



STACKING
WIZARD



ASTRO
WIZARD

USER MANUAL

Professional Astrophotography –
easy and uncomplicated.
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Improve and perfect
your captures



STACK

Intelligent stacking
for maximum detail



AUTOMATE

Simplify and automate
processes



ENHANCE

Make results
brilliant

VERSION 31.08.2026

StackingWizard - complete working guide

Supplement to the AstroWizard guide | Public Beta 2.4 | Build 31
August 2026

StackingWizard is used before AstroWizard: individual exposures and matching calibration frames first become a clean, registered stack. AstroWizard then handles gradients, colour, sharpening, denoising, stretching and final polish.

What StackingWizard does

This free program is the stacking half of the same software family. It reads an imaging folder, sorts the files, grades the subframes, registers and integrates the keepers, and sends the result to AstroWizard. Its interface deliberately follows four consecutive stages.

Stage	Task	Your key decision
1. The Pile	Recognise and sort lights, darks, flats, bias and finished stacks.	Is the classification correct? Are targets mixed or files unidentified?
2. The Looking Glass	Grade each sub for sky, noise, star size and tracking.	Which frames stay? Verify the automatic selection by eye.
3. The Stack	Calibrate, match stars, register and integrate the selected frames.	Watch warnings, free disk space, the live build and receipts.
4. The Handoff	Save the stack, combine sessions and send it to AstroWizard.	Save the right file; for mono, verify filter/channel assignments.

Current scope

- FITS subframes from one-shot-colour cameras and smart telescopes, including Seestar, Dwarf and ASI AIR-style workflows.
- Darks, flats and bias: matching calibration data are brewed into masters and assigned to the lights.
- Mono Ha/OIII/SII and LRGB sets: Beta 2.4 grades and stacks each filter separately on one shared alignment.
- Finished stacks of the same target can be combined when telescope and camera are identical and the fields overlap sufficiently.

Not intended for camera RAW such as CR2/NEF/ARW, planets, Moon, Sun, comets, mixed telescopes in one combined stack, or true mosaic integration at present. StackingWizard is a deep-sky stacker and remains a public beta.

A. Before you start - prepare data and folders

Stacking can strengthen weak real signal, but it cannot rescue incorrectly classified or fundamentally poor data. A clean folder and correctly matched calibration frames save more work than aggressive post-processing.

The four essential frame types

Type	Contains	Purpose	Match carefully
Light	The sky image with stars and target.	All usable lights contribute signal.	Same target; check focus, tracking, cloud and dew.
Dark	Dark exposure with the optical path closed.	Measures thermal signal and fixed sensor defects.	Exposure, gain/ISO and preferably temperature.
Flat	Uniformly illuminated exposure.	Corrects vignetting, dust shadows and optical field response.	Optical train, focus position and filter must stay unchanged.
Bias	Very short dark exposure.	Describes camera offset/read signal when the workflow requires it.	Same gain/ISO; do not add blindly to already calibrated data.

Recommended folder practice

- Keep original data untouched. For beta experiments, work from a copy.
- Use one target and preferably one camera configuration per project. Mixed nights are allowed only when the manifest identifies them correctly.
- Lights, darks, flats and bias may be in subfolders. FITS headers take priority, filenames come next and folder names last.
- Work from a local drive when possible. Network folders work, but may become the slowest part of the run.
- Keep enough free disk space. Registered frames are temporarily streamed through a local cache; the Stack page reports the required space.

For smart telescopes: if individual FITS subs are available, start in StackingWizard. If only finished nightly stacks exist, combine nights of the same target from the same device. If there is already one good stack, open it directly in AstroWizard.

Do not mix

Do not combine stacks from different optical systems or cameras - for example an S30 stack and an S50 stack. Different image scales, distortions and fields are not currently supported. For mono data, flats must belong to their filter; Beta 2.4 assigns flats per filter.

B. Stage 1 - The Pile: recognise and sort

The Pile is the intake check. Choose or drop the night's folder. StackingWizard reads the FITS headers and creates a manifest listing targets, filters, exposure groups, calibration frames, finished stacks, duplicates and unidentified files.

Classification priority

Priority	Source	Meaning
1	FITS header	Image metadata wins. A frame correctly tagged as a light remains a light even if its filename is misleading.
2	Filename	If the header is unclear, typical light/dark/flat/bias, filter and finished-stack naming is evaluated.
3	Folder name	Folder structure is only the last clue. Long exposures are no longer guessed to be lights.

