

FieldNotes: SyQon Studio and DeepPrism V2 (OSC)

Stack, flatten, calibrate and restore in SyQon Studio, or drive the same neural models from PixInsight. DeepPrism runs in two passes: Advanced while the data is linear, Ultra once it is stretched.

Rig context: ASI585MC Air on the FRA400 or 107PHQ via ASIAIR, plus the Seestar S30 Pro. SyQon Studio 1.1 public beta, DeepPrism V2, Parallax and Axiom V3, with PixInsight 1.9.x as the alternative host.

The workflow at a glance

STAGE 0SET UP	once	STAGE 3RESTORE LINEAR	neural pass 1
1	Install Studio and sign in Free account; let Required Items download models and catalogues	8	Deblur with Parallax Deblur strength 0.45 to 0.5; or BlurXTerminator in PixInsight
2	Add the PixInsight script SyQon-Hub repository, then Script > SyQon > Studio	9	DeepPrism Advanced Linear only; careful, keeps faint detail
STAGE 1STACK	Fusion Stack	STAGE 4STRETCH AND CLEAN	neural pass 2
3	Build the session Classic, filter RGB, one acquisition per night or rig, scientific defaults	10	Stretch Continuum Stretch in Studio, or my usual PixInsight stretch
4	Analyse and review subframes Slow step; sort by quality, check the tails, confirm Use	11	DeepPrism Ultra Stronger pass now faint signal is lifted; new layer
5	Analyse and Stack, drizzle Off Then read coverage, rejection map and manifest	STAGE 5JUDGE AND SAVE	
STAGE 2FLATTEN AND CALIBRATE	linear	12	Compare, then save the project Fit and 100%; SYQ or SYQPRJ before any export
6	Remove the gradient Deep Gradient or Gradient Removal, to a new layer	Walking noise: DeepPrism Ultra removes it on linear or stretched data. Max only when time allows.	
7	Image Solver, then SPCC Local ASTAP solve, Gaia XP colour calibration	No DeepPrism licence: Essential (free) does the linear pass. Axiom Mini and Parallax Nano are also free.	

The logic in one line: flatten and calibrate colour before any neural model touches the data, deblur before denoise, and split denoising so the gentle linear pass protects faint signal before the strong pass cleans the stretched image.

NON-NEGOTIABLE	YOUR CALL
- Essential and Advanced need linear input. Never run them after the stretch. - Gradient removal before SPCC, and a plate solve before SPCC. - Deblur before any denoise, never after. - Drizzle Off for the first integration. Turn it on only for real, well spread dithers. - Keep darks, bias and flats inside their own acquisition. Never borrow across nights. - Every neural step to a new layer, checked at 100%.	- Host: Studio end to end, or stack elsewhere and call the models from PixInsight. - Max versus Ultra: Max is far slower for a very small gain on normal data. - Deep Gradient versus classical Gradient Removal around large targets. - Prism application: 1.0 for full effect, lower to keep some grain. - Star separation with Axiom before or after the second Prism pass. - Drizzle 2x on dithered Seestar data; off on the FRA400 and 107PHQ.

Why this order

Every neural model and every colour tool reads the data the stage before it left behind. A gradient that is still in the image biases SPCC, because the calibration measures stars sitting on a sloped background. SPCC in Studio also needs a WCS solution to match stars to Gaia, so the solve comes first. Both of these happen while the data is linear, which is the only state in which colour calibration is valid.

Deconvolution comes before noise reduction for the same reason it does with BlurXTerminator: the deblur model is trained on real star profiles and real noise. Denoise first and it sees a smoothed image it was not built for.

Denoising is split in two. DeepPrism Advanced is the careful profile: it removes a large share of the noise on linear data while leaving faint structure alone. After the stretch that faint structure is lifted clear of the floor, so Ultra can clean harder with far less risk of taking dim stars and faint nebulosity with it. Running Ultra on linear data is allowed, but it is the more aggressive tool at the stage where faint signal is most vulnerable.

Check: confirmed by SyQon. The CLI model registry lists Prism Essential and Prism Deep Advanced as “Linear RGB or mono” input only, while Ultra and Max accept linear or non-linear data. The Advanced then Ultra split is my working order, not a SyQon rule; SyQon allows Ultra on linear data.

Check: confirmed by SyQon. Studio’s SPCC entry says to solve the image first with Image Solver, then calibrate linear RGB against local Gaia DR3 XP spectrophotometry.

Stage 0: Set up

Step 1. Install Studio and sign in. Studio is free. Sign in with a SyQon account to download; the installer comes from SyQon’s own delivery. On first launch let Required Items verify the account and download the models and catalogues it is entitled to. Anything already licensed appears inside Studio with nothing else to install. Internet is only needed for sign-in, licences and updates; processing and inference stay local.

