How to use your NEON Safely

NEON is designed to a high standard but there are some things you should be aware of in order to prolong the life of the unit and for your own safety.

Using NEON Safely

NEON is a robust and solid object that could cause injury if misused.

• Always make sure that NEON is mounted securely and is unable to fall onto anyone nearby. This is especially important when there are children or pets present who might be tempted to pull on cables.

• Always ensure that cables that run to NEON are clearly visible and do not present a trip hazard.

• Do not place on uneven or unstable surfaces.

• Do not insert anything but a Master Caddy II / III, AtomX SSDmini or AtomX CFast Adaptor in the drive slot on the rear of the MCU.

• Do not touch NEON screen with sharp, metallic or abrasive objects.

• Do not expose to strong electrical or magnetic fields.

• Do not expose to liquids, rain or moisture.

• Do not dispose of NEON in municipal waste and do not incinerate it. Always follow local regulations for safe disposal.

Care of Disk Drives

SSDs are very sensitive to damage from static electricity. Please observe all the usual electrostatic discharge (ESD) precautions when handling them.

HDMI Cables

Please remember that almost all HDMI cables do not use locking connectors and will simply pull out if they are jerked or tripped over. Please ensure that your cables make a secure connection and avoid flexing them excessively to maintain reliability.

What is included with NEON?

Here is the check list of what you will receive in box with the NEON Monitor:

- NEON Display
- 1 x AC/DC Power Adapter
- 1 x Power Adapter Mount Cage

- 1 x AC Cable
- 1 x Master Caddy II kit
- 1 x AtomX SDI Expansion Module
- 2 x Stand Feet
- 2 x 1/4″ Screws
- 1 x NEON Master Control Unit (MCU)
- 1 x Quick Start Guide
- 1 x Hex Wrench

Main Components

Master Control Unit (MCU)

The Master Control Unit (MCU) is the brain of NEON, with native support for HDMI 2.0 for input and loop out, and provides support for video input at 4096 x 2160 4K DCI at up to 60p. The removable design of the MCU allows for it to be easily upgraded in the future, and to be swapped out with a replacement unit if there is an issue, allowing for maintenance in the field without needing to take the entire monitor out of commission.

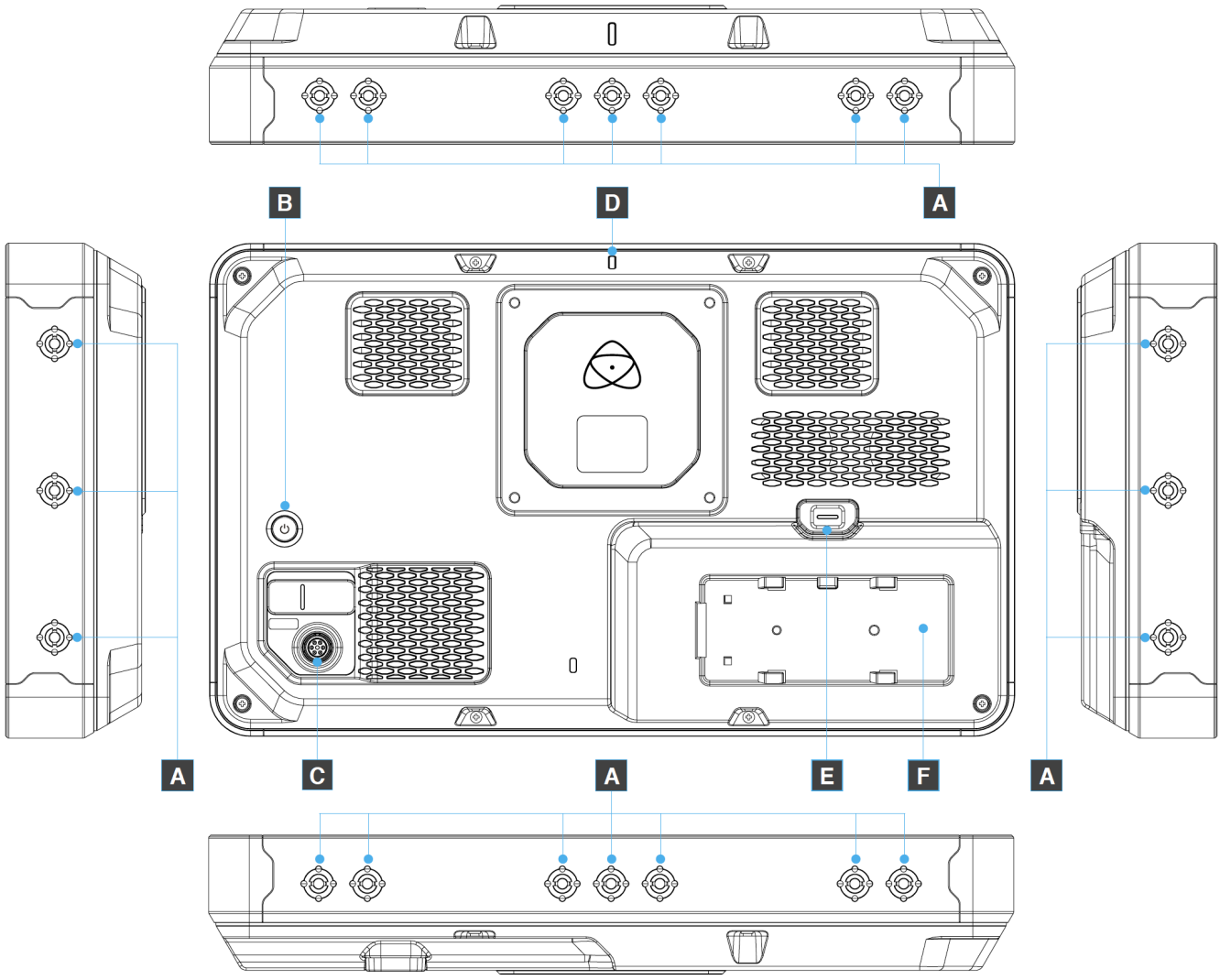
AtomX SDI Expansion Module

The SDI module attaches to the AtomXpansion slot on the MCU, to provide 2 x 12G configurable SDI connections that support up to 4096 x 2160 4K DCI at up to 60p and are backwards compatible to single and dual link 1.5G, 3G and 6G standards. In Record (Rec) mode, the SDI ports can also be configured as single A and B inputs that you can toggle between or as a single input and loop out.

Button Bar Remote Control Unit (BBRCU)

The BBRCU is the control interface of NEON for direct operation and fast access to configuration and tools. The buttons offer a tactile interface with adjustable backlight and provide fast access and control of color space, source signal selection and the tools needed for image analysis.

Physical Features – NEON Main Unit



A. Screw Holes / Mounts + Locking Pin Holes (Arri)

3/8″ screw hole with 1/4″ adapter. Top, bottom and sides.

B. ON / OFF

To turn ON, press the power button on the rear of the unit. To shut down, hold the button for at least 4 seconds until the unit turns OFF. The On / Off button is also used during pairing of NEON to your iOS device or Mac computer.

C. Power Port

Only insert the connector of the supplied power adapter or qualified accessories.

D. Tally Light

The red tally light on the rear of the unit indicates active recording. It can be turned off in the menu options.