Your checks

- Check the light, dark, flat and bias counters. They are buttons: when recognition is wrong, point a category explicitly at its correct folder.
- Read the full manifest. It names mixed targets, filters, mosaic panels, exposure groups, finished stacks and duplicates set aside.
- Do not ignore Unidentified or Unreadable. Unknown files are no longer silently treated as lights; unreadable frames appear in red and are excluded.
- Make sure a finished stack has not wandered into the light folder. Modern builds recognise stack-style names such as '105x1m' and separate them.
- Duplicate files in subfolders are detected by timestamp and used once, preventing inflated integration time and double-counted data.

Mono and multiple exposure groups

Beta 2.4 understands many spellings of Ha, H-alpha, OIII, SII, L, R, G and B, including filters recorded only in filenames. The manifest should clearly report groups such as Ha x24, OIII x23 and SII x21. Every filter/exposure/night group is graded against its own kind, so a small 30-second group is not unfairly judged against a large 10-second group.

Do not proceed until the manifest makes sense. A wrong intake classification contaminates calibration, grading and stacking and is difficult to repair later.

C. Stage 2 - The Looking Glass: grade quality

Each subframe receives a quality assessment based on sky brightness, noise, star size and star elongation. The list can be sorted and the magnifier lets you inspect the actual frame. Since Beta 2.3, even very large nights with thousands of files remain scrollable.

What the measurements mean

Feature	Typical cause	Visible symptom	Decision
Sky glow	Moon, pollution, twilight, thin cloud	Bright or uneven background	Reject strong outliers; mild brightening may remain usable.
Noise	Short exposure, heat, electronics	Grainy background	Do not reject every noisy frame; consider total count and calibration.
Star size	Poor focus, seeing, dew	Bloated or soft stars	Remove clearly softer frames.
Trails	Wind, tripod movement, tracking error	Elongated or doubled stars	Reject clearly affected frames.
Intrusion	Satellite, aircraft, branch, cloud	Line or obscured area	Often not detected automatically: inspect by eye.

Standard or Lenient?

Start with Standard. If it rejects substantially more than the previews justify, try Lenient and review borderline frames yourself. The developer explicitly notes that Standard can be too strict under some skies. Changing the grading mood warns before overwriting manual picks.

A reliable review method

- Inspect the best, a middle and the worst frame first to learn this night's scale.
- Sort rejected frames by the relevant metric and sample them visually.
- Search manually for satellites, aircraft, branches, cloud edges and reflections; current grading concentrates on stars and does not reliably detect these events.
- Shift-click selects a consecutive run, useful when cloud or dawn begins at a known time.
- Do not maximise the keep percentage. Ten very bad frames can do more harm than their extra time helps; equally, do not discard merely average but usable data out of perfectionism.

Automation is a proposal, not scientific truth. The strongest stack comes from agreement between measured scores and visual inspection.

D. Stage 3 - The Stack: calibrate, register, integrate

The actual computation now begins. Matching calibration frames are brewed into masters, stars are detected, lights are registered to a common reference and the aligned images are integrated. The live view shows the build, matched stars and an auditable receipt log.

What happens technically

Operation	Purpose	Evidence of success
Calibration	Reduce fixed sensor and optical defects with darks, flats and bias.	Fewer hot pixels, smoother field, fewer dust rings; no new detail is invented.
Registration	Geometrically align stars across exposures.	Stars overlap; drift, field rotation and meridian flip are compensated.
Integration	Combine common signal and reject discrepant pixels in the final vote.	Weak structure stabilises and the background becomes smoother.
Metadata	Write coordinates, date, optics, pixel size, camera, filter, frame count and integration time.	The saved stack can be identified and plate-solved later.

Why more frames help

For random noise, signal-to-noise ratio grows approximately with the square root of the number of equivalent frames: $\text{SNR} \propto \sqrt{N}$. Four times as many good frames therefore deliver about twice the SNR, not four times the visible quality. Selection and calibration still matter.

Watch during the run

- Free disk space: the local cache holds registered frames; if space is insufficient, the program reports the requirement rather than silently reducing precision.
- Timing: grading, registration and the final vote each show estimates. Stop ends the run in a controlled way.
- Star matching: at least six stars must agree. A difficult frame receives a second, harder attempt before being abandoned.
- Impossibly perfect alignment may mean soft colour data locked onto fixed hot pixels rather than stars. Take the warning seriously and inspect for doubled or unshifted stars.
- 'Pixels clipped by the voting' is the percentage of discrepant pixels, not the percentage of whole frames rejected.

Honest edges

Since Beta 2.2 the result is not auto-cropped. Drift, field rotation and meridian flips therefore leave ragged, less-covered edges. This is intentional: one wandering frame can no longer shrink the field to a strip. Crop deliberately in AstroWizard, where the choice is visible.

