ASTON IMPACT INSTALLATION MANUAL

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Revision History

Revision	ECO	Change Log	Author
A	ECO-001XX	No Content Changes	Vinay Kulkarni

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1. ASTON IMPACT SW INSTALLATION PROCEDURE

1.1. Full RFS Flash on Aston Impact System

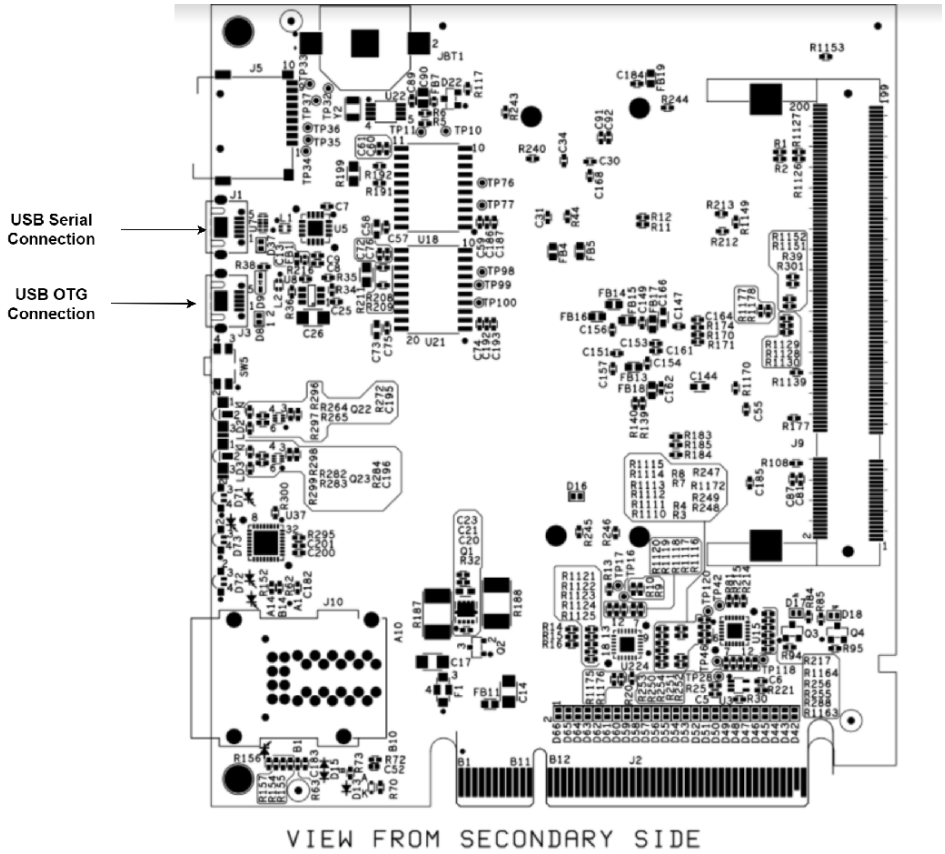
This section details the steps required to flash the complete Aston Impact Software on the Aston Impact System.

Hardware setup Prerequisites:

The following hardware setup is required for flashing the full RFS image onto the Aston Impact Board:

1. Linux Host PC (Preferably Ubuntu 20.04 or later)
2. 3 USB Ports are accessible on the Laptop for connecting to Aston Impact.
3. H/W Connections between Host PC and Front Panel.
4. Connect USB UART (J1) from FP (Debug-Serial, just below Micro SDCARD) to Host Laptop - required for getting a serial console
5. Connect USB OTG (J3) from FP to Host Laptop - required for flashing
6. Ethernet connected to Front panel (We need direct internet to be accessible for Time sync purposes while installing S/W F/W for the first time).

The figures below can be used as a reference to locate the USB UART and OTG ports:



Software Requirements

The following artifacts are required to carry out a full RFS flash. They are shared as a Google Drive Link for each release. You can find the flash images from the release emails.

NOTE

Software Flashing is enabled using the Aston Flasher tool.

1.2. Aston Flasher (for Linux host)

Description

Aston Flasher is a tool (available for both Windows and Linux) used to flash Aston images to multiple Aston devices simultaneously. It works in two modes, Flash and Recovery. You can use it for mini and SOM devices.

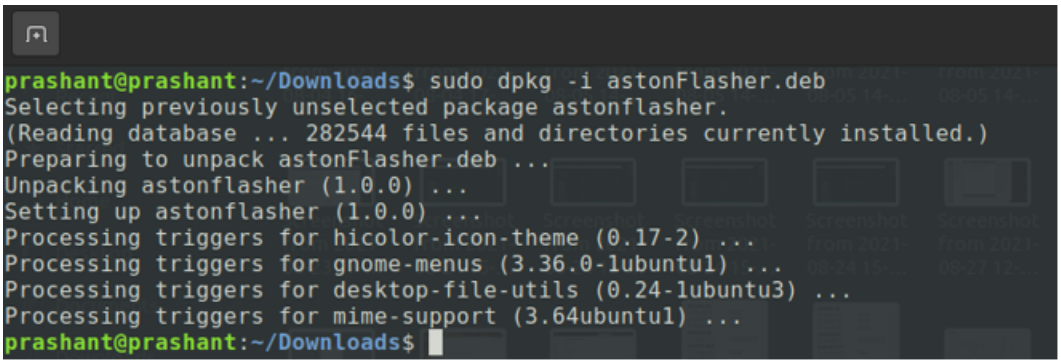
Aston devices can go into recovery mode if the Bootloader partition is corrupt. During recovery (i.e., taking the device from recovery mode to normal mode), a new bootloader binary will be loaded into the RAM.

Here is the link to the Aston flasher distributions.

Installation

Once you have downloaded the Aston flasher distro (i.e., astonFlasher.deb) from the software packages, Use the following command to install it using

sudo dpkg -i astonFlasher.deb



Setting Aston into Recovery Mode

If the PLUS SOM cannot find a Bootloader to boot, It will move into a special recovery mode., In a Blank State (technical term for recovery mode), the SOM is exposed as a USB Download Gadget ready to be flashed with any image.

Since the fresh SOMs already have a bootloader flashed on the eMMC, we will employ a workaround to get the SOM in recovery mode. This can be done as follows:

1. Power off the SOC
2. Remove any SD card if present on the SOM
3. Press the switch on the SOM, which is responsible for making the SOC boot from the SD card (which should be empty), OR Manually Configure the HW

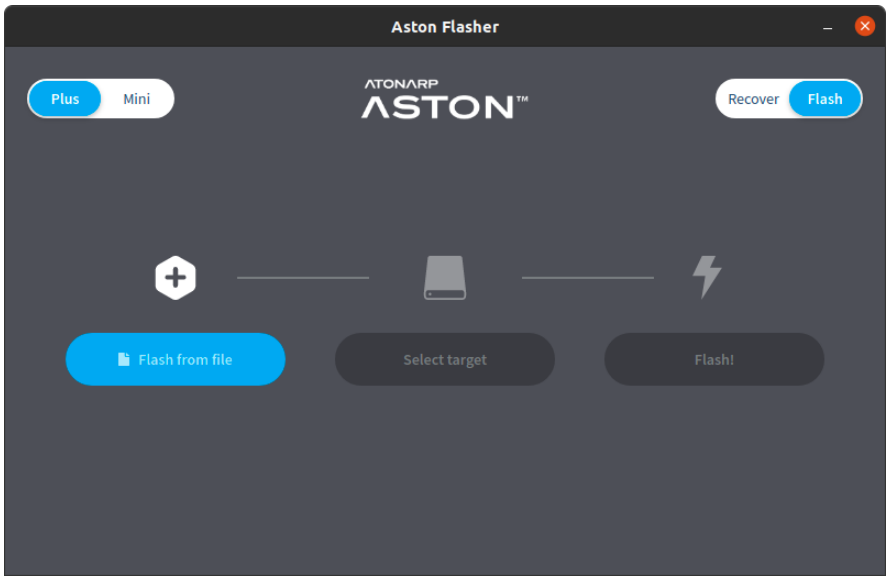
Jumper on the Front Panel to boot from SD Card

4. While pressing the switch, Power on the SOM. Since the SD card slot is empty, the SOC will not be able to find a bootloader and will enter the Blank (Recovery Mode)

Recovery Procedure

1. Complete the Post Installation procedure. Without this, recovery mode will not work as per the expectations.
2. Start the application using the following command

