Telescope Mounted Computing for Astro Imaging

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” Astrophotography is a serious mental disease”

Plato (428 - 347 BC)

Telescope Mounted Computing for Astro Imaging

- Why Telescope Mounted Computing ?
- Pro's and Con's
- System 1 – Primalucelabs Eagle 3
- System 2 – ZWO Astronomy ASIAIR
- Alternatives?

Why Telescope Mount a PC?

- Modern computing has shrunk to a size that can easily be telescope mounted with low impact and has reached a consumer price point that is 'affordable'
- Astro imaging has rapidly developed over the past years with new cooled CMOS cameras becoming widely available – these invariably need controlled through software and can require significant amounts of fast data storage
- A modern astro imaging rig can contain multiple camera USB connections, auto focusers, filter wheel, dew control straps, PC connection to the mount – cable management is becoming a nightmare!
- A number of vendors now offer telescope mounted computing that can be easily integrated into an astro imaging rig and these are now starting to become more popular

Pro's and Con's

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- Automation – using programs like Sequence Generator Pro
- Better cable management
- Integrated unit – quickly able to set up and tear down with less hassle
- Image capture becomes PC'less (at least not requiring a permanent connection)
- Ability to integrate further than a normal PC – environmental control
- Remote control capability

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- Can become complex – you need to be comfortable with technology
- Cost (for higher end systems)