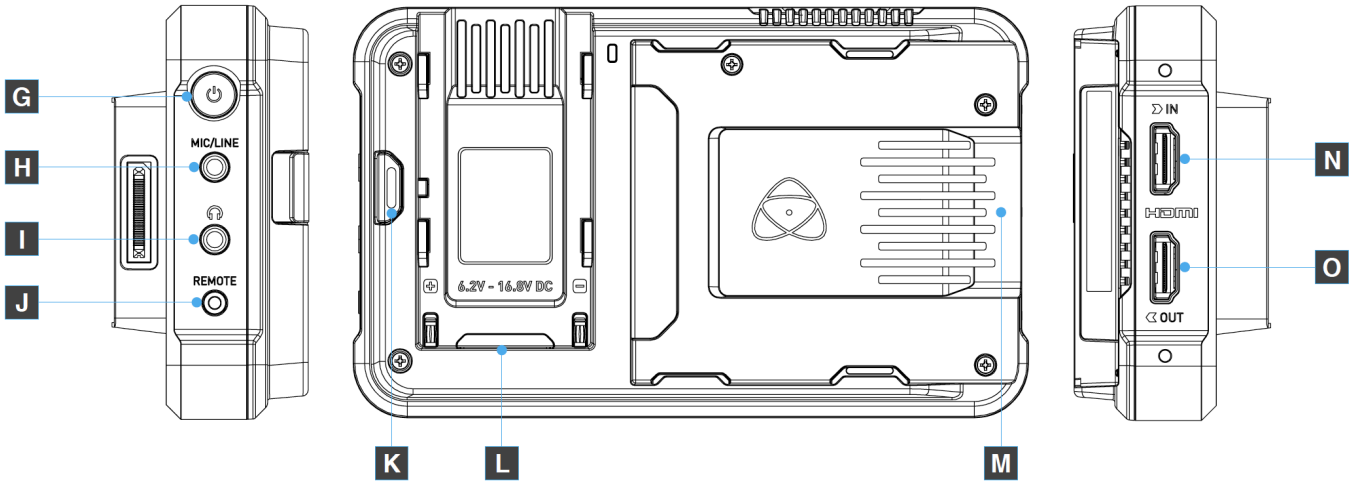
E. MCU Release Button

Pressing the release button allows you to slide the Master Control Unit (MCU) away from NEON to remove it.

F. MCU Slot

The MCU slides into the slot provided on the back of NEON and locks in place.

Physical Features – Master Control Unit (MCU)



G. MCU Button

This button can be used for pairing to the AtomRemote app.

H. Mic/Line In

The 3.5mm input jack allows you to connect a microphone or line connection as an audio source. Channel selection can be accessed in the audio menu of the AtomRemote app.

I. Headphone Out

The 3.5mm mini jack allows for the connection of headphones to the MCU. Volume for connected headphones can be adjusted by using the phones volume slider in the audio menu of the AtomRemote app. When monitoring channels please ensure that the headphone selection is set to the stereo pair you'd like to monitor.

J. Remote Control/LANC and Calibration

The 2.5mm calibration jack on the left hand side (looking from the rear of NEON), allows for the connection of the optional Atomos USB Type-C to Serial LANC Calibration Cable for use with the Calibrite ColorChecker Display Pro / Display Plus calibration device. For remote operations via this

port AtomOS supports both LANC in Sony and Canon format. NEON uses LANC client, so a LANC controller must first be attached to a camera and the output taken out via a Y cable to NEON.

K. Release Button – Expansion Module

Press the release button and slide the AtomX Expansion Module away from the unit to remove.

L. AtomXpansion Port

Enhance your NEON through the in-built modular expansion slot. Bi-directional high speed video, audio and power are available. Supported expansion modules dock into the AtomXpansion port and can be stacked, passing power and offering advanced connections and functions.

WARNING: Do not attach a battery to the Expansion port on the MCU. Attaching a battery to the MCU via the Expansion Port will not power the MCU or screen. AC/DC mains power is required to power NEON.

M. Disk Slot

NEON's MCU is compatible with Master Caddy II/III media, AtomX SSDmini and the AtomX CFast adapter.

N. HDMI In

The video input is a full-size HDMI 2.0a connection used to receive video. The image is both displayed on NEON and can be recorded to inserted storage media. This connection also supports embedded audio and timecode if your camera or NLE sends these out over HDMI.

- **Embedded Audio**

> *Most mirrorless cameras and camcorders send two channels of audio over HDMI but NEON can record up to 8 channels of digital audio embedded in the HDMI signal ifsupported.*

O. HDMI Out

This output allows for connection to an external monitor or other device with an HDMI input. It carries a loop-through of the incoming HDMI signal in record and standby mode, and the playback signal when NEON is in playback mode. This output is HDMI 2.0a and can carry either a 4K or HD signal (with the option to down convert the 4K input to HD).

- **HDR Output**

> *NEON can read the incoming HDR information frame from compatible cameras, which indicates whether a signal is HLG or PQ. You can set NEON to automatically detect this and loop it out. You can also convert from a Log input to HDR display standards or between HLG and PQ.*

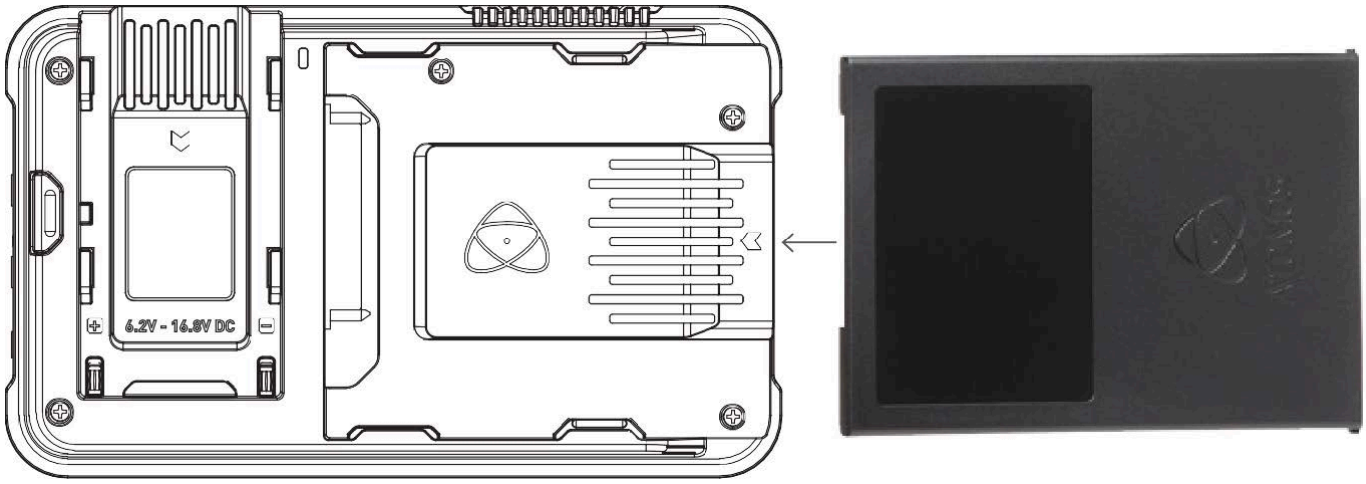
- **Video Scale Convert**

> *The output menu in the AtomRemote app and the Button Bar provide an option for down-scaling to be applied to the signal being sent over the HDMI output. This allows a 4K input to be*

> *converted to a 1080 HD output for use with existing HD equipment.*

Media Slot

On the rear of the MCU unit is a 2.5″ Media Slot designed for Master Caddy II/III media, AtomX SSDmini and the AtomX CFast adapter. To insert your chosen media, gently push until it stops at the end of the drive slot. Media is hot-swappable, so it can be removed at almost any time – even while NEON unit is turned on. However, do not remove media while recording or your files will be corrupted and may be unplayable.



The MCU disk slot does NOT have a release latch – it is friction-fit. Simply pull the SSDmini / Master Caddy II/III or CFast Adapter out using the top and bottom tabs on the media itself.

AtomX SSDmini is backwards compatible with previous Atomos recorders (SUMO19 usage requires AtomX SSDmini handle). The original Master Caddy 1 is not compatible with NEON as the keyways are on one sided only.

