

ASKAR SQA55 264mm f/4.8 Super Quintuplet Astrograph

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The Askar SQA55 is a versatile Petzval refractor that incorporates five optical elements for superior image correction. Uniquely, it features a variable aperture—a rarity among refractors. With an adjustable aperture ranging from f/4.8 to f/22, the SQA55 is ideal for both nighttime astrophotography and daytime photography, functioning seamlessly as a manual focus camera lens.

The Askar SQA55 combines the simplicity of a lens with the power of a telescope. Its Petzval design eliminates backspacing hassles and the need for a field flattener. It features ergonomic touches like dual focus locks, quick-release hardware, and multiple filter threads. Compact and travel-ready, the SQA55 redefines user-friendly performance (Figure 1 to 8).



Figure 1 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph.

Main Specs:

- Aperture: 55mm
- Focal Length: 264mm
- Focal Ratio: f/4.8 (adjustable up to f/22)
- Optical Design: Quintuplet Petzval APO (includes SD and ED glass elements)
- Closest Focus Distance: 5m

- Focusing Mode: Manual focus
- Filter Diameter: M67 (front) and M48 (rear)
- Total Length: 316mm (including dew shield), 244mm (without dew shield)
- Weight: 1.84kg (OTA), 2.18kg (including handle & dovetail plate)
- Rear-End Connection Distance: Supports 50-60mm range (recommended 55mm)
- Additional Features: Built-in filter thread, quick-release base, reversible lens hood, dual-speed focuser, and compatibility with autofocus kits



Figure 2 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph.

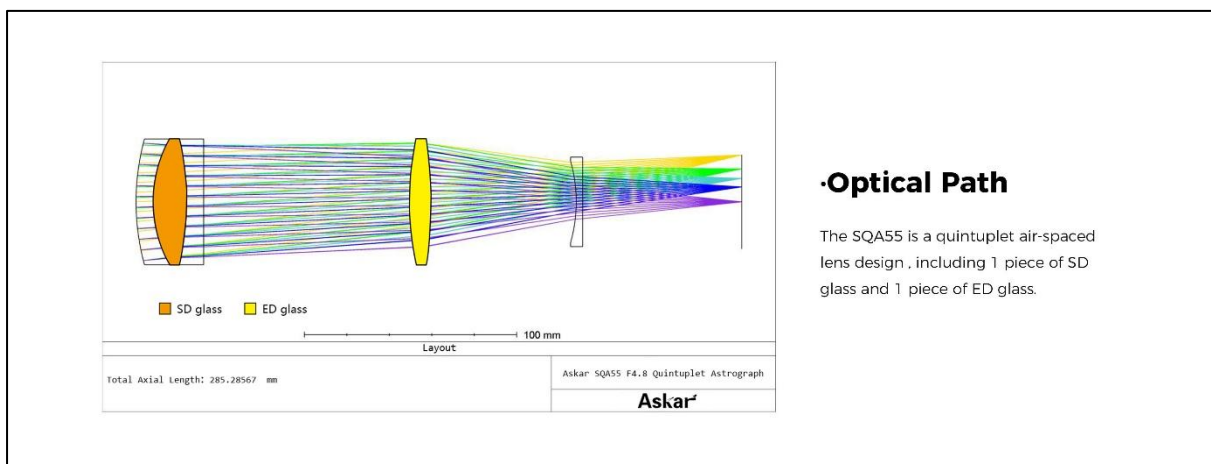


Figure 3 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph.

•MTF Chart

The modulation transfer function (MTF) is a quantitative description of the clarity of the image (including resolution and contrast) of an optical lens. The vertical axis is the MTF value, and the horizontal axis is the distance from the center of the frame to the edge. In the two sets of curves corresponding to low and high frequencies, even at the edge of the full frame, the sagittal lines and sagittal lines distance of the SQA55 lens remain very small, and at the low frequency of 10LP/mm, it is higher than 0.9 overall, showing the high resolution and sharpness of the SQA55.

