FlatMaster Neo Series

Product Manual



Version 2.0

13-May-2026

VERSION HISTORY

Version #	Implemented By	Revision Date	Reason
1.0	George Karantzalos	01/12/2025	Initial document
2.0	George Karantzalos	13/05/2026	Flat Master Neo 160 addition

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INTRODUCTION

Thank you for purchasing Pegasus Astro FlatMaster Neo.

The Pegasus Astro FlatMaster Neo is a retractable flat panel that enhances the FlatMaster series by providing both automation and remote-control functionality. This advanced device enables users to efficiently acquire flat frames via their preferred control software, eliminating the need for direct physical interaction with the equipment. With these features, the FlatMaster Neo streamlines the calibration process, enabling users to manage their setup entirely from a remote location.

IN THE BOX

The box contains the following items

- 1 x FlatMaster Neo 120 or 160
- 1 x USB A to USB-C USB cable 1.0m
- 4 x Belts. (2 x 70cm , 2 x 45 cm)

DEVICE CARE

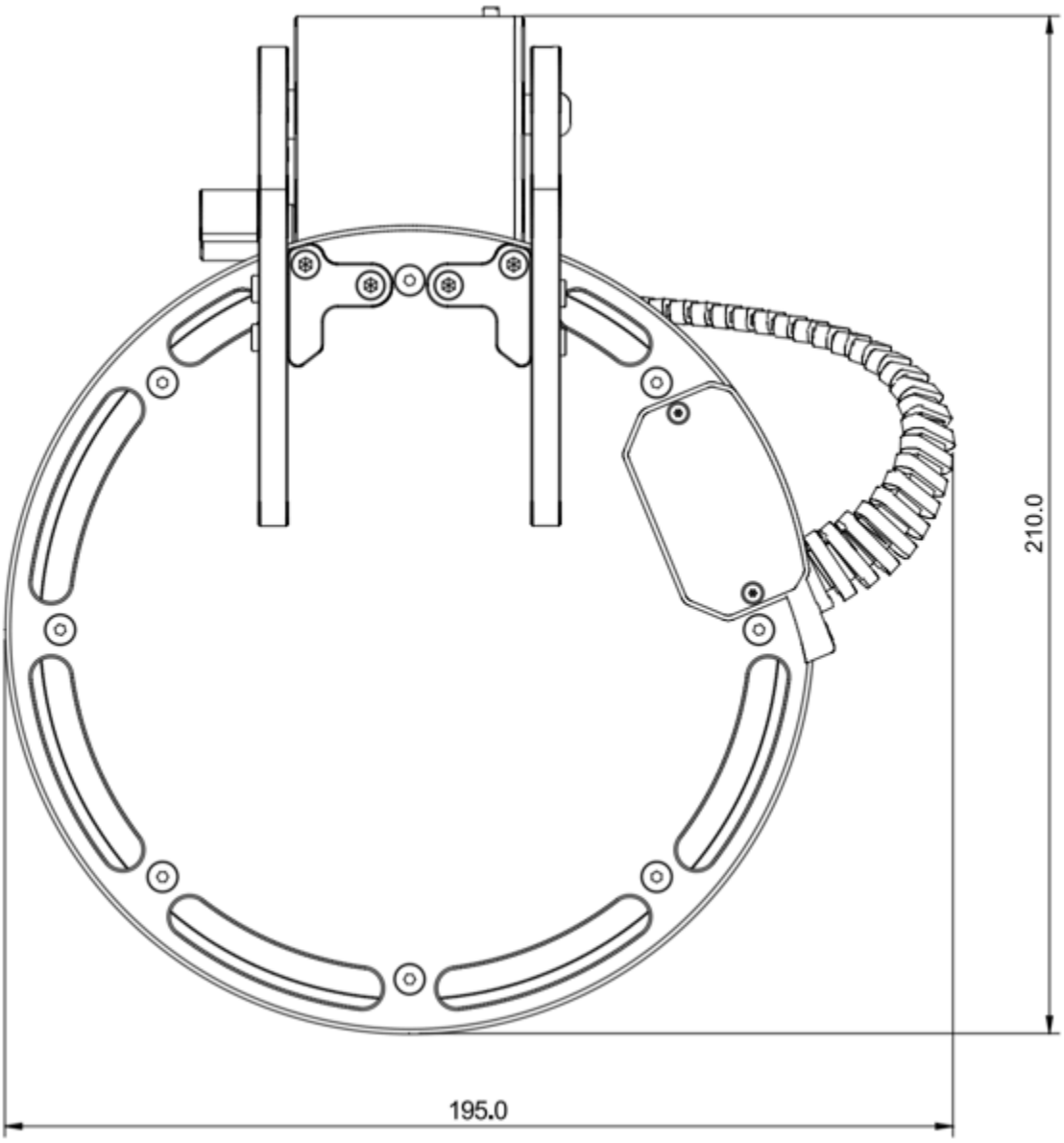
The device electronics are housed inside an aluminum blue and black anodized enclosure. The enclosure is made from aircraft aluminum alloy type 6061, which provides very good corrosion resistance.

- While the device is safeguarded against moisture, it is essential to emphasize that it is not waterproof and should always be maintained in a clean and dry environment.
- Prolonged exposure to excessive moisture can pose a significant risk to electronics and connectors, potentially causing damage. It is imperative to exercise caution in this regard.
- Avoid any contact between solvents or chemicals and the device, as these substances can have adverse effects on its functionality.
- When the device is not in use for extended periods, it is advisable to store it indoors within a dry room to prevent any potential moisture-related issues.
- Take precautionary measures and refrain from touching the internal components during operation, as they may become hot. Ensuring safety and optimal performance is paramount.