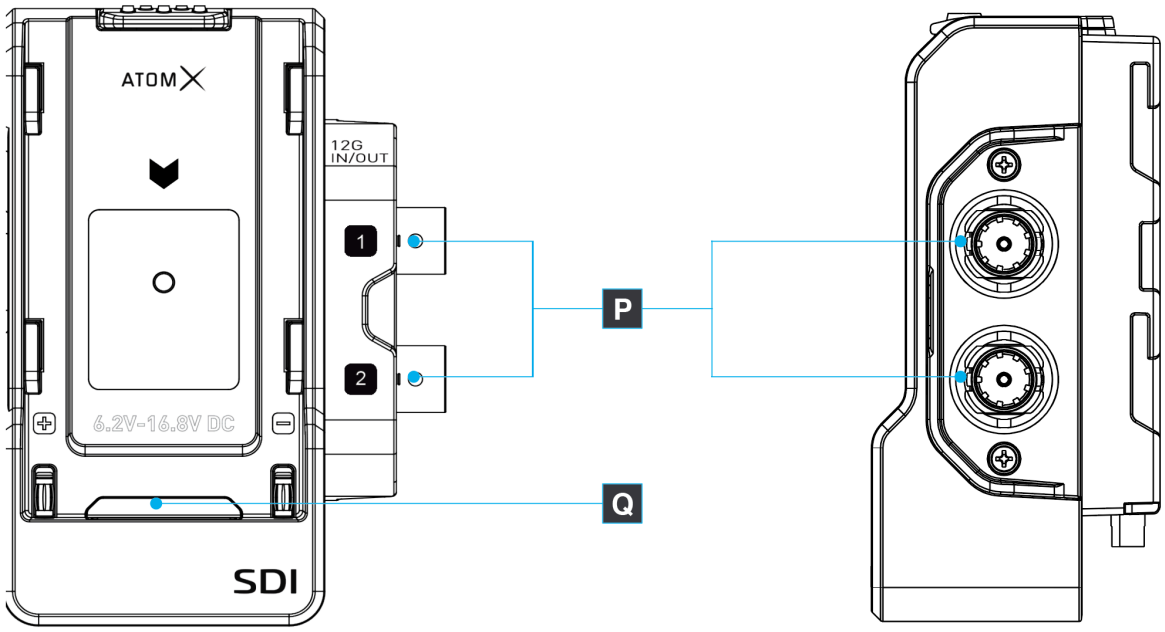
Backing Up and Archiving

Remember that no storage media, including tape, optical disks, spinning disks and flash memory, is completely immune from failure. You should bear this in mind when deciding how to manage your recorded content. At the very least, you should consider the consequences for you and your business if your storage media were to suffer from a sudden failure, and you should back up your content accordingly.

Most media professionals back up their content to multiple locations, for example 2-3 separate hard drives in separate locations, so that if one of the drives fails they will still have a copy of the content on another drive.

Physical Features – AtomX SDI Expansion Module

The AtomX SDI Expansion Module allows you to connect SDI equipment to your NEON as an input or output.



P. BNC Connectors

The 2 x 12G SDI connectors allow for SDI input or output connections and allow for the input of up to 4096 x 2160 4K DCI video at up to 60p. The connectors are backwards compatible for single and dual link 1.5G/3G/6G and can also be configured as separate A and B inputs allowing you to toggle between inputs, or as a single input and loop out.

Q. Expansion Port

The Expansion Port allows for additional modules to attach to the SDI Expansion Module.

It is not possible to stack an AtomX SDI module on top of another AtomX SDI module.

WARNING: Do not attach a battery to the SDI Expansion Module. The SDI Expansion Port is for attaching additional modules only.

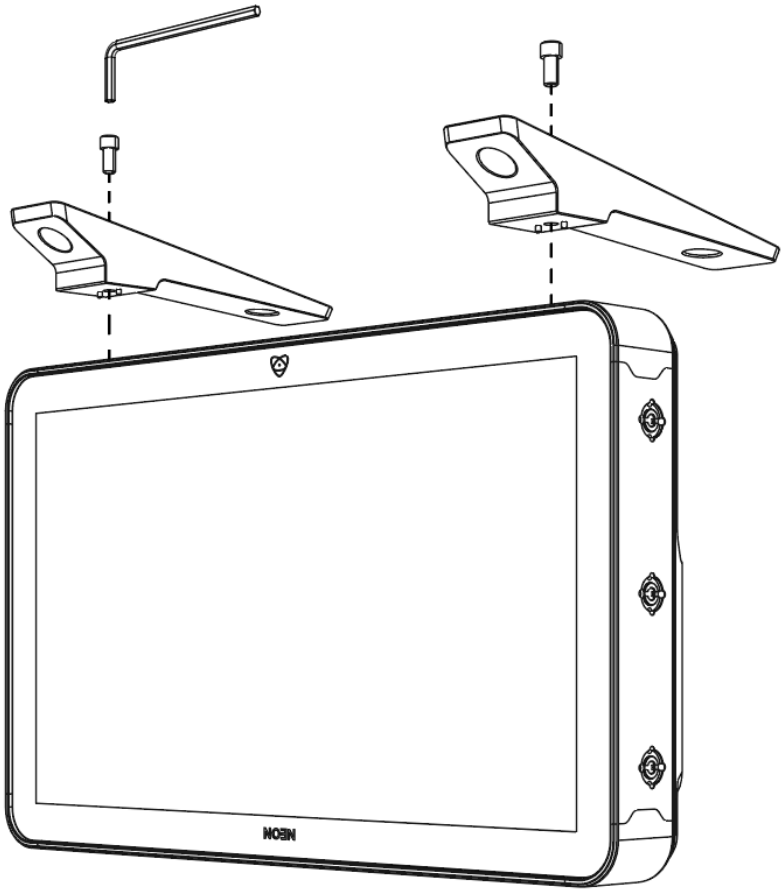
Getting ready for work. Assembling your NEON

To watch a video on setting up your NEON visit:

https://youtu.be/rTuL05jRhH0

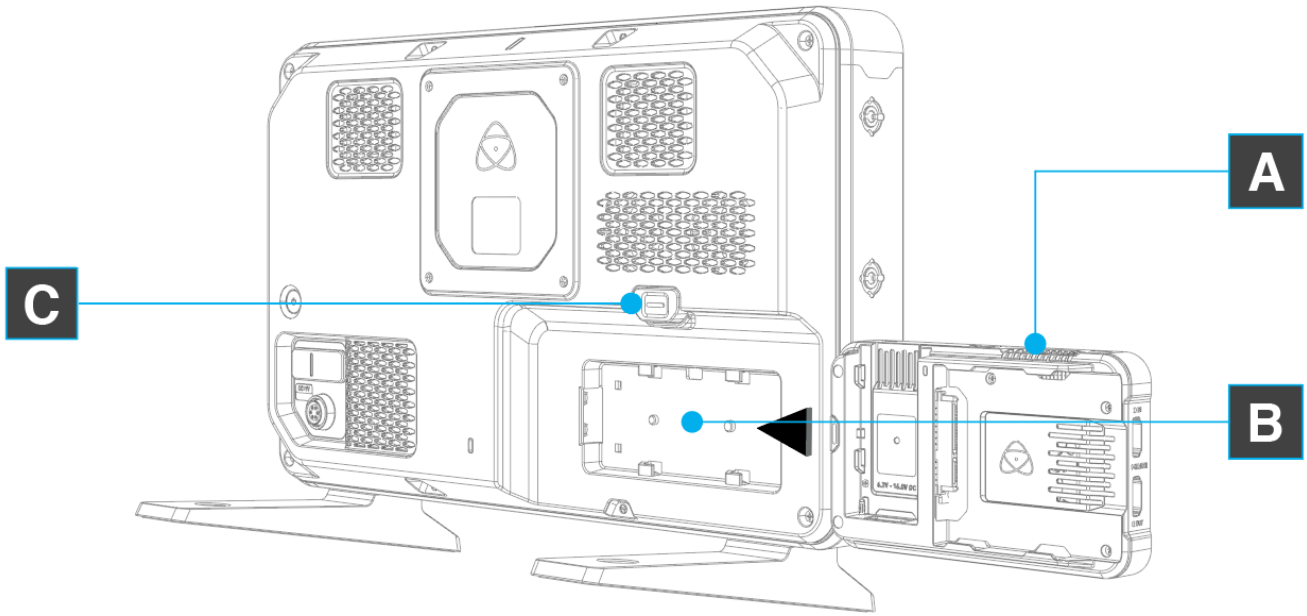
Attach Feet

Place NEON top down on a firm surface. The top of the unit has a NEON logo on the front bezel and an Atomos logo on the bottom. Attach the feet to the bottom of the unit using the supplied 1/4″screws and hex wrench. The short ends of the feet should face towards the front of the unit, so that the NEON leans back away from you.