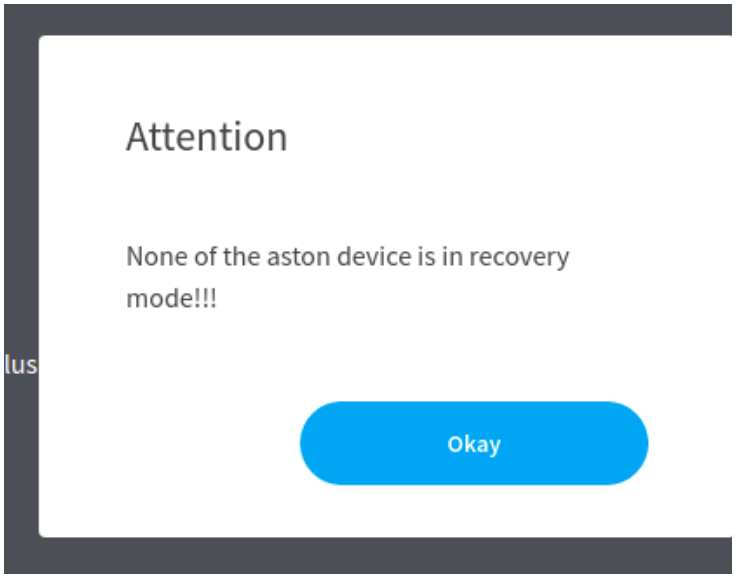
   sudo astonFlasher



3. Select the required SOM (System on Module) type (i.e., plus or mini) from the toggle in the top left corner.

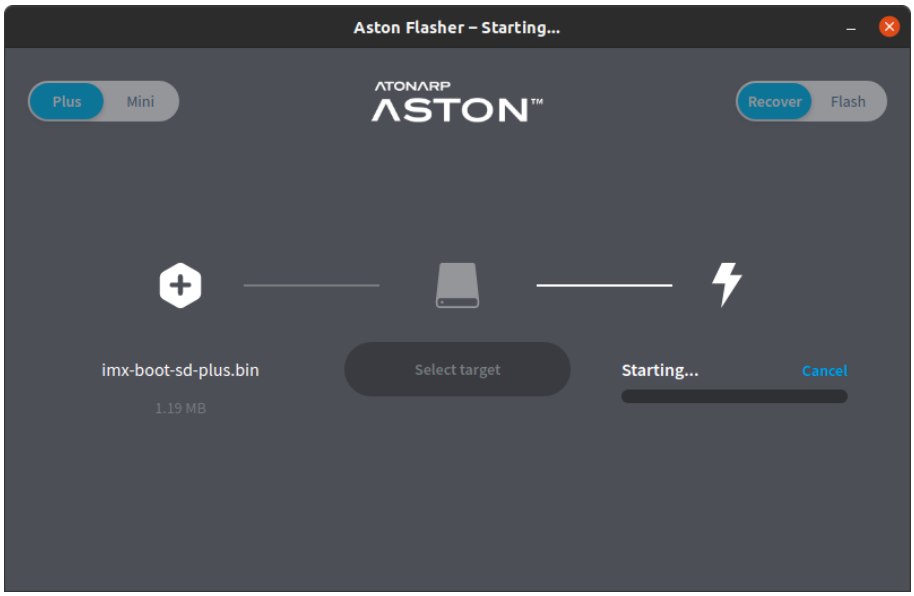
4. Once you have selected the right SOM type, Enter into recovery mode with the toggle in the top right corner.

5. The Recover button will be enabled only if any of the Aston devices with the selected SOM type is in the recovery mode. Otherwise following warning should appear

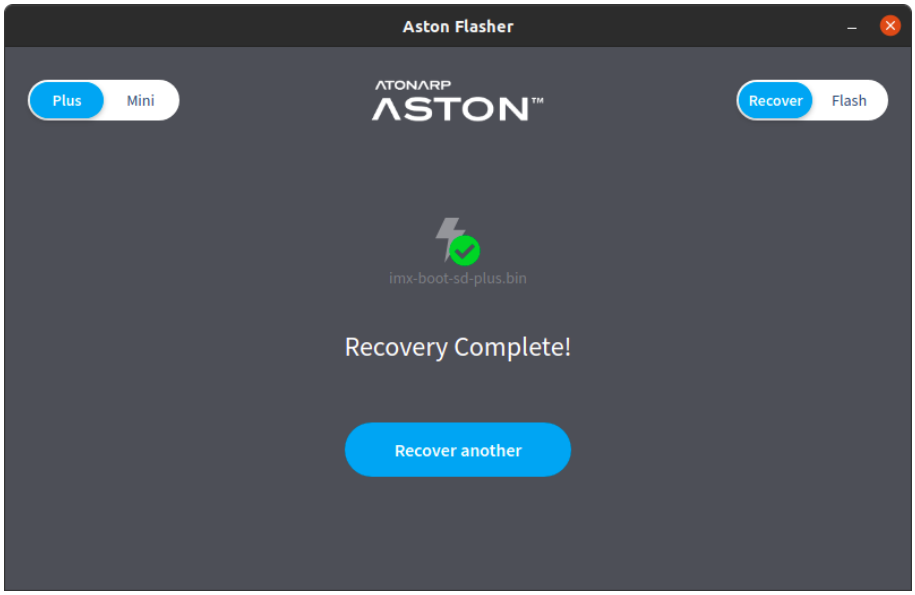


6. The required bootloader will be selected automatically (Also, you can always upload another bootloader file). In case, no bootloader is being added automatically, toggle back and forth between recovery and flash mode.

7. Now, click on the Recover button, and the recovery process should start



8. Once recovery is completed, you'll see the following success page and you are free to toggle to flash mode to flash the recovered Aston device.



Flashing Procedure

1. Download Aston image that will be shared as part of release package → Aston RFS > aston-os-<<version>>.img
2. Example- aston-os-v0.9.0.img
3. Plug the Aston device into the system where the astonFlasher app is installed.
4. Expose the connected Aston device as a UMS (USB Mass Storage) device. You can do that with the following steps

5. Open a serial connection on the Host PC via minicom that will enable us to send commands to the SOM**.** Here is how you can do it

sudo minicom -b 115200 -D <serial port dev node> # Device node can be /dev/ttyUSB0 or /dev/ttyUSB1 depending on the connections made
sudo minicom -b 115200 -D /dev/ttyUSB0 #If USB UART is connected to the USB0 port

After taking serial connection, you will get the u-boot terminal (This appears for a short period after booting of the device, so, you can reboot the device from the minicom serial connection to get uboot). Then, execute the following:

aston => mmc list
 # Will list down the available storage devices with their device index as follows:
aston => ums 0 mmc 1 # ums 0 mmc 2 for PLUS SOMs
 # In Mini SOMs, the eMMC is indexed with "1"
 # In PLUS SOMs, the eMMC is indexed with "2"
 # We instruct USB controller 0 to expose storage device 1 (or 2) (the eMMC) as UMS Disk on the host PC
 # On starting the UMS mode the u-boot console will display a blinking cursor, we will now move to the Host PC

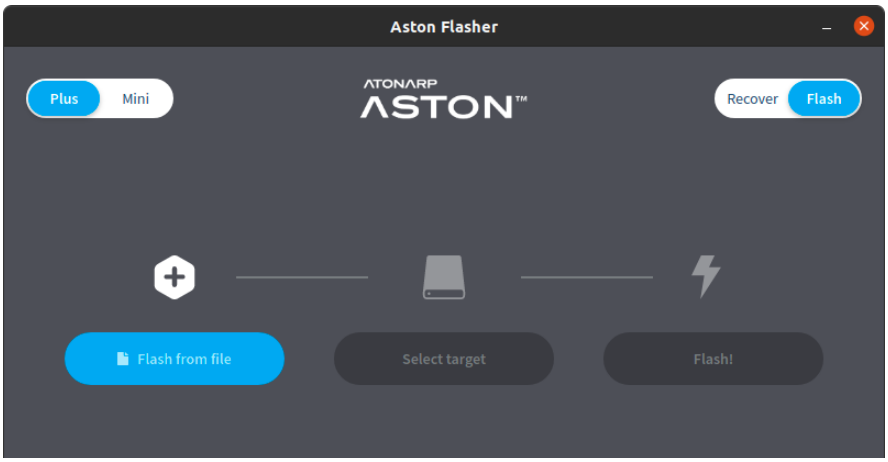
U-Boot prompt

In the above, note that the prompt appears as aston . When attempting to expose device in UMS mode in builds older than v0.9.0, the prompt will appears as u-boot=>

1. Open the astonFlasher app with the following command (Don't open it directly from the app menu, otherwise, the app will ask for the sudo permissions multiple times)

   sudo astonFlasher

2. Once the application is open, you will see options to select the image and the target.

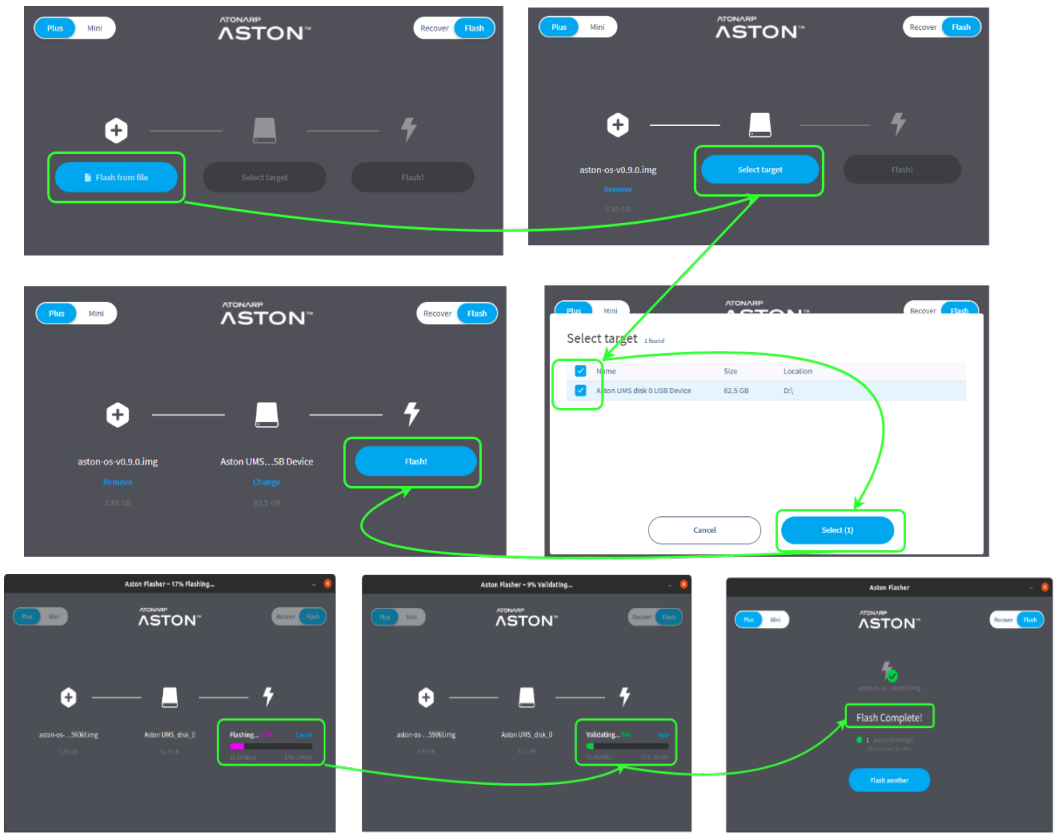


3. Do select the required SOM type (via toggle present in the top left corner) and make sure Flash mode is selected (via toggle in top right corner).

4. Click on the Flash from file option and select the image (Formats: .img, img.gz) from the file selection menu that you had downloaded in step 1. We are not doing any filtering for Aston images, so astonFlasher will accept any valid image file. You will get the Error Opening source error for an invalid image file.