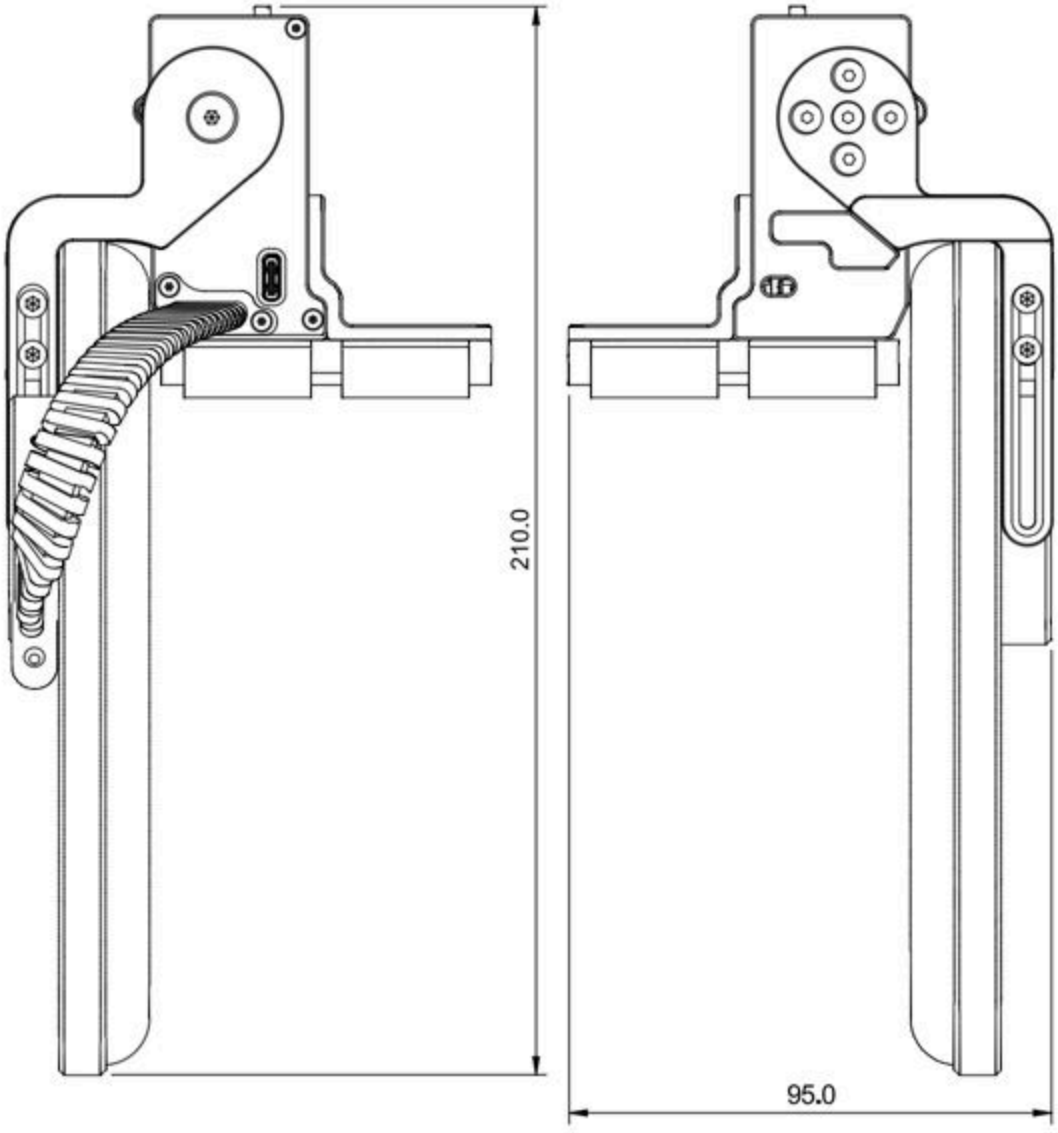
DEVICE DESCRIPTION

DESIGN OVERVIEW

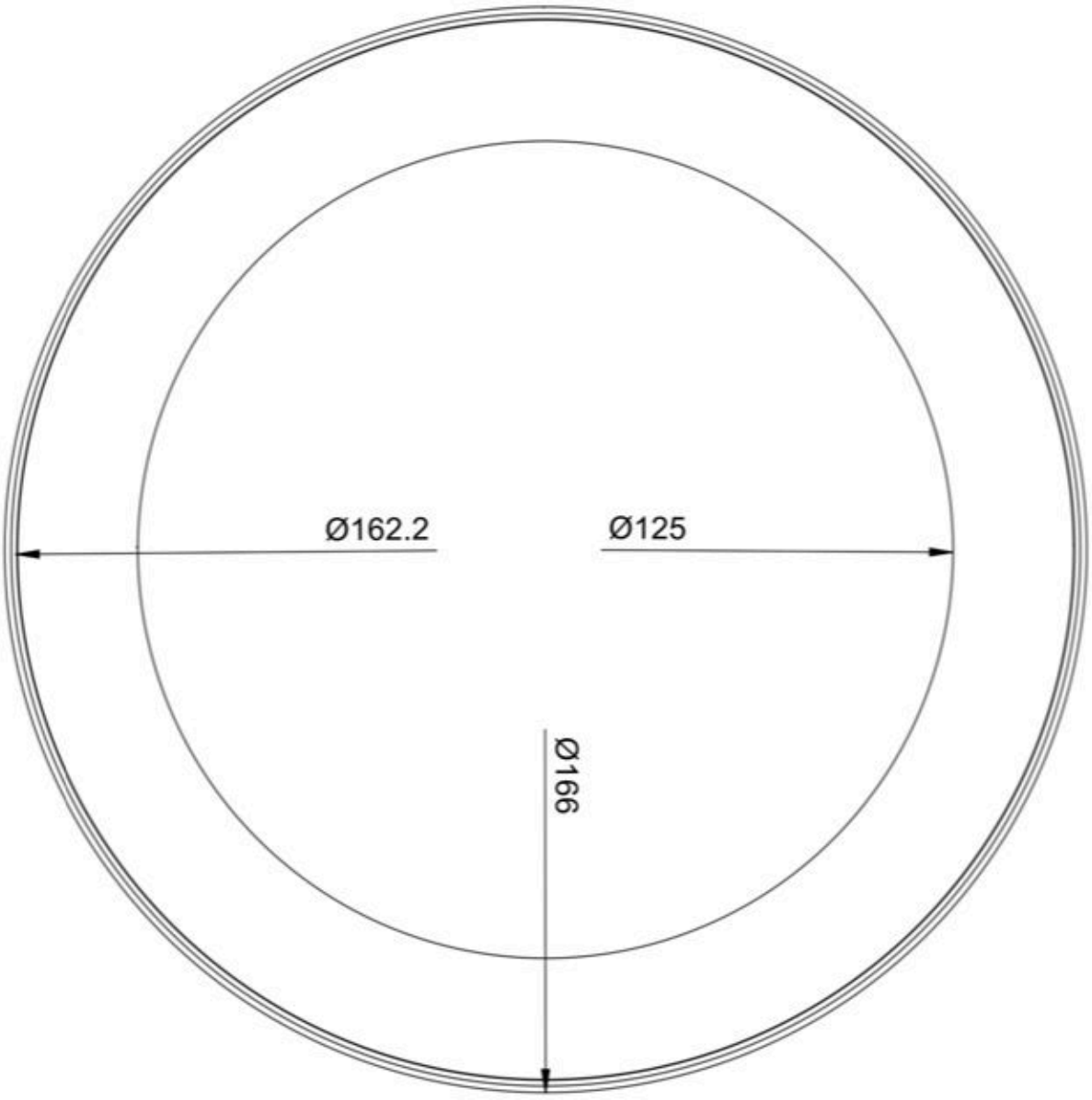
FM NEO 120



Front side FM Neo 120

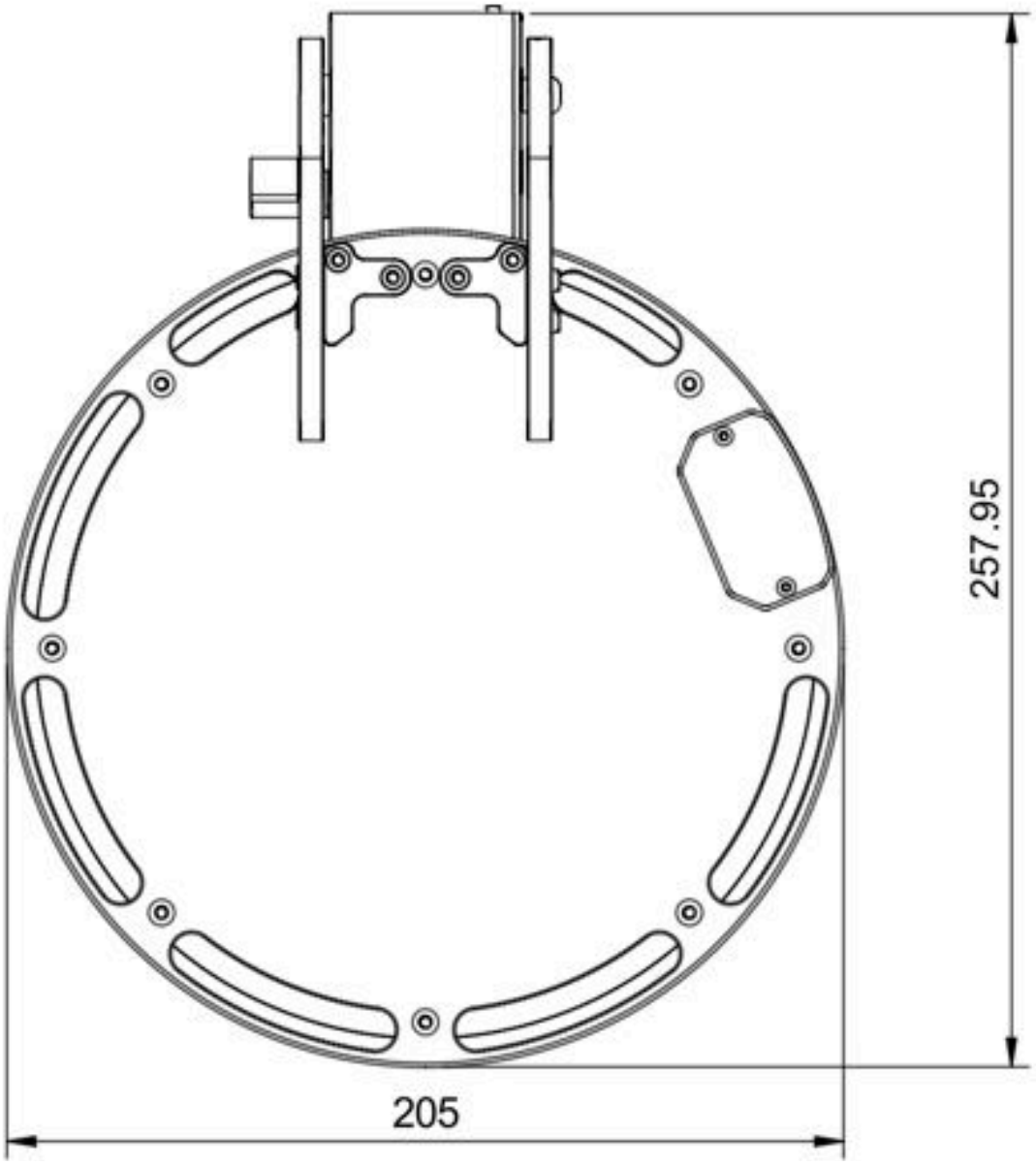


FM Neo 120 Side View

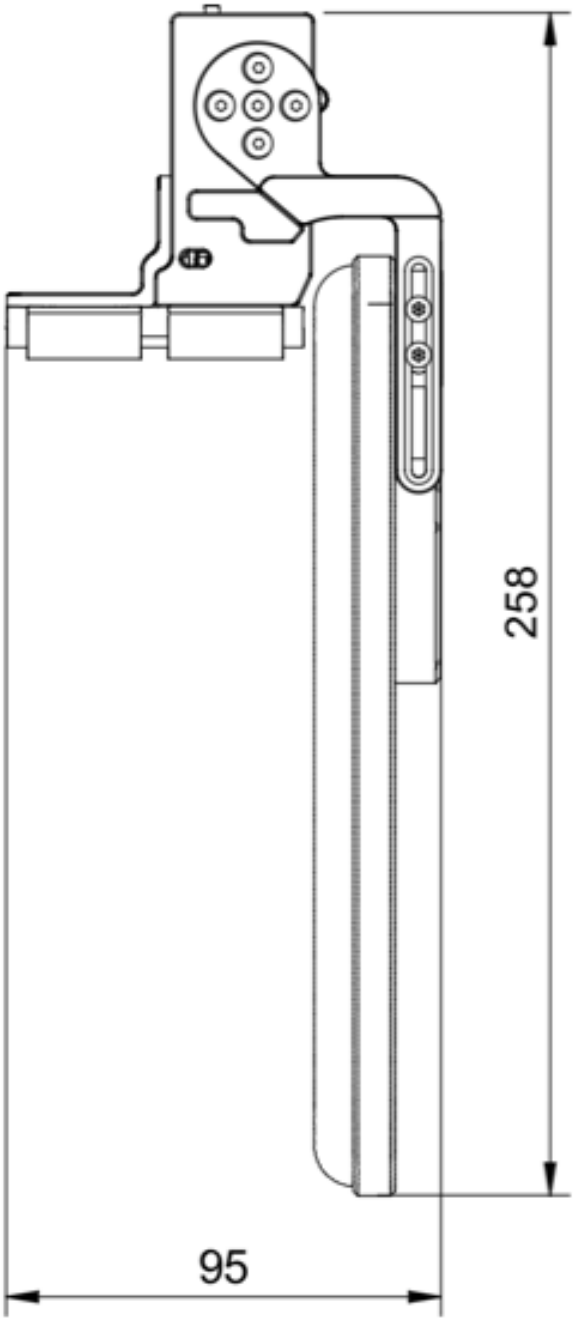


Cover ,LED and Silicone flange dimensions FM Neo 120

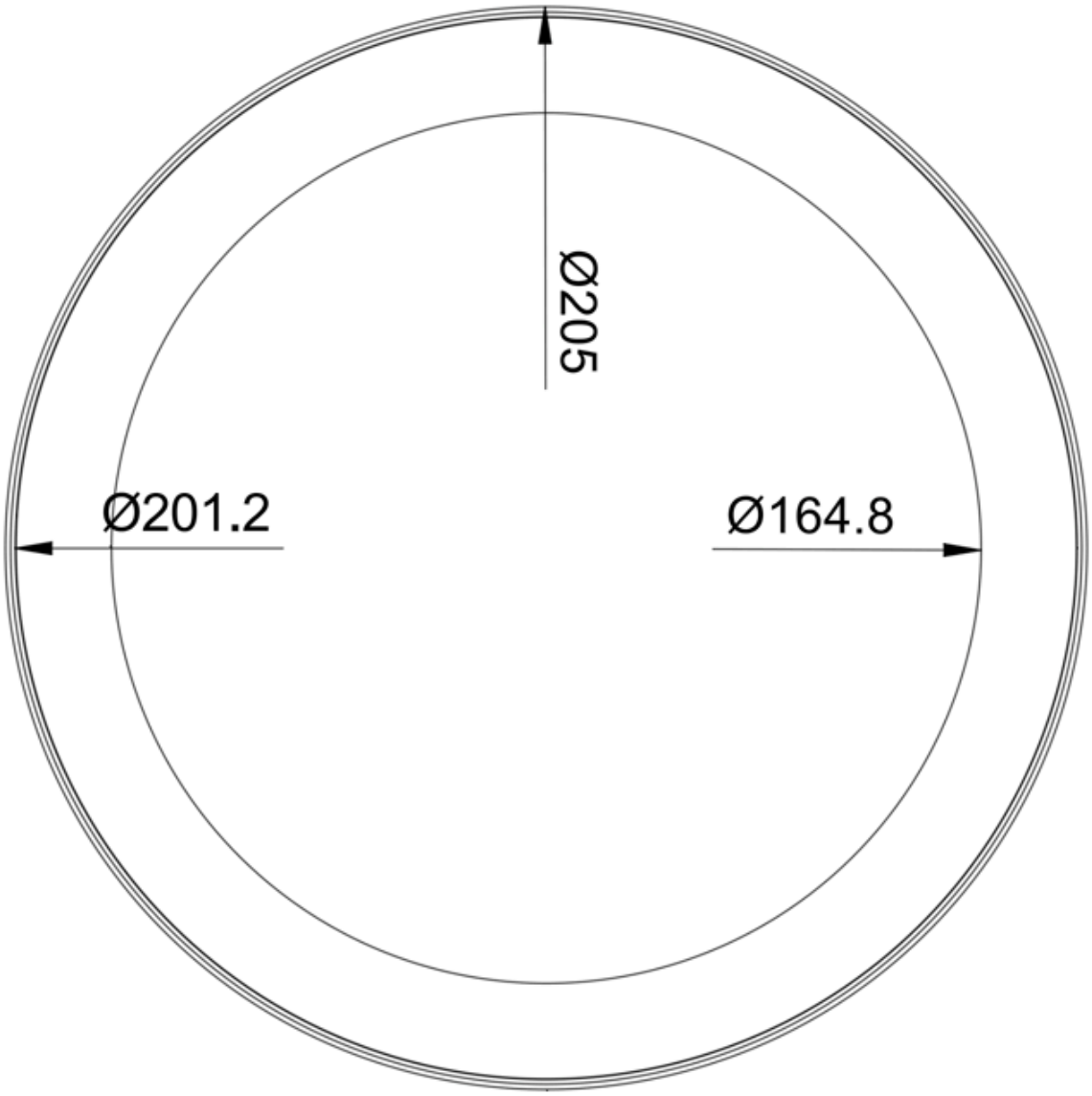
FM NEO 160



FM Neo 160 Front Side View



FM Neo 160 Side view



Cover ,LED and Silicone flange dimensions FM Neo 160

FEATURE LIST

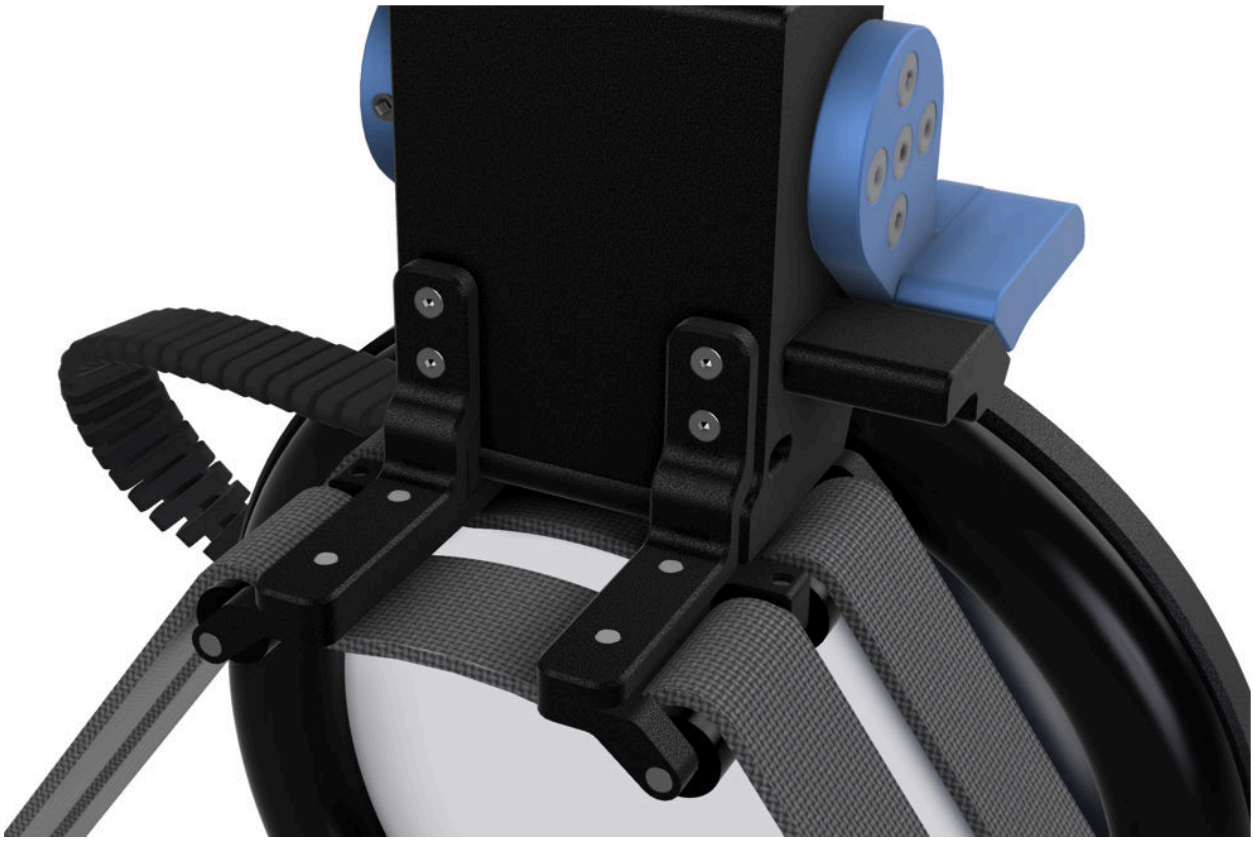
- Adjustable lid from 0° to 270°.
- Customizable maximum angle.
- Dimmable LED panel 0 to 100% brightness.
- Silicone flange ensures a light- and dust-proof seal.
- One cable (USB-C) for operation for data and power.