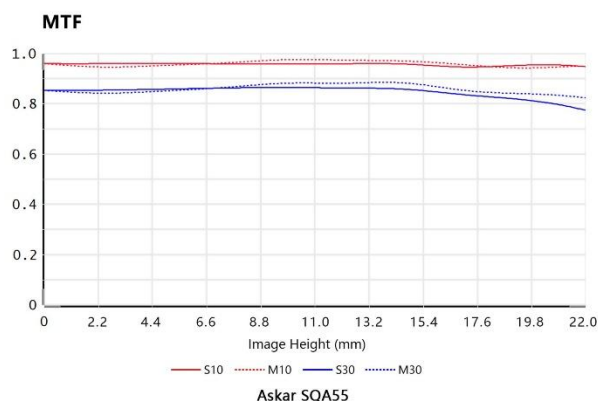
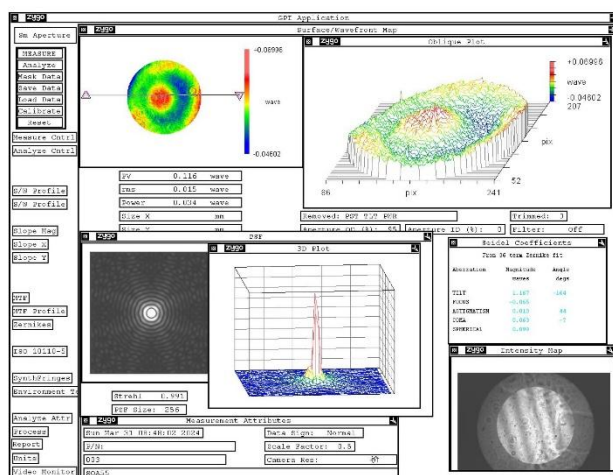


Figure 4 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph.



•ZYGO Objective Chart

The ZYGO interferometer is internationally recognized as a more authoritative instrument for testing optical lens quality, and the SQA55 test results show great star quality.

Figure 5 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph.

•Spot Diagram

The imaging quality of the optical system can be evaluated by analyzing the distribution of the spots on the spot diagram.

The SQA55 has a central star point with an RMS radius of less than $2.5 \mu m$, and the star point at the corner is less than $4 \mu m$, showing fine star point.

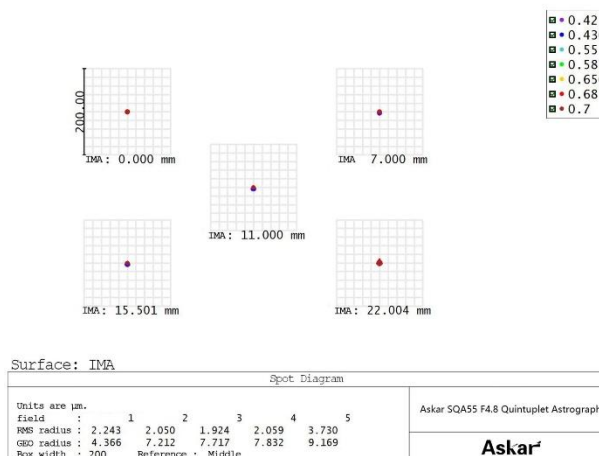


Figure 6 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph.



Figure 7 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph. Pedro RÉ (2025).



Figure 8 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph. Pedro RÉ (2025).



Figure 9 – Askar SQA55 264mm f/4.8 Super Quintuplet Astrograph. LEO TRIPLET (M65, M66, NGC3628), 85Min (17x5Min), ASKAR SQA55, Antlia Triband RGB Ultra filter, ZWO ASI533MC, ASI120MM Mini (Guide), Paramount ME. Aberration Inspector (PixInsight). Pedro RÉ (2025).

Optical Correction Highlights

- ***Five-element lens system:*** This design includes two Super Low Dispersion (SD) glass elements, which significantly reduce chromatic aberration and ensure accurate color reproduction.
- ***Flat field imaging:*** The built-in Petzval configuration eliminates the need for external field flatteners and backfocus calculations. This means sharp stars from center to edge—perfect for full-frame sensors.
- ***Minimal distortion:*** The SQA scopes correct for common issues like coma, field curvature, and vignetting, delivering clean, distortion-free images across the entire field of view.