5. Click on Select Target and select the Aston device(s) on which you would like to flash the image.

6. Once done with the selection, click on the Flash button and the app will start flashing the image



7. Then astonFlasher will go via the steps of Decompression (of image file, if required), Flashing, and validation

8. And done! Aston Image has been flashed successfully!!!

Post Flash Procedure

- The UMS mode must be stopped in the u-boot console as well. To stop the UMS mode, press Ctrl-C on the serial monitor (That we opened during the 4th step of the Flashing procedure). The U-Boot console is now yielded back for

further use.

- The new bootloader and RFS have been flashed. However, the u-boot prompt being displayed is still of the old u-boot image as it is being executed from RAM. So, we will need to reset the device.

  #Manually reboot the device using the external power supply or enter "reset" in the u-boot console.

  aston => reset

The device boots up using the new Bootloader and RFS
The RFS will perform a one time auto-reboot after the very first flash. This is to setup various Aston services.
Hence, please allow the Rootfs to auto-reboot after the very first flash

For doing a power off enter the following in the OS command prompt

$ sudo poweroff

#The console comes up with the Login Prompt.

Enter the following credentials:

Username: *admin*

Password: *P@thF1ndr*

- Flashed Aston devices should be accessible from Aston UI after the reboot.
- NOTE: It is recommended to hard reset the whole system after the flash procedure to avoid any Drive board to CB communication issues.

1.3. Aston Flasher (for Windows host)

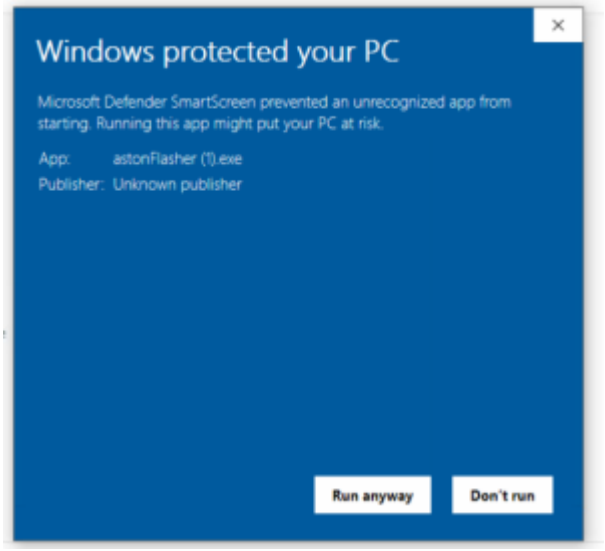
Description:

Aston Flasher is a tool (available for both Windows and Linux) that can be used to flash Aston images to multiple Aston devices at once. It works in two modes i.e., Flash and Recovery, and can be used for devices with both mini and plus SOM.

Installation:

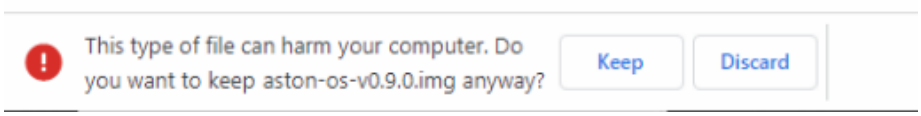
Once you have downloaded the distribution (i.e., .exe file), double click on it to trigger its installation. If you are installing it for the first time, you will probably see the following SmartScreen warning

Click on the More Info link and it will then show you the new option of Run anyway with which installation should start.

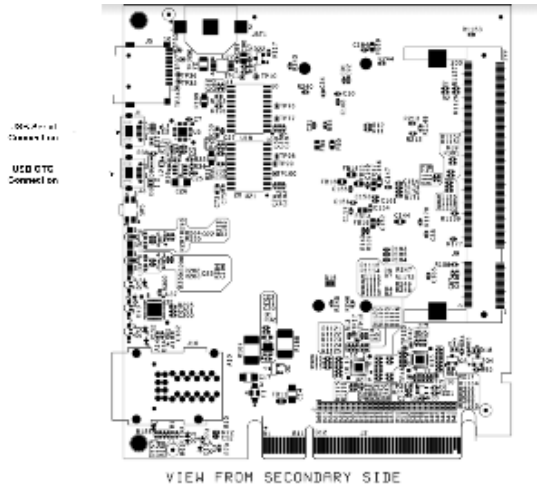


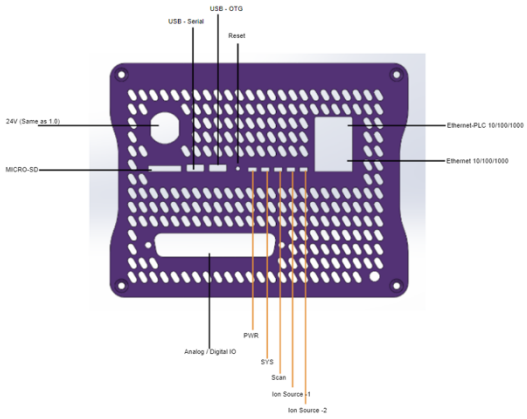
Flashing Procedure

1. Download Aston image that will be shared as part of release package → Aston RFS > aston-os-<<version>>.img Example- aston-os-v0.9.0.img
2. After Aston Image has been downloaded, click on the Keep option if Google Drive is showing you the following warning



3. Plug both USB OTG and USB serial from the Aston device into the Laptop where the astonFlasher app is installed.





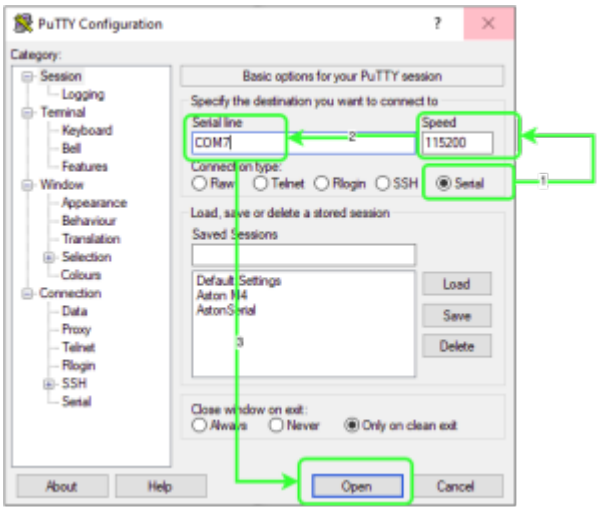
Using a USB Hub

It is advised not to use a USB Hub for making the connections to the Host PC while flashing. Flashing via a connection that uses USB Hub is known to cause Kernel Panic on the Host Side. Hence, please connect the above USB Cables to separate USB ports in the Host Laptop.

1. Configure the Aston device as a USB Mass storage device. Otherwise, the connected Aston device will not be listed on the list of available devices in the astonFlasher app.

    A. To configure, identify your Aston device in the device manager (In this case, it is COM7).

    B. Open the putty application and enter the required device details to connect to open a serial connection with the Aston device. Here is one example



C. Click on Open button and it should open a serial connection window.

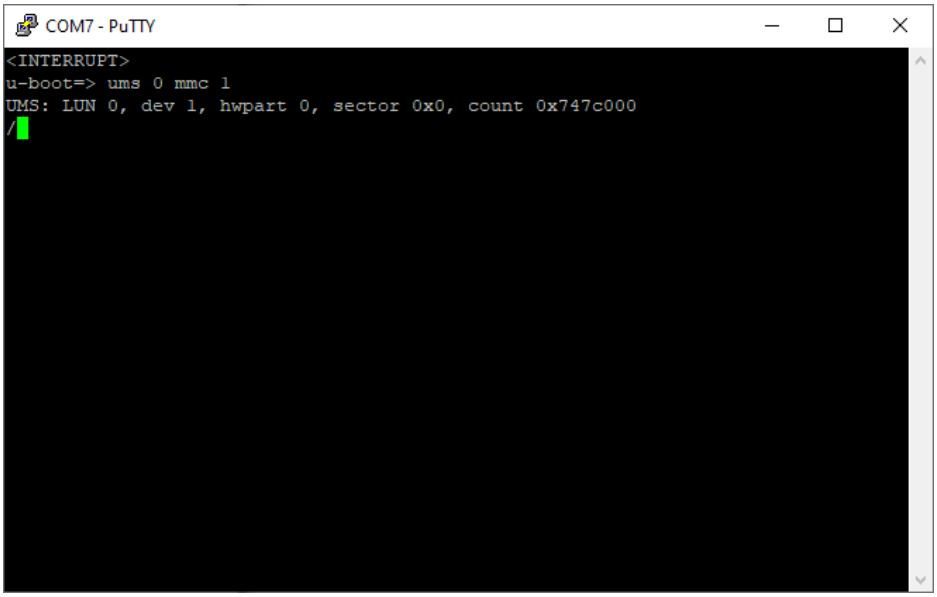
D. Press ctrl + C to stop the ongoing process and then you will get the u-boot console.