- Manual button to open and close the cover and control the panel brightness.
- Integrated Dew heater (on panel surface).
- Built-in temperature and humidity sensor.
- Built-in light sensor.
- Obstacle detection.
- Auto range calibration.
- Wi-Fi hotspot and client modes.
- Integrated web dashboard.
- USB / PC / Web Controlled out of the box.
- Durable and robust aluminum enclosure.

INSTALLATION

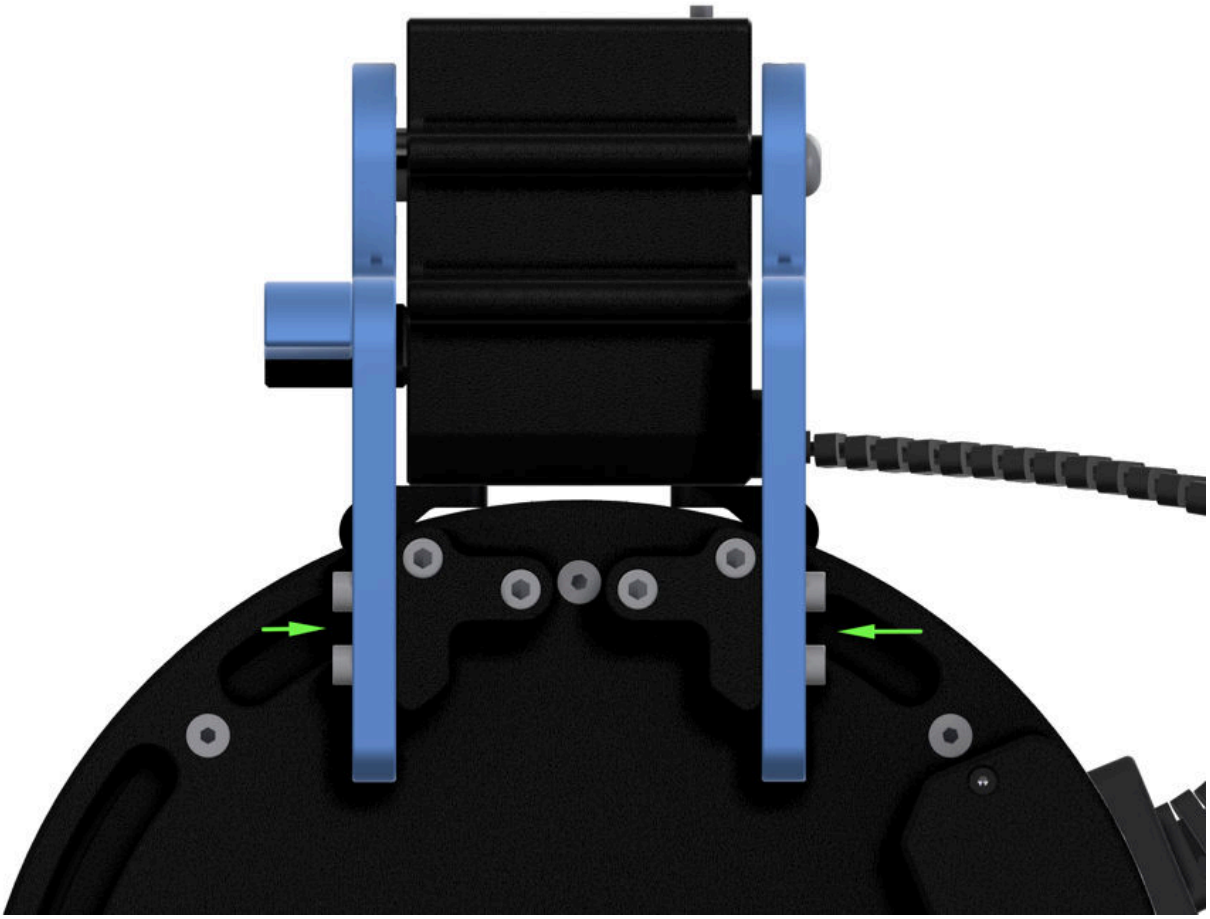
ATTACHING FLATMASTER NEO ON YOUR TELESCOPE

Make sure that your telescope hood is fully extended and securely fastened before beginning installation. Select the two belts that fit your telescope hood diameter and attach them to the Flat Master Neo enclosure.