- **Star sharpness:** Central stars maintain an RMS radius of $<1.7\ \mu\text{m}$, with corners at $<2.2\ \mu\text{m}$, which is exceptional for astrophotography.
- **Illumination:** The SQA106, for example, offers 90% illumination at 44mm and supports a 55mm corrected image circle, making it ideal for full-frame and even medium-format cameras.

The Askar SQA series offers high-performance optics in a user-friendly design, making it an attractive choice for astrophotographers seeking simplicity without compromising image quality. Its integrated features eliminate the need for additional accessories or complex setup, streamlining the imaging process. Whether selecting between models or pairing with a specific camera, the SQA line provides versatile solutions for both novice and experienced users (Figure 9).

Pros and Cons

✓ Pros

- **Flat Field Imaging:** Petzval design delivers sharp stars across the entire frame—no need for a field flattener or back focus calculations.
- **Full-Frame Friendly:** M54 thread and wide optical path reduce vignetting, making it ideal for full-frame sensors.
- **Compact & Travel-Ready:** Weighs just over 2kg and includes a military-grade carrying case—perfect for mobile setups.
- **Versatile Aperture:** Adjustable from f/4.8 to f/22, allowing use for both astrophotography and daytime terrestrial imaging.
- **Premium Build:** Machined aluminium body, integrated rotator, and dual ring mounting system feel solid and professional.
- **No Coma or Aberration:** Round stars with minimal distortion, even at the edges.

✗ Cons

- **Helical Focuser Limitations:** Less precise than dual-speed rack-and-pinion focusers, especially for autofocus.
- **Dew Shield & Lens Cap Issues:** The lens cap can be tricky to attach when the dew shield is in place, risking scratches.
- **Guide Scope Flex:** Mounting a guide scope on the top handle may introduce flex, affect guiding accuracy unless carefully secured.
- **CAA Locking Difficulty:** The Camera Angle Adjuster (CAA) locking screw is hard to adjust; it can be replaced with a flat head screw.