System 1 – Primalucelabs Eagle

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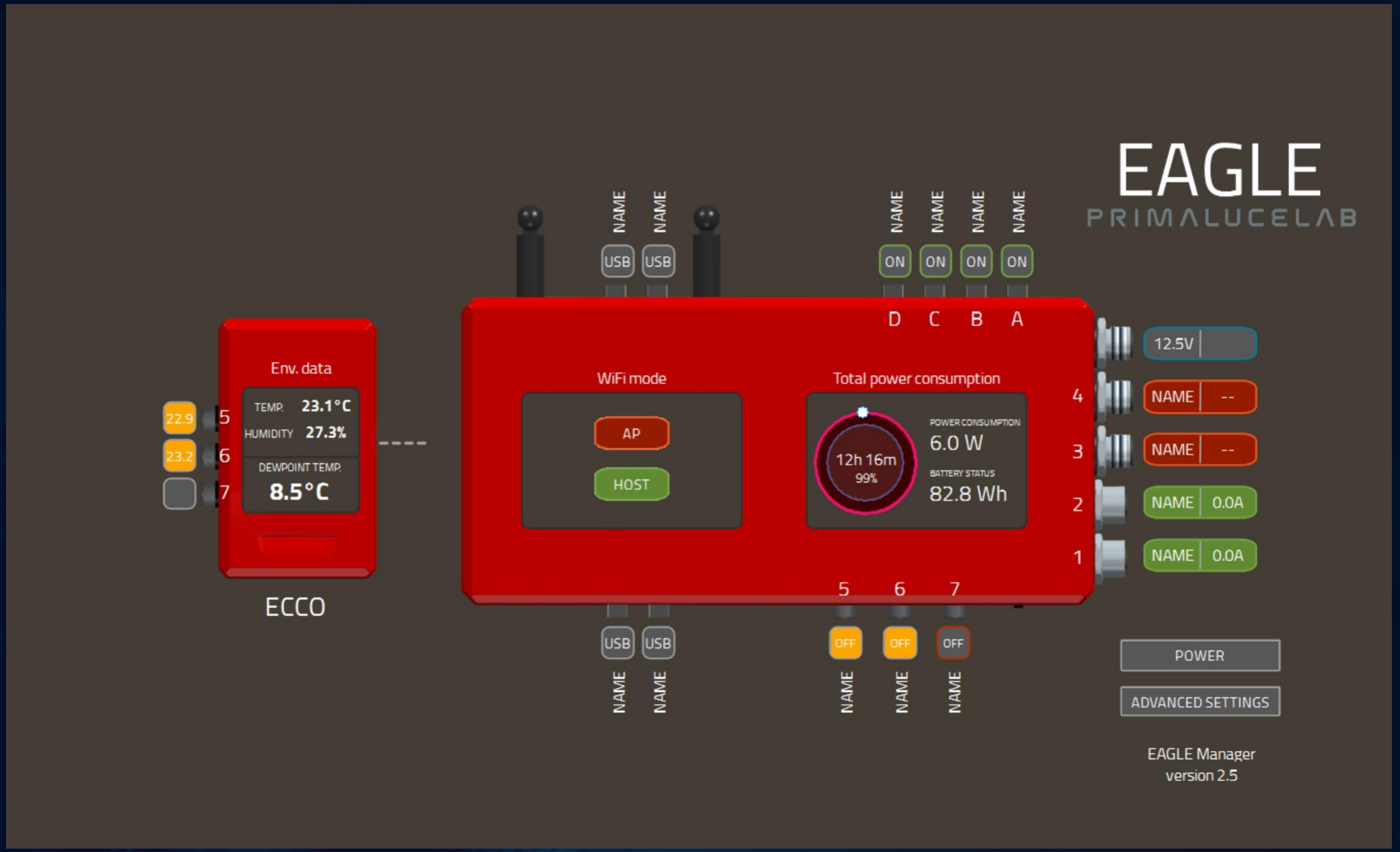
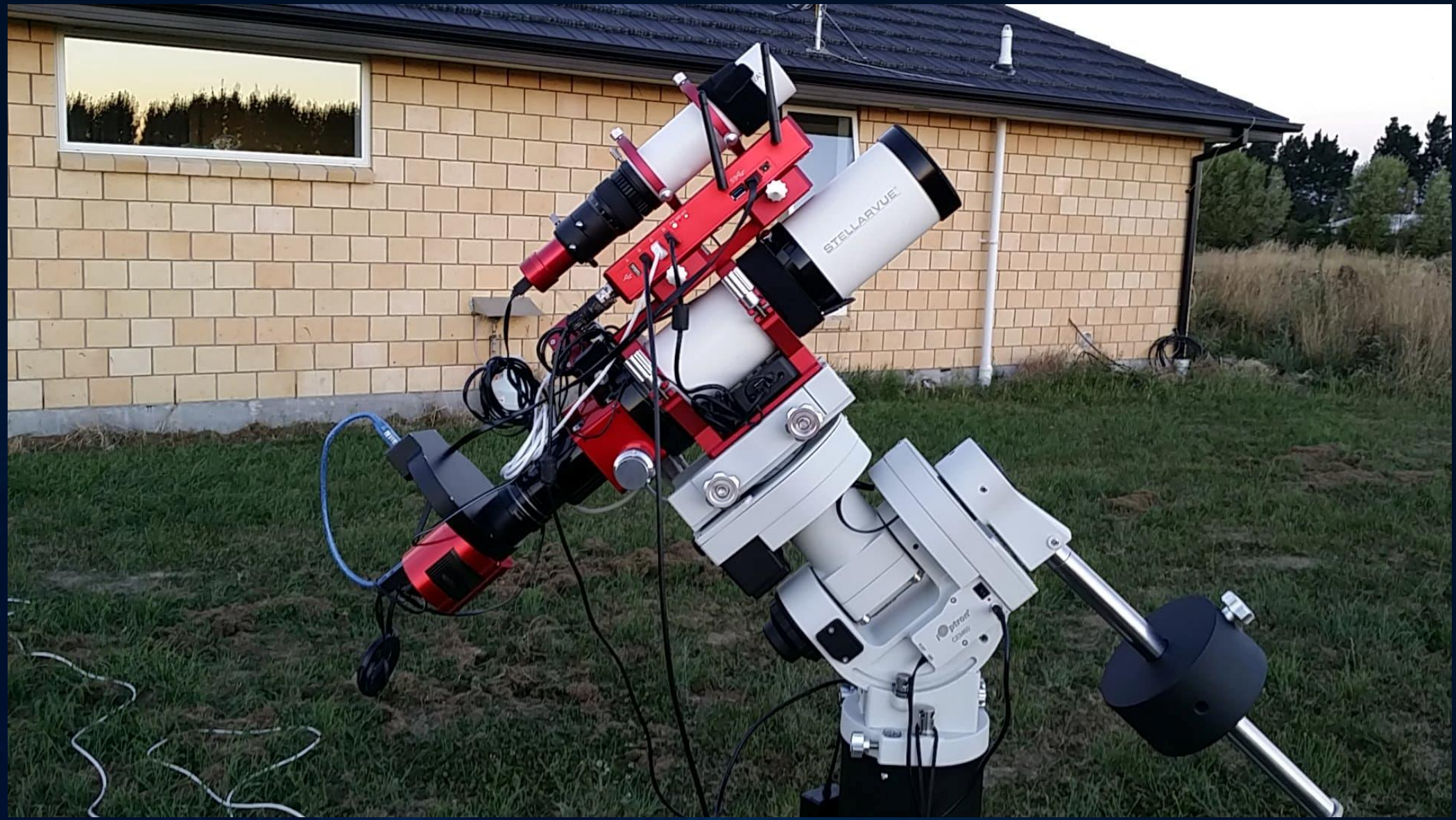