Platform	Requirement	Status (Sept 2026)
macOS	Apple Silicon M1 or later, macOS 15 or later	Available, 1.1 public beta
Windows	10 22H2 or 11, x64	Available, 1.1 public beta
macOS Intel, Linux	x64	Due early October 2026
Memory	8 GB minimum, 16 GB general use, 32 GB or more for mosaics and drizzle	
Storage	12 GB free on a local SSD, plus cache and checkpoints	

Model	Job	Access
DeepPrism Essential	Denoise, linear only	Free
DeepPrism Advanced, Ultra, Max	Denoise and restoration	One licence covers all three
Parallax Nano	Correction, reduction, deblur	Free
Parallax	Same stages, Aesthetics or Classic family	Licensed
Axiom Mini	Star separation	Free
Axiom V3	Star separation	Licensed
Deep Gradient	Neural gradient removal, linear only	Free during beta

Check: confirmed by SyQon. Studio download page and developer guide, Sept 2026. Deep Gradient is already shipping, free during the beta.

Step 2. Add the PixInsight script. Studio must be installed and opened once before the script will work, because the script hands the job to Studio’s local engine rather than running the model itself. In PixInsight go to Resources, Updates, Manage Repositories, add https://raw.githubusercontent.com/SyQon-Hub/PixInsight_Scripts/main/, then Check for Updates, apply and restart. The script appears as Script, SyQon, Studio. Every model the account is licensed for sits in one dialog: denoise, star removal and

deconvolution, with the legacy Prism models kept for comparison. The blue triangle drags the current settings onto the workspace as a process icon, which is the quickest way to keep an Advanced preset and an Ultra preset side by side.

Check: confirmed from the repository. The SyQon-Hub updates file (25 Sept 2026) publishes “SyQon - Studio” and states it communicates with SyQon Studio to run any licensed model. The same file declares compatibility with PixInsight 1.8.0 to 1.9.3. On a newer build the updater may report no updates; install manually from the GitHub release zip through Script, Feature Scripts, Add.

Stage 1: Stack

Step 3. Build the session. Processing Tools, Calibrate, SyQon Fusion Stack, or New stack from the welcome screen. Choose Classic for one night on one rig, Multi-night / camera when nights or scopes differ. Set the filter to RGB for all my OSC data, including L-Ultimate and L-eNhance captures. Add lights, darks, flats, dark-flats and bias to the acquisition they belong to. Choose Use scientific preprocessing defaults. Set a new results folder name; Studio will not overwrite an existing one.

Frame	Belongs to	Note
Lights	Filter and acquisition	Same Bayer pattern and geometry throughout
Darks	Acquisition	Match exposure, gain, offset, temperature
Flats, dark-flats	Filter and acquisition	Dark-flats preferred for raw flats
Bias	Acquisition	Optional; never subtract twice

Step 4. Analyse and review subframes. Analyse subframes measures FWHM, eccentricity, noise, background, star count and relative quality, and it also registers the frames, so it tells me which ones fail to register before I commit. That makes it slow; expect a long wait on a full night. In Review, sort by quality, inspect the worst and best tails, change the plot to look for a separate population (cloud, moon, focus drift), preview suspects and override Use only when the frame itself justifies it.

Step 5. Analyse and Stack with drizzle Off. Validate the session, clear every mismatch, then Analyse and Stack. When it finishes, open the master with Display Stretch on (the stored pixels stay linear), then check the coverage map at the edges and the rejection map for anything shaped like the target.

Rig	Image scale	Drizzle
FRA400 native	1.50"/px	Off
FRA400 reduced	2.14"/px	Off; 2x only with good dithering
107PHQ	0.80"/px	Off
Seestar S30 Pro	3.99"/px	2x is worth trying on dithered data

Check: confirmed by SyQon. The Fusion Stack manual says to leave drizzle Off for the first integration unless the capture has genuine, well distributed sub-pixel dithering, and that a dark and light temperature difference above 2 °C is rejected.

Stage 2: Flatten and calibrate

Step 6. Remove the gradient. Studio offers Deep Gradient, a neural background model for linear images, and classical Gradient Removal with automatic ABE or sampled DBE. On a wide field with a Shinfield light-pollution slope I start with Deep Gradient; around a large target that fills the frame I compare it against DBE and keep whichever leaves the faint outer signal intact. Apply to a new layer and inspect the extracted background.

Check: confirmed by SyQon. Deep Gradient is linear only and SyQon’s own guide says to compare it against classical Gradient Removal when preservation near large targets matters.

Step 7. Image Solver, then SPCC. Image Solver runs ASTAP locally; give it the focal length and pixel size from the rig table above to make it fast. Then Spectrophotometric Color Calibration, check the matched stars, apply, and inspect with a linked stretch. If the solve fails, Color Calibration from image statistics is the fallback, not a substitute.