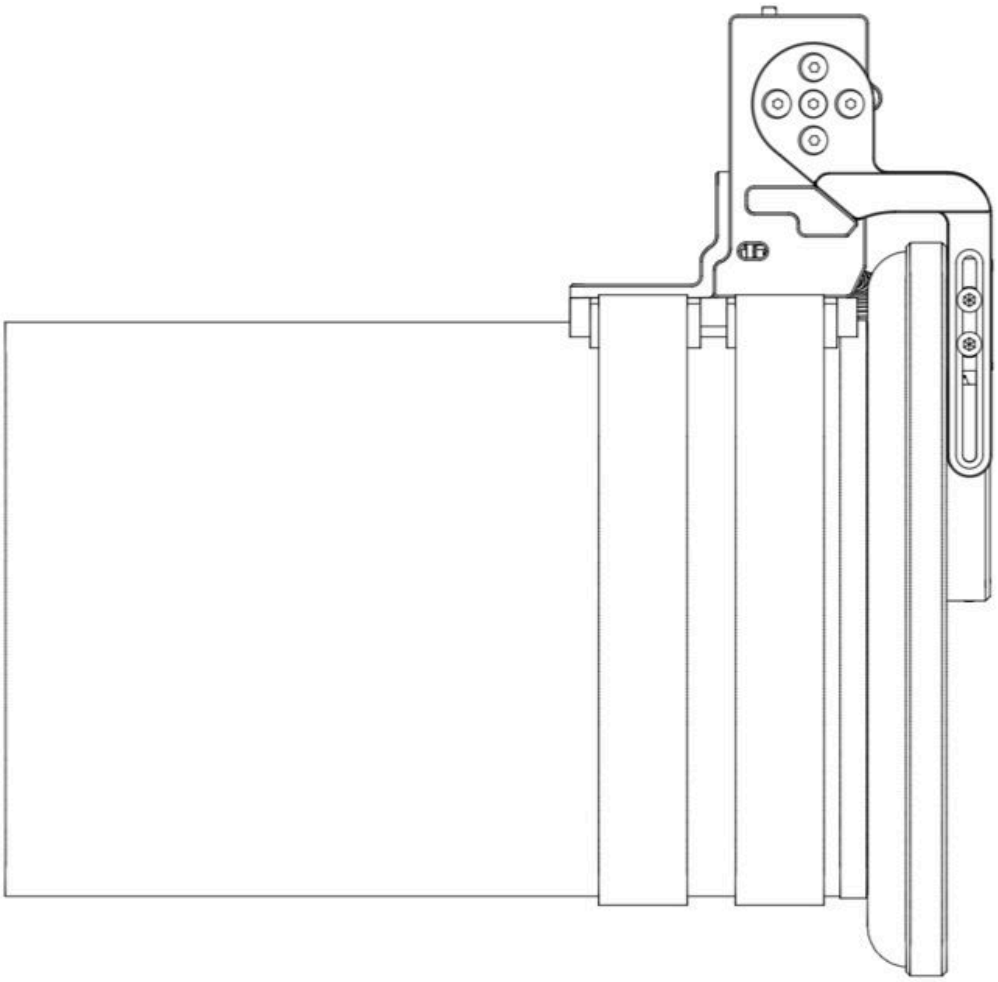
Loop each belt over one rubber cylinder, under the enclosure, and over the opposite cylinder.

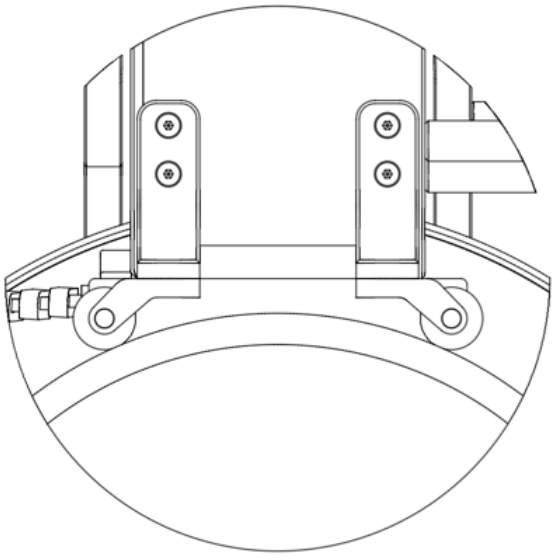


Loosen the four bolts (two on each side) securing the flat panel cover to the left and right brackets with an Allen key. Make sure not to take the bolts out completely. This will let you adjust and center the Flat Master cover over the hood of your telescope.

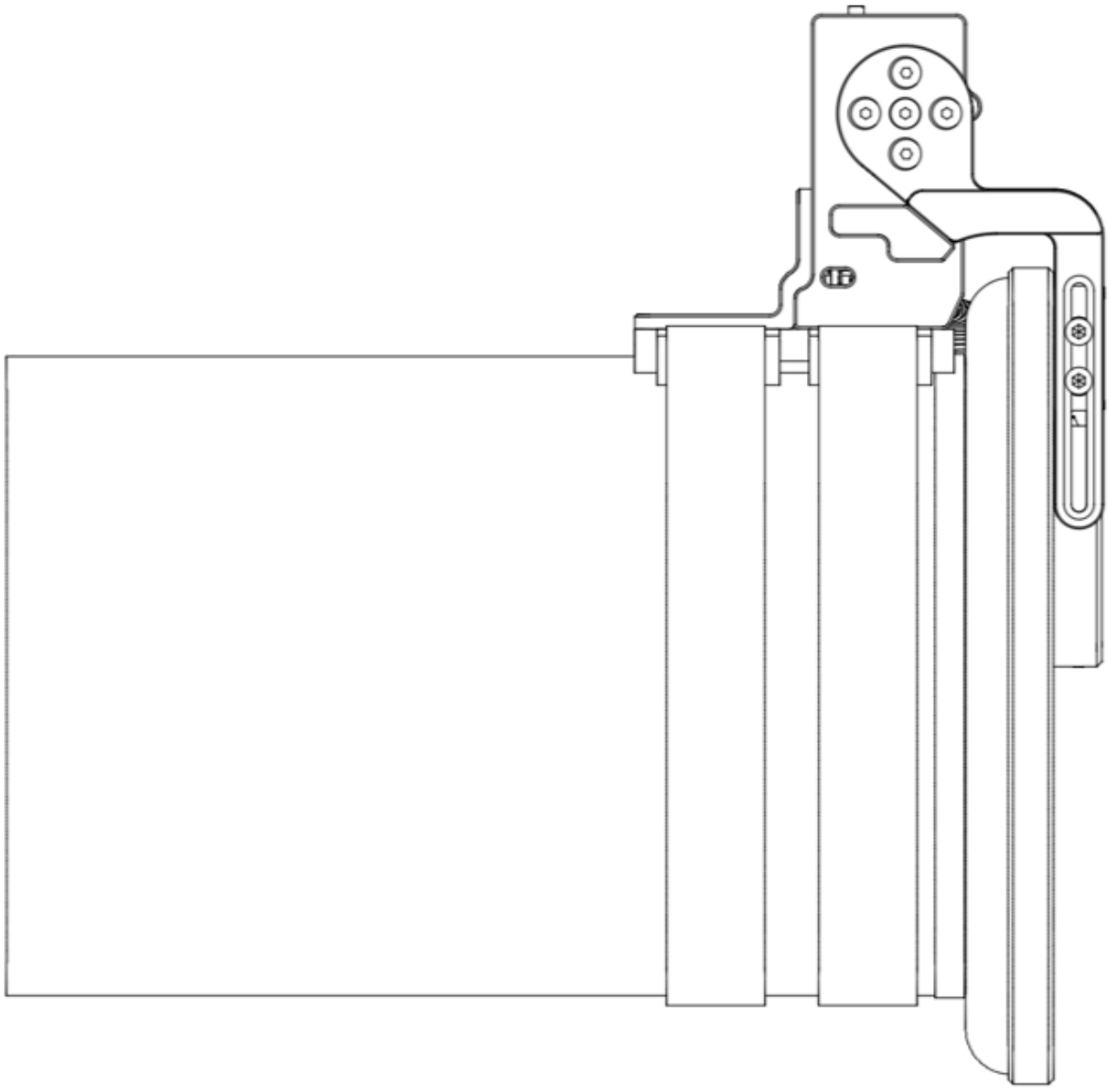


Carefully place the FlatMaster Neo enclosure onto the telescope hood, ensuring correct alignment with the hood for optimal fit.

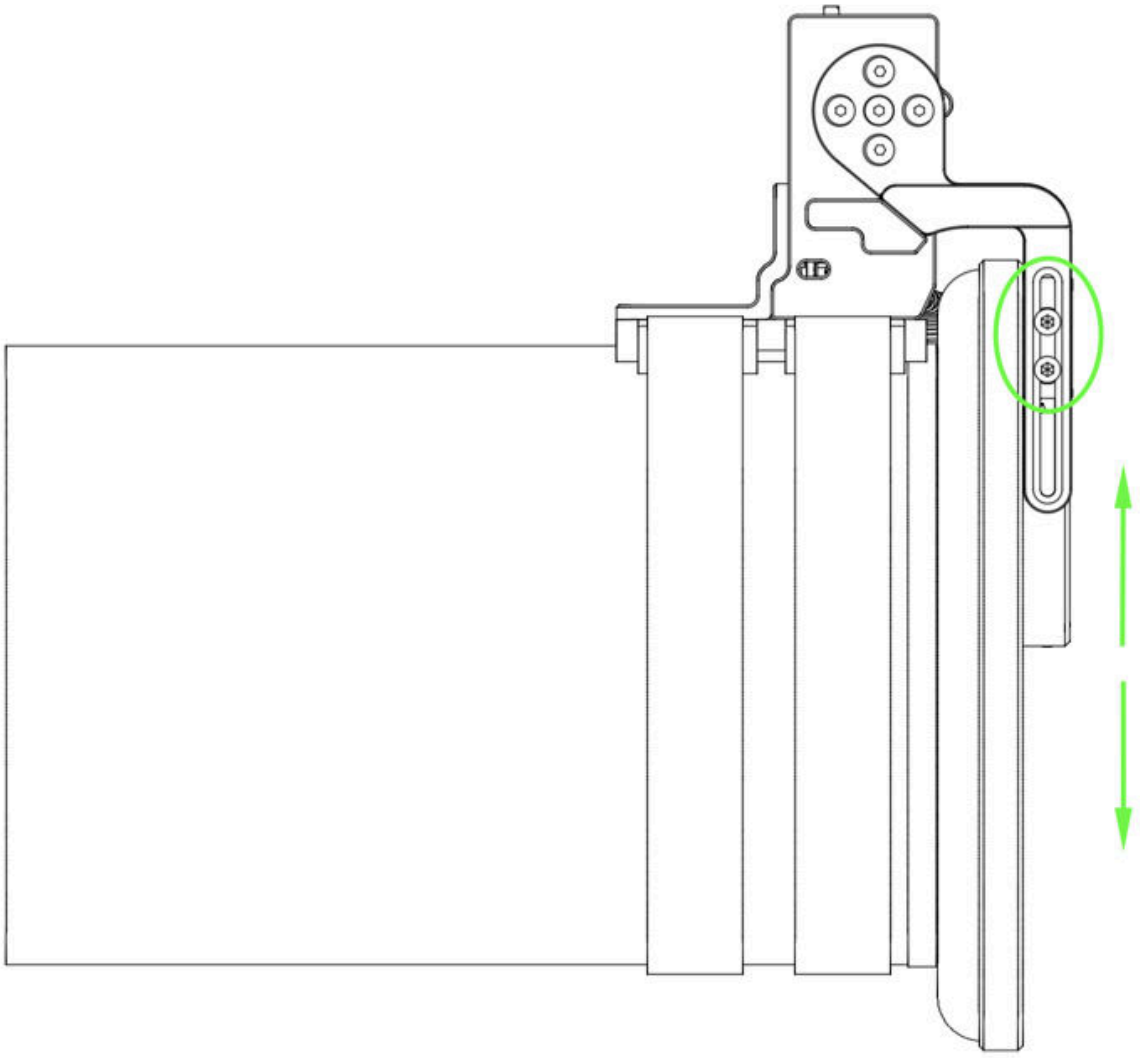




Wrap the two belts around the telescope hood, but do not fully tighten them.

