for when automatic discovery can't find your camera or FlashAir card on its own: enter an IP address, or a full `http://` / `https://` address for FlashAir cards at a non-default address.

Metadata. Shows whether **ExifTool** is available. A copy is included with FM Studio, so this normally reads as installed. If you keep your own newer copy (for example with Homebrew), FM Studio uses it instead. Browsing and downloading work without ExifTool; lens filtering, the rich settings caption, and metadata editing need it.

Reset App. Restores your download folder, Lightroom folder, and Lightroom-mode setting to their defaults, and clears FM Studio's thumbnail/metadata cache for the current download folder (it simply rebuilds the next time you load photos). It also clears the saved format-filter choice and EXIF preset history stored in your browser profile. **Your downloaded photos on disk are never touched or deleted.** You may need to re-enter your fredmiranda.com username afterward, so have it handy.

Lightroom folder settings live inline in the app's header rather than inside Preferences; see §12 for the Custom folder / Lightroom-style folder toggle and the auto-add-to-catalog option.



Full Preferences window in Light Mode Layout

19. Updates

FM Studio checks for a newer version automatically alongside its regular license check. If one's available, a banner appears at the top of the window (dismissible for the rest of that session) with a direct download link, and the same note appears inside **Preferences → License**.

Updating is a manual step: download the new version from the link provided, and drag it into Applications the same way you did the first time, replacing the older copy. Your Preferences, license, and saved folders all carry over, so there's nothing to redo. You do not need to repurchase for a normal update while your license is active.

20. Troubleshooting

License

Symptom	Try
Screen won't clear	Double-check the username spelling and that the whole license key was pasted; confirm your plan hasn't expired; renew online
Key rejected after it worked before	You (or someone with access to your page) generated a new key, which cancels the old one. Paste the newest key, or generate a fresh one on your FM Studio page
Lost the key	Click Generate a new key on your FM Studio page and enter the new key in Preferences → License
Can't reach the license server	Check your network/firewall; retry Verify once you're back online
Worked before, fails after a forum rename	Your purchase record is tied to the name used at checkout, so contact support to update it

Wi-Fi

Symptom	Try
Can't connect	Make sure you're joined to the camera's own Wi-Fi network, that Wi-Fi is enabled on the camera, and try a Custom Wi-Fi host in Preferences if auto-discovery isn't finding it
Drops mid-download	Stay close to the camera and off other networks mid-transfer; USB is more resilient for large batches

USB

Symptom	Try
Generic "USB device" prompt, no images appear	Try a known-good data cable, plug directly into the Mac (no hub), and check that the camera shows up with thumbnails in Apple's Image Capture app

Symptom	Try
Image Capture shows nothing either	This points to the Mac's own USB/imaging stack rather than FM Studio. Restarting the Mac, or testing under a fresh macOS user account, can help isolate it
Works fine on another Mac	Confirms the issue is local to this Mac's USB/PTP handling, not the camera

Bluetooth pairing

Symptom	Try
Camera never found within ~20 seconds	Confirm the camera is powered on with wireless enabled, and that you triggered pairing mode (Menu → Leica FOTOS → Pairing, or held the M11-D's function button) right before clicking Start
Got credentials, but Wi-Fi didn't join automatically	Use the plain-text network name and password FM Studio shows you and join by hand once; this only ever needs to happen the first time for a given camera
Bluetooth pairing seems stuck	Watch for a native macOS "Connection Request" pop-up needing your click, and make sure Location Services is turned on both system-wide and specifically for FM Studio (see §6.5)
The Bluetooth step finds the camera, but the Wi-Fi join times out after about a minute	Location Services is probably turned off. Go to System Settings → Privacy & Security → Location Services, turn on the switch at the top, and make sure FM Studio is switched on in the list. Then quit and reopen FM Studio and try again. If Location Services was off, macOS never showed the permission prompt. As a fallback, join the camera's Wi-Fi by hand and click Wi-Fi Connect

Thumbnails

Symptom	Try
The grid shows the right number of photos but the thumbnails are blank	Your browser may be holding on to stale cached images. Reload the page with a hard refresh (Cmd+Shift+R). If that doesn't help, open <code>http://127.0.0.1:8420</code> in a private window, or clear that browser's site data for <code>127.0.0.1</code> and reload
A few thumbnails appear later than the rest	Some RAW files have no small embedded preview, so FM Studio builds one from the full file. Large files take a little longer, especially over Wi-Fi