E. Stage 4 - The Handoff: save, combine, send

After integration, save the stack. StackingWizard also keeps a safety autosave. Once your normal save succeeds, it can remove or keep that copy and remember the choice. 'Copy the receipts' captures build, platform, warnings and the run log for a useful beta report.

Three common routes

Starting point	Correct route	Outcome
One night's FITS subs	Pile → Looking Glass → Stack → Save/Send	One calibrated, registered colour or filter stack.
Several finished nightly stacks	Load stacks of the same target from the same camera/optics and combine them.	A deeper master; duplicates and insufficient overlap are excluded.
One already-good stack	Skip StackingWizard and open it directly in AstroWizard.	No unnecessary second integration.

Combining nights

- Combine only the same target, telescope, camera and compatible image scale.
- A stack sharing less than roughly half the field is left out rather than forcing the result into a narrow crop.
- Identical or already-contained data are detected and not counted twice.
- Different sky brightness can be combined, but inspect the result for gradients and colour differences.

Send to AstroWizard

The gold Send button opens the finished stack in AstroWizard. It is transferred uncropped. Its FITS header identifies the well-covered core, allowing AstroWizard to solve a sensible display stretch without letting ragged edges dominate. Crop/rotation is the first deliberate editing action, followed by the nine steps in Part I.

Always preserve the high-quality linear FITS stack before continuing. JPEG is for the finished presentation copy, not the working master.

If handoff fails

Save normally and open the file manually in AstroWizard. Copy the receipts from the Stack/Handoff page. A screenshot, build number and operating system make a reproducible beta report far more useful.

F. Mono, SHO/HOO and LRGB - new in Beta 2.4

The largest new feature is the full mono workflow. StackingWizard recognises filter sets, grades each frame only against comparable exposures and creates one stack per filter. All filters share one alignment so the channels match geometrically.

Mono workflow

Step	What to verify
1. Pile	The manifest lists every filter and frame count; exposure groups and nights are correctly separated.
2. Calibration	Flats are brewed per filter and assigned correctly. Darks/bias match the acquisition mode.
3. Looking Glass	Ha is compared with Ha, OIII with OIII, etc.; weak OIII is not judged against strong Ha.
4. Stack	Each filter gets a separate stack on shared registration. You can switch among completed filter stacks.
5. Handoff	Save all stacks together and Send once. Combine Mono Channels opens pre-filled in AstroWizard.

Understand channel assignments

Palette	Typical mapping	Character
SHO	SII → red, H-alpha → green, OIII → blue	Classic Hubble palette; scientific false colour, not natural visual colour.
HOO	H-alpha → red, OIII → green and blue	Common narrowband red/cyan interpretation; still a mapped colour result.
LRGB	Luminance for detail; R/G/B for colour	Broadband mono colour workflow; the exact combination remains a human decision.

AstroWizard recognises SHO, HOO and LRGB and pre-fills the slots. The data-type declaration and final mapping remain visible for confirmation. This is deliberate: filenames can lie, and a wrong mapping can produce a colourful but physically incorrect image.

Natural-colour practice

For a restrained red/cyan result, use HOO or an OSC colour stack as the starting point and keep later saturation/curves moderate. Label SHO as a deliberate alternative palette. In particular, do not force OIII to appear stronger than the recorded data through extreme stretching or hue shifts.

G. Recommended smart-telescope workflow

For Seestar, Dwarf and similar data, this route is robust and preserves the linear master until the end.

Situation	Recommendation
Individual subs available	Load original FITS in StackingWizard; verify manifest; use Standard grading plus visual checks; stack; save linear FITS; send to AstroWizard.
Several nights, only nightly stacks	Combine only the same target and device. Review overlap and duplicate warnings; save and send the combined stack.
Only one nightly stack	Open it directly in AstroWizard. StackingWizard cannot add quality without additional data.
Telescope mosaic	Do not rebuild it in this beta. Use the telescope's own mosaic stack or a dedicated external mosaic workflow.
Moon, Sun, planet, comet	Do not use StackingWizard; it is designed for deep-sky star-field registration.

Recommended order after handoff

- 1. Crop/rotation: visibly remove unevenly covered edges.
- 2. Gradient: correct pollution and large-scale brightness carefully.
- 3. Colour balance: remove technical cast while preserving real H-alpha/OIII colour.
- 4. Sharpen and denoise: keep both moderate and preferably linear.
- 5. Big Stretch: test Linked first; use Deep only with clean backgrounds and flats.
- 6. Final Polish: small controlled adjustments; separate and restore stars only if useful.
- 7. Export: archive the linear stack and a high-quality TIFF/FITS master; use JPEG for viewing/sharing.