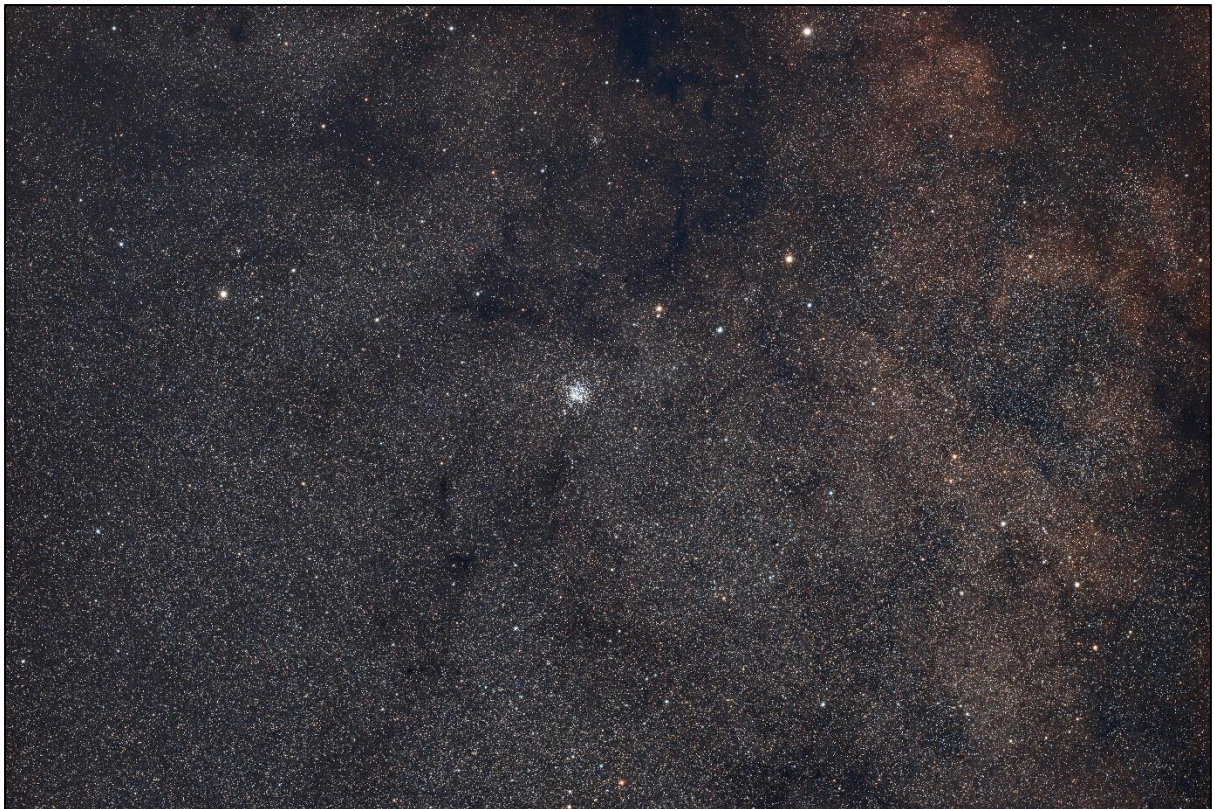


Figure 10- M011, 85Min (17x5Min), ASKAR SQA55, Player One Poseidon-C Pro, Antlia Triband Filter, Median, Paramount ME. Pedro RÉ (2005).

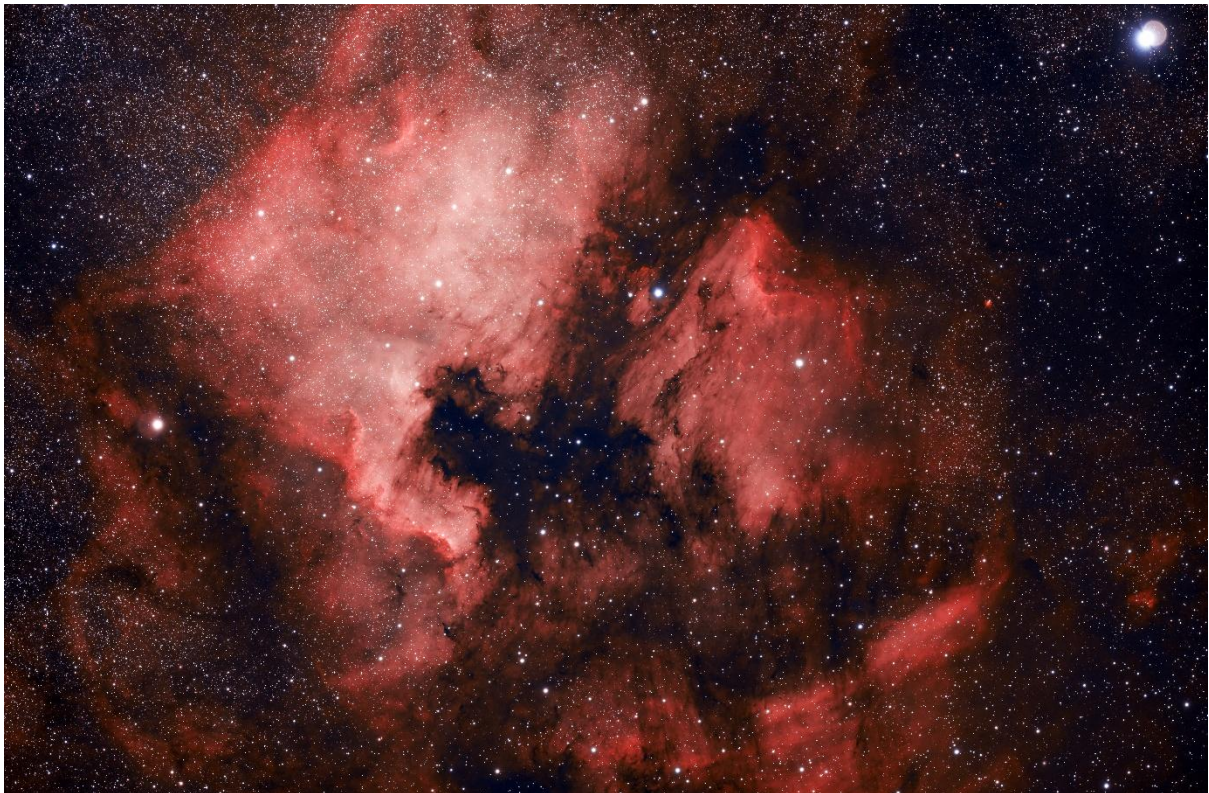


Figure 11 - NGC7000, 450Min (90x5Min), ASKAR SQA55 Player One Poseidon-C Pro, Optolong L-eNhance filter, Median, Paramount ME. Pedro RÉ (2005).