System 1 – Primalucelabs Eagle



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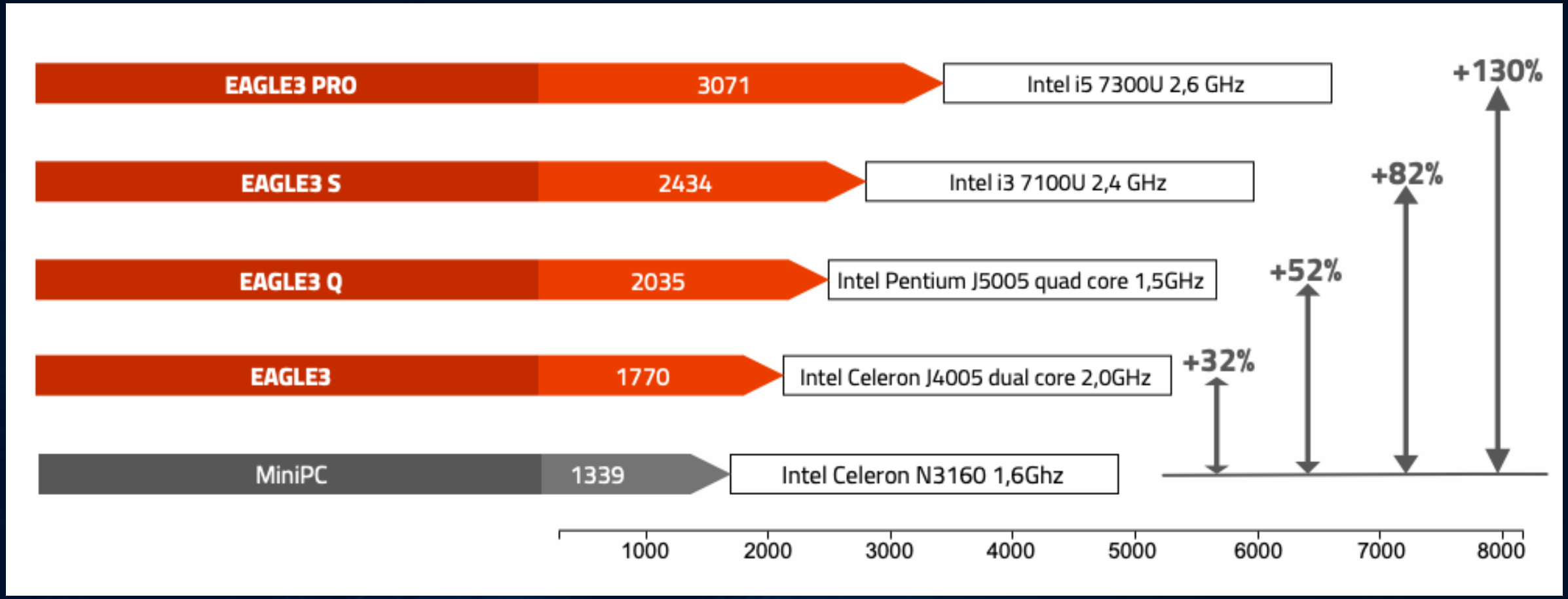
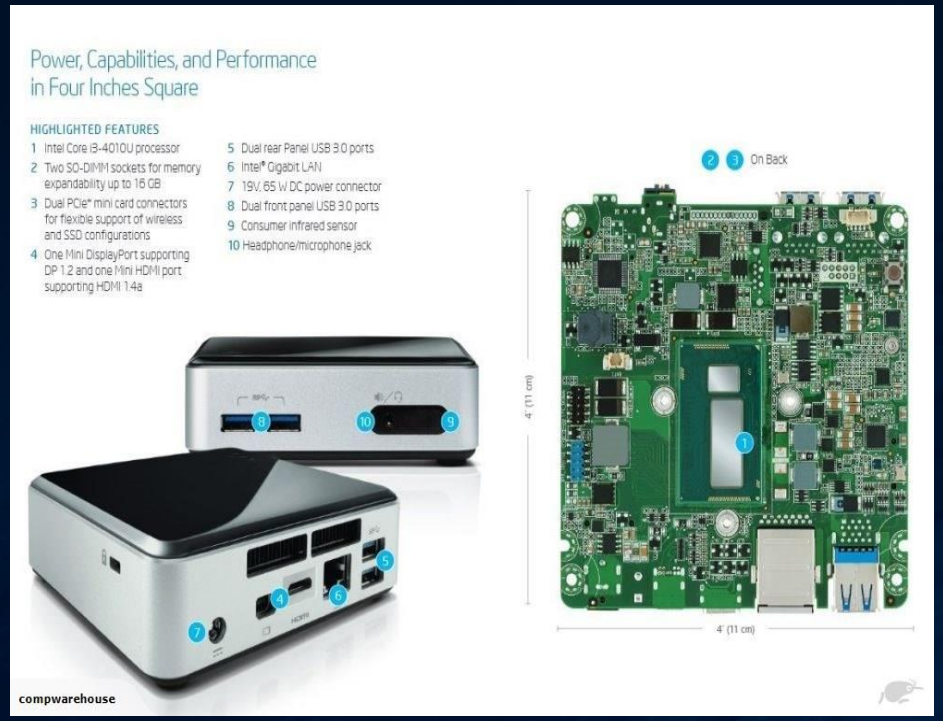


System 1 – Primalucelabs Eagle

	EAGLE3	EAGLE3 Q	EAGLE3 S	EAGLE3 PRO
Processor:	Intel Celeron 2,0 GHz dual core	Intel Pentium 1,5 GHz quad core	Intel i3-7100U 2,4 GHz dual core	Intel i5-7300U 2,6 GHz dual core, Turbo 3,5 GHz
RAM memory: / SSD disk	4 GB / 120 GB	4 GB / 120 GB	8 GB / 250 GB	16 GB / 500 GB
USB 3.0 + USB 2.0 ports:	8: 4xUSB 3.0 + 4xUSB 2.0	8: 4xUSB 3.0 + 4xUSB 2.0	8: 4xUSB 3.0 + 4xUSB 2.0	8: 4xUSB 3.0 + 4xUSB 2.0
Control via WiFi:	✓	✓	✓	✓
Control via Ethernet:	✓	✓	✓	✓
Remote ON/OFF peripherals:	✓	✓	✓	✓
Remote ON/OFF USB ports:	✓ only for USB 2.0 ports	✓ only for USB 2.0 ports	✓ only for USB 2.0 ports	✓ only for USB 2.0 ports
Power out ports and max current:	7 12V ports , 4x12V + 3x0-12V	7 12V ports , 4x12V + 3x0-12V	7 12V ports , 4x12V + 3x0-12V	7 12V ports , 4x12V + 3x0-12V
Average power consumption:	600 mA/hour	800 mA/hour	1000 mA/hour	1600 mA/hour
Operative system:	Windows 10 Enterprise	Windows 10 Enterprise	Windows 10 Enterprise	Windows 10 Enterprise
Price:	€ 995,00	€ 1125,00	€ 1495,00	€ 1995,00

Alternatives?