Metadata

Symptom	Try
Lens filter never appears	Quit and reopen FM Studio, then reload your photos. Check Preferences → Metadata shows ExifTool as available
Edits won't apply	Confirm Preferences → Metadata shows ExifTool as available, and that the destination folder is writable

Lightroom Importer plug-in

Symptom	Try
Nothing imports automatically	Confirm the plug-in's configured root folder is the <i>exact same</i> folder as FM Studio's current Lightroom base, that the plug-in shows as enabled in Plug-in Manager, and that "auto-add to catalog" is turned on inside FM Studio
Had the older plug-in installed	Remove the previous plug-in from Plug-in Manager before adding the current one

21. Privacy, safety, and best practices

- Follow the same order every time: **download** → **verify** → **delete or format**. FM Studio is built to nudge you toward this by disabling Delete Mode and Format until everything shows as safely on disk, but the habit is worth keeping regardless of what tool you're using.
- Keep a second copy of anything irreplaceable until a shoot is fully backed up and edited, because no transfer tool, including this one, is a substitute for a real backup habit.
- Your license check sends only your fredmiranda.com username and your license key, and compares them with your purchase record. Nothing else about your Mac or your photos is sent anywhere as part of licensing. Keep your license key private, like a password.
- Resetting FM Studio's app settings never deletes a photo you've already downloaded.
- FM Studio is independent software, not affiliated with Leica Camera AG.

Part II: FM Studio Lightroom Importer (Lightroom Classic plug-in)

22. What the plug-in does

The FM Studio Lightroom Importer is an optional plug-in for **Lightroom Classic** (not the cloud-based Lightroom app) that automatically adds photos downloaded by FM Studio into your open catalog. It never moves, renames, or duplicates your files. FM Studio continues to save them into the same Year/Date folder structure it always does; the plug-in simply tells Lightroom Classic to bring newly finished files into your catalog for you.

You'll want this plugin if you organize your photos using Lightroom-style folders in FM Studio and prefer not to manually synchronize your active year/shoot folder (e.g., 2026/) after every session.

Key Benefits & Usage

- **Automatic Sync:** Once installed, downloading images from FM Studio automatically syncs and displays them in your Lightroom Catalog.
- **Optional Installation:** If you don't use Adobe Lightroom, you can safely skip this plugin, and FM Studio remains fully functional on its own using a standard custom folder setup.

23. Setting up the plug-in

Before you begin, you'll need:

- FM Studio with **Lightroom-style folders** turned on
- Lightroom Classic (desktop, catalog-based, not the cloud Lightroom app)
- The **FM Studio Lightroom Importer.Irplugin** folder from your FM Studio download

Keep that `.lrplugin` folder somewhere permanent (your Documents or Pictures folder is a good choice) and don't move it once it's added to Lightroom. If you'd previously installed an older plug-in under the name "FMSync Lightroom Importer," remove that one from Plug-in Manager first.

Step 1: Point FM Studio at your Lightroom folder

1. Open FM Studio.
2. In the header, switch to **Lightroom folders** if you're currently using a custom folder.
3. Click the folder link and choose your Lightroom photo root folder, for example, `/Users/[yourusername]/Pictures/Lightroom/`.

FM Studio will file downloads under that folder in its usual date structure, e.g. `2026/2026-09-11/photo-name.DNG`.

Step 2: Turn on auto-add to catalog, in FM Studio

While Lightroom-style folders are active, click the **"auto-add to catalog: off"** link in the header; it flips to **"auto-add to catalog: on"**. FM Studio now queues each completed download for Lightroom, but only once that download (and any metadata edit you staged for it) has fully finished, so the plug-in never sees a half-written file.

Step 3: Install the plug-in in Lightroom Classic

1. Open Lightroom Classic.
2. Choose **File → Plug-in Manager**.
3. Click **Add**.
4. Select the **FM Studio Lightroom Importer.Irplugin** folder.
5. Confirm its status reads **Installed and running**, then click **Done**.