Figure 12- VEIL NEBULA, 145Min (29x5Min), ASKAR SQA55 Player One Poseidon-C Pro, Optolong L-eNhance filter, Median, Paramount ME. Pedro RÉ (2025).

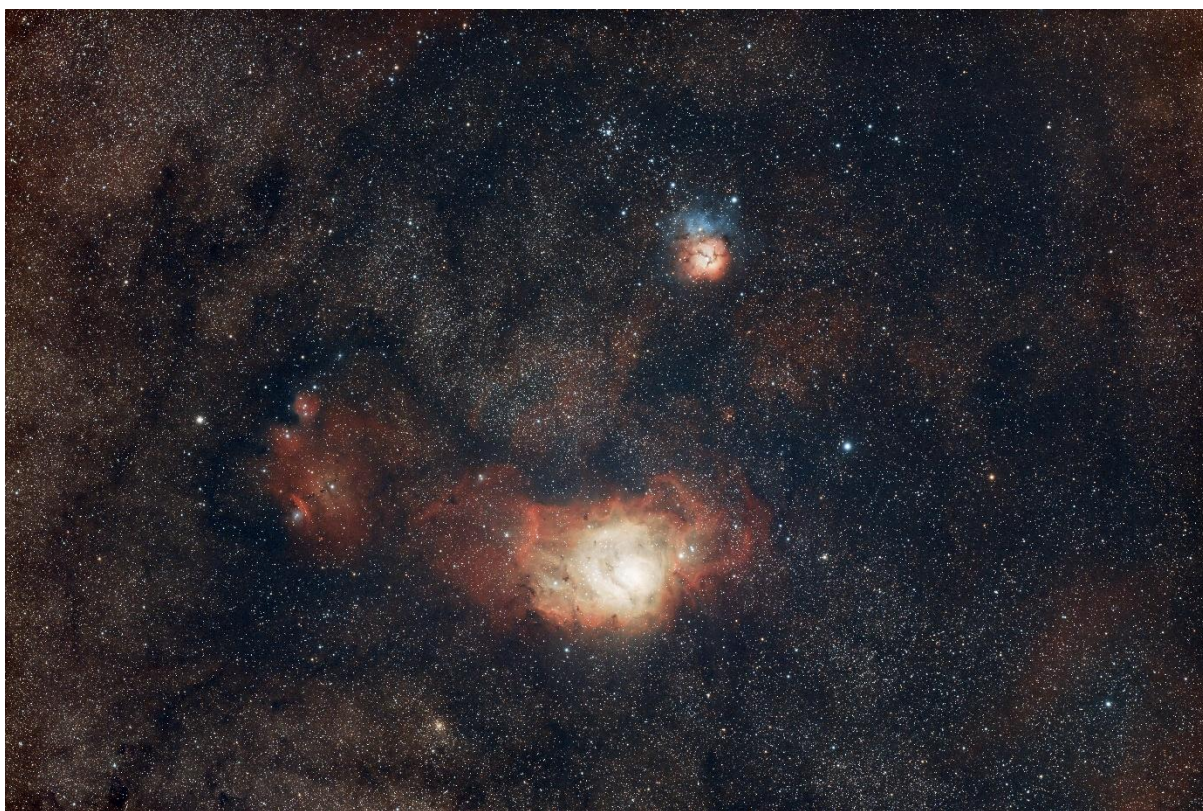


Figure 13- M008/M020, 80Min (16x5Min), ASKAR SQA55, Player One Poseidon-C Pro, Antlia Triband Filter, Median, Paramount ME. Pedro RÉ (2025).