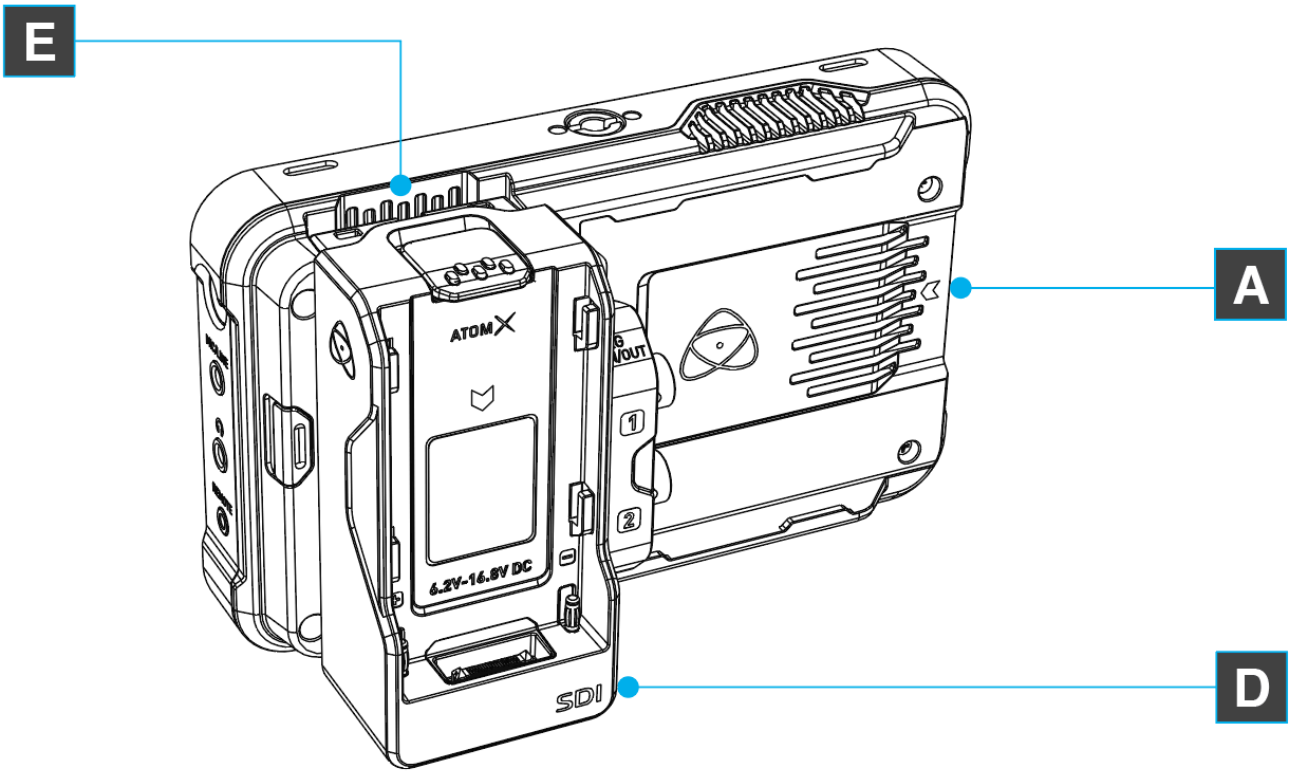
Connect the MCU

Connect the Master Control Unit – MCU (A) by mounting it to NEON’s MCU slot (B). When the MCU is mounted, make sure the unit locks in.



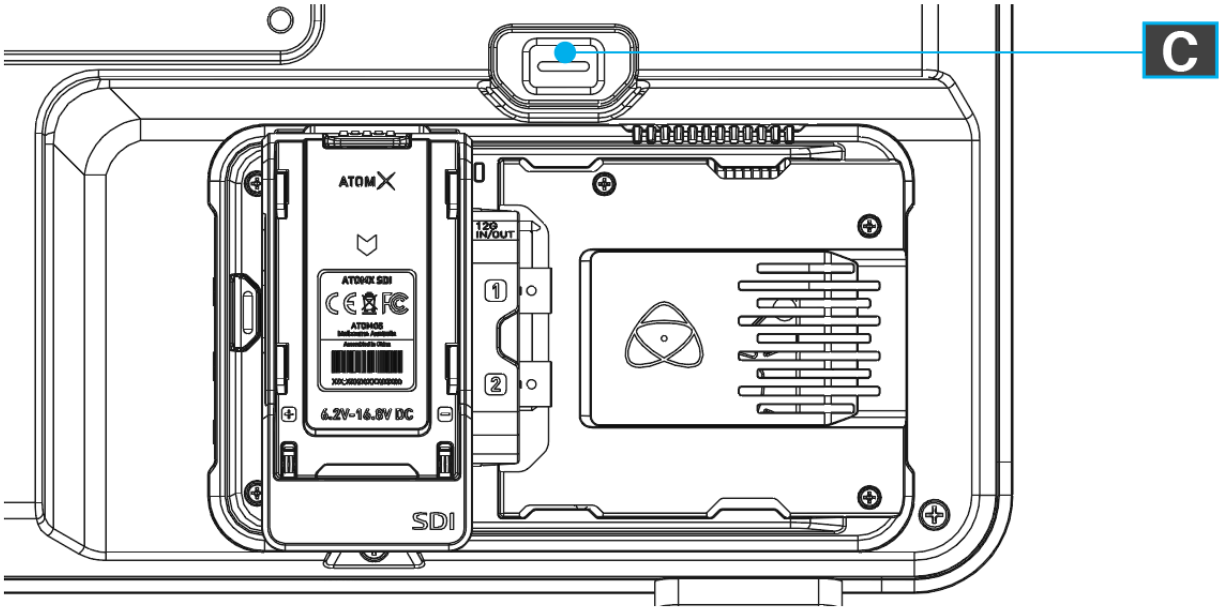
Attach AtomX SDI Module to MCU

Slide the SDI module (D) into the AtomXpansion port on the MCU (E) so that the bottom edges of each unit are approximately aligned. Push in and down until the SDI module locks into place.



