

Wide-Field CMOS imaging with a Sky Watcher Star Adventurer Gti and a ZWO ASIAIR Mini

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The **ASIAIR Mini** (Figure 1 and 2) is ZWO's most compact astrophotography controller to date—a wireless, all-in-one smart device that orchestrates your entire imaging setup from a single app. It's designed to simplify and streamline the astrophotography process, especially for mobile or minimalist rigs (e.g. Sky Watcher Star Adventurer GTi) (Figure 3).

Despite its small size, the ASIAIR Mini offers nearly all the core features of its larger siblings, including:

- **Camera and Mount Control:** Operates ZWO cameras, auto guiders, filter wheels, and motorized focusers, plus most GoTo mounts.
- **Wireless Operation:** Connects via dual-band Wi-Fi, allowing full control from your smartphone or tablet.
- **Automated Imaging:** Handles polar alignment, plate solving, autoguiding, live stacking, and autorun sequences.
- **Power Distribution:** Includes four 12V DC outputs to power accessories directly.
- **User-Friendly Interface:** The ASIAIR app (iOS/Android) offers intuitive control with real-time previews and adjustments.

It's particularly well-suited for users who value **portability, simplicity, and precision**—making it a strong candidate for solar imaging setups or remote field work.

The ASIAIR Mini has a few limitations as compared to the ASIAIR Pro or ASIAIR Plus, namely:

Hardware Limitations

- **No USB 3.0 Ports** All four USB ports are USB 2.0, which can slow down data transfer—especially with high-resolution cameras or planetary video capture.
- **No Ethernet Port** Unlike the ASIAIR Plus, the Mini lacks wired network connectivity. You're reliant on Wi-Fi, which may be less stable in noisy environments.
- **No Physical Power Switch** It powers on automatically when connected to 12V DC. Shutdown must be done via software.
- **Limited Power Control** The four 12V outputs are always on at 100%—no individual control or monitoring like on the ASIAIR Plus.

Connectivity & Compatibility Constraints

- **Wi-Fi Only** While the external antenna improves range, interference or dense environments can still affect performance. No support for travel routers via Ethernet.

- **Device Support** Only supports ZWO cameras and accessories. DSLR/mirrorless compatibility is limited, and mount support must be verified per model.

Software & Functional Limitations

- **No Video Mode Optimization** May struggle with planetary or lunar video stacking depending on the camera used.
- **Basic Documentation** Initial setup can be confusing—*e.g.*, password location is not clearly explained in the manual.
- **No Telescope Profiles** You can't save multiple telescope configurations for quick swapping between setups



Figure 1 – ZWO ASI Air Pro (left) and ASI Air Mini (right).



Figure 2 – *What's in the Box* – The ZWO ASI AIR Mini comes with four DC power cables: two 0.5-meter and two 1-meter cables, each with 2.1mm barrel plugs, the type commonly used for 12-volt astronomy gear. A 1.5-meter-long male-to-female extension cable is also supplied.

The **ZWO ASI AIR Mini** and the **Sky-Watcher Star Adventurer GTi** can work together quite effectively, especially for wide-field imaging or solar setups where portability and precision matter.



Figure 3 – Sky Watcher Star Adventurer Gti, ASI AIR Mini, Samyang 135mm f/2, ZWO ASI2600MC Duo.
Pedro RÉ (2025).

The **Sky-Watcher Star Adventurer GTi** is a significant evolution of the classic **Star Adventurer**, blending portability with full GoTo functionality. The SW Star Adventurer Gti is designed for **portable deep-sky imaging**, offering advanced features in a compact form factor.

Key Features

- **GoTo Mount:** Full computerized GoTo capability via SynScan app (iOS/Android) or hand controller.
- **Wi-Fi Control:** Integrated Wi-Fi for wireless operation using mobile devices.
- **Tracking Rates:** Sidereal, Solar, Lunar, and custom speeds.

- **Payload Capacity:** Up to **5 kg**, suitable for DSLR/mirrorless cameras with telephoto lenses or small refractors.
- **Integrated Polar Scope:** Illuminated and built into the body for precise polar alignment.
- **Equatorial Wedge:** Built-in with altitude and azimuth adjustments.
- **Autoguider Port:** ST-4 compatible for guiding corrections.
- **Power Options:**
 - Internal battery compartment (8× AA batteries).
 - External 12V DC input for longer sessions.

