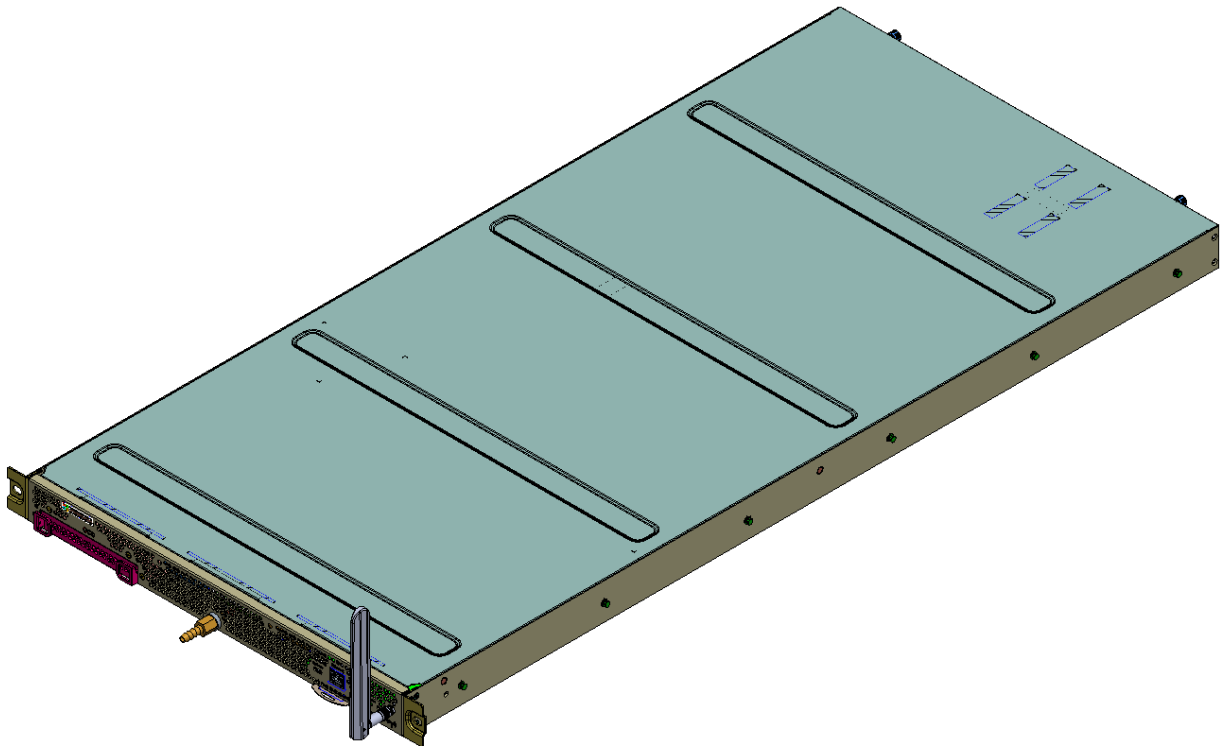


Quick Installation Manual

Environmental Station (EnvStation)

ES0001



Environmental Station

ES0001

Special Features:

- EN61000-3-2 harmonic compliance
- No minimum load required.

Safety:

- UL/cUL 62368-1 (UL Listed)
- IEC/EN 60950-1
- IEC/EN 62368-1

Electrical Specifications

Input Rating

- Input Rating: 200-240 Vac, 1A, 50/60Hz
- Feed A1 to A6: 200-240Vac, 1A, 50/60Hz
 - Frequency: 50-60 Hz, single phase AC
 - Inrush Current: 15 A maximum per line

Environmental Specifications

Operating Temperature

- 10 - 43°C
- Maximum rate of change: 10°C (18°F)/hour

Storage Temperature

- -40°C to 60°C
- Rate of change less than 20°C (36°F) / hour

Humidity

- 10 – 80% RH, non-condensing

Package

- ISTA 2A
Warranty

- Five (5) years

Certifications

Product

- Environmental Station

Model / Type Ref:

- ES0001

Ratings

- Input Rating: 200-240 Vac, 1A, 50/60Hz
- Feed A1 to A6: 200-240Vac, 1A, 50/60Hz
- Frequency: 50-60 Hz, single phase AC