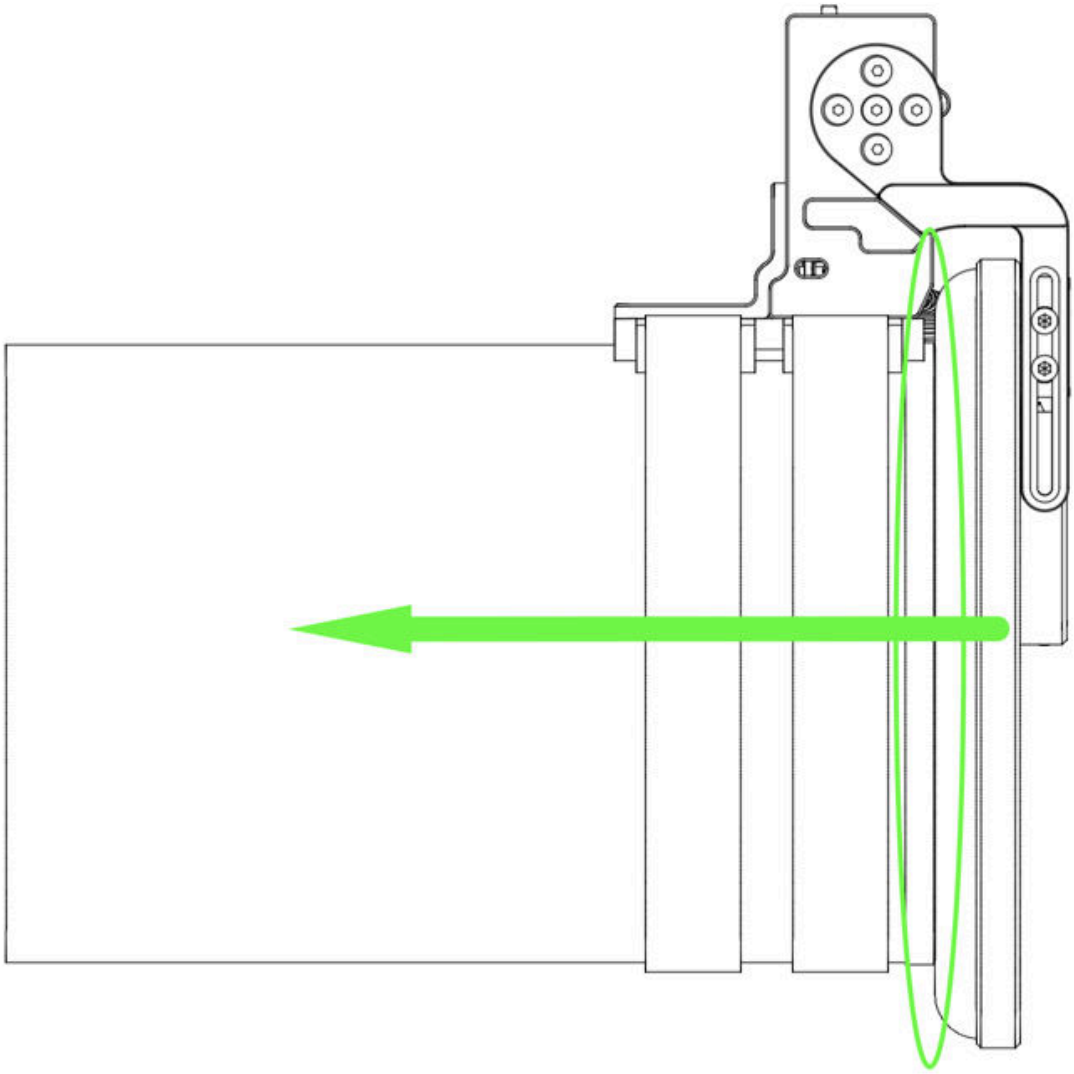


Make sure that the cover is centered on the telescope hood opening and tighten the four bolts (two on each side) that secure the cover on the brackets.



Make sure that all four rubber enclosure feet are in contact with the telescope hood. Check if the cover needs additional adjustment.

Push the lid onto the telescope hood so that the silicone flange makes good contact. This will ensure a light and dust-proof seal between the FlatMaster Neo and the telescope hood.



Tighten the two belts to firmly secure the FlatMaster onto your telescope hood, completing the installation process.

SETUP AND OPERATION

INITIAL CONNECTION

- Plug the USB-A end of the USB cable into your computer USB port and the USB-C cable into the FlatMaster USB-C port.

DEVICE BOOT-UP

- The device will power on, the LED panel will light up, gradually increase in brightness, and then turn off. This sequence indicates that the firmware has loaded successfully and the controller is now fully operational.

SOFTWARE INSTALLATION

- To establish communication with the device, please visit our official website, download and install Unity platform.

Click here to download Unity Platform

Wi-Fi CONFIGURATION

WIFI CLIENT

FlatMaster Neo seamlessly operates as a Wi-Fi client, connecting to a 2.4GHz Wi-Fi network. Notably, it stands out by functioning concurrently as both a Wi-Fi hotspot and a Wi-Fi client.

To link up with a Wi-Fi network, navigate to the Unity platform, access the Wi-Fi tab, and initiate a scan to discover networks in your area. Simply select the desired network, input the Wi-Fi password and your preferences are stored.

With each reboot, the device effortlessly connects to the configured wireless network. The device retrieves your selection on every boot and automatically connects to the configured wireless network.

WIFI HOTSPOT

FlatMaster Neo has a built-in Wi-Fi Access Point (hotspot) at 2.4 GHz. The hotspot is enabled by default. The SSID name is compiled from the prefix FMNeo and the unique device ID, e.g., FMNeo_0043c88c.

The default password is 12345678

You can easily control the hotspot settings from the Unity Platform.

- Open Unity Platform, click on the discovered FlatMaster Neo, and locate the Wi-Fi settings tab.
- There you will see the screen below, which allows you to control the Wi-Fi hotspot.

- You can easily change the SSID name, enable or disable the Wi-Fi hotspot, or switch to another channel number.

ANGLE RANGE SETUP

Open Unity Platform and press the button on top of the FlatMaster enclosure to move the cover. Press it again when the cover reaches the desired angle to stop it. Record the angle, enter it as the max limit, and save your settings. The maximum angle limit is stored in the device EEPROM and will be retrieved after each boot, ensuring that your equipment is safe.

IN DEPTH DEVICE OVERVIEW

POWER AND DATA CONNECTIVITY

FlatMaster NEO supports single-cable operation via a side-mounted USB-C port, which handles both power and data.

A 1.0m USB-A to USB-C cable is provided in the package.

BUILT-IN SENSORS

- Temperature sensor
- Humidity sensor
- Light sensor
- Obstacle detection sensor

RESET WATCHDOG

A watchdog resets the device if, for any reason, there is no response from the controller after two (2) seconds. A neat feature in the unlikely event of a microcontroller freeze, when you have a remote observatory, and you need to be sure that everything works as expected.

UPGRADABLE FIRMWARE

The FlatMaster Neo is firmware upgradable to support future features and bug fixes.

When a new firmware update is available, the user is notified upon connecting FlatMaster Neo to a PC running the Unity platform.

SOFTWARE

ASCOM

FlatMaster is supported by ASCOM 7 & ASCOM Alpaca

https://ascom-standards.org/

N.I.N.A

Follow the generic N.I.N.A. device connect guide to connect your Pegasus Astro device.

FlatMaster NEO can be connected as a Flat Panel device

https://pegasusastro.com/troubleshooting/unityplatform-troubleshooting-guide/#a5ff6a48d96516df8

UNITY PLATFORM

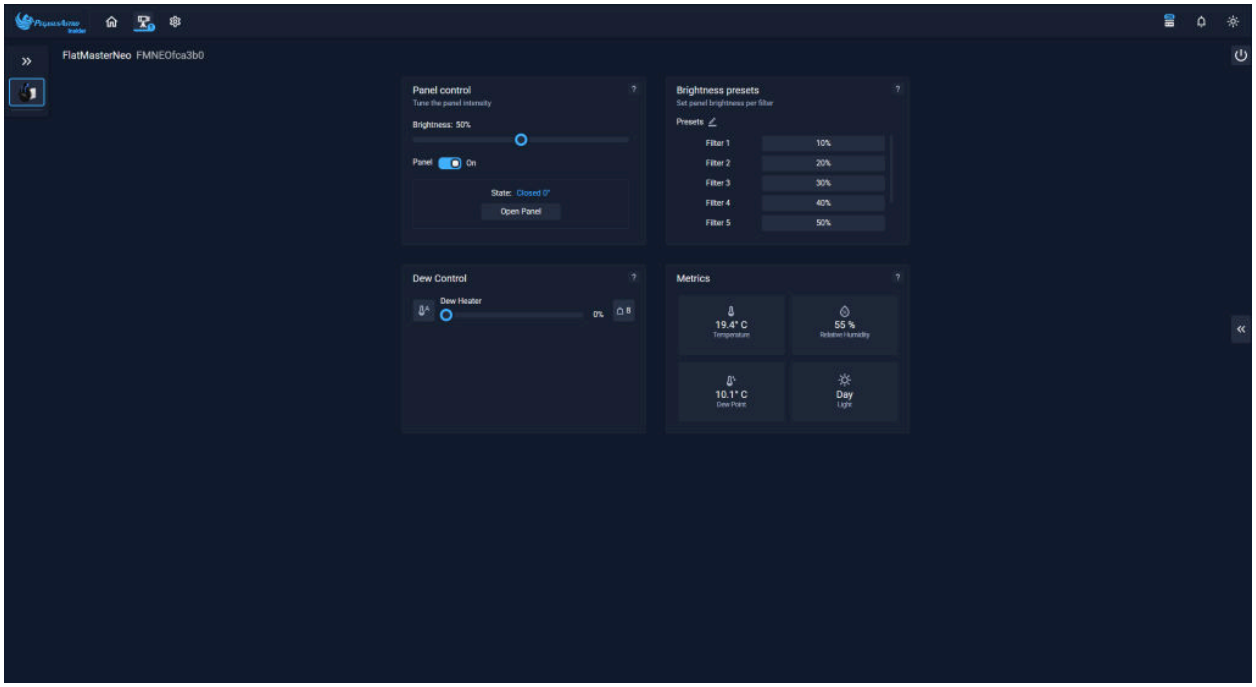
Pegasus Astro Unity Platform is our new all-around application. Our goal is to provide a robust and modern application that will support current and future products under one roof.