Connectivity & Control

- **USB Interface:** For DSLR shutter control and firmware updates.
- **SynScan Pro App:** Enables slewing, tracking, and object database access.
- **Vixen-Style Dovetail Clamp:** Compatible with most small telescopes and mounting rails.
- **Tripod Compatibility:** Standard 3/8" thread for universal tripod mounting.

Imaging Applications

- Wide-field Milky Way panoramas
- Long-exposure nebula and galaxy imaging
- Solar/lunar tracking with filters or spectroheliographs
- Time-lapse astrophotography

Sky-Watcher Star Adventurer GTi + ASIAIR Mini: Integration Overview

How They Work Together

- **Mount Control:** The ASIAIR Mini can control the GTi via USB (EQMod cable or SynScan USB), replacing the hand controller entirely.
- **GoTo & Plate Solving:** ASIAIR handles slewing, plate solving, and framing.
- **Autoguiding:** Connect a ZWO guide camera and guidescope to the Mini for precise tracking and dithering.
- **Camera Integration:** DSLR, mirrorless, or ZWO astro cameras can be controlled directly from the ASIAIR app.
- **Power Distribution:** The Mini can power accessories, but not the GTi mount itself—Sky-Watcher warns against this due to current draw risks.



Figure 4 – ASI AIR App. Operates ZWO cameras, auto guiders, filter wheels, and motorized focusers, plus most GoTo mounts.



Figure 5 - Samyang 135mm F/2 (@F/2.8), Sky-Watcher Star Adventurer GTi, ZWO ASI AIR Mini, ZWO ASI294MC, ASI120MM Mini (Guide). Pedro RÉ (2025).



Figure 6 - ASI AIR App. M45.