Releasing the MCU

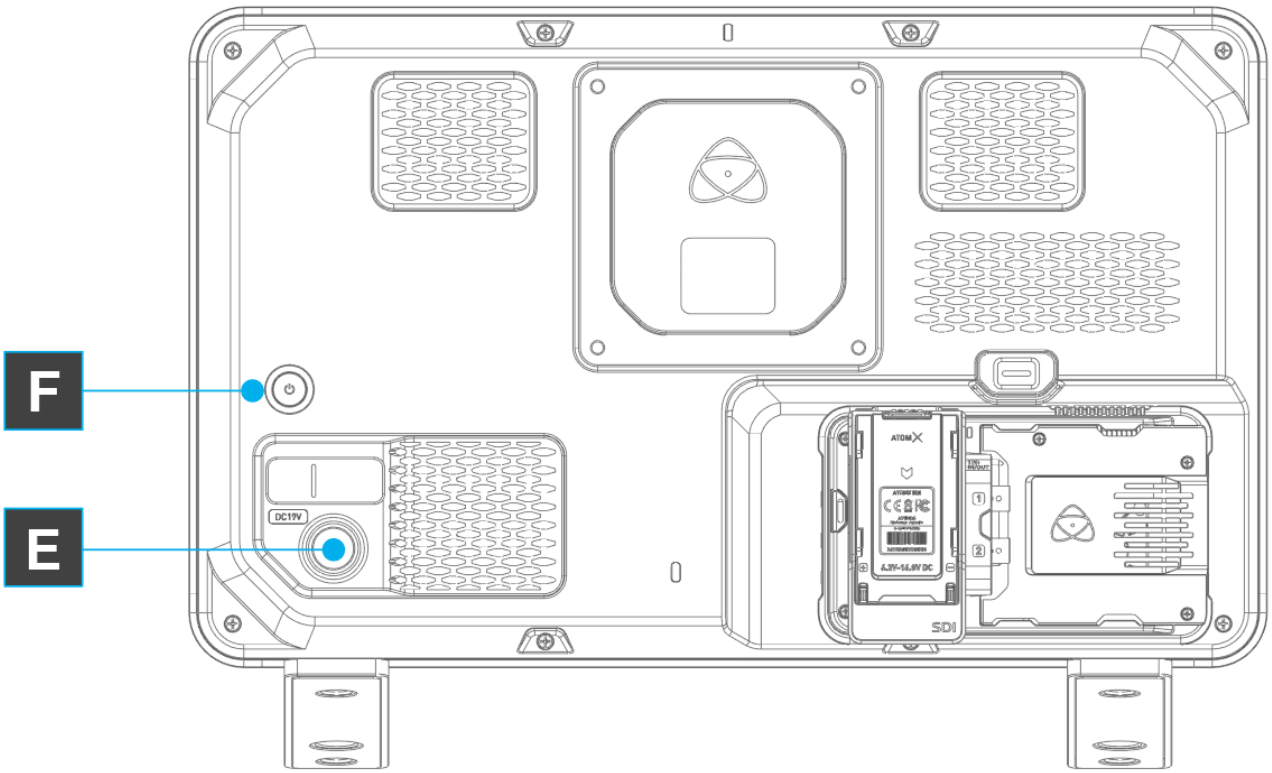
To release the MCU from your NEON, press the MCU release button (C) located above the MCU slot, and gently slide the MCU away from NEON.



Connect to Power Supply

NEON includes a choice of AC cables suitable to specific global regions.

1. Select the appropriate power cable for your region and plug it in to the provided AC/ DC power adaptor.
2. To power NEON, line up the red dot on the connector with the red indicator on the power port (E) and push gently until it clicks into place. Ensure that the connection is locked in place before the power cable is connected to mains power.
3. The power button (F) is located on the back of NEON. To turn NEON on, briefly press the Power button. After a couple of seconds NEON will boot to the home screen.



The AtomX SDI Expansion Module must be attached to the MCU before powering on NEON in order to be activated. It should not be hot swapped whilst the unit is turned on.

When NEON is connected to a power source, the fans will momentarily spin up to confirm that the device is receiving power. The rear Tally LED will also glow red.

NEON's MCU will not accept any power from batteries connected to the MCU. Do not try to power NEON by using batteries or a third-party power supply, as it will result in damage to the device.

Do not press and hold the power button in on NEON while the unit is off. This may place the device into a Firmware recovery mode. If you accidentally do this, simply turn NEON off and on again.

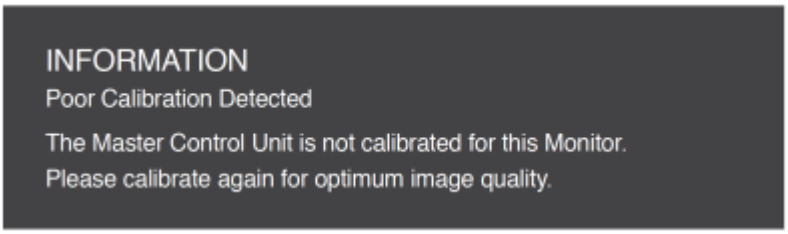
Getting ready for work. Powering on your NEON

Briefly press the power button (F) located on the back of NEON to power it on. After a couple of seconds you will see the following startup screen briefly:

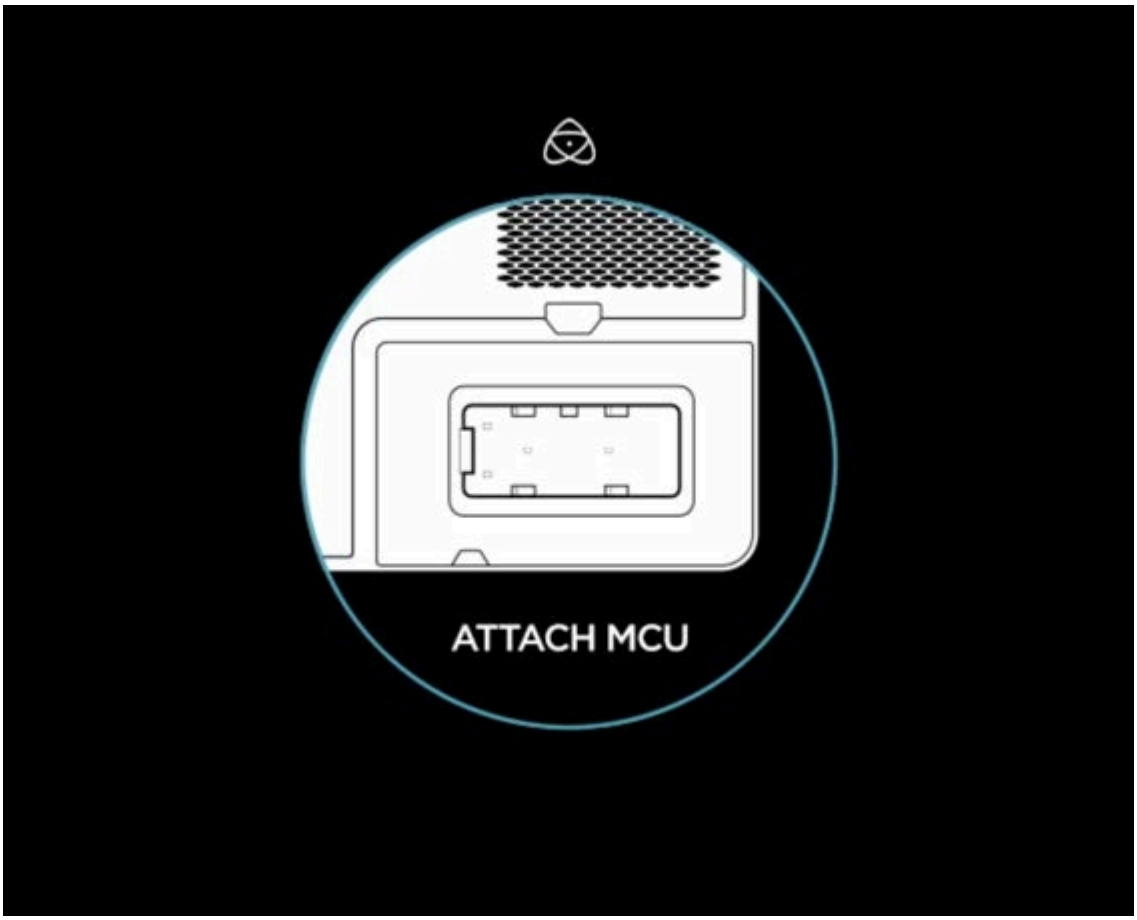
Following this, NEON's home screen will be displayed, and No Input will appear on screen. The first time that NEON boots up, it will be set to HDMI as the input and SDR (Standard Dynamic Range). Following this, NEON will always boot up with the previous settings used.