The 80/20 rule: keep good frames, reject clearly bad ones, ensure correct calibration and archive the uncropped linear stack. These four decisions determine more quality than extreme post-processing sliders.

Check before final processing

Zoom into stars at the centre and corners. Look for doubled stars, hot-pixel patterns, dust rings, colour offsets, abrupt brightness seams and excessively noisy edges. Only proceed when this foundation is plausible.

H. Troubleshooting, beta limits and final checklist

Problem	Likely cause	Useful response
Many Unidentified	Ambiguous headers/names	Assign the correct folders via category buttons and check the data source.
Standard rejects too much	Grading too strict for this night	Try Lenient and inspect the worst/borderline frames yourself.
Satellite/aircraft remains	Intrusions are not reliably detected	Inspect Looking Glass manually and untick affected frames.
Doubled/smeared stars	Misregistration or hot pixels used as stars	Heed warnings, remove suspects and restack.
Ragged/noisy edges	Drift/rotation; no auto-crop	Normal and honest: crop later in AstroWizard.
Stack will not start	Insufficient local disk space	Free the reported amount or change the working drive.
Network is very slow	Lights are on NAS/network storage	Move a working copy to a local drive.
Wrong mono colours	Filter/channel misidentified	Check manifest and Combine Mono Channels before committing.
Mosaic area missing	Union canvas is not implemented	Do not integrate mosaics in this beta; use a suitable external workflow.

Known Beta 2.4 limits

- Branches, satellites and aircraft are not reliably detected.
- Mosaics and a union canvas preserving every frame footprint are not complete.
- Camera RAW must first be converted to FITS.
- There is no reusable camera/temperature calibration library or automatic parent-folder processing yet.
- With colour data, apparently perfect hot-pixel alignment may still be warned about rather than prevented in every case; a fuller cure is planned for Beta 3.

Final checklist

- Manifest is plausible: target, camera, filter, exposure groups and calibration data agree.
- Unidentified/Unreadable files are explained or deliberately excluded.
- Automatic grading was visually sampled.
- Satellites, aircraft, cloud, branches, dew and focus errors were checked manually.
- Stack has no doubled stars, major calibration residue or unexplained brightness seams.
- Linear FITS is saved separately; crop waits for AstroWizard.
- For mono, filter stacks and channel mapping are confirmed before combination.

Official sources (checked 1 September 2026)

[StackingWizard official download, feature and known-issues page](#)

[Official AstroWizard/StackingWizard changelog, especially Beta 2 through 2.4](#)

[AstroWizard official home and download page](#)

Note: StackingWizard is a rapidly developed public beta. For a later build, check Known Issues and the changelog again.

AstroWizard - Detailed Guide

Updated edition for the 31 August 2026 build

Research status: 1 September 2026

This edition replaces the previous guide. The earlier version was still based mainly on the 26 August 2026 build. The official AstroWizard site now lists the **31 August 2026 build** as the current release. The core nine-step workflow has not changed, but several usability and quality features have improved enough to justify a full update.

The most important changes affect **cropping and rotation**, the handoff of mono stacks from StackingWizard, the speed and responsiveness of **Curves and Narrowband Tune**, the expanded **BlurXTerminator custom controls**, and full-resolution tool previews. As before, this guide explains not only where to click, but **what each operation actually does to an astrophotograph** and where restraint is advisable.

Bottom line: an update was warranted. The core workflow is unchanged, but usability and processing control have improved materially.

EXPANDED EDITION: complete StackingWizard working guide

Part II · Public Beta 2.4 · The Pile · Looking Glass · Stack · Handoff

What changed since the first edition?

Area	Status	Meaning
Current build	31 Aug 2026	The official download page identifies the 31 August 2026 build as current.
Crop / Rotation	substantially expanded	Draw a crop box directly on the image, move it, resize from corners, rotate by dragging outside the frame; fine rotation plus 3:2, 4:3, 2:1 and 9:16 aspect ratios.
Mono workflow	new integration	Multiple mono stacks handed off by StackingWizard are recognised by filter; Combine Mono Channels opens pre-filled. SHO, HOO and LRGB are recognised while final channel interpretation remains a visible user choice.
Curves / Narrowband Tune	faster and smoother	While dragging, only the preview is rendered; after you pause, the full-resolution result is computed in the background. Commit processing uses multiple CPU cores.
BlurXTerminator Custom	expanded	Separate controls for stellar sharpening, star halos, nonstellar detail and manual PSF diameter.
Tool previews	improved	Curves and Step-8 Tune use true viewports: fit image, scroll to zoom, drag to pan, double-click to refit.
Big Stretch	more convenient	A stretch preview you already like can be committed directly; Custom Deep includes Keep Colours.