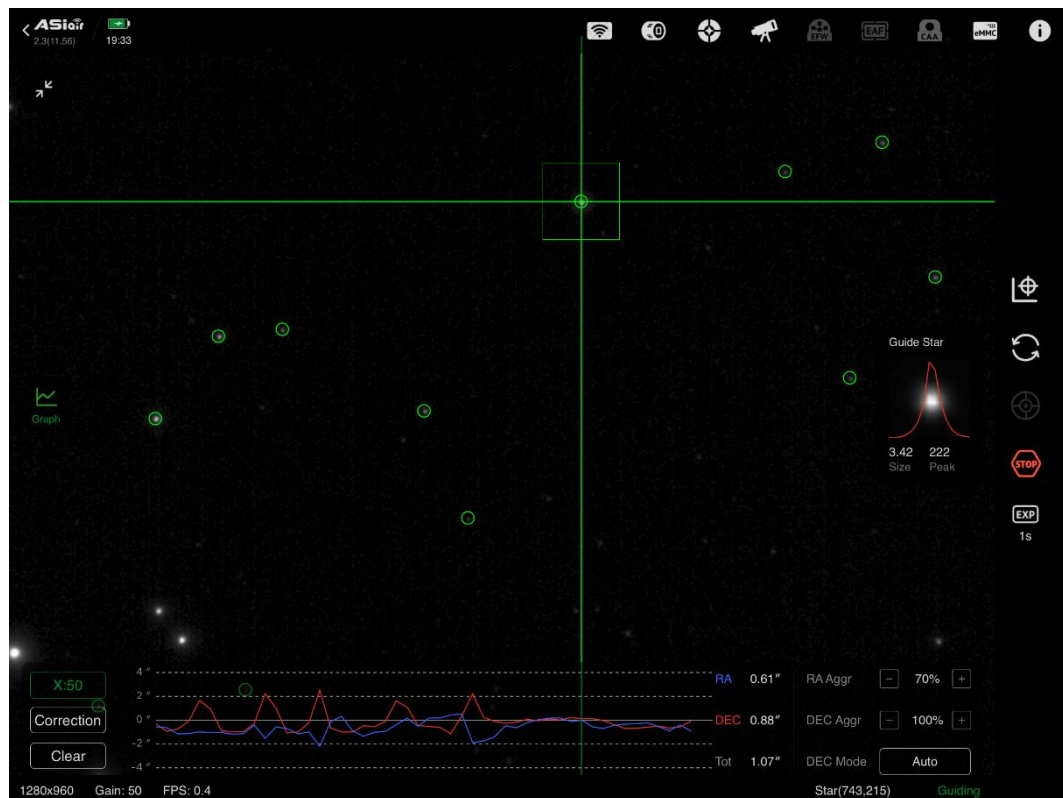


Figure 7 - ASI AIR App. Autoguiding PHD2.



Figure 8 - M045, 230Min (46x5Min), Samyang 135mm F/2 (@F/2.8), Sky-Watcher Star Adventurer GTi, ZWO ASIAIR Mini, ZWO ASI294MC, ASI120MM Mini (Guide), Antlia Triband RGB Ultra filter. Pedro RÉ (2025).

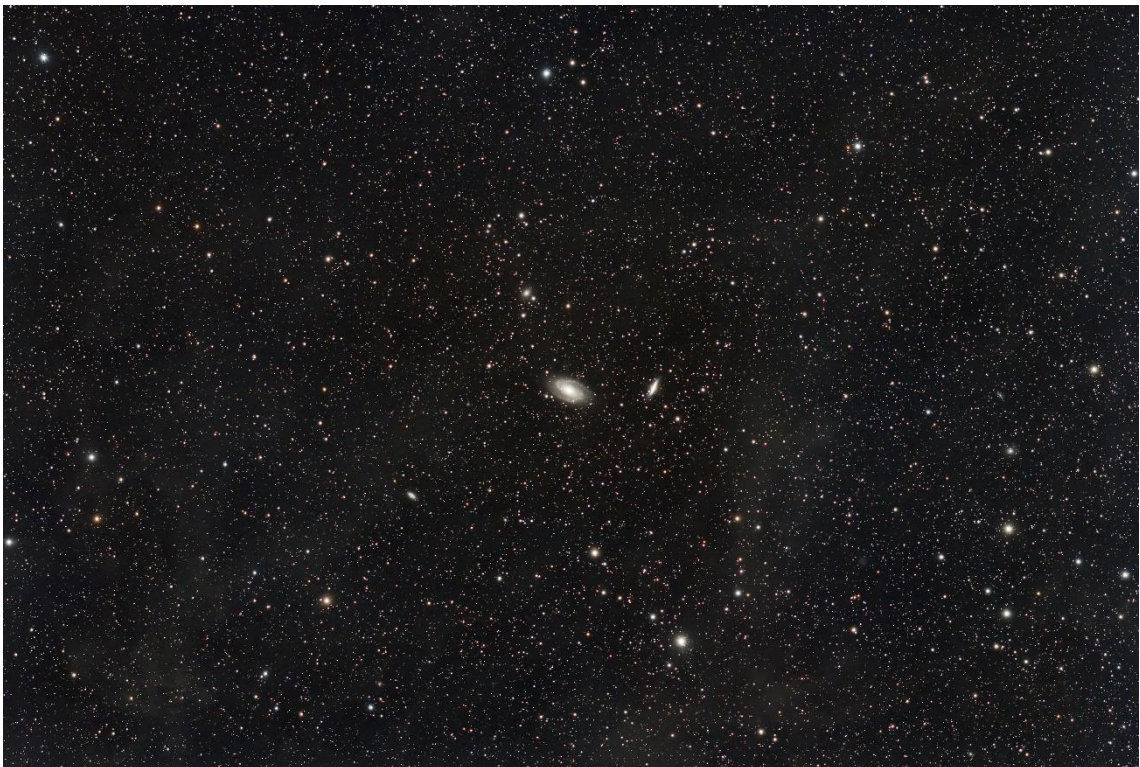


Figure 9 - M081/M082, 125Min (25x5Min), Samyang 135mm F/2 (@F/2.8), Sky-Watcher Star Adventurer GTi, ZWO ASIAIR Mini, ZWO ASI294MC, ASI120MM Mini (Guide), Antlia Triband RGB Ultra filter. Pedro RÉ (2025).