Intel NUC PC

Stick PC

Pegagsus Astro Powerbox

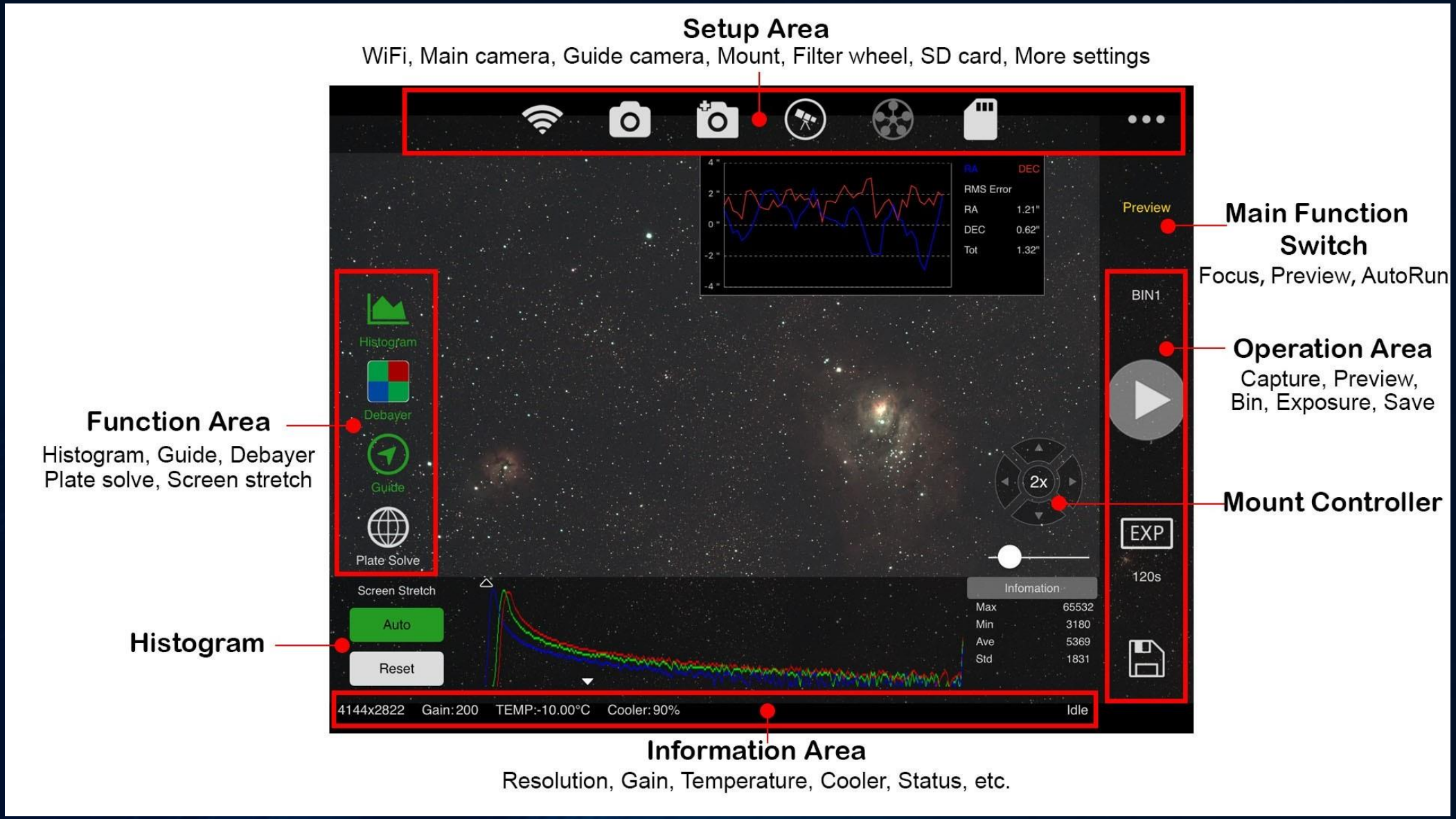
System 2 – ZWO Astronomy ASIAIR

- Raspberry PI based imaging system designed as a low cost but rich feature imaging platform for astro imaging
- Uses Android / IOS tablets as the control panel
- Lightweight, scope mounted unit providing remote control capability
- Low power requirements – great for portable imaging
- Low cost – but powerful imaging platform
- Easy to use and requires litte technical expertise to use
- Does not need the tablet connected all the time
- Evolving development – lots of new features being added – free at this time.
- Whats coming: Auto focus …. Polar Alignment ….. Much more!