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1. Core concept and installation

AstroWizard is a **guided post-processing application for already stacked astrophotography data**. It does not necessarily replace a stacking application; normally it starts with a completed master stack. It supports stacked **FITS, TIFF and XISF** from smart telescopes and conventional astrophotography workflows. The official site explicitly mentions Seestar, Dwarf, ASTAP, Siril, PixInsight and DeepSkyStacker as typical sources.

The central advantage is the fixed order: **load -> crop -> remove gradient -> balance colour -> sharpen -> reduce noise -> stretch -> final polish -> export**. This sequence avoids many common mistakes, such as boosting saturation before background correction or applying aggressive sharpening after a harsh stretch.

AstroWizard itself is free. For AI-assisted steps it can drive external tools. **GraXpert** provides free gradient removal and AI denoising; **StarNet2** provides free star removal. Optional paid RC-Astro tools are **BlurXTerminator, NoiseXTerminator and StarXTerminator**.

A practical setup point: after installing GraXpert, open it once by itself and run Background Extraction and Denoise so its AI models are downloaded. For RC-Astro, keep the stand-alone CLI current. AstroWizard often detects standard installations automatically; otherwise paths can be set in Settings & Help.

Recent builds also provide a **UI Scale control from 90 to 140 percent**, useful on high-resolution screens or when larger interface elements are preferred. Undo and Redo are prominent and standard keyboard shortcuts are supported.

2. Input data and StackingWizard

For high-quality processing, the **stacked FITS** file is usually the best starting point. A JPEG is normally already stretched, compressed and reduced to 8-bit output, leaving less headroom in faint nebulosity and bright star cores. TIFF can also be excellent when saved at sufficient bit depth.

AstroWizard recognises Seestar stacks from their headers and can automatically choose an appropriate profile. Files can be opened through Load Image, by drag-and-drop, or through **Open with AstroWizard**.

Since the 31 August build, integration with **StackingWizard** is much tighter. When several mono stacks are handed off together, AstroWizard recognises filter groups and opens **Combine Mono Channels** pre-filled. SHO, HOO and LRGB can be recognised. The software removes sorting work but deliberately leaves the final interpretation of channel type visible to the user.

This matters primarily for mono cameras and multi-filter projects. For an ordinary OSC colour camera or a typical smart-telescope colour stack, the usual workflow is unchanged: load one finished colour stack and follow the nine steps.

3. The nine steps at a glance

Step	Function	What it does	Practical note
1	Load Image	Load the stack and assess its state	Prefer FITS/XISF/TIFF; do not rush into corrections.
2	Crop / Framing	Remove border defects; set composition and rotation	New: free draw, move, corner resize, rotate outside frame,

			aspect ratios.
3	Remove Gradient	Model and remove unwanted large-scale background	Be conservative with extended nebulosity.
4	Balance Colour	Reduce technical RGB cast	Do not neutralise genuine H-alpha/dual-band colour.
5	Sharpen	Improve detail and PSF	Native High Pass or BlurX; watch halos and micro-contrast.
6	Reduce Noise	Suppress random noise	Avoid smooth plastic surfaces.
7	Big Stretch	Make linear data visible	Start Linked; use Deep with close attention to background and noise.
8	Final Polish	Contrast, colour, Curves, stars, narrowband	Many small adjustments beat one extreme adjustment.
9	Export	Save archival and presentation files	High-quality FITS/TIFF; JPEG for sharing; preserve Starless/Stars Only.

This table is the 80/20 overview. The following chapters explain each step in detail.

4. Step 1 - Load Image

Loading brings the image into AstroWizard's working space. A linear astro master often looks dark and unimpressive at first. That is normal: faint signal is present but has not yet been stretched for display.

The distinction between **linear** and **already stretched** data matters. Deconvolution, colour calibration and many background operations are most reliable while the image remains as linear as practical.

AstroWizard attempts to recognise the state and adjusts the preview and available functions accordingly.

Immediately after loading, check: Is the entire field present? Is the orientation sensible? Are there black stack borders? Is there an obvious overall colour cast? These observations guide later decisions without prematurely changing the data.

5. Step 2 - Crop / Framing

This step received one of the largest upgrades in the 31 August build. Cropping now behaves more like a modern photographic editor: **draw a box directly on the image, move it from inside, resize from the corners, and rotate by dragging just outside the frame**. The image rotates behind the fixed frame and auto-fills so dead corners do not enter the crop.

There is also a fine rotation control and additional fixed aspect ratios including **3:2, 4:3, 2:1 and 9:16**. This is useful when an image is intended for printing, phone display or social media.