Figure 10 - M042, 200Min (40x5Min), Samyang 135mm F/2 (@F/2.8), Sky-Watcher Star Adventurer GTi, ZWO ASI AIR Mini, ZWO ASI294MC, ASI120MM Mini (Guide), Antlia Triband RGB Ultra filter.
Pedro RÉ (2025).

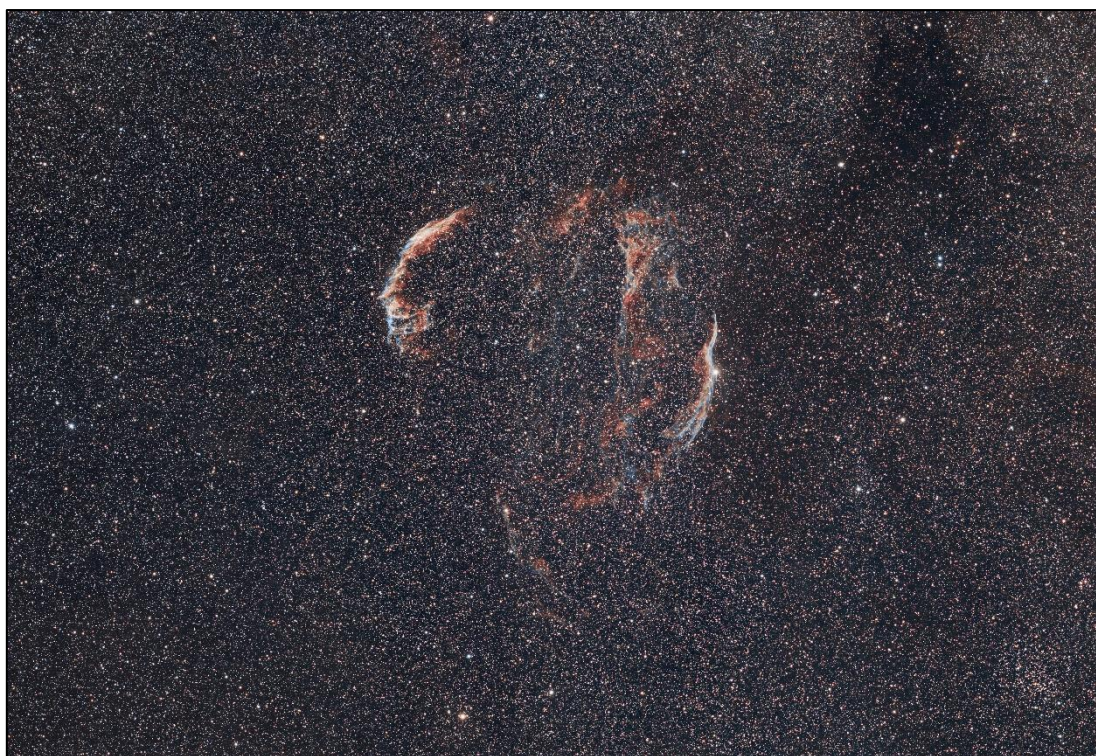


Figure 11 - NGC6960, 315Min (63x5Min), Samyang 135mm F/2 (@F/2.8), Sky-Watcher Star Adventurer GTi, ZWO ASI AIR Mini, ZWO ASI294MC, ASI120MM Mini (Guide), Altair QuadBand CMOS Optimised Filter- Pedro RÉ (2025).