System 2 – ASIAIR

- Simple low cost Android / IOS tablet as control panel – NO PC
- Camera control, cooler control, filter wheel control – for cooled and non cooled ZWO cameras – NOW SUPPORTS Nikon /Canon DSLRs (V1.0.9)
- Integrated auto guider – easy to use – looks like PHD2
- Mount control for many well known brands (INIDI supported) – got to / dithering
- Fast plate solving – seconds to solve – sync to mount
- Integrated sequencer and target acquisition tools
- Integrates to Sky Safari for tablet mount control
- Built in 32GB SD card - 5V USB powered
- Low cost - $179 USD

System 2 – ASIAIR



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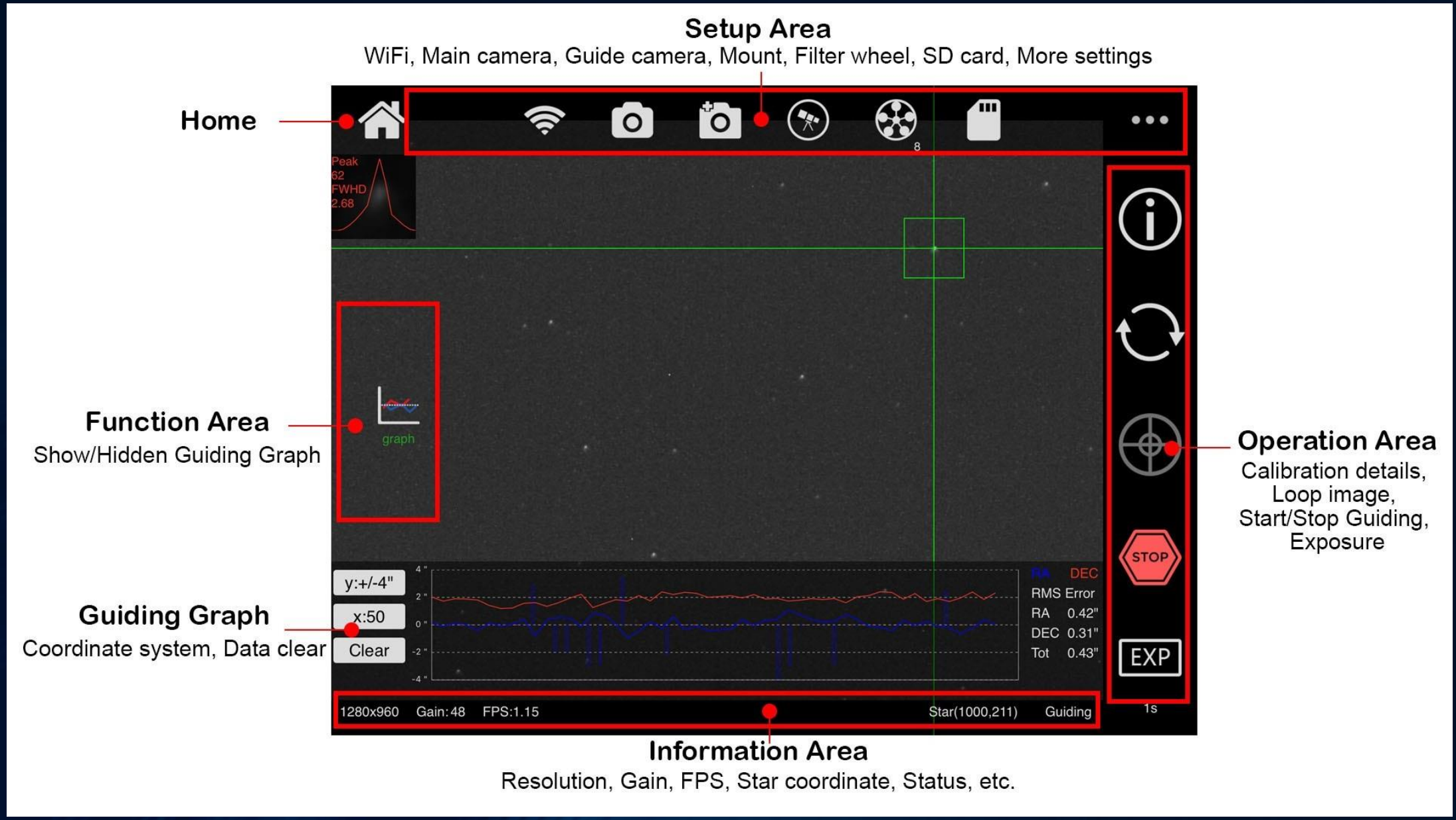