Cropping is more than cosmetic. Stack borders often contain less integration time, poorer signal-to-noise ratio and uneven illumination. If left in place, they can influence **gradient modelling, stretch statistics and automatic background analysis**. Poorly covered edges should therefore be removed early.

Rotation does not change astronomical information but does change composition. For large nebulae, consider placing the dominant structure on a diagonal or leaving space in the direction in which the object visually 'flows'. Avoid excessive cropping, because every removed area is permanently lost.

6. Step 3 - Remove Gradient

Gradients are produced by **light pollution, moonlight, vignetting, atmospheric illumination changes or reflections**. They are large-scale background variations rather than genuine astronomical structures.

AstroWizard can call GraXpert for this task. GraXpert models the background and removes the modelled component. Ideally, the sky becomes more uniform while stars, nebulae and galaxies remain intact.

The main risk occurs with **very large faint nebulae or galactic dust**: an algorithm can mistake real extended astrophysical signal for background. Before/after comparison is therefore essential. If weak outer nebulosity suddenly disappears, the correction may have been too aggressive.

Practical rule: a small object surrounded by plenty of empty sky usually tolerates stronger background modelling. North America Nebula, Veil, Barnard fields and extended IFN require more restraint.

7. Step 4 - Balance Colour

Colour balance is not simply 'more saturation'. The aim is to align the **RGB channels** so that a technical colour cast is reduced without neutralising genuine object colour.

The **Image looks all one colour?** function acts as a cast correction when the whole image is strongly green, blue or red. In newer builds it can also work on already stretched data as a pure colour-cast fix.

Be careful with emission nebulae: an H-alpha dominated nebula may naturally be red. Dual-band data can also legitimately contain strong red/cyan relationships. A dominant colour is not automatically an error.

A useful order is: remove technical colour cast first, then set **aesthetic** saturation and colour relationships later in Final Polish.

8. Step 5 - Sharpen

Sharpening increases separation of fine image structures. AstroWizard provides **Native High Pass** as a free built-in method and optionally **BlurXTerminator** from RC-Astro. High Pass boosts local contrast, while BlurXTerminator attempts deconvolution - partial reversal of blur caused by seeing, optics, tracking and the point-spread function (PSF).

The 31 August update expands the **Custom BlurXTerminator dialog** with the main controls, giving AstroWizard substantially more control over deconvolution.

Sharpen Stars / Stars: reduces stellar diameter in the FWHM sense. Higher values produce smaller, tighter stars. Excessive values can create dark rings, hard star cores or unnatural star shapes.

Adjust Star Halos / Halos: changes the brightness and extent of star halos. Higher values create larger, softer halos; lower values reduce halos and make stars harder-edged. Too low can cause dark halos. For

bright saturated stars, much of the visible colour lives in the halo, so moderate halo retention can preserve better star colour.

Sharpen Nonstellar / Nonstellar: controls sharpening of nonstellar features such as nebular filaments, galaxy arms and dust lanes. Very high values may turn genuinely smooth structures into artificial micro-contrast.

Automatic PSF: BlurXTerminator estimates the local point-spread function from stars in the image. This is usually the most convenient setting. In large star-poor regions, automatic PSF estimation can become less reliable.

Manual PSF Diameter: specifies the FWHM diameter in pixels. RC-Astro recommends using the measured FWHM of representative stars as a starting point. Manual mode is particularly useful when large areas contain few stars or when processing a starless image.

Important: RC-Astro generally recommends applying BlurXTerminator **before star removal**, because the stars provide critical PSF information. The current BlurXTerminator ML5, released 28 August 2026, is stated by RC-Astro to work already with applications integrating the stand-alone CLI, explicitly including AstroWizard.

Quality rule: sharpening should make existing information easier to read, not generate apparent new structure. When uncertain, back off and use 10-20 percent less strength.

9. Step 6 - Reduce Noise

Noise consists of random brightness and colour variation. The weaker the signal and the shorter the total integration time, the more strongly noise competes with real fine structure.

AstroWizard can use **GraXpert AI Denoise** for free or optionally **NoiseXTerminator**. Both aim to suppress statistical noise while preserving genuine structure.

Too much denoising creates the familiar **plastic look**: smooth nebular surfaces, missing fine filaments and an unnaturally sterile background. Good denoising makes the image quieter without calling attention to the processing.

Pre-stretch denoising is especially valuable because strong stretching also reveals noise. A light second denoise in Final Polish can be useful, but only as a finishing touch, not as a way to rescue an over-stretched image.