A sample of the product was tested and found to be in conformity with:



- IEC/EN 60950-1 (UL Listed)
- IEC/EN 62368-1 (UL Listed)



EN55032 & EN55035

EN301 489-1 V2.1.1

EN301 489-17 V3.1.1

EN300 328 V2.1.1



47 CFR FCC Part 15 B, Class A

CAN ICES-003(A) / NMB-003(A)

47 CFR FCC Part 15 C

FCC ID: [2A67GES0001](#)

IC: 28610-ES0001

FCC Warning statement:

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

This product is designed for specific application and needs to be installed by trained personnel. The general user shall not attempt to install or change the set

IC Warning statement:

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(s). Operation is subject to the following two conditions:

1. This device may not cause interference.
2. This device must accept any interference, including interference that may cause undesired operation of the device.

L'émetteur/récepteur exempt de licence contenu dans le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage;
2. L'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

This radio transmitter [IC: 28610-ES0001] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.

Antenna Type	Model Number	Antenna Gain(dBi)	Remark
Dipole Antenna	ARY121-0108-001-00	3.6	For 2.4G

Le présent émetteur radio [IC: 28610-ES0001] a été approuvé par Innovation, Sciences et Développement économique Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal. Les types d'antenne non inclus dans cette liste, et dont le gain est supérieur au gain maximal indiqué pour tout type figurant sur la liste, sont strictement interdits pour l'exploitation de l'émetteur.

IMPORTANT NOTE:

IC Radiation Exposure Statement:

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance **20cm** between the radiator & your body.

Cet équipement est conforme aux limites d'exposition aux rayonnements IC établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20cm de distance entre la source de rayonnement et votre corps

CAN ICES-3 (A)/NMB-3(A)

1. General Information

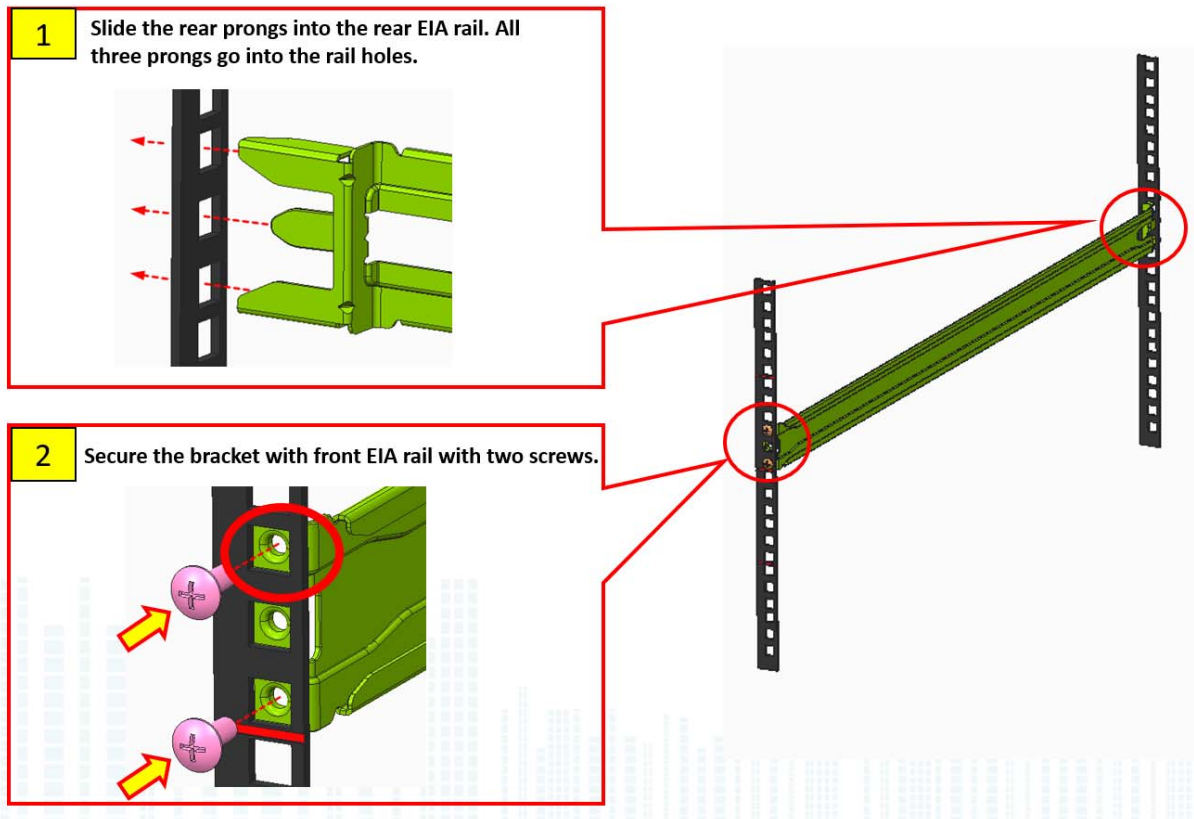
It is recommended that personnel read through and become familiar with the entire document before assembly of the system begins.