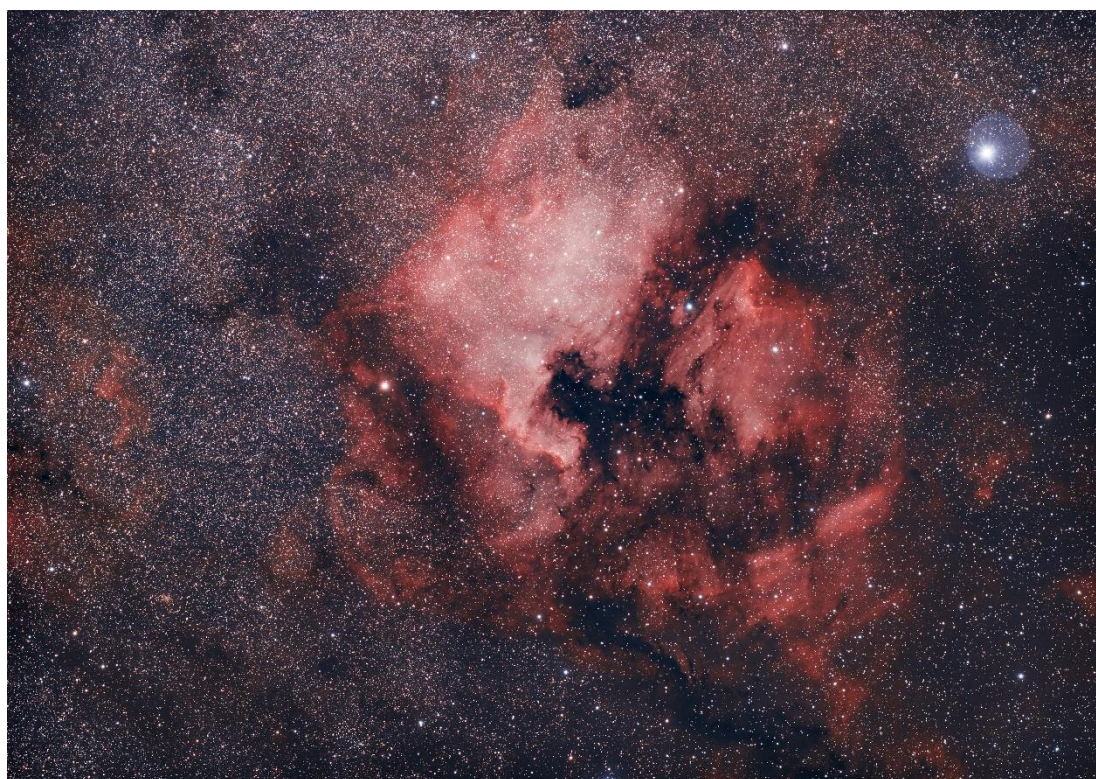


Figure 12 - NGC700/IC5070, 500Min (100x5Min), Samyang 135mm F/2 (@F/2.8), Sky-Watcher Star Adventurer GTi, ZWO ASI AIR Mini, ZWO ASI294MC, ASI120MM Mini (Guide), Altair QuadBand CMOS Optimised Filter

References

- <https://www.zwoastro.com/> ZWO Web site
- <https://skywatcher.com/> Sky Watcher Web site
- https://pedroastrophotography.com/samyang_135_f2_widefield.html Pedro RÉ's Web site

Youtube Videos (Pedro RÉ):

https://youtu.be/L7_B79svj7o

WIDEFIELD CMOS IMAGING | Pedro RE'

SAMYANG 135mm F/2.0 | ZWO ASI 294MC PRO | SW Star Adventurer Gti | ASI AIR mini

Finding Chart (PixInsight)

<https://youtu.be/hcmza7Hs9MQ>

WIDEFIELD CMOS IMAGING | Pedro RE'

SAMYANG 135mm F/2.0 | ZWO ASI 294MC PRO | SW Star Adventurer Gti | ASI AIR mini

(NGC7000/NGC6960)

https://youtu.be/LVF_CL1xptU

WIDEFIELD CMOS IMAGING | Pedro RE'

SAMYANG 135mm F/2.0 | ZWO ASI 294MC PRO | SW Star Adventurer GTi | ASI AIR Mini

<https://youtu.be/-gBtUZ5XvdI>

WIDEFIELD CMOS IMAGING | Pedro RE' (20250117/31)

SAMYANG 135mm F/2.0 | ZWO ASI 294MC PRO | SW Star Adventurer GTi | ASI AIR Mini

<https://youtu.be/p0eUSOOo-mw>

WIDEFIELD CMOS IMAGING | Pedro RE' (20250117)

SAMYANG 135mm F/2.0 | ZWO ASI 294MC PRO | SW Star Adventurer GTi | ASI AIR Mini