E. Enter the following command in u-boot console to expose the device as a UMS device

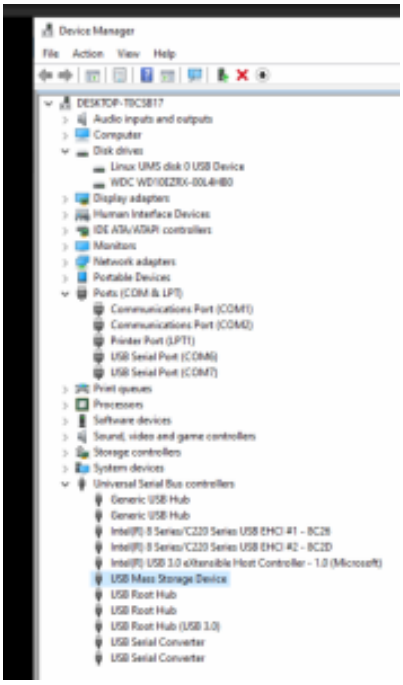
```
aston => mmc list
# Will list down the available storage devices with their device index as follows:
aston => ums 0 mmc 1  # ums 0 mmc 2 for PLUS SOMs
# In Mini SOMs, the eMMC is indexed with "1"
# In PLUS SOMs, the eMMC is indexed with "2"
# We instruct USB controller 0 to expose storage device 1 (or 2) (the eMMC) as UMS Disk on the host PC
# On starting the UMS mode the u-boot console will display a blinking cursor, we will now move to the Host PC
```

U-Boot Prompt

In the above, note that the prompt appears as Aston. When attempting to expose device in UMS mode in builds older than v0.9.0, the prompt will appear as u-boot=>



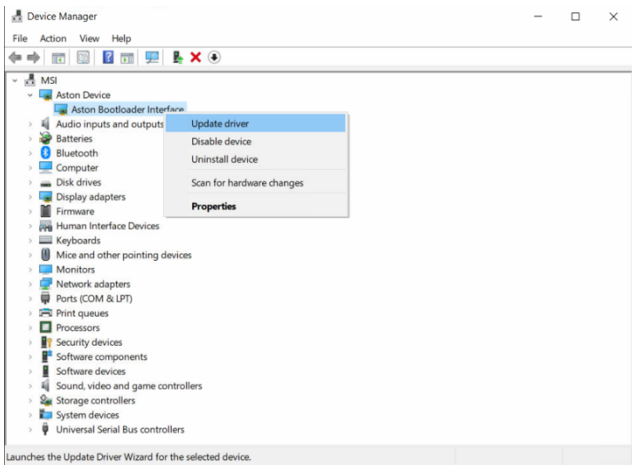
F. Once configured, the device should be visible as UMS device



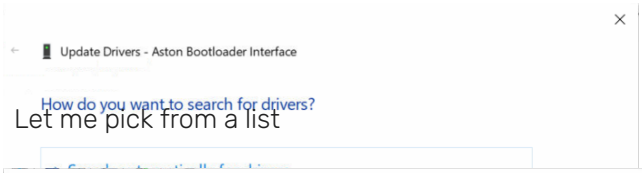
NOTE

In some laptops Aston drivers are installed and it will show as separate device. Please follow below steps to revert to UMS device.

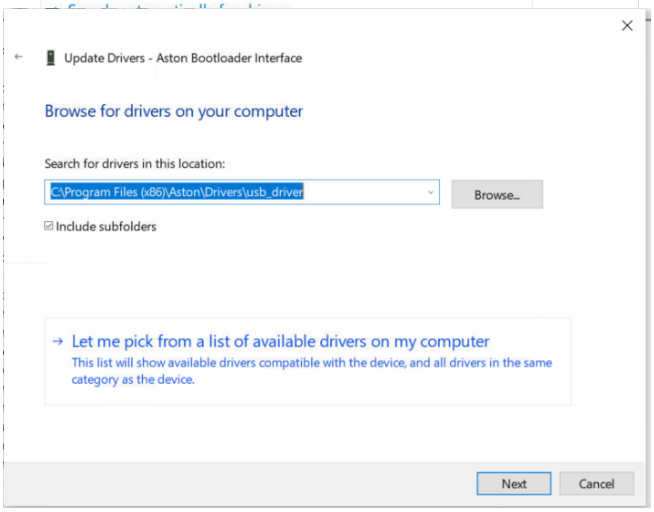
1. Go to device manager Aston device > update driver



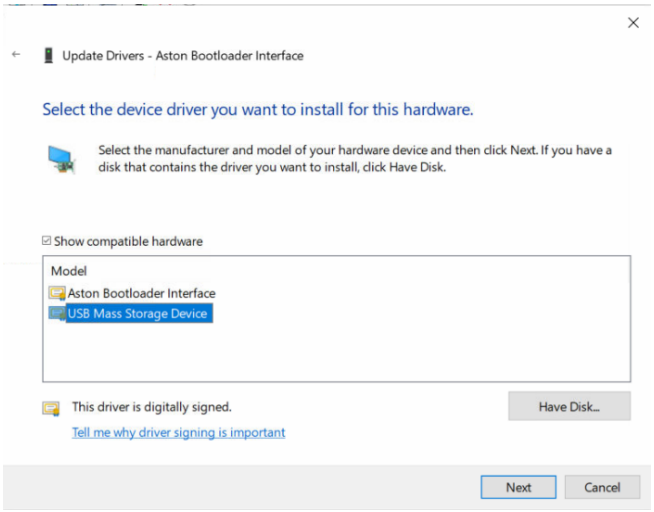
2. Browse my computer for drivers



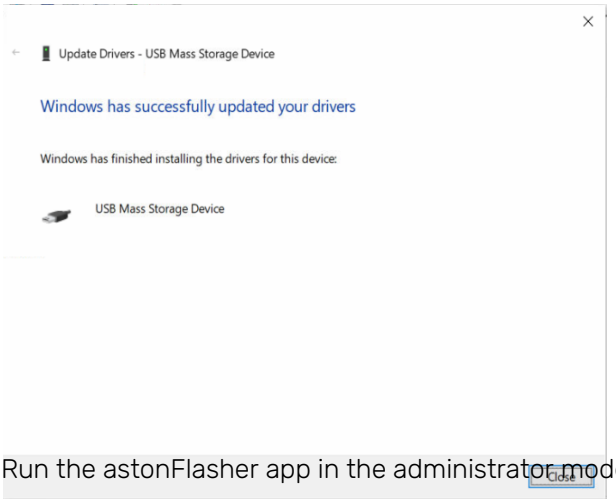
3. Let me pick from a list



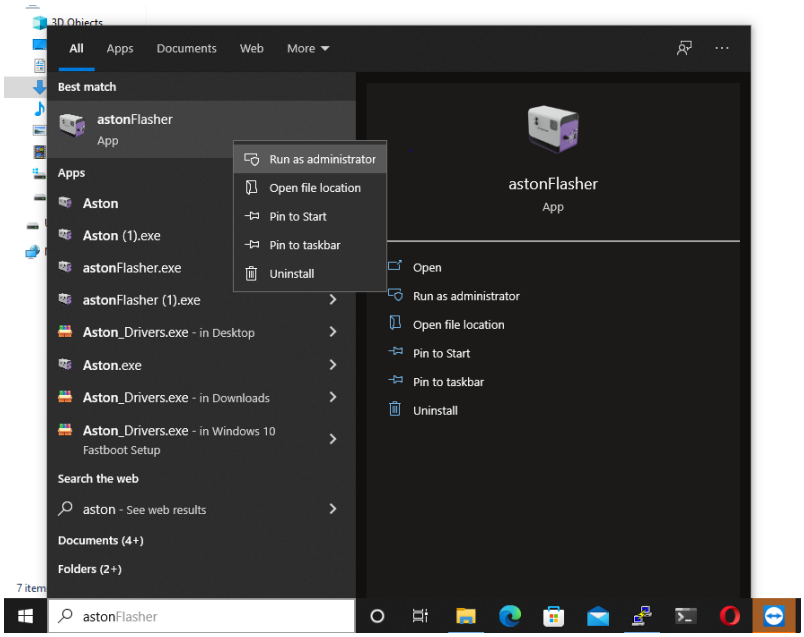
4. Choose USB mass storage



5. Done

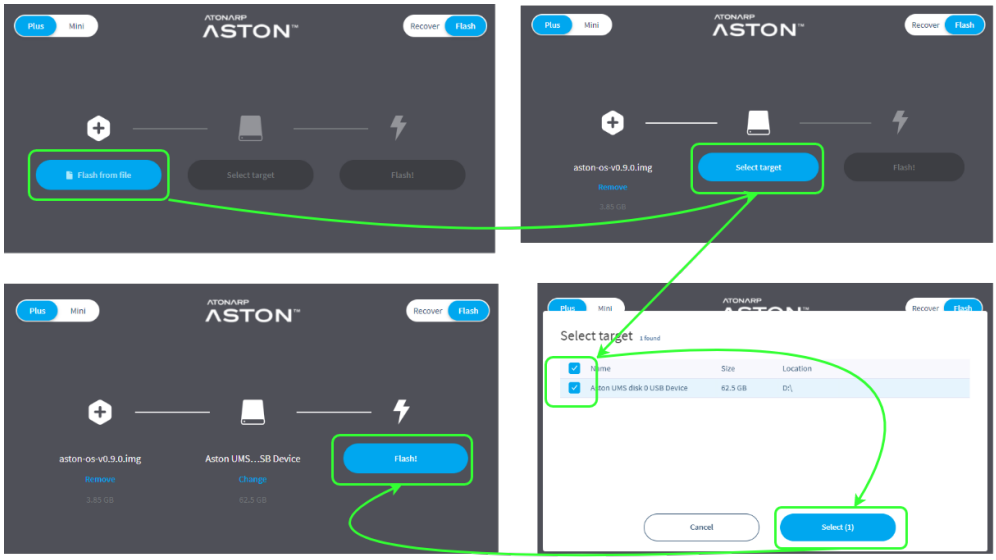


6. Run the astonFlasher app in the administrator mode



7. Once the application is open, you will see options to select the image and the target.
8. Click on the Flash from file option and select the image (Formats: .img, img.gz) from the file selection menu that you had downloaded in step 1. We are not doing any filtering for Aston images, so astonFlasher will accept any valid image file. You will get the Error Opening source error for an invalid image file.
9. Click on Select Target and select the Aston devices on which you would like to flash the image.