The photos and illustrations used in this procedure are representative only. The most recent revisions could look different.

1.1 Assembly Sequence

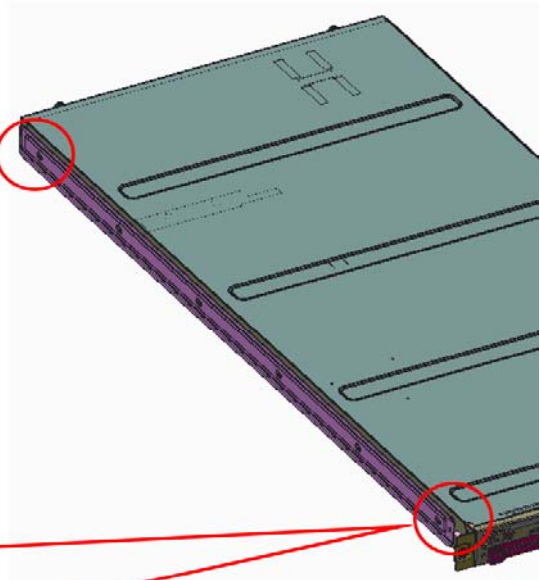
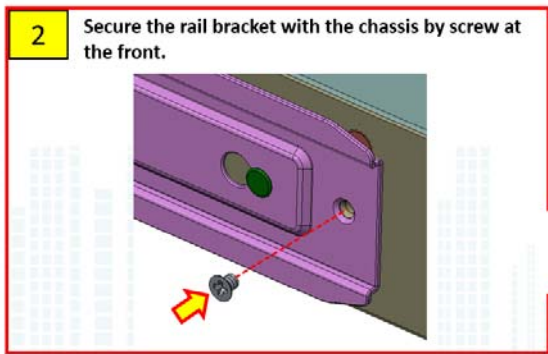
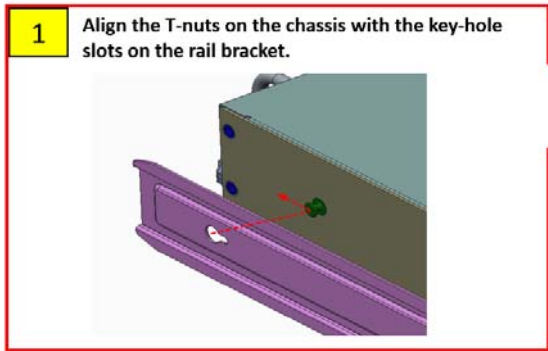
The assembly sequence that is presented in this document is a general sequence that may be modified to suit the methods of the integrator.