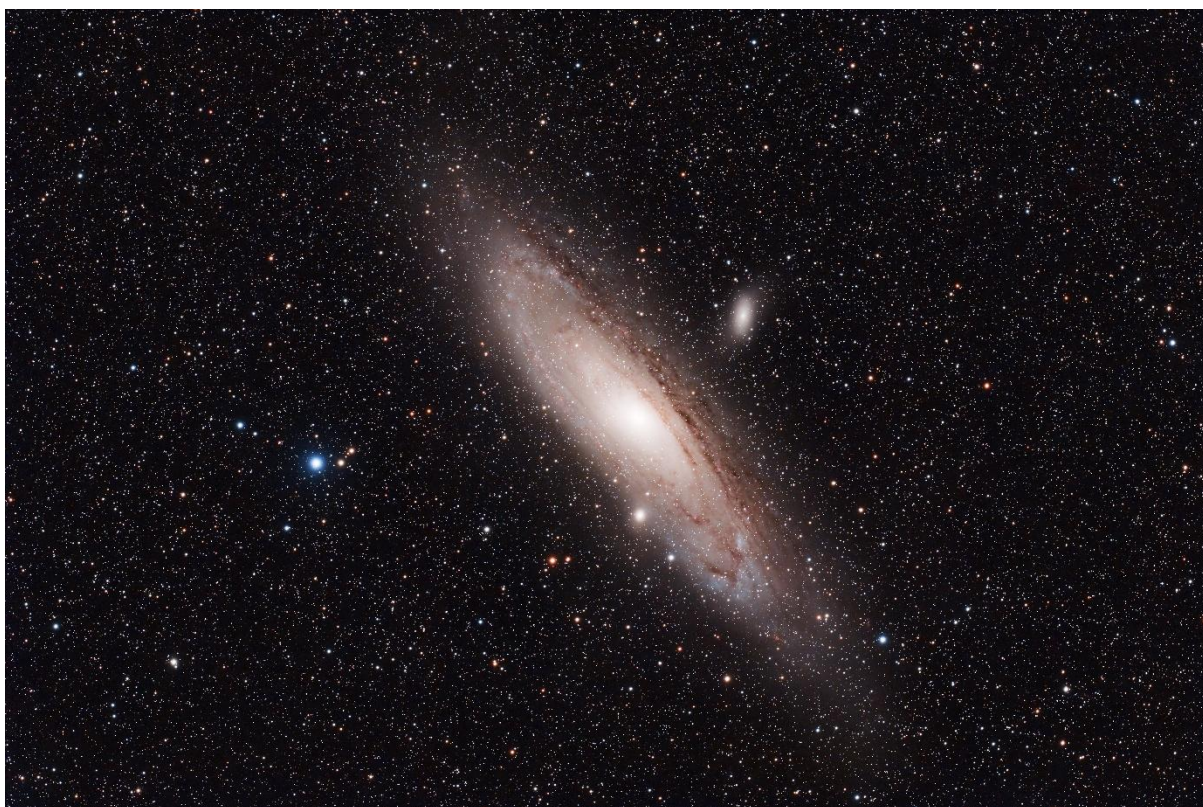


Figure 14- M031/M032, 320Min (64x5Min), ASKAR SQA55, Player One Poseidon-C Pro, Antlia Triband Filter, Median, Paramount ME. Pedro RÉ.

References:

- <https://www.sharpstar-optics.com/> Askar website
- <https://astrobackyard.com/askar-sqa55-review/> Review
- <https://www.highpointscientific.com/astronomy-hub/post/astro-photography-guides/askar-sqa55-quintuplet-refractor-review> Review
- https://pedroreastrophotography.com/askar_sqa55.html Pedro RÉ's website

Youtube Videos (Pedro RÉ):

<https://youtu.be/UUjy8xjQNDs>

ASKAR SQA55 264mm f/4.8 Super Quintuplet Astrograph | Pedro RE'
Player One Poseidon-C Pro | Paramount ME (M31/M16/M17)

<https://youtu.be/KKdsObRCMRw>

ASKAR SQA55 264mm f/4.8 Super Quintuplet Astrograph

<https://youtu.be/tXuo038yXQk>

ASKAR SQA55 264mm f/4.8 Super Quintuplet Astrograph | Pedro RE'
Player One Poseidon-C Pro | Paramount ME

<https://youtu.be/75FL0a0-6HI>

ASKAR SQA55 264mm f/4.8 Super Quintuplet Astrograph | Pedro RE'
Player One Poseidon-C Pro | Paramount ME | (NGC7000)