If the AtomX SDI Expansion module is not attached to the MCU when NEON is powered on, and SDI was the last used input setting, then HDMI will need to be manually selected as the input in the AtomRemote app or on the Button Bar.

Poor Calibration Detected – This information box will appear when your NEON detects a poor calibration of the unit. If the AtomRemote app is connected, it will also display a warning on screen advising you to check NEON's screen for information.



If the MCU is not connected to NEON or is not seated properly, NEON will not boot to the home screen and will display the following image instead:



In this situation, check that the MCU is connected properly. If the MCU is already in place, press the release button to remove and reseat it.

Turning OFF power to NEON

To turn the unit off, simply press and hold the Power button (F) on the rear for 4 seconds.

Four seconds can seem like a long time! This is intentional, to make absolutely certain that NEON can't be turned off accidentally.

Operating NEON

There are two ways you can control the NEON monitor, the Button Bar (BBRCU) or the AtomRemote app, some of the controls are duplicated in both places and others are only on the App. The controls that are only available in the app are in general more complex.

When the button bar is first plugged in, some of the buttons will illuminate. If a button is glowing white that means you can select or change a setting, whereas if they are glowing green then that item is selected. Pressing the Menu button (changes to Green) brings the on-screen menu interface into view.

Pressing the PLAY button switches the monitor into play mode and allows the viewing of content stored on the SSD drive. You can switch back by pressing F5 and choosing an input HDMI or SDI.

Button brightness

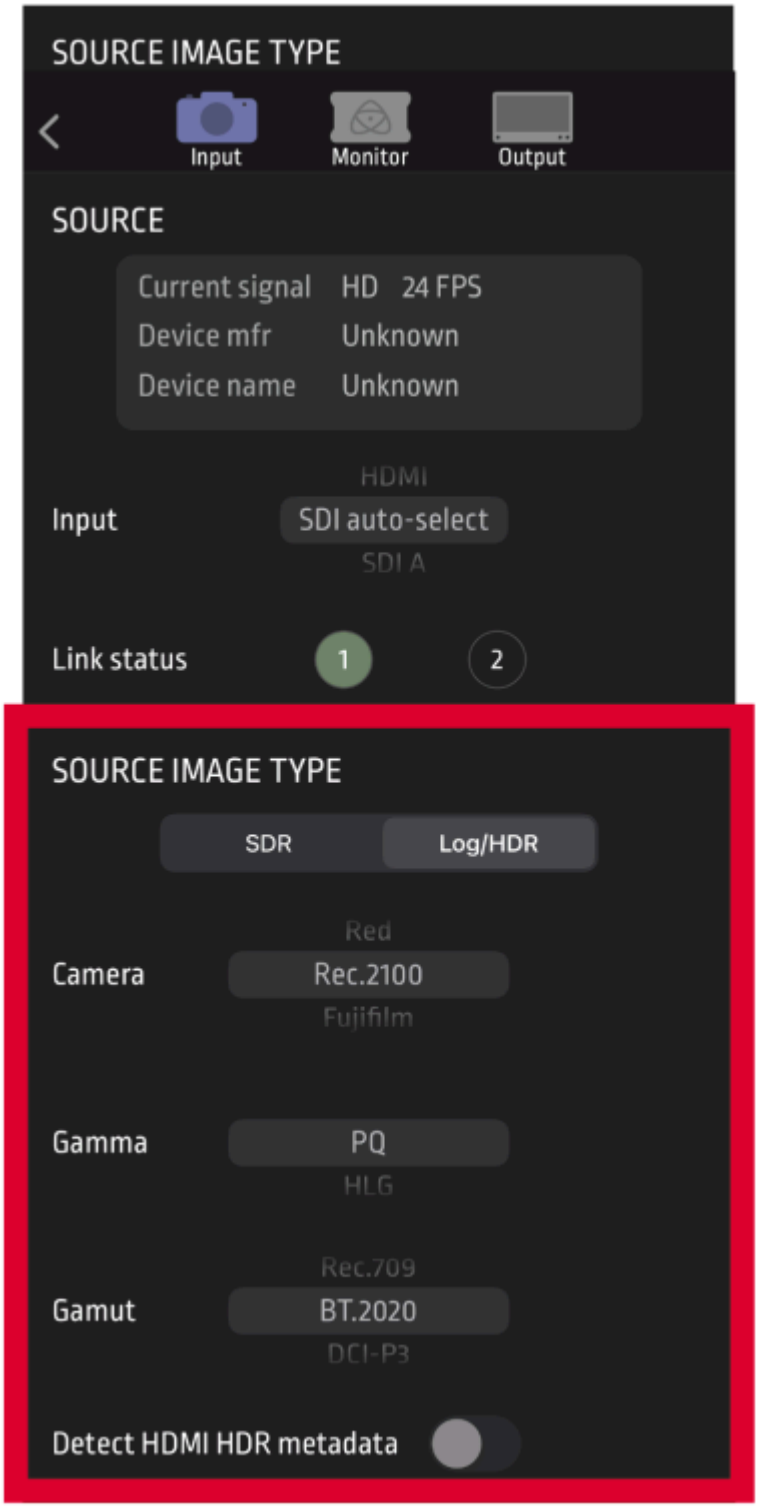
To change the brightness of the buttons. When none of the function keys is selected, you can use the UP and DOWN arrow keys to change the brightness of the buttons.

Select a Color Space (F1)

Once the Menu button has been pressed, press the F1 button to bring up the color space options. Buttons 1-4 allow you to select the following options:

	Button 1	**Button 2**	**Button 3**	**Button 4**
Color Space	REC.709	PQ	HLG	Camera Log
Gamut	REC.709	P3	P3	P3
White Point	D65	D65	D65	D65
EOTF	Gamma 2.4	PQ	HLG	Log
Luminance	100 nits	1000 nits	1000 nits	1000 nits
Range	Narrow/ legal	Full	Full	Full

To adjust the color space in the AtomRemote app, navigate to SOURCE IMAGE TYPE in the Input menu.