10. Once done with the selection, click on the Flash button and the astonFlasher app will start flashing the image



11. Then astonFlasher will go via the steps of Decompression (of image file, if required), Flashing, and validation.

12. Aston image has been successfully flashed.

Post Flash Procedure

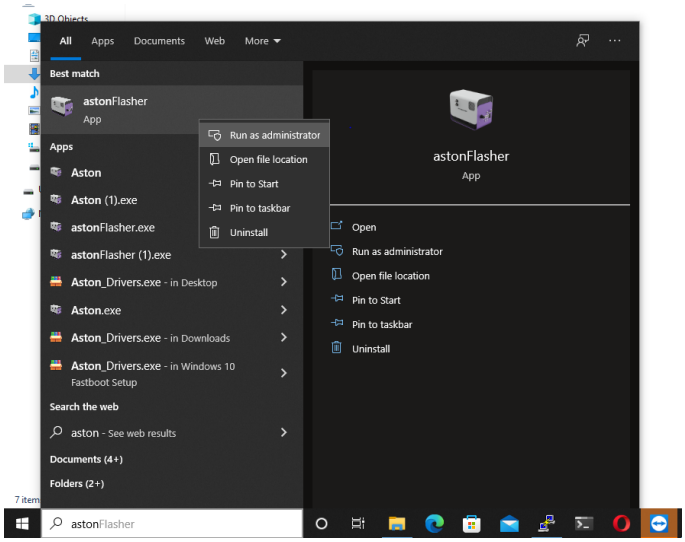
- The UMS mode must be stopped in the u-boot console as well. To stop the UMS mode, press Ctrl-C on the serial monitor (That we opened during the 4th step of the Flashing procedure). The U-Boot console is now yielded back for further use.
- The new bootloader and RFS have been flashed. However, the u-boot prompt being displayed is still of the old u-boot image as it is being executed from RAM. So, we will need to reset the device.

```
#Manually reboot the device using the external power supply or enter "reset" in the u-boot console.

aston => reset

#The device boots up using the new Bootloader and RFS
#The RFS will perform a one time auto-reboot after the very first flash. This is to setup various Aston services.
# Hence, please allow the Rootfs to auto-reboot after the very first flash

# For doing a power off enter the following in the OS command prompt
$ sudo poweroff

#The console comes up with the Login Prompt.
# Enter the following credentials:
# username: admin
# password: P@thF1ndr
```

- Flashed Aston device should be accessible from Aston UI after the reboot.
- **NOTE**: It is recommended to hard reset the whole system after the flash procedure to avoid any Drive board to CB communication issues.

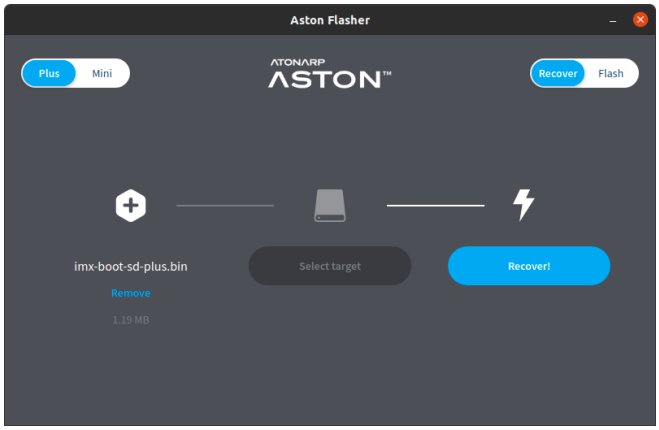
Recovery Procedure

1. Run the astonFlasher app in the administrator mode

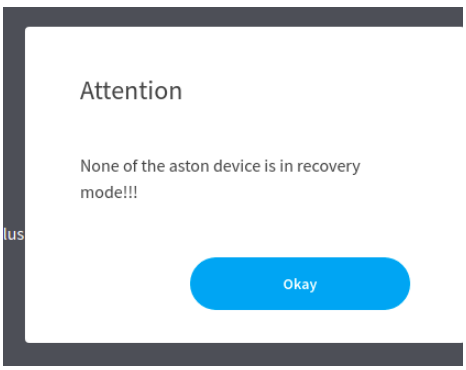


2. Select the required SOM (System on Module) type (i.e., plus or mini) from the toggle in the top left corner.

3. Once you have selected the right SOM type, Enter into recovery mode with the toggle in the top right corner.

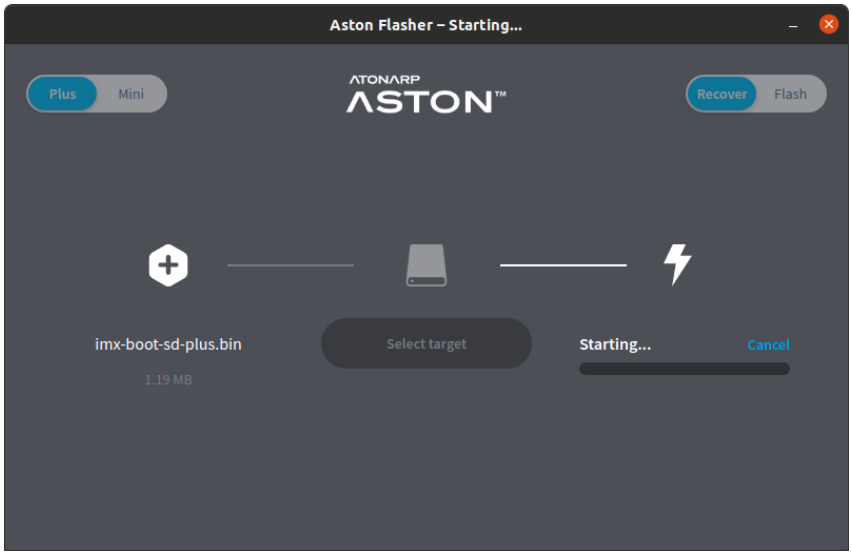


4. The Recover button will be enabled only if any of the Aston devices with the selected SOM type is in the recovery mode. Otherwise following warning should appear

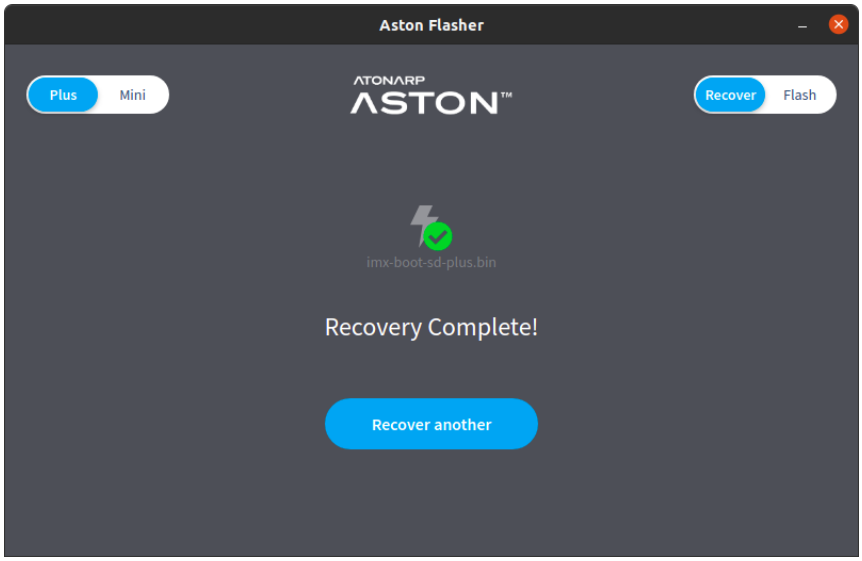


5. The required bootloader will be selected automatically (Also, You can always upload another bootloader file). In case, no bootloader is being added automatically, toggle back and forth between recover and flash mode.

6. Now, click on the Recover button, and the recovery process should start



7. Once recovery is completed, the following success page will come, and you are free to toggle to flash mode in order to flash the recovered Aston device.



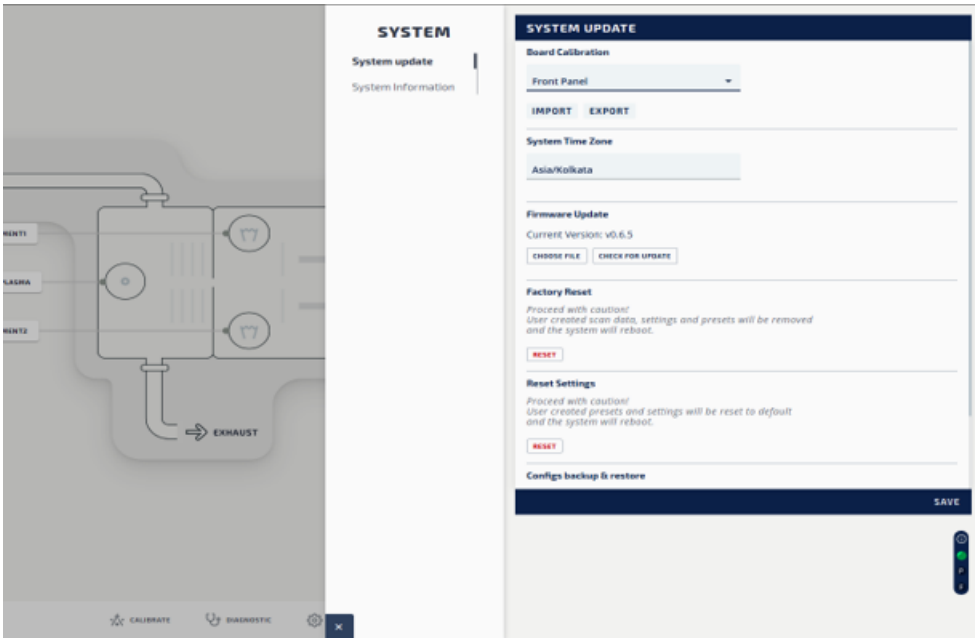
2. ASTON IMPACT SW UPDATE PROCEDURE

NOTE

For the following upgrade, all the user data will be wiped off. Kindly back up the reports & configurations manually.