Download and install the Unity platform:

https://pegasusastro.com/download/

Please note that all required ASCOM drivers are included in Unity Platform installation.

UNITY 3 USER INTERFACE



Panel control

- Adjust the brightness
- Toggle the LED
- Review the cover status
- Open and close the panel cover

Brightness presets

- Brightness presets may be configured and saved individually for each filter.

Dew control

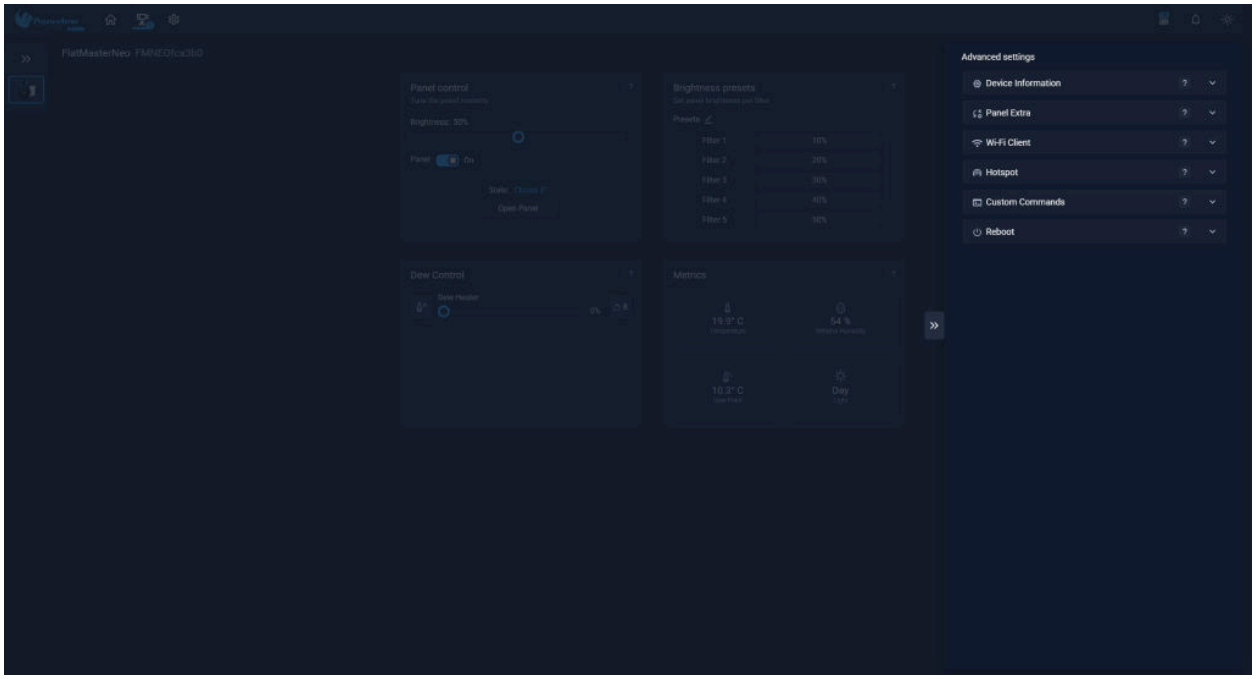
- Enable or disable the Auto Dew function by clicking the Auto Dew icon
- Set the dew heater lever manually
- Set the Auto dew function aggressiveness

Metrics

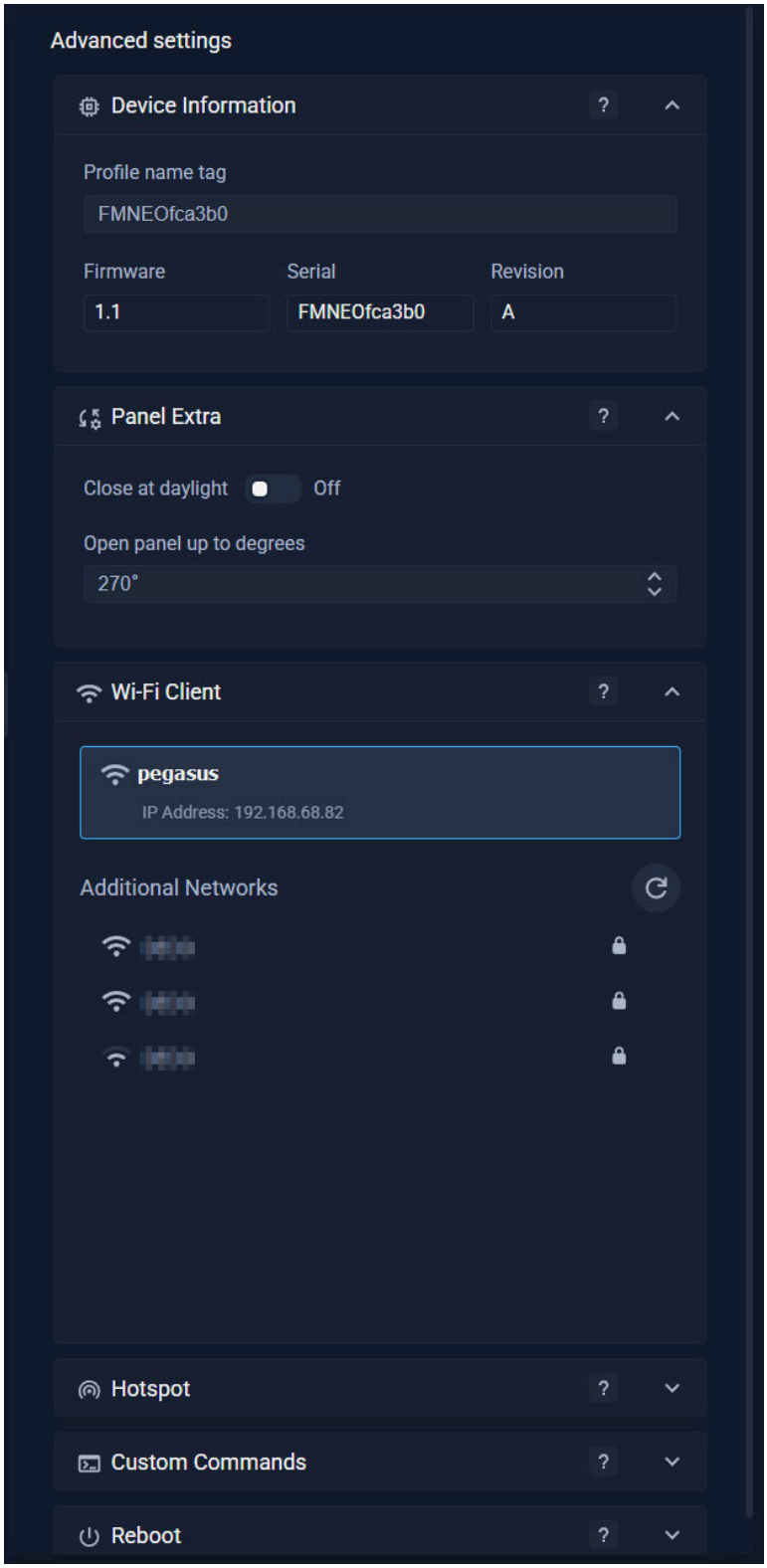
You can review the

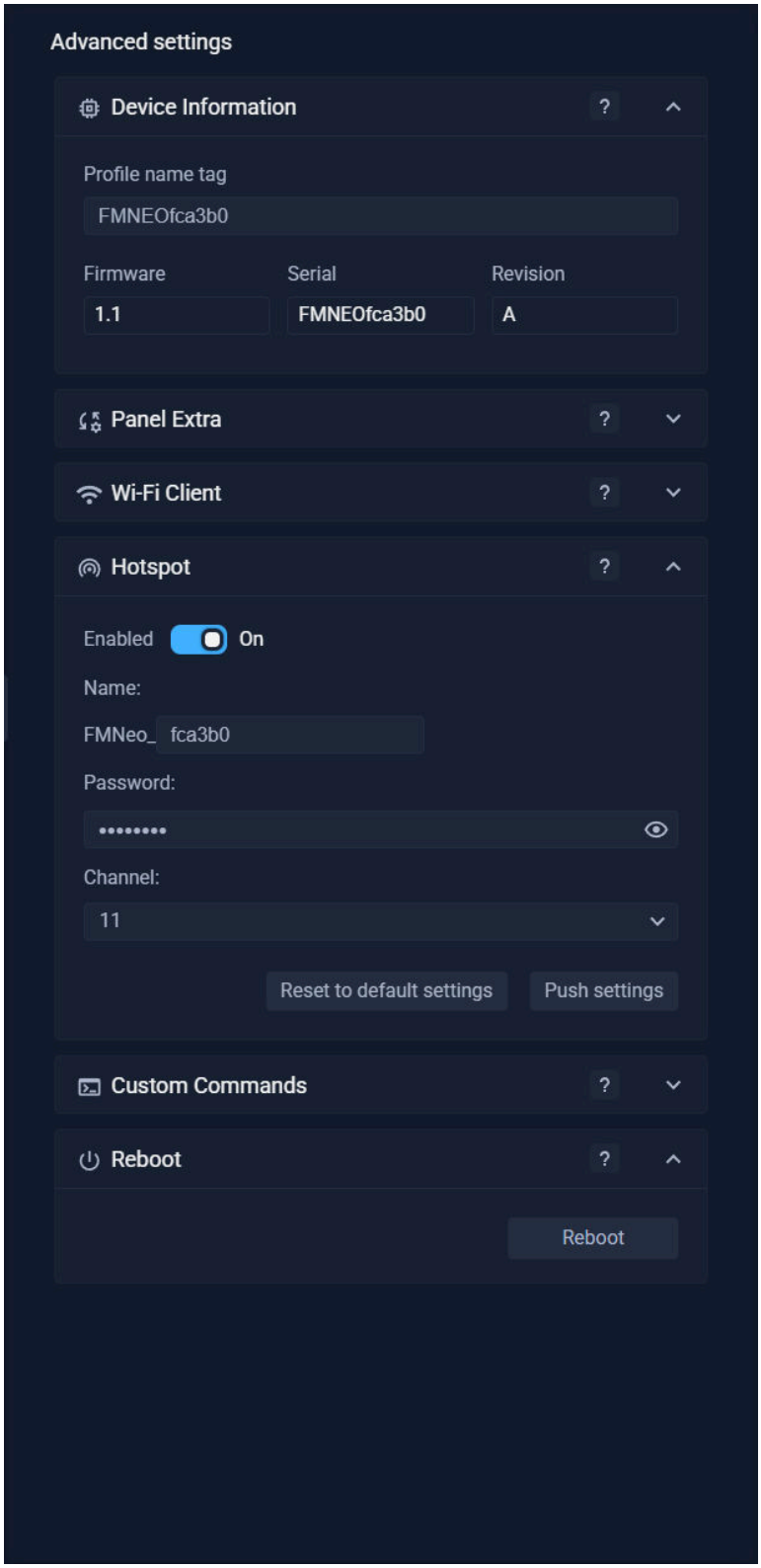
- Temperature
- Relative Humidity
- Dew point
- Light sensor status