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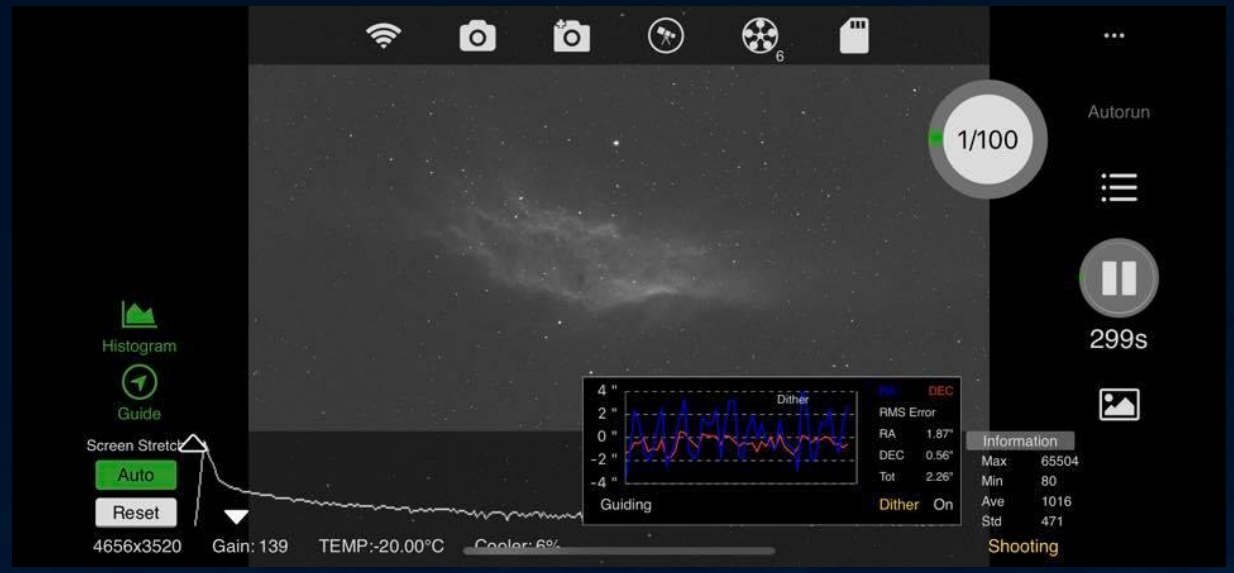