2.1 Offline Upgrade

1. Download the file from the internet.
2. Click on “choose file”

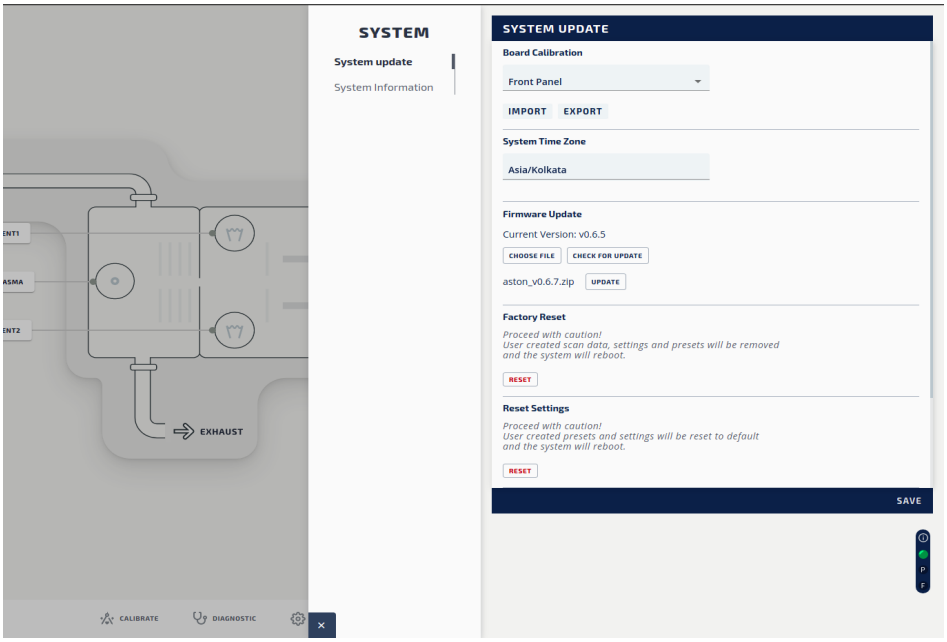


3. Choose the downloaded file & wait for it to be uploaded successfully.

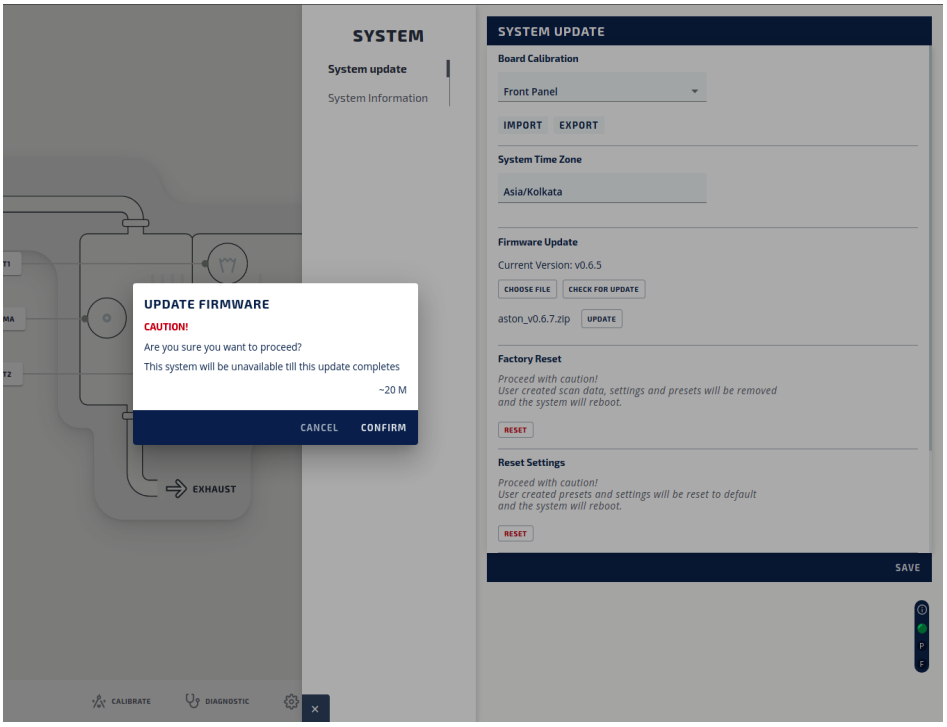
NOTE

Ignore the warnings regarding file safety during .exe file download and proceed to download the same.

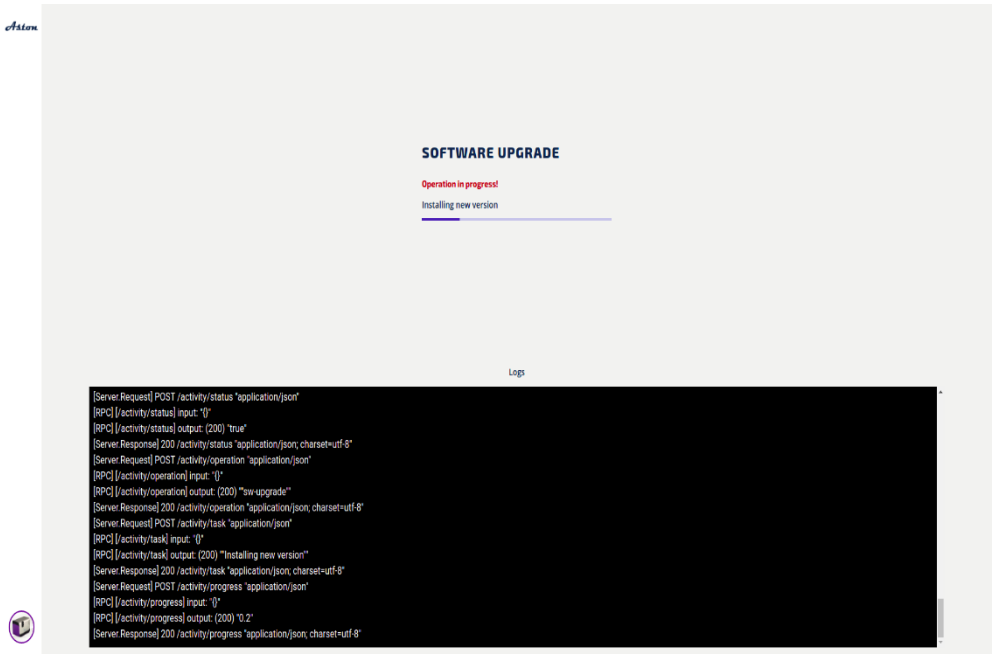
4. Click on “Update”.



5. Click on “Confirm”.



Wait for the upgrade process to finish and for Aston to reboot.

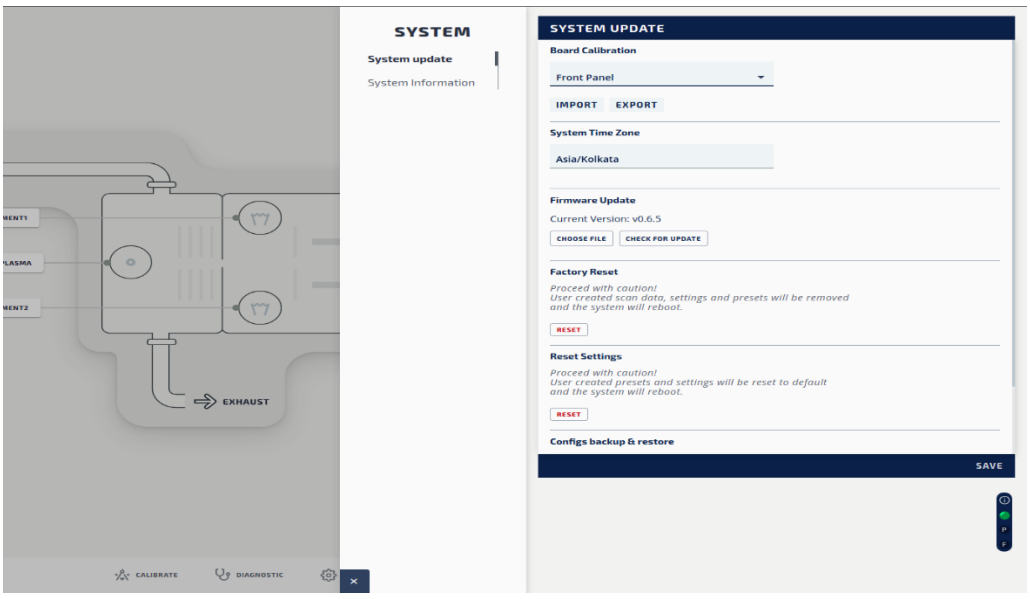


NOTE

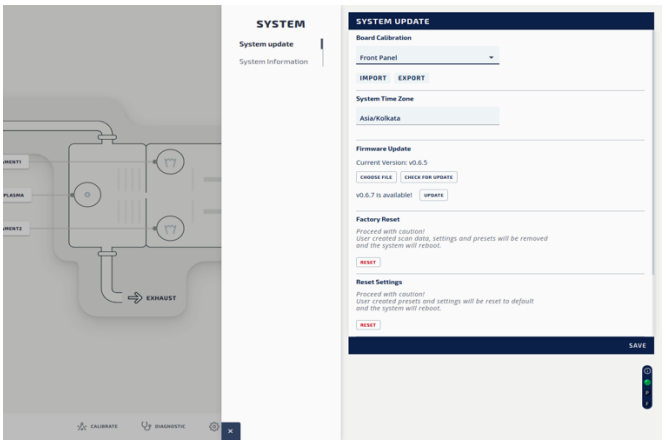
Reload the Aston app to access the UI after the installation.

2.2 Online Upgrade

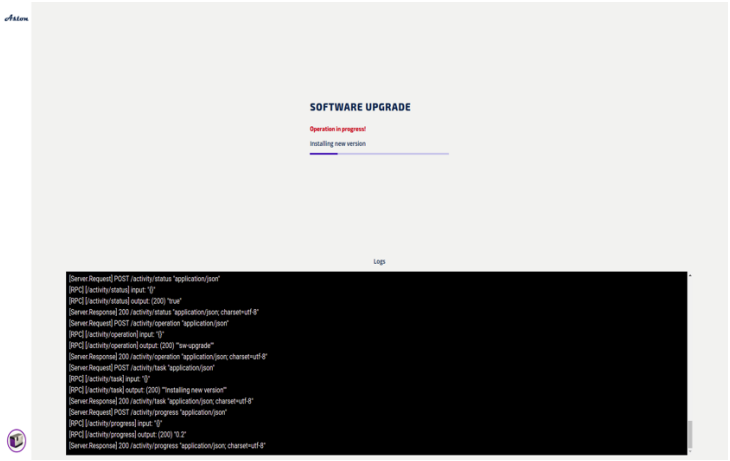
1. Click on “check for update”