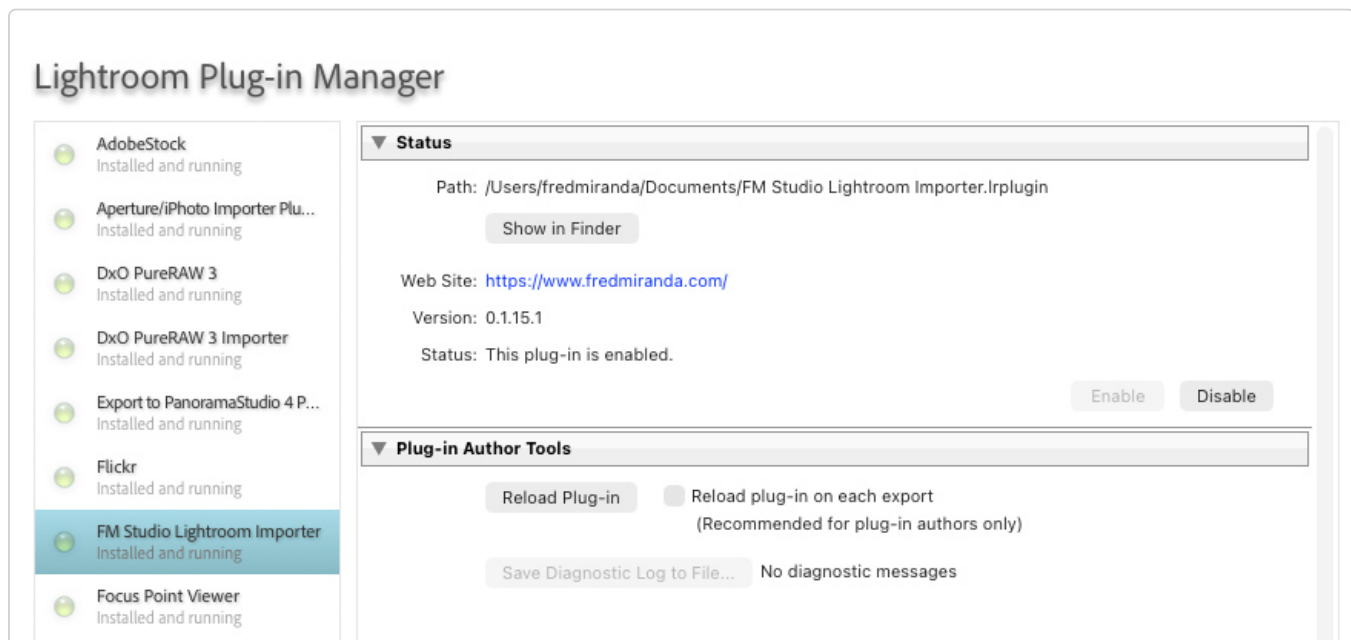
Step 4: Point the plug-in at the same folder

1. In Lightroom Classic, choose **File → Plug-in Extras → Configure FM Studio Lightroom Importer...**
2. For **FM Studio Lightroom root**, choose the *exact same* root folder you set in FM Studio in Step 1. (important)
3. Leave **Check every** at its default of 5 seconds. That's the recommended setting: it feels instant while barely touching Lightroom's performance, since the plug-in is only ever checking FM Studio's small queue file, never scanning your whole library.
4. Click **Save**.

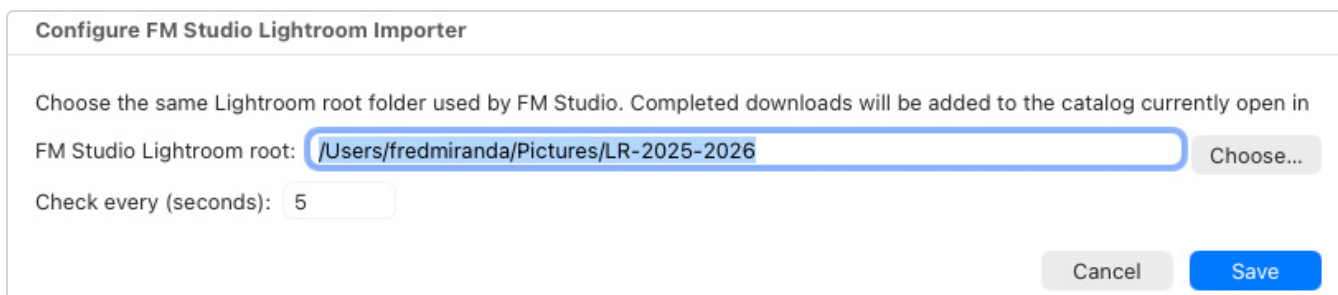
Step 5: Test it

1. Keep Lightroom Classic open on the catalog you want to use.
2. Download a new photo in FM Studio.
3. Within about five seconds, look in the matching Year/Date folder in Lightroom's Library module, or search by filename.

For an immediate check instead of waiting, choose **File → Plug-in Extras → Import pending FM Studio downloads now**. Lightroom will report exactly how many photos it just imported.