10. Step 7 - The Big Stretch

Stretching is the key transition from a **linear** to a **nonlinear** image. A linear FITS file can contain a huge dynamic range that a display cannot show directly. Stretching raises faint signal strongly while controlling bright regions so nebulosity and galaxies become visible without immediately blowing out star cores and bright nuclei.

AstroWizard provides classic stretch choices and **Deep Stretch**. Deep is data-driven: black point, white point and strength are derived from the image to expose extremely faint structure. This can be impressive, but it reveals flat-field problems, residual gradients and noise just as aggressively.

Linked Stretch: colour channels are stretched together, helping preserve their relative relationships. For a natural colour result, Linked is usually the best starting point.

Unlinked Stretch: channels are stretched separately. This can correct casts but changes colour relationships more strongly, so it should be a conscious choice rather than an automatic 'better' option.

The current Custom Deep area includes **Keep Colours**, allowing a deep stretch with improved colour preservation. The former Soft mode has been retired as a separate choice; according to the developer, it can be recreated with the Custom control at the appropriate high setting.

The 'Seeing Build' also added a convenient feature: if the current stretch preview already looks right, that exact view can be **committed directly as the real stretch**, making the final result match the preview more closely.

Practical recommendation: do not select the stretch that shows the most nebulosity. Select the one that best balances **faint signal, background, star cores and colour separation**. A very deep stretch can make weak data look more dramatic but less credible.

11. Step 8 - Make it Beautiful / Final Polish

This stage is not where a fundamentally poor image should be rescued; it is where a good image is refined. Tools include background brightness, contrast, saturation, Curves, narrowband tuning, star management and, if needed, light final denoising.

Dark Sky / Lighter Sky: changes background perception. A completely black background may look punchy but can erase faint nebulosity and background galaxies. A good sky is dark without being clipped.

Masked Saturation: increases colour more selectively than a global saturation control. This can strengthen faint nebular colour without immediately over-saturating star cores.

Make it Pop: increases visual impact through contrast. Repeated application or excessive strength can quickly create an artificial HDR-like appearance.

Curves: one of the most powerful tools. An S-curve can increase contrast, and colour-targeted curves can change specific colour families. Small movements are usually more effective than large curve changes.

Recent builds substantially improved Curves and Narrowband Tune technically. The tool window now shows a **true full-resolution viewport**. Scroll to zoom into real pixels, drag to pan, and double-click to refit. While a control is moving, the dialog preview updates; once you pause, a full-resolution pass lands without freezing the interface.

With the 31 August build, Curves and narrowband commits also use multiple CPU cores. The developer reports roughly twice the speed on large images while keeping the result identical.

12. Star removal and replacement

Star removal separates the image into a **starless component** and a **star layer**. The main advantage is that nebulosity or galaxies can be processed more strongly without simultaneously making stars larger, brighter and whiter.

StarNet2 is available for free, while **StarXTerminator** is optional. AstroWizard computes star layers so that Replace Stars can be as exact as possible. Star strength can be adjusted on return, and there is also a star colour control.

The **Exact** and **Soft** blend modes differ in how the stars are recombined. Exact aims for mathematically faithful restoration; Soft can appear gentler over bright structures.

For BlurXTerminator, the order matters: **deconvolve first, remove stars afterwards**. Stars are important PSF references. If BlurX is used on starless material, a sensible manual PSF should be supplied.

A useful nebula sequence is: sharpen -> denoise -> stretch -> remove stars -> process nebula with Curves/saturation -> replace stars moderately -> final background and colour check.

13. Narrowband and Hubble palette

AstroWizard includes tools for dual-band and mono narrowband data, including **OSC Dual-Band to Hubble** and **MONO SHO to Hubble**, plus tuning controls for narrowband mixes.

The Hubble palette is a **false-colour representation**: SII, H-alpha and OIII are assigned to RGB channels. It provides strong structural separation but does not represent the visual colour of the sky.

With the new mono handoff from StackingWizard, AstroWizard can prepare SHO, HOO and LRGB combinations. The user should still verify which stack actually corresponds to which filter. A wrong mapping can create a technically clean but physically misinterpreted colour image.

For a more natural treatment of OSC dual-band data, restrained red/cyan balance is often preferable to an aggressive Hubble conversion. The Hubble version can be saved as an additional creative or scientifically coded variant.

14. Step 9 - Export

Export should match the intended use. **FITS** is ideal for high-quality working and archival data. **TIFF** is well suited to further editing, printing and applications such as Photoshop, Affinity or Lightroom. **JPEG** is convenient for phones, messaging, forums and quick sharing.

After star separation, AstroWizard can also save **Starless** and **Stars Only** versions. These are valuable if you later want to try a different star blend.