By clicking the arrow on the right you can access the advanced settings menu



- Device information
- Panel extra settings
- Wi-Fi Client mode settings
- Wi-Fi Hotspot settings
- Custom commands tool
- Reboot button


Advanced settings
Device Information
Profile name tag
FMNEOfca3b0
Firmware
Serial
Revision
1.1
FMNEOfca3b0
A
Panel Extra
Close at daylight
Off
Open panel up to degrees
270°
Wi-Fi Client
pegasus
IP Address: 192.168.68.82
Additional Networks
Hotspot
Custom Commands
Reboot


Advanced settings
Device Information
Profile name tag
FMNEOfca3b0
Firmware
Serial
Revision
1.1
FMNEOfca3b0
A
Panel Extra
Wi-Fi Client
Hotspot
Enabled
On
Name:
FMNeo_
fca3b0
Password:
Channel:
11
Reset to default settings
Push settings
Custom Commands
Reboot
Reboot

Device information

- Edit the FlatMaster Neo profile name
- View the firmware version installed on the device
- View the Serial number and device revision

Panel extra settings

- Enable the auto cover close function on daylight
- Set the maximum cover angle

Wi-Fi Client

- Connect the FlatMaster Neo to your Wi-Fi network

Wi-Fi Hotspot

- Enable and disable the FlatMaster Hotspot
- View and change the Hotspot SSID
- View and change the Hotspot password
- View and change the Wi-Fi Channel
- Reset the Wi-Fi settings to default

Custom commands

- Use this tab to send API commands directly to the device

Reboot

Tip: by clicking on the question mark icon you can review each tab function.

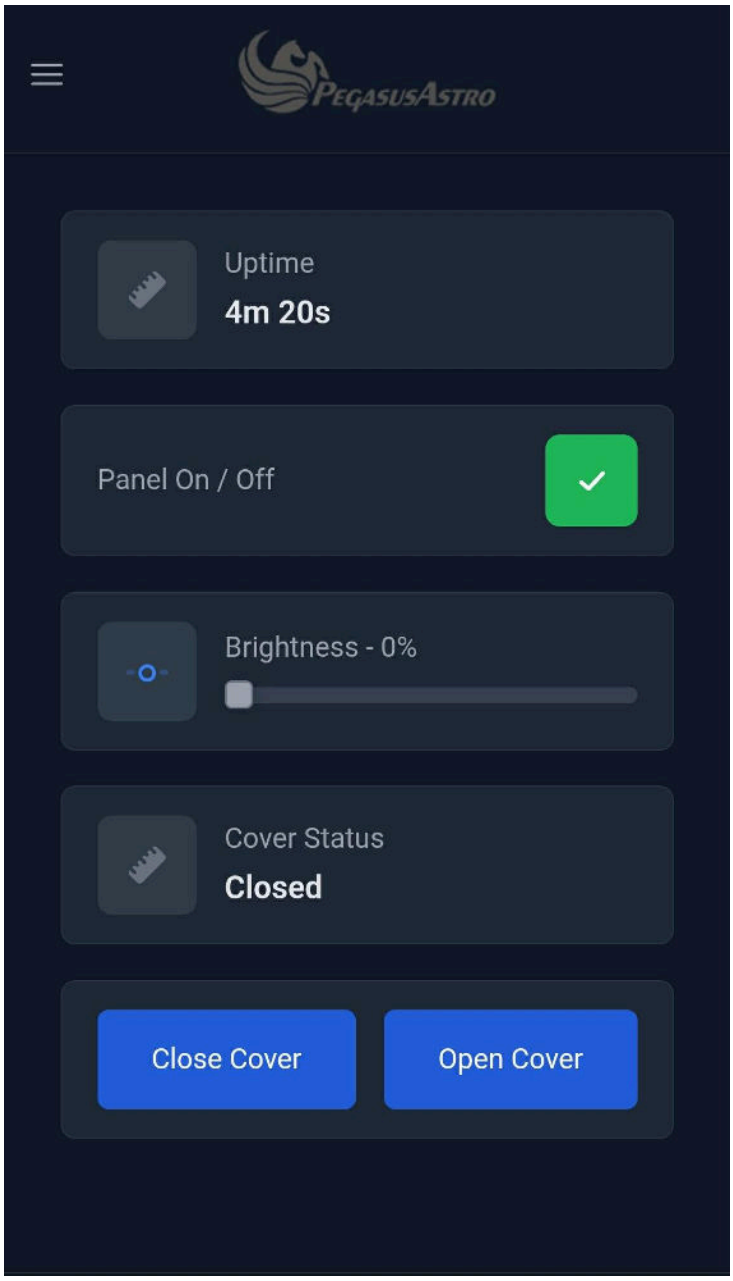
WEB DASHBOARD

Upon connecting to the Flat Master Neo hotspot or a Wi-Fi network where the Flat Master Neo is connected, you can conveniently access it from any web browser by simply typing "**fmneo.local**" in the address bar.

This feature is operating system-independent and functions seamlessly alongside USB control.

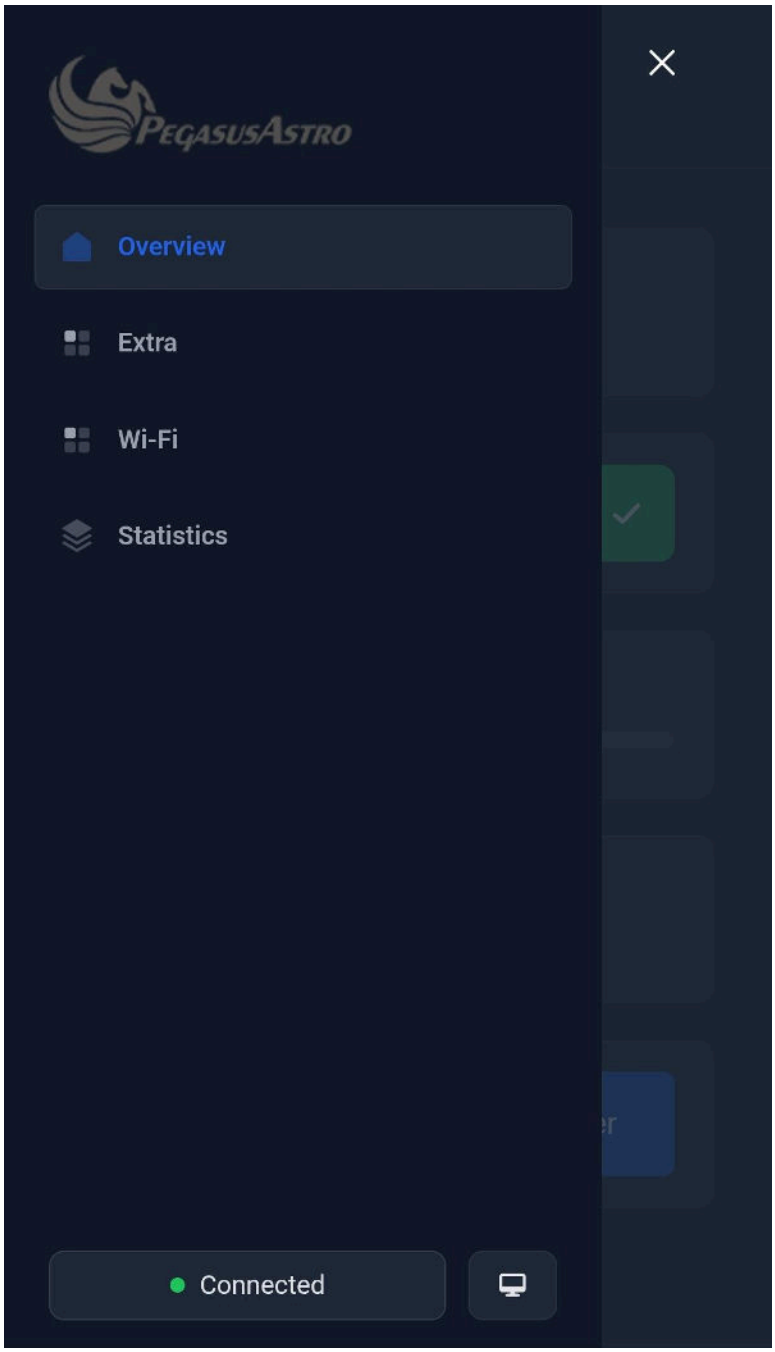
The web dashboard offers full control of the device.