Lightroom Classic's Plug-in Manager with the plug-in enabled



Configure FM Studio Lightroom Importer

Choose the same Lightroom root folder used by FM Studio. Completed downloads will be added to the catalog currently open in

FM Studio Lightroom root: Choose...

Check every (seconds):

Cancel Save

The Configure FM Studio Lightroom Importer dialog

24. Everyday use

Once set up, the day-to-day workflow is simple:

1. Open Lightroom Classic and the catalog you want to use.
2. Open FM Studio.
3. Download photos in FM Studio as usual.
4. They will automatically appear in Lightroom within about five seconds or the next time you open the app if it was closed.

25. Important notes

- **Lightroom Classic needs to be open** for automatic importing to happen in real time.
- If Lightroom is closed when you download photos, nothing is lost: FM Studio keeps them safely queued, and they'll import the next time you open Lightroom.
- The plug-in adds files to your catalog **in place**; it never duplicates, moves, or renames them.
- If a file is already in your catalog, the plug-in simply skips it.
- If you ever change FM Studio's Lightroom root folder, update the same folder inside **Configure FM Studio Lightroom Importer...** so the two stay pointed at each other.
- This plug-in is built for **Lightroom Classic** only; it has no equivalent for the cloud-based Lightroom desktop app.
- **Star ratings sync with Lightroom whether or not this plug-in is installed.** FM Studio writes ratings straight into each file's metadata (the same field Lightroom itself reads), so rating sync isn't tied to the plug-in or to automatic import; see [§11](#).

Appendix A: Quick-start checklist

1. Generate your license key on your FM Studio page, install FM Studio, open it, and verify your license (username plus key) under **Preferences → License**.

2. Connect your camera or card (Wi-Fi, USB, FlashAir, or SD).
3. Adjust the file-format filter if you only want DNGs, JPEGs, or HEIC/HIF.
4. Select your keepers and click **Download selected**.
5. Optional: batch-edit metadata; set up the Lightroom Importer plug-in.
6. Optional, once everything shows **ON DISK**: Delete Mode to clear specific frames, or Format to start the card completely fresh.

Appendix B: Glossary

Term	Meaning
PTP / PTP-IP	The protocol FM Studio speaks to your camera, over USB or over the camera's own Wi-Fi
DNG	Digital Negative, the RAW file format most Leica bodies write
HEIC / HIF	Apple's High Efficiency Image format (HIF on some cameras), treated as a JPEG-like image by FM Studio's pairing and filtering logic; the HEIC/HIF Only filter (see §10) appears only when your card actually has one
Contact sheet	The grid of thumbnails FM Studio shows for reviewing and culling
Tether	A live session where new shots appear in the grid as you take them
Burst	A group of frames shot within about two seconds of each other, collapsed into one entry by default
ExifTool	The open-source metadata engine FM Studio uses for lens filtering, rich captions, and metadata editing
C2PA / Content Credentials	A signed, tamper-evident record of a photo's origin, embedded by some cameras; removed automatically if you edit that file's metadata
FormatStore	The camera-level command FM Studio sends when you format a live camera's storage over Wi-Fi or USB
Rating	A 1–5 star rating set from the lightbox, matching Lightroom Classic's own rating system and keybindings, synced with Lightroom automatically, in both directions

Appendix C: Document history

Version	Date	Notes
1.0	2026-09-18	Full rewrite and expansion covering every current FM Studio feature, plus the FM Studio Lightroom Importer plug-in, combined into one manual

Version	Date	Notes
1.1	2026-09-28	Added the dedicated HEIC/HIF Only file-format filter option throughout; removed a duplicated Bluetooth-pairing step list in §6.1 in favor of a cross-reference to §6.5
1.2	2026-10-01	Replaced the old binary Favorites toggle with a 1–5 star rating system that matches Lightroom Classic's own rating and keybindings, and syncs with Lightroom automatically in both directions; updated §1, §9, §10, §11, §25, and the glossary
1.3	2026-10-12	Added rating from the grid thumbnails (§9, §11) and the Cmd+A / Cmd+D select-all and select-none shortcuts (§8); added a Thumbnails section to Troubleshooting (§20); corrected the Bluetooth button name to "Pair Leica M11 series" and removed the outdated screenshot placeholders; fixed formatting and cross-reference slips
1.4	2026-10-24	Updated for the signed and notarized FM Studio 1.0 release: ExifTool is now included, first-launch steps, how FM Studio opens in your browser and how to quit it, and the quit confirmation while work is in progress
1.5	2026-10-24	Added a Location Services troubleshooting entry for the Bluetooth Wi-Fi join