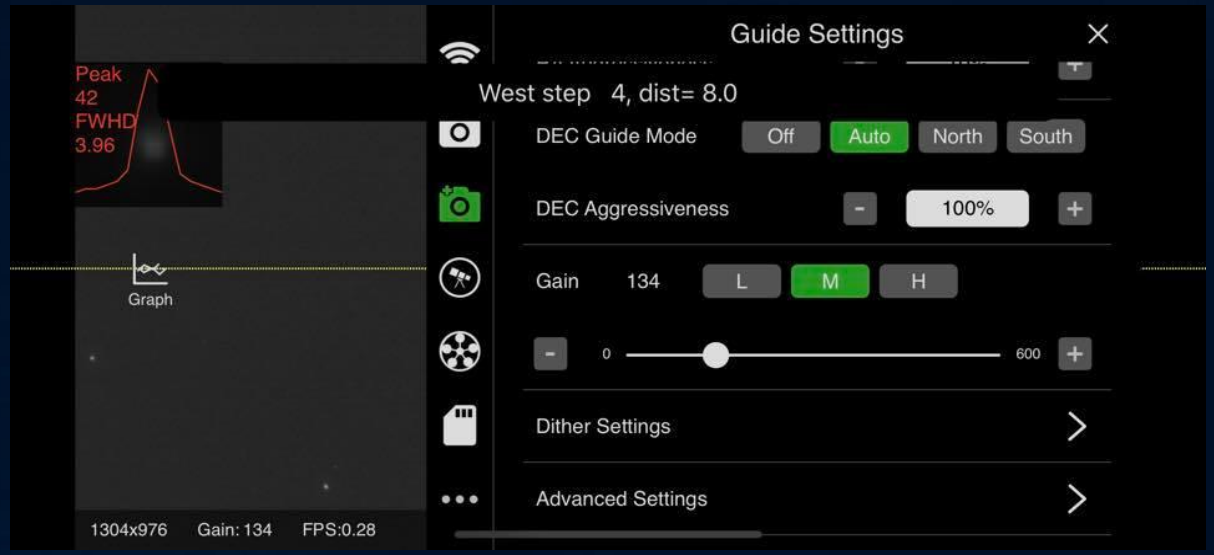

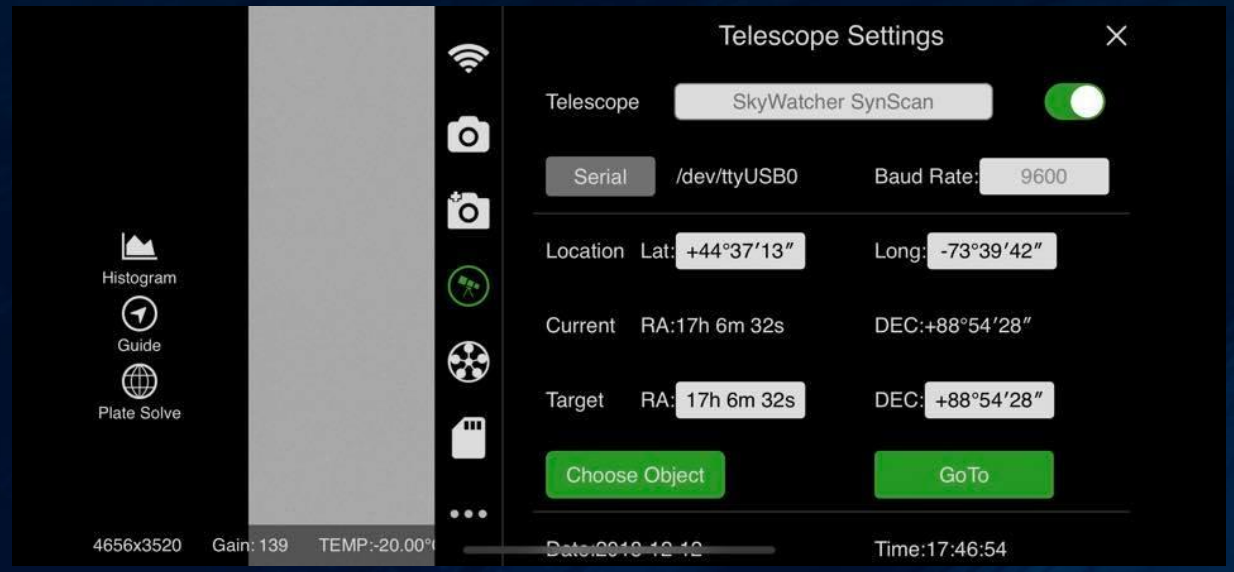

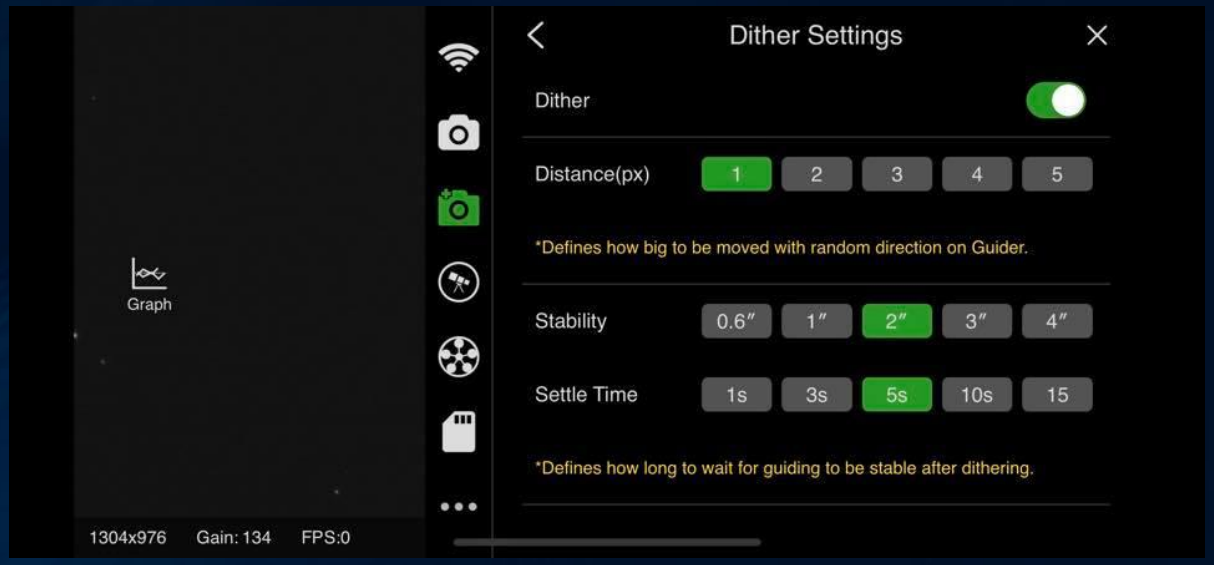

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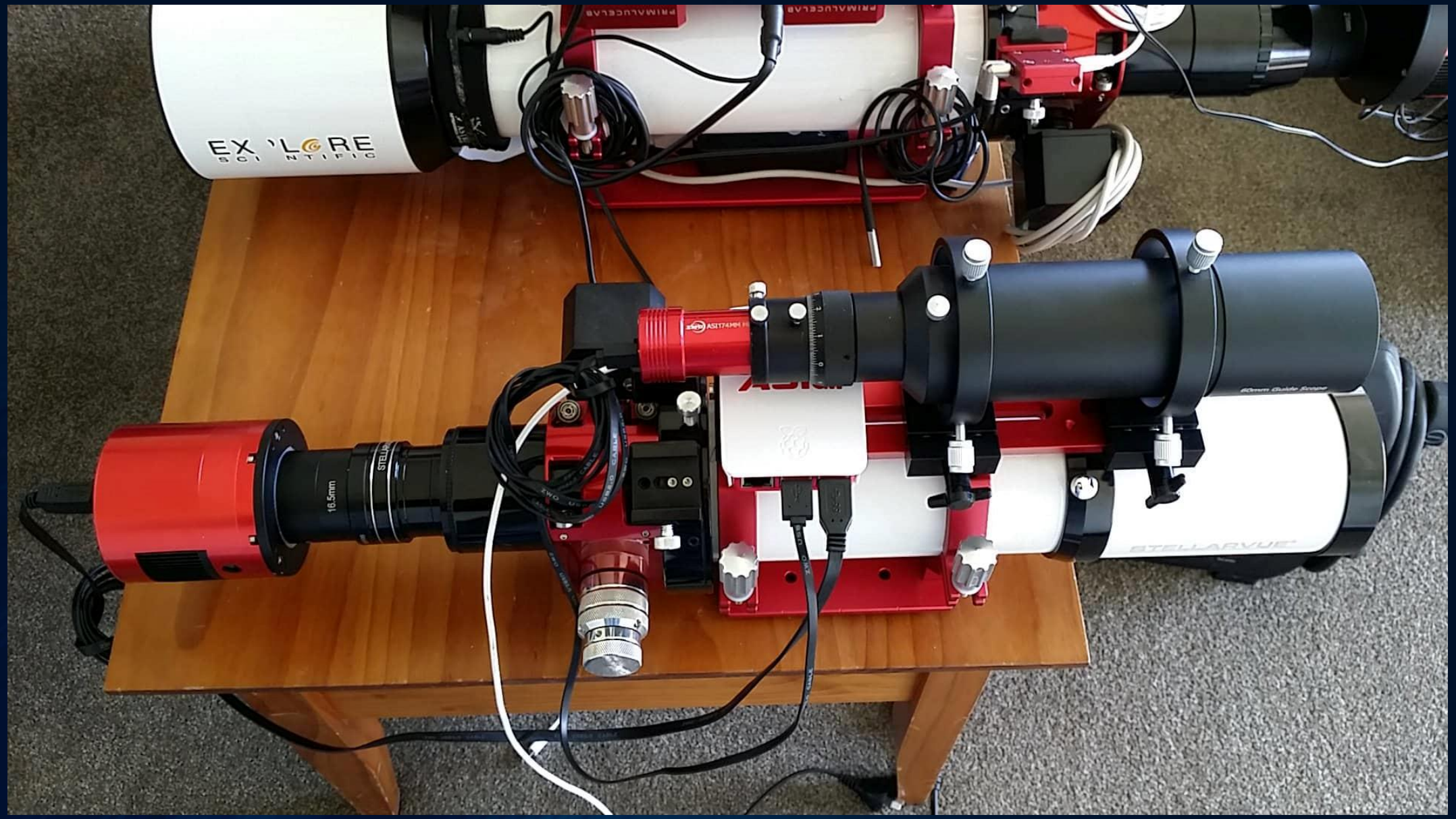