2. Click on “Update”

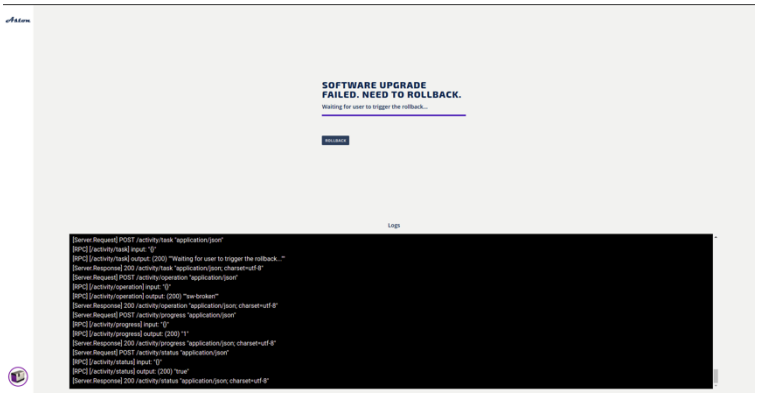


3. Wait for upgrade process to finish and for Aston to reboot.



2.3 Rollback in case of failure/interruption

1. Click on “Rollback” button.



2. After software rollback, user has to install the new version of desktop application to connect to the system.

3. ASTON IMPACT EMULATOR INSTALLATION PROCEDURE

3.1 Introduction

This document describes the procedure to be followed to setup the Aston Impact Emulator on a Laptop/PC

3.2 Prerequisites

The below mentioned prerequisites are required for the setup of Aston Impact Emulator

- Emulator PC/Laptop
    - PC / Laptop to install the Emulator
    - intel i5 or higher processor
    - 4 GB RAM
    - 100 GB Hard disks
    - Ethernet port / Wi-Fi
- Client PC to create a bootable USB image
    - Ubuntu 20.04 PC/Laptop to create a bootable USB image
    - Access to download the ISO image from internet
- USB Drive with 64 GB or more size
- Familiarity with Unix commands

3.3 Emulator Setup

3.3.1 Fresh installation Procedure

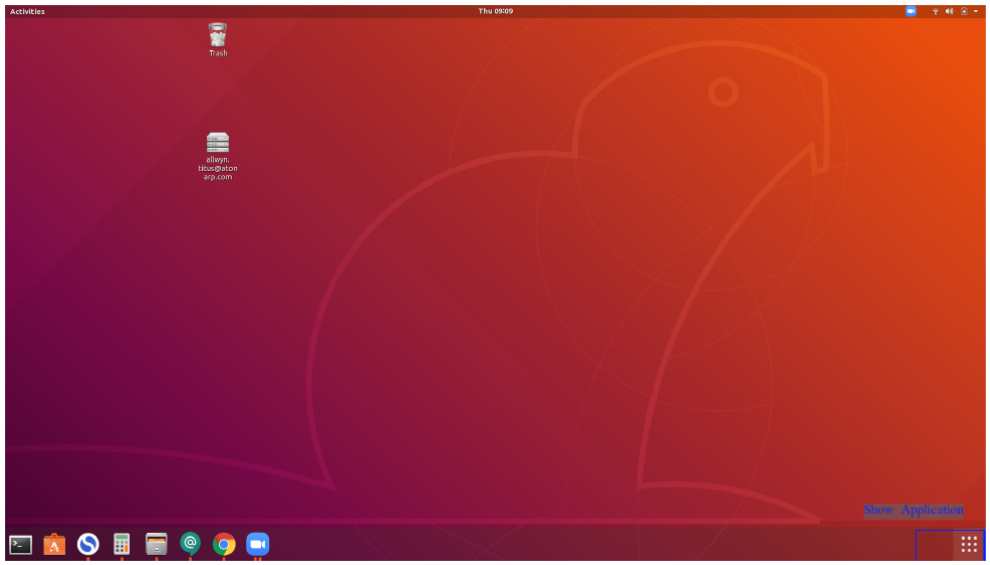
Setting up of the Aston Impact Emulator involves the below major steps

1. Create a bootable USB drive from the ISO image
3. Install the Debian OS from bootable USB to the Emulator PC/Laptop
4. Install the application packages
5. Accessing the Aston Impact UI

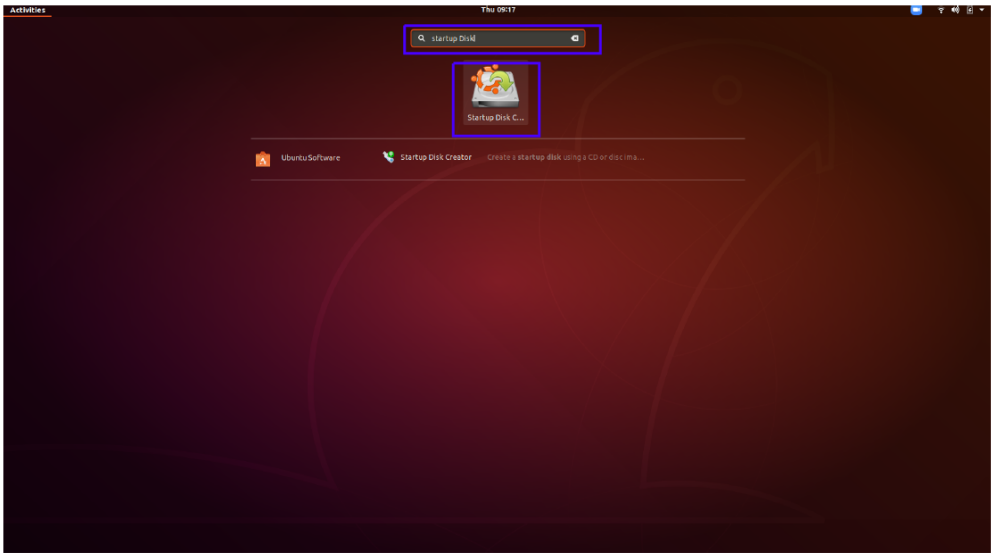
3.3.2 Create a bootable USB drive from the ISO image

This section explains the procedure to create a bootable USB drive

1. Download the ISO file on the client PC. Click here to download
2. Connect the USB drive to the client PC
3. Once USB is connected, open the system utility ***show applications***

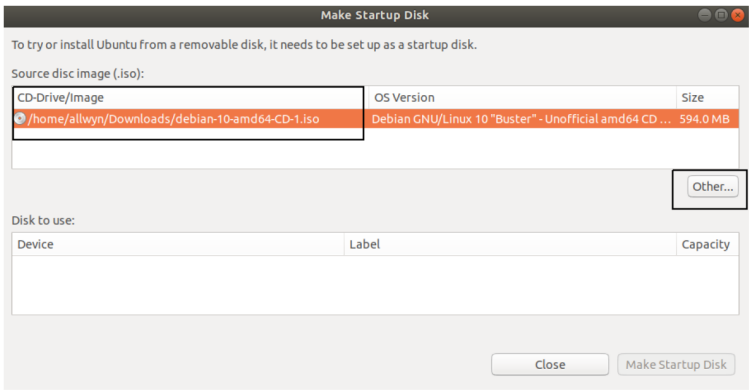


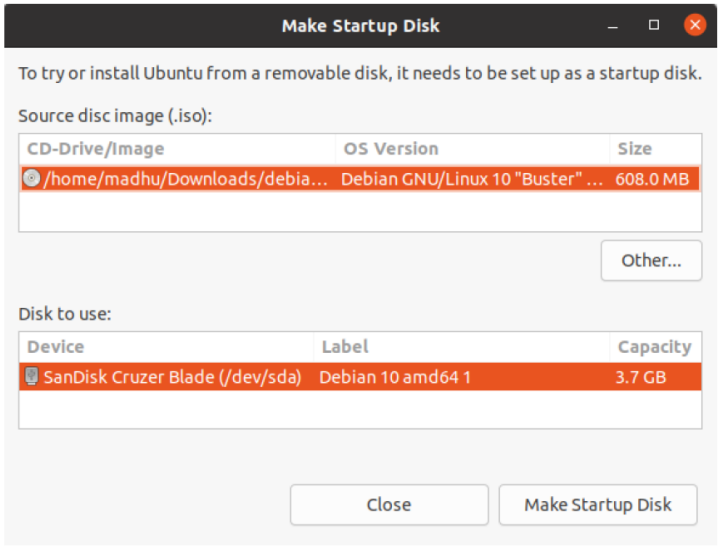
4. From the Show Applications window type **“Startup Disk Creator”**



5. Verify if the CD-Drive/Image points to the downloaded iso image. If not click on ‘Other’ to select the correct ISO image.

6. The connected USB drive would show up and can be selected.





7. Click on the “Make Startup Disk” and wait to complete.

3.3.3. Flashing the ISO image on emulator PC

1. Connect the bootable USB created in the previous step to the emulator PC/Laptop
2. Ensure ethernet or WiFi connectivity is available to the Laptop
3. Restart the Laptop
    a. The PC/Laptop should now boot from the USB. If not goto BIOS setup and set the Boot sequence to boot from USB Drive as the Highest Priority Option. Refer instructions here to how to change the boot sequence
4. When boot prompt to select the bootable devices, select the USB on which ISO is flashed
5. Select the “Install” option
6. Continue with the OS installation and complete the setup.
7. It would take close to 20-30 mins for the installation to complete.
8. Once the installation is complete a Unix login prompt will appear
9. Wait for 5 minutes, the Laptop would automatically go for another reboot
10. Login with the username / password provided. Login should be successful
    a. Verify the file /var/log/atp.once exists in the emulat system. The below command should not throw an error command: ls -l /var/log/atp.once
        i. If there is an error, then execute the below command
        ii. command: sudo atp-once
        iii. The above command would reboot the emulator system
11. Obtain the IP address of the system with the below command hostname I

Once the ISO image flashing is complete, the application packages have to be installed. The application packages can be downloaded from here

Steps to install packages:

1. Download all the .deb packages to the Client PC
2. Copy all the downloaded files to the Emulator PC using scp command
   For example,