1. Assembly Procedure on Rack – Fixed Bracket:



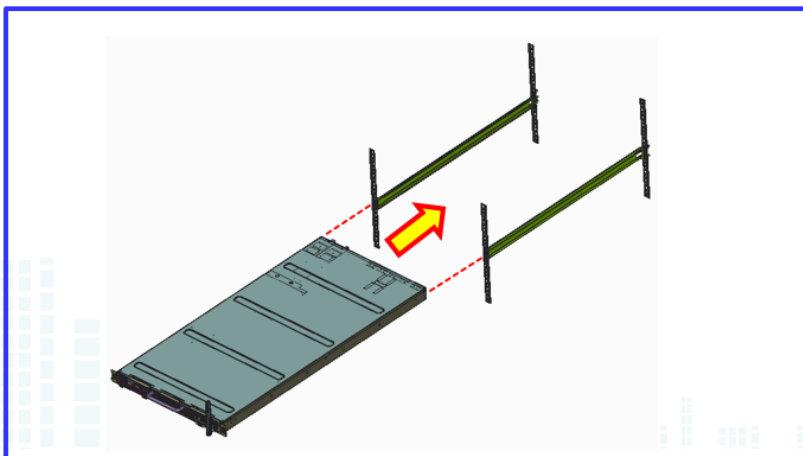
Repeat for the other side of the rack.

2. Assembly Procedure on Chassis – Rail Bracket

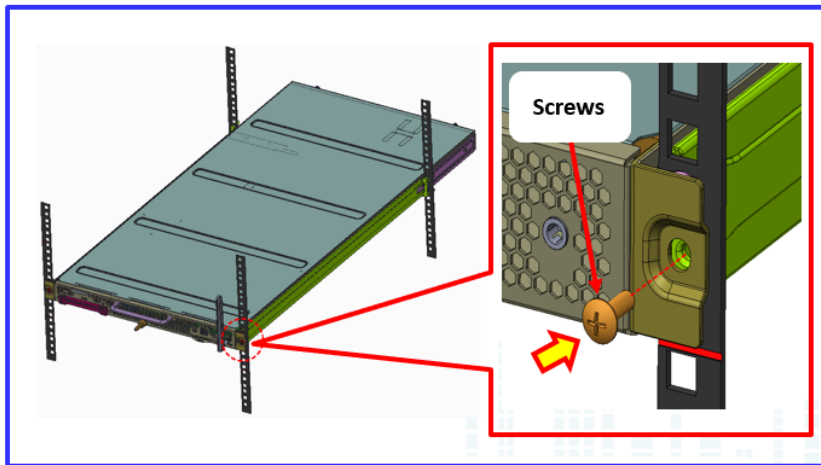


Repeat for the other side of the chassis.

3. Assembly Procedure – Chassis with Rack



Step 1: Slide the Environmental Station into the rack.



Step 2: Secure the chassis by screws at the front.

1.2 Related Documentation

1.2.1 Label Documentation

Label placement is required as part of the assembly process but is not covered in this document. Reference the following MS documents for labeling requirements, including placement locations:

1.3 Required Tools and Assembly Fixtures

Screwdriver:

- T10
- Phillips#2

Hex-key wrench:

- HEX10(or with socket wrench)
- HEX12(or with socket wrench)
- adjustable wrench

2. Safety and Compliance Information

Read Safety and Compliance Information

Read all the safety and compliance information made available by Microsoft prior to using this equipment. Failure to follow instructions could result in fire, electric shock, or other injuries, or damage to your properties. Request a copy of the Safety and Compliance Guide at SSC_Compliance@microsoft.com

3. About the system

Below is a view of the major components in the Environmental Station system:

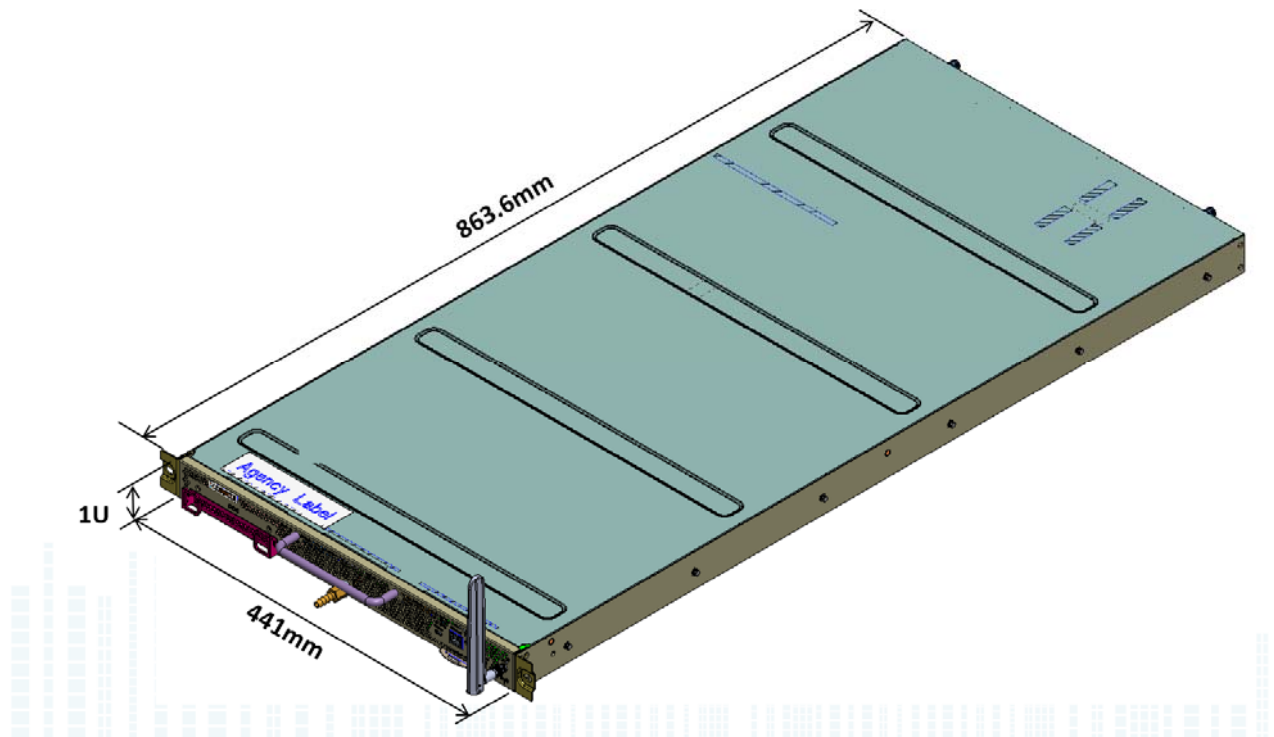


Figure 1: Exterior View

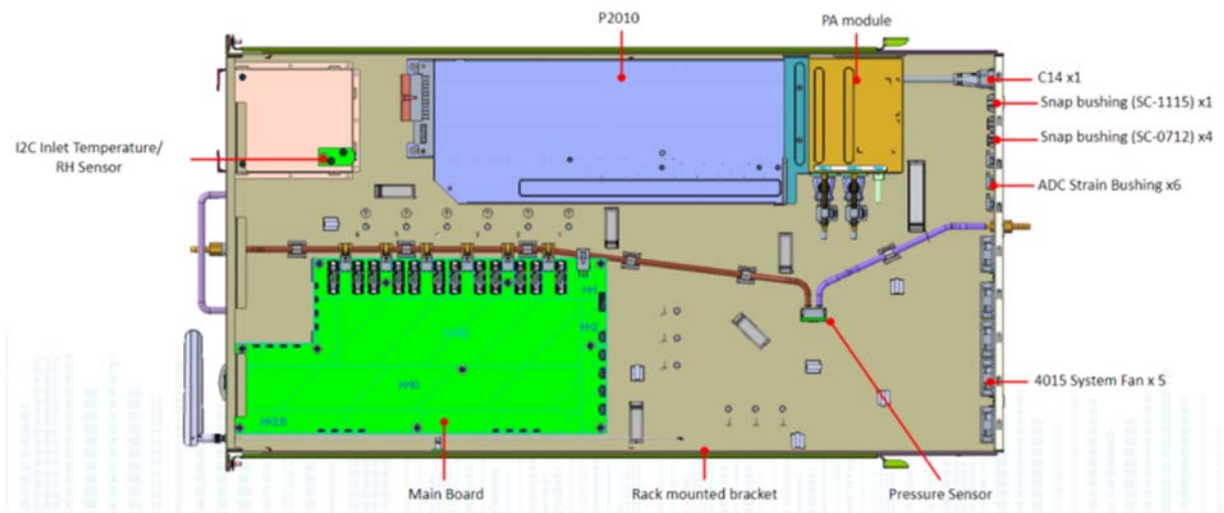


Figure 2: Interior View

Mainboard