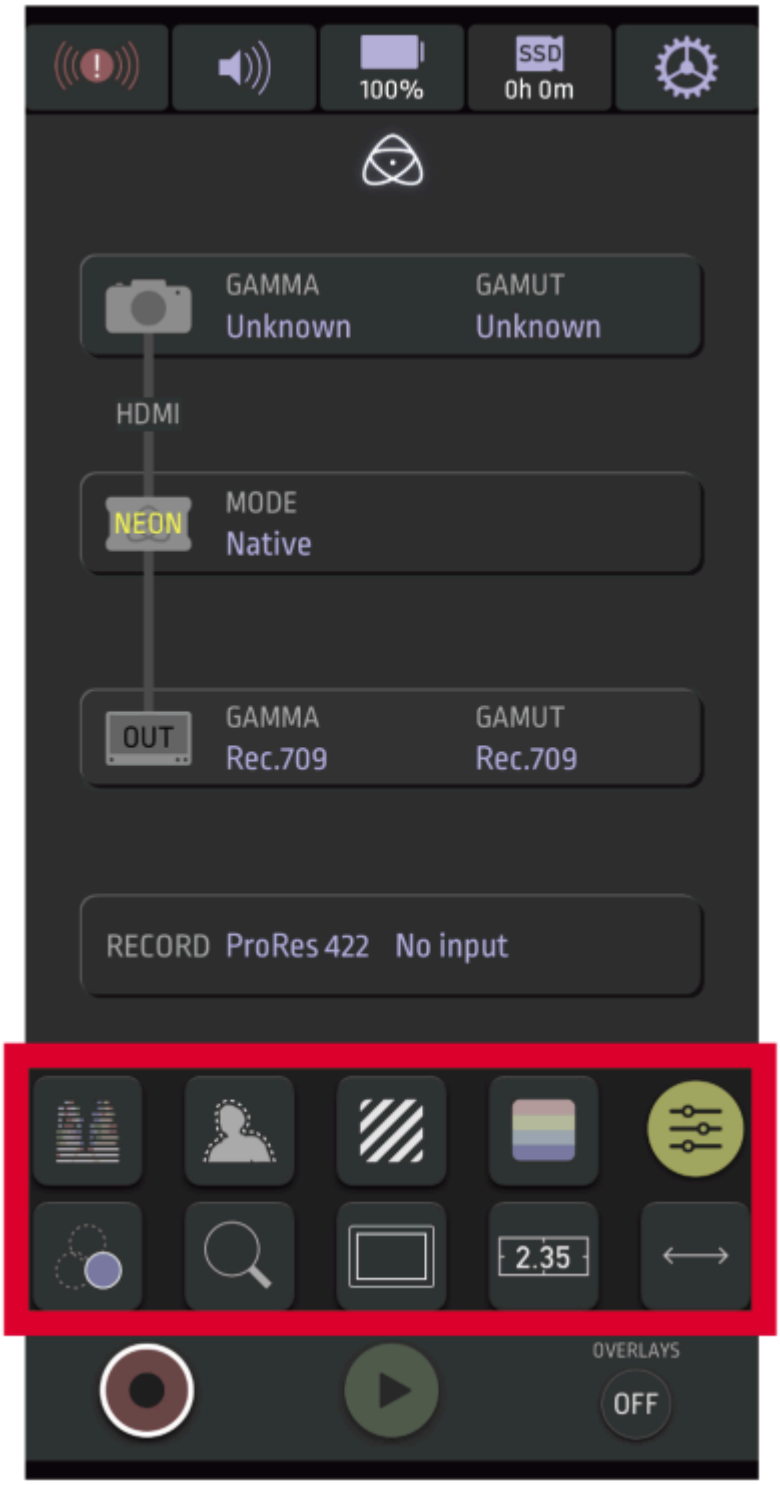
You can also select Camera and Log on this page in the AtomRemote app. You must first select Camera/Log with number 4 on the button bar or choose the option in the AtomRemote app. Then using the AtomRemote app, you can select the Camera, the Log and Gamut so your images are displayed correctly.

Select an Image analysis tool (F2)

To select an image analysis tool from the button bar, press F2 and then one of the following buttons for each specific tool:

1. Waveform monitor
2. Parade
3. Vectorscope
4. Magnified Vectorscope

You can also select the Image Analysis Tools from the lower region of the mainscreen in the AtomRemote app. These can be toggled on and off simply by tapping the icon on the main screen of the app. When a tool is enabled, the icon will have a solid border around it. Many of the monitring assist tools can be used simultaneously to assist with focus, exposure, framing and more.



Scopes
The Luma Waveform, RGB Parade and Vectorscope assist with exposure, color balance and saturation.

Focus Assist
Highlights the areas that are in focus.

Zebra
Highlights peak exposure.

False Color
A visualization of exposure ranges across the image.

Monitor Assist Settings
A menu page which provides options and settings for each of the monitoring assist tools.

Blue Only
Reveals noise in the video image more clearly.

Zoom
Magnifies the image on screen.

Safe Areas
Displays title and action safe areas.

Frame Guides
For a variety of aspect ratios.

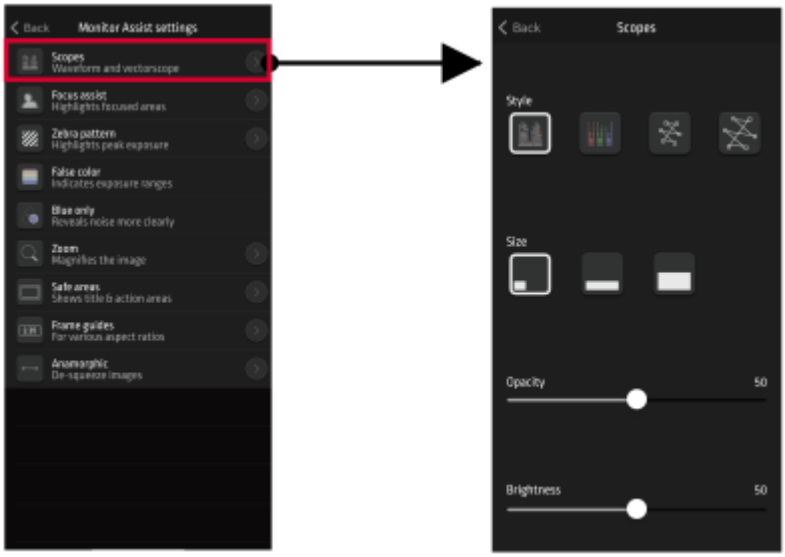
Anamorphic De-squeeze
Allows you to view a correctly squeezed image when using anamorphic lenses.

The Monitor Features will only be illuminated and available if there is an input signal detected.

Using the monitoring features will NOT affect the recorded image in any way. They are purely monitoring aids.

Monitor Assist Settings

These settings can be accessed by tapping on the yellow Monitor Assist Settings icon in the AtomRemote app. The settings provide additional configuration options for the Image Analysis Tools like size options for scopes, brightness settings for the data display and opacity settings for the background. If the tool has settings that can be adjusted, it will display an arrow to the right of the tool, which provides access to its settings.



Frame Guides (F3)

To select the Frame Guides (also known as cages or graticules) from the button bar, press F3 and then one following buttons for each guide type. Notice that repeated presses of a button will select another guide option as listed below.

1. Image analysis tool, Blue only.
2. Aspect Ratio Guides (repeat presses will cycle through the following):
    1. 16:9
    2. 2:41
    3. 2:35
    4. 1:9
    5. 1:85
    6. 4:3
3. Safe areas (repeat presses will cycle through the following):
    1. Safe Action area
    2. Safe Titles area
4. Anamorphic desqueeze (repeat presses will cycle through the following):
    1. 2x
    2. 1.5x
    3. 1.33x

You can also select a Frame Guide from the AtomRemote app by accessing the Frame Guide settings as described above. Then tap the Frame Guides

Exposure Tools (F4)

To select an Exposure Tool from the button bar, press F4 and then one of the following buttons for each specific tool:

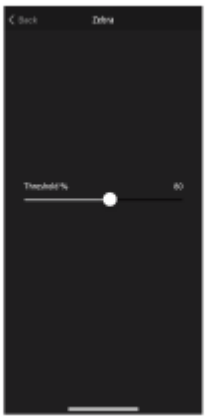
1. Focus Assist

2. Zebra

3. False Colour

4. Zoom x2 – this magnifies the centre of the screen 2x. You can move the position of the selected area in the AtomRemote app by selecting the Monitor Assist Settings and choosing zoom. Drag your finger across the box at the bottom of the screen to move the zoomed location around the image. You can also select one of the Exposure Tools on the AtomRemote app by tapping on one of the icons on the main screen.

To adjust the settings for Focus Assist and Zebra, navigate to the Monitor Assist Settings as outlined on the previous page. The settings allow you to select the style of focus assist and the Zebra threshold level.


How do I make sure NEON is colour accurate?

Required hardware

You will need the following items to Calibrate you NEON monitor:

• Either a Calibrite ColorChecker Display Pro / Display Plus Colorimeter or an X-Rite I1DisplayPro Colorimeter is required to calibrate the NEON.