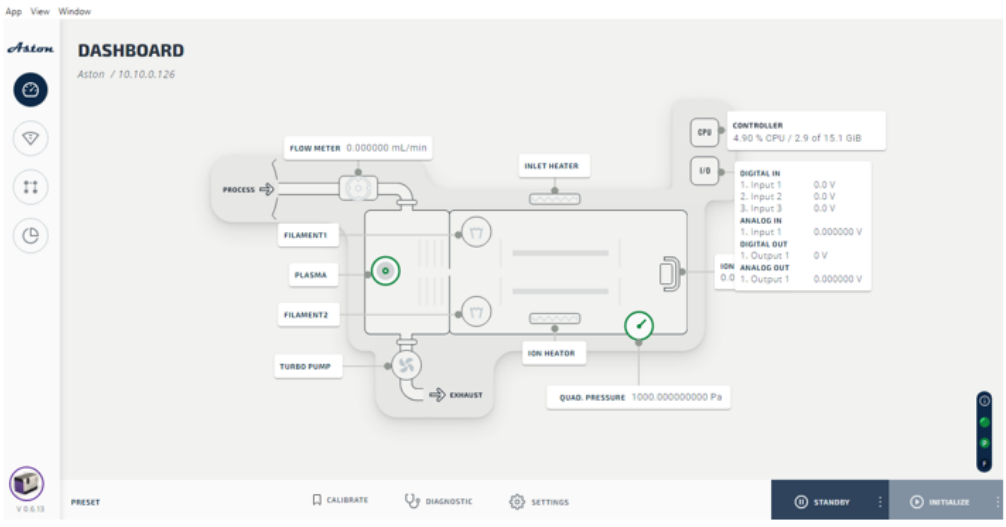
   scp atp-raw-data_0.85200_amd64.deb admin@<ip address>:/home/admin

   Enter the password if prompted
3. Login to emulator system terminal using SSH or putty with the provided credentials
4. The downloaded packages should be available in the home directory. Verify by performing the below command
   command: ls
5. Install all .deb packages in the same sequence provided below
   - *sudo apt install ./atp-raw-data_0.85200_amd64.deb*
   - *sudo apt install ./atp-server-module_0.85200_amd64.deb*
   - *sudo apt install ./atp-server-mw _0.85200_amd64.deb*
   - *sudo apt install ./atp-ui_0.85200_all.deb*

3.4 Accessing the Aston Impact UI

Steps to setting up device hostname

1. Open a web browser on the Client PC
2. Open https://<hostname> on the browser.
3. The below UI should load on the browser, if then the emulator setup is complete



3.5 Contact

For any issues in setting-up the emulator, write an email to techpubs@atonarp.com

4. NETWORK CONFIGURATION

Network configurations for communicating with Aston Impact are described as follows.

4.1 Overview

- The simplest way to communicate with the Aston Impact system in a networked environment, like an office, is to connect the Ethernet port, through a network cable, to the office network. The Aston Impact is by default configured for this mode of communication.
- The Aston Impact can also be directly connected to a workstation/laptop, but its networking properties must be reconfigured for this usage.
- The Aston Impact Ethernet port is a gigabit device and performs optimally when the networking equipment (cables and switches) are also gigabit compliant.
- The AstonApp user interface is designed to operate through the client's application. Communication with the Aston Impact system can be performed from any workstation having an Ethernet port Controller and a client application.

The officially supported operating systems are:

- Windows 7 and above
- Ubuntu Linux 14.04 and above
- Mac operating system -X 10.7 (Lion) and above

A workstation with any of the earlier mentioned operating systems and client applications used to communicate with the Aston Impact is referred to in this manual as the client system.

4.2 Client operating system-specific network configuration

4.2.1 Ubuntu/Mac operating system

On Ubuntu Linux and Mac operating systems, no operating system configurations are required to communicate with the Aston Impact system using the Aston Impact client application.

4.3 Networking modes and setup

4.3.1 DHCP Server

Through the USB interface, the Aston Impact is by default configured to operate as a DHCP server. The user can communicate with Aston Impact by connecting a PC/Laptop directly to Aston Impact's Ethernet port using an RJ45 CAT 7 cable. The Aston Impact will assign an IP address to the connected laptop/PC. The user interface of Aston Impact can then be loaded using the Aston Impact client application.

If the Aston Impact is already in DHCP client mode, it can be configured to DHCP server mode from the User Interface settings.

4.3.2 DHCP client

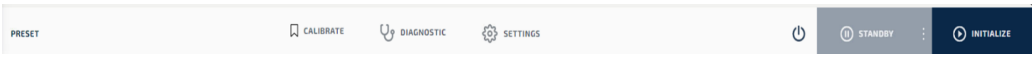
Through the Ethernet interface, Aston Impact is by default configured to operate as a DHCP client. An RJ45 CAT 7 network cable must be used to connect Aston Impact to the local network. The user interface of Aston Impact can then be loaded using the Aston Impact client application.

4.3.3 Manual IP

Manual mode allows the user to set a static IP for the Aston Impact's network controller.

4.3.4 Client application UI

1. Navigate to the Dashboard, open the Settings panel, System tab and Networking section.



2. Set IP configuration mode to the desired option.
3. If IP config mode is manual or DHCP server, additionally specify "DHCP server/Manual mode IP" and "DHCP server/ Manual mode subnet".
4. Save the settings for changes to take effect.

NOTE

This feature is yet to be implemented in the UI.

5. ABBREVIATIONS

A	Amperes (current)
Amu	Atomic Mass Unit
BSD	Berkeley Software Distribution
CLI	Command Line Interface
COMM	Communication Port
CTS	Clear to Send
Da	Dalton
dB	Decibel
DB	Database
DC	Direct current
DHCP	Dynamic Host Configuration Protocol
DNS	Domain Name System
EI	Electron Ionization
EHS	Environmental Health and Safety
eV	Electron volt
GND	Ground
GPL	General Public License
HTTPS	Hypertext Transfer Protocol Secure
Hz	Hertz (frequency)
IP	Internet Protocol
IPv4	Internet Protocol version 4
I2C	Inter Integrated Circuit Communications
JPEG	Joint Photographic Experts Group
JSON	JavaScript Object Notation
LED	Light emitting diode
m/z	Mass to charge
Nmtui	NetworkManager Text User Interface
PC	Personal Computer
PDF	Portable Document Format

pF	Picofarads
PNG	Portable Network Graphics
RF	Radio Frequency
RPM	Revolutions per Minute
RS-232	Recommended Standard no. 232
RTS	Request to Send
RX	Receive
SoC	System on a Chip
SSH	Secure Shell
SSL	Secure Sockets Layer
SVG	Scalable Vector Graphics
Th	Thomson
TLS	Transport layer security
TTL	Transistor-Transistor Logic
TX	Transmit
U	Unified Atomic Mass Unit
USB	Universal Serial Bus
UI	User Interface
URL	Uniform Resource Locator
V	Volts (voltage)
W	Watts (power)

6. QUICK ACCESS TO IMPACT FILES

Quick Links to Aston Impact Source Files.

1	Atonarp knowledge base
2	Aston Impact Windows client application
3	Aston Impact Ubuntu client application

7. GLOSSARY

Ambient Temperature
: Ambient temperature is the temperature of the air surrounding a component.

Analyte
: An analyte is a substance whose chemical constituents are identified and measured.

Annotate
: Annotation is a technique to describe or add additional comments, notes, explanations, or other types of remarks to a plot.

Aston Impact
: Aston Impact uses mass spectrometry to quantify the composition of constituents in a gas blend by measuring the mass-to-charge ratio of the ions generated from the blend.

Aston Impact configuration
: Aston Impact configuration sets the mass spectrometer properties.

Aston Impact manager
: A middleware layer of the Aston Impact software stack.

Background scan
: A background scan measures the contribution of ion leakages and the environment to the generated spectrum.

Baud
: Baud is a component that determines the speed of communication over a data channel.

Blend
: A blend is a mixture of different analyte molecules. Known combinations are used for calibrating the Aston Impact.

Calorific value
: The amount of energy produced by the complete combustion of a specified quantity of material or fuel.

Compliance
: Following certain accepted standards

Dashboard

Dashboard is the primary page for the user to interact with and monitor the Aston Impact.

Detector

Detector is a component in the mass spectrometer which generates an electronic signal proportional to the number of ions striking it.

DHCP server

DHCP server is a network server that automatically assigns an IP addresses and other network configuration parameters to a device on a network so it can communicate with other IP networks. It relies on the standard protocol known as Dynamic Host Configuration Protocol (DHCP).

Ethernet

A system for connecting computer systems to form a local area network, to transmit the data bits containing any sort of information.

Faraday cup

Faraday cup is a component in the mass spectrometer, also known as Detector.

Filter

Filter is a process which removes or separates unwanted components. The Aston Impact requires one filter at the inlet to keep out undesired contamination.

Initialize

Bring the system into a state ready for data acquisition.

Ion Current

An ion current is the rate of flow of electrical charge associated with the flow of ions into the ion detector (electrometer/collector).

Ion source

Ion source is a component in the mass spectrometer where ionization of the analyte takes place by electron bombardment.

Ionization

Ionization is a technique used in mass spectrometer to ionize the analyte.

Mass Filter

Mass filter separates ions according to their mass-to-charge ratio (m/z).

Mass spectrometer

Mass spectrometer is an analytical technique that ionizes a sample based on their mass-to-charge ratio of the ions generated from the sample.

Molecules

A molecule is an electrically neutral group of two or more atoms held together by chemical bonds. Molecules are distinguished from ions by their lack of electrical charge.

Quadrupole

Quadrupole is a type of mass filter used in mass spectrometry. It consists of four cylindrical rods mounted in a ceramic collar. Every pair of opposing rods is electrically shorted, and a radio frequency (RF) voltage with a DC offset voltage is applied between one pair of rods and the other. The magnitude of the RF voltage determines the mass-to-charge ratio of the ions that pass through the mass filter and reach the detector. The ratio of DC-to-RF voltage determines the resolution (widths of the mass peaks).

RF to DC ratio

Ratio of the RF (AC) voltage to the DC voltage applied to the quadrupoles of a mass filter. The RF-DC ratio determines the resolution (inverse to sensitivity) of the peaks in a mass spectrum.

Scan

Each sequence of processing the ions in the mass filter followed by analysis of the ions in the detector is called a scan.

Scan configuration

Scan configuration provides options to configure the masses scanned, the number of scans run, trade- off between speed and accuracy.

Scan report

Record of all scans performed on the system. This includes system settings, mole fractions, and ion currents for all masses that are scanned.

Spectrum

Distribution of ion currents corresponding to ion fragment masses of interest.

Standby

Put the system in a state not ready for scan so that it can then be shutdown. Also required before certain features in the Aston Impact software can be used.

Workflow

Workflows allow the user to sequence scan events with unique scan properties and controls valves alongside running scans in the sequence.

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