Recent versions allow multiple saves during one session without ending the processing state. You can save a TIFF, then a JPEG, then a Starless version, and continue processing afterwards.

For archiving, keep the original stack untouched, plus a high-quality processed TIFF/FITS, and create smaller JPEG derivatives from that. This preserves maximum processing headroom.

15. Recommended practical workflows

Emission nebulae: load FITS -> crop stack borders -> remove gradient conservatively -> correct technical cast -> moderate sharpening -> denoise -> compare Linked and Deep Linked -> remove stars -> process nebula with Curves and moderate saturation -> replace stars -> final background and colour check.

Galaxies: careful gradient correction -> restrained BlurX/High Pass on dust lanes and spiral arms -> denoise -> stretch while protecting the galaxy core -> Curves for outer arms -> retain star colour. Deep Stretch can reveal halos and tidal structure but will also expose background defects.

Star clusters: star removal is usually less important. Be particularly conservative with stellar sharpening and halos. Avoid over-stretching so bright stars keep colour and the centre does not become a white mass.

Planetary nebulae: small structures can benefit from precise sharpening, but do not max out Stars or Nonstellar in BlurX. A controlled crop is often useful before judging the preview.

General rule: after every major step, use **before/after and inspect at 100 percent**. If a change only looks good when heavily zoomed out but produces halos, ringing or artificial texture at 100 percent, it is usually too strong.

16. Typical failure modes

Black background with no faint structure: black point too strong, Dark Sky applied too often, or stretch too harsh. Faint nebula and background galaxies are being clipped.

Plastic nebula: too much denoise. Fine natural texture and filaments have disappeared.

Dark rings around stars: stellar sharpening too strong or Star Halo control too low. Reduce BlurX strength or moderately increase halos.

Stars look pasted in: over-aggressive star removal/replacement or excessive processing of the starless layer. Revisit Replace Stars with a gentler blend.

Neon colours: too much saturation/Make it Pop/Curves or repeated channel shifts.

Nebulosity disappears after Gradient Removal: the model removed real extended astrophysical signal. Undo and use a more conservative correction.

Deep Stretch suddenly looks terrible: not necessarily a stretch failure. Deep often exposes problems that were already in the data - residual gradient, flat-field defects, noise or poorly covered stack borders.

17. Videos and sources

German-language AstroWizard video material is still limited. The most current and technically useful material is mainly from Lukomatico and Cuiv. Where subtitles are available on YouTube, automatic translation can be used.

- The best just keeps getting better, this is unreal! BlurXterminator - Lukomatico, 28 Aug 2026. [Open YouTube channel](#)
- StackingWizard Beta? AstroQuizzard?! The AstroWizard Tower Grows! - Lukomatico, 22 Aug 2026. [Open YouTube channel](#)
- AstroWizard - Big Updates! XISF, Free Star Removal, and Fellowship! - Lukomatico, 8 Aug 2026. [Open YouTube channel](#)
- AstroWizard - The Stretch Wizard update! - Free, Fast, Friendly! Process in a snap! - Lukomatico, 2 Aug 2026. [Open YouTube channel](#)
- Can the FREE AstroWizard Compete with Siril and PixInsight? Simple Processing in minutes! - Cuiv, The Lazy Geek, 17 Aug 2026. [Open YouTube channel](#)
- I Tested Siril's Biggest New Competitor... I'm Switching! - Matthew Grimsley Photography, 6 Aug 2026. [Open YouTube channel](#)

Currency note: AstroWizard remains in fast-moving open-beta development. The official download page currently lists the 31 August 2026 build. For later builds, check the changelog first.

Sources

- AstroWizard official site - current build and workflow: <https://astrowizard.lukomatico.com/>
- AstroWizard changelog: <https://astrowizard.lukomatico.com/changelog.html>

- RC Astro - BlurXTerminator Technical Manual: <https://www.rc-astro.com/blurxterminator-technical-manual/>
- RC Astro - BlurXTerminator ML5 (28 Aug 2026): <https://www.rc-astro.com/blurxterminator-ml5/>
- RC Astro - Stand-alone tools / CLI: <https://www.rc-astro.com/stand-alone-rc-astro-tools/>
- Forsyth Astronomical Society - StackingWizard & AstroWizard overview and video list: <https://www.fas37.org/wp/astrophotography/>
- German Astrotreff discussion - current AstroWizard update notes: <https://www.astrotreff.de/forum/index.php?thread/309495-astrowizard-zum-nachbearbeiten-statt-siril-oder-pi/>
- Lukomatico YouTube channel: <https://www.youtube.com/@lukomatico/videos>