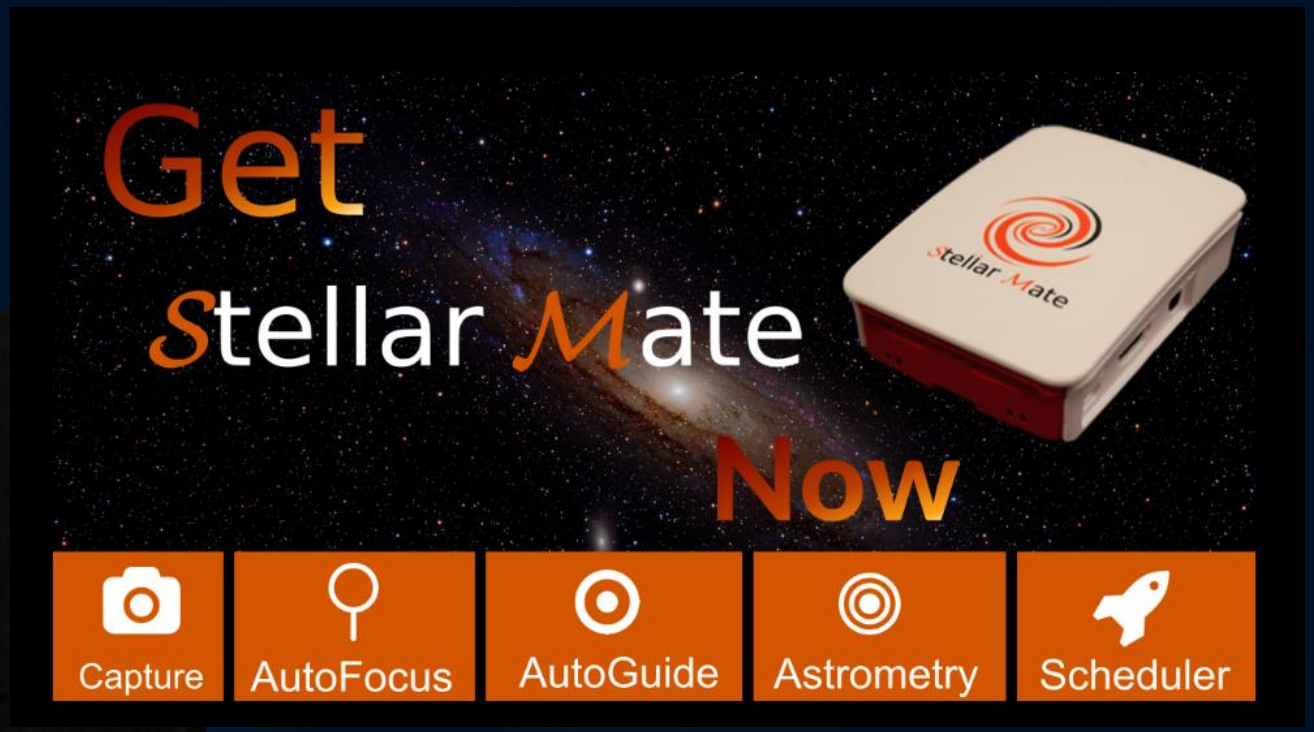


Alternatives?



Further Reading / Resources

http://primalucelab.com

Primalucelabs Eagle 3

https://astronomy-imaging-camera.com/

ZWO Cameras and ASIAIR

https://www.facebook.com/groups/ASIAIR/

Questions?