Stage 3: Restore linear

Step 8. Deblur with Parallax. Parallax runs up to three stages in a fixed order: correction, reduction, deblur. For this step I only

want deblur. Deblur strength runs 0 to 1, default 0.5; I start at 0.45. Leave star reduction for later, after the stretch, when I can judge star size by eye. In PixInsight, BlurXTerminator does the same job at this point in the chain if I prefer it.

Check: confirmed by SyQon. Developer guide: stages always run correction, reduction, deblur; reduction level 0 to 10, default 5; deblur strength 0 to 1, default 0.5. At least one stage must be enabled.

Step 9. DeepPrism Advanced. Run Advanced on the linear image. It is deliberately the careful profile, so it will look less smooth than a maximum NoiseXTerminator pass; that is the point. The aim here is to take out the bulk of the noise without touching faint stars or dim nebulosity. Use the movable preview region at native scale, apply to a new layer, compare at 100%.

Profile	Input	Use
Essential	Linear only	Free linear pass when Advanced is not licensed
Advanced	Linear only	Pass 1, preserves faint detail
Ultra	Linear or stretched	Pass 2, and the walking-noise tool
Max	Linear or stretched	Extreme noise, many times slower than Ultra

Stage 4: Stretch and clean

Step 10. Stretch. In Studio, SyQon Continuum Stretch sets black, midtone and white points iteratively; Display Stretch can be baked in as a new layer. In PixInsight I use my usual stretch. Star separation with Axiom fits here if I am processing stars and background separately.

Step 11. DeepPrism Ultra. Now the stronger pass. With faint signal already lifted, Ultra cleans the background and midtones hard with little risk to real structure. It is fast enough for full-resolution work. Apply to a new layer. If faint texture turns too uniform, lower the application or mask the result rather than skipping the pass.

Check: confirmed by SyQon. Ultra is described as the everyday flagship, with native plus stretched awareness and walking-noise suppression. Max uses a deeper contextual field for the hardest data at workstation-grade processing time. On a normal dataset I do not wait for Max.

Walking noise. Diagonal bands from undithered or drifting data are not random noise and ordinary denoisers only weaken them. DeepPrism Ultra is built to remove that pattern, on linear or stretched data. This is the one case where Prism earns its place even alongside NoiseXTerminator, and it rescues old undithered data. Dither going forward regardless.

Check: confirmed by SyQon. SyQon states DeepPrism V2 is purpose-built to remove walking noise, with Ultra conditioned against directional noise, drift and imperfect rejection.

Stage 5: Judge and save

Step 12. Compare, then save the project. Compare switches or splits source and result; judge every neural step at Fit for the whole image and at 100% for stars and the background floor. Save an editable SYQ (self-contained) or SYQPRJ (linked, keep the .syqprj.assets folder beside it) before exporting. Export FITS or XISF for linear data, TIFF for further work, JPEG or PNG with embedded sRGB for sharing.

Troubleshooting

Symptom	Likely cause	Fix
Analyse subframes takes a very long time	It registers every frame as well as measuring it	Expected; run it on a local SSD and leave it
Calibration mismatch reported	Darks from another night, gain or temperature	Split into a separate acquisition; do not bypass
Master opens nearly black	Linear data	Enable Display Stretch; leave the master alone
Holes or patchy noise after drizzle	Too few dither positions	Drizzle Off or lower scale; check Coverage
Faint stars vanish after denoise on linear	Ultra or Max used for pass 1	Advanced for the linear pass, Ultra after

stretch

Blotchy pattern around a galaxy on dark sky	Legacy Prism model selected	Use a V2 profile; legacy is for comparison only
Essential or Advanced refuses a stretched image	Linear-only models	Run them before the stretch, or use Ultra
SPCC finds no match	Image not solved	Run Image Solver first
PixInsight updater shows no SyQon update	Repository lists PixInsight up to 1.9.3	Install from the GitHub zip via Feature Scripts
Script runs nothing	Studio not installed, opened or signed in	Open Studio once and let Required Items finish

Sources checked

- SyQon Studio product and download page (syqon.eu/syqonstudio): version 1.1 public beta, platforms, system requirements, bundled models, local inference.
- Learn SyQon Studio (syqon.eu/learn-studio): Fusion Stack manual (session setup, calibration scope, subframe review, drizzle, results), and the function entries for DeepPrism V2, Parallax, Axiom, Deep Gradient, Image Solver, SPCC, Continuum Stretch, Compare, SYQ and SYQPRJ projects.
- SyQon Developer guide (syqon.eu/develop): CLI model registry and input domains, Parallax stage order and parameter ranges, Prism application blend 0 to 1.
- DeepPrism V2 page (syqon.eu/prism): profile descriptions, Ultra and Max, walking noise.
- SyQon-Hub PixInsight_Scripts repository updates file, release of 25 Sept 2026: script name, purpose and PixInsight version range.
- Not confirmed from SyQon documentation: the Studio slider name for Prism strength (the CLI calls it application), and whether the PixInsight script requires any extra path setting beyond an installed, signed-in Studio.