• An Atomos USB to Serial Calibration cable (USB A - ATOMCAB004 or USB-C ATOMCAB018) is required to connect your computer to the NEON MCU for calibration.

• A PC or Mac to run the Calibrator software

Required Software

You will need the following software to calibrate you NEON monitor:

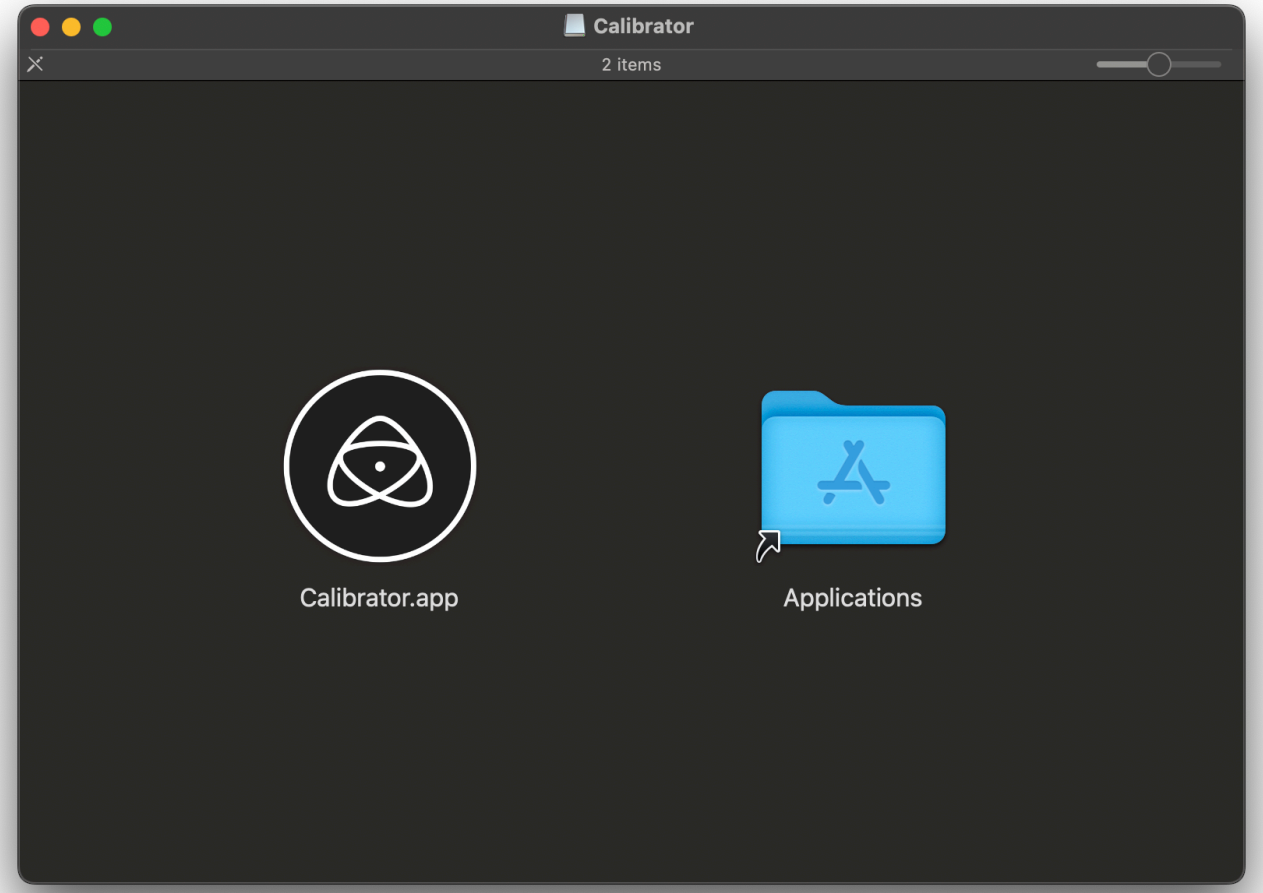
- ATOMNEO_10.25.zip – this file contains the ATOMNEO.FW file for the firmware
- AtomRemote.app is available for download as described below.
- The Calibrator app version 2.1.8 for your operating system.

    - • macOS (64-bit) - Calibrator_2.1.8.dmg
    - • Windows (64 - bit) - Calibrator_2.1.8.msi

For more information on the installation process, refer to the The NEON 'Your Reference' Color Management release.

macOS

To install the Calibrator App, double click to open the Calibrator_2.1.8.dmg file and then drag the Calibrator icon to the Applications folder.



Windows

To install the Calibrator App, you will need to run the installer 'Calibrator_2.1.8.msi' file and follow the install instructions.

NOTE: If you already have a version of Calibrator installed and want to keep it, you should be able to rename it, something like 'Calibrator (2.0.0)' will allow you to have the two versions installed.

Calibrating your NEON monitor

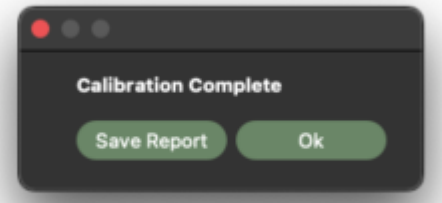
The final stage of the set-up process is to Calibrate the NEON monitor. This is important to make sure that the images are displayed accurately as you would expect them to. For the process to work correctly, the NEON monitor needs to be switched on with pictures on the screen, and the Colorimeter plugged into your computer for **at least 30 minutes** before you begin the calibration. Calibration should be performed in a dark environment, at a temperature between 22˚C to 30˚C.

The full guide to calibrating the monitor is here:Atomos Display Calibration

This process is almost identical to the one described in the guide linked above, except that on completion of the calibration process you are presented with an option to 'Save Report'. This report

contains details of the calibration.

Click on Save Report to download a copy of the report to your computer, and share it with us at the following email address: neon@atomos.com



Please refer to the Atomos Calibrator Report Guide once you have generated the report. This guide will help you to understand the results of the report. More information and guides related to the Atomos Calibrator are available at https://www.atomos.com/calibration

Setup is complete

Your NEON is now configured and ready for you to begin using with the new firmware. Outlined below are the major changes in this release.

NOTE: Now you can unplug the Atomos USB to Serial Calibration cable from the Remote Port on the MCU and use the 2.5mm to 2.5mm jack cable to connect the Button Bar (BBRCU) to the Remote Port.

How do you connect to the NEON Monitor to play video?

The source video needs to be provided from either an SDI or an HDMI source, this could be a camera, a suitable player or a video delivery device driven from a computer running appropriate grading, editing or other production software. The device you are connecting will need to deliver a signal that fits within specifications the Neon can display, as follows:

- An SDI signal needs to be either 1.5G, 3G, 6G including dual-link or 12G up to DCI 4K 4096 x 2160 60p.
- An HDMI signal can be either version 1.4 to support HD or version 2.0 to support DCI 4K 4096 x 2160 60p.

If you connect an HDMI cable directly from your computer or a domestic video player to your NEON, you might find that the device refuses to send a signal to your NEON. This can be caused by the fact that NEON does not support High-bandwidth Digital Content Protection (HDCP).

If you are connecting NEON to a computer for production work such as VFX, editing or grading, a signal converter should be used as these devices will generate a proper video signal. The output from

your computer's HDMI port is designed to work with domestic televisions and monitors, and will not provide the image quality and the accuracy that is provided by a signal converter.

The video signal converter you choose will depend on the different software applications you intend to use, as well as the facilities they offer to output a video signal over SDI or HDMI. These converters are offered either in an external box connected by Thunderbolt, or as an internal card hosted inside your computer. You will find instructions on how to connect your chosen production software either from the software vendor or the converter manufacturer. Remember that a good source of advice is your reseller as they will be working with many people setting up similar systems.