OVERVIEW



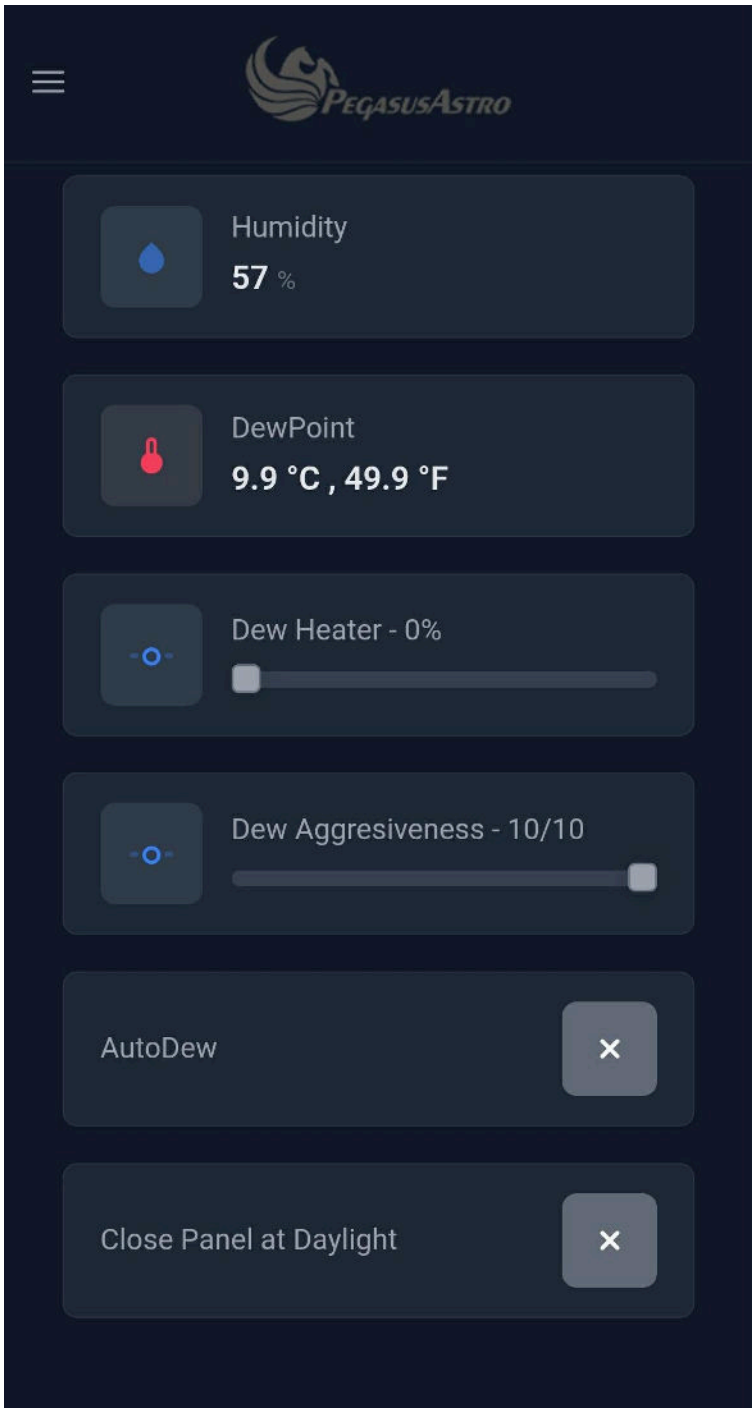
On the Overview screen you can control most basic Flat Master Neo functions. You can toggle the LED, adjust brightness, view cover status, and open or close the panel.

MENU



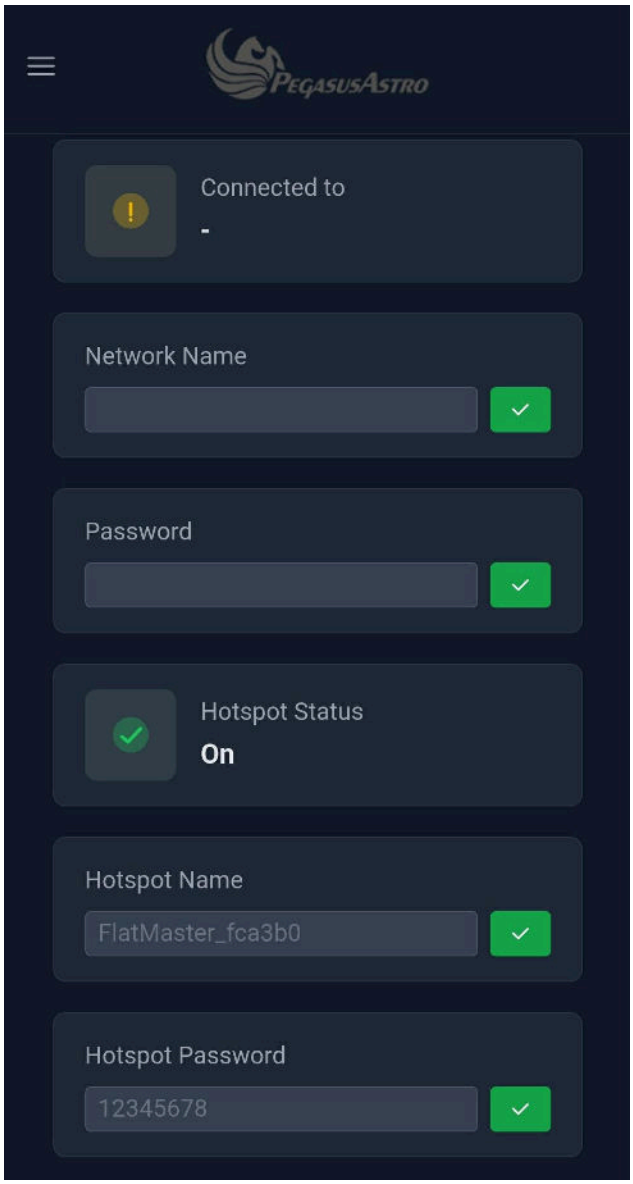
By tapping the three dashes at the top left of the Overview screen you can access the dashboard menu for Extra options, Wi-Fi settings, and device Statistics.

EXTRA



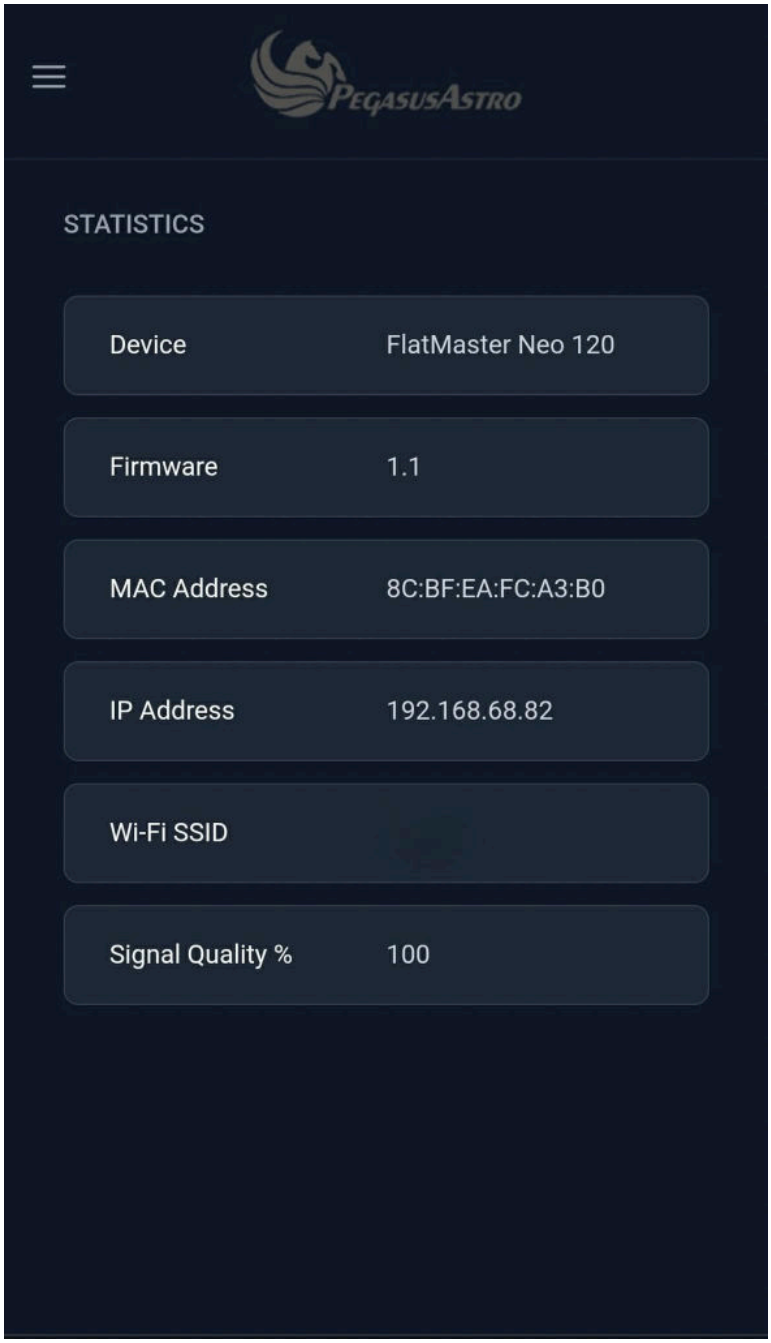
- You may view the environmental sensor readings for both humidity, temperature and dew point.
- Manually set the dew heater level as required.
- Adjust the dew heater's aggressiveness within a range of 1 to 10; a setting of 8 is recommended.
- Activate the automatic dew control function.
- Enable the automatic panel closing feature, where the panel cover closes at daylight by referencing the integrated light sensor.

WI-FI SETTINGS



- Wi-Fi Client Mode: You can view the current Wi-Fi network to which the Flat Master Neo is connected when operating in Client mode.
- Connect to a Wi-Fi Network: Users have the ability to enter the SSID of a Wi-Fi network and enter the corresponding password to establish a connection.
- Hotspot Status: The system allows you to check the current status of the built-in Hotspot.
- Hotspot SSID Configuration: You can view and modify the Flat Master Neo Hotspot SSID as needed.
- Hotspot Password Configuration: The Flat Master Neo also enables you to view and set the Hotspot password for secure access.

STATISTICS



On the Statistics page, you can view various device information.

TELESCOPE COMPATIBILITY

FLAT MASTER NEO 120

The Flat Master Neo 120 is designed to be compatible with telescopes featuring apertures of up to 120mm.

The Flat Master Neo 120 silicone flange is designed to provide a secure seal for telescopes featuring hoods with an external diameter of at least 125mm and up to those with an internal hood diameter of 166mm.

FLAT MASTER NEO 160

The Flat Master Neo 160 is designed to be compatible with telescopes featuring apertures of up to 160mm.

The Flat Master Neo 160 silicone flange is designed to provide a secure seal for telescopes featuring hoods with an external diameter of at least 165mm and up to those with an internal hood diameter of 205 mm.

Capture dark flats at night in a completely dark environment. This prevents stray light or leaks from compromising dark flat frame quality.

TECHNICAL SPECIFICATION

Panel type	Led Light Panel (White)
Dimmable	Yes – (0-100%)
Connectivity	USB-C socket (USB2 signalling)
Adjustable angle range	0° and 270°
Manual Push Button	Open / Close Cover

Wi-Fi Capabilities	Access Point or Client (at 2.4GHz)
Power requirements	5V DC provided by USB-C cable (500mA max current)
Usable diameter of LED	120mm (FM Neo 120) / 160mm (FM Neo 160)
Effective silicone flange seal	125mm - 166mm (FM Neo 120) / 165 - 203mm (FM Neo 160)
Material	Aluminum 6061
Dimensions	18mm x 21mm x 10mm (FM Neo 120)
Weight	590gr / 1.3 lbs (FM Neo 120)

RETURNS AND SERVICE POLICY

The device is covered by two (2) years warranty

For detailed information on returns and service policy, follow the link below

https://pegasusastro.com/returns/

Designed and assembled in Greece

For any questions, feedback, and support please contact: support@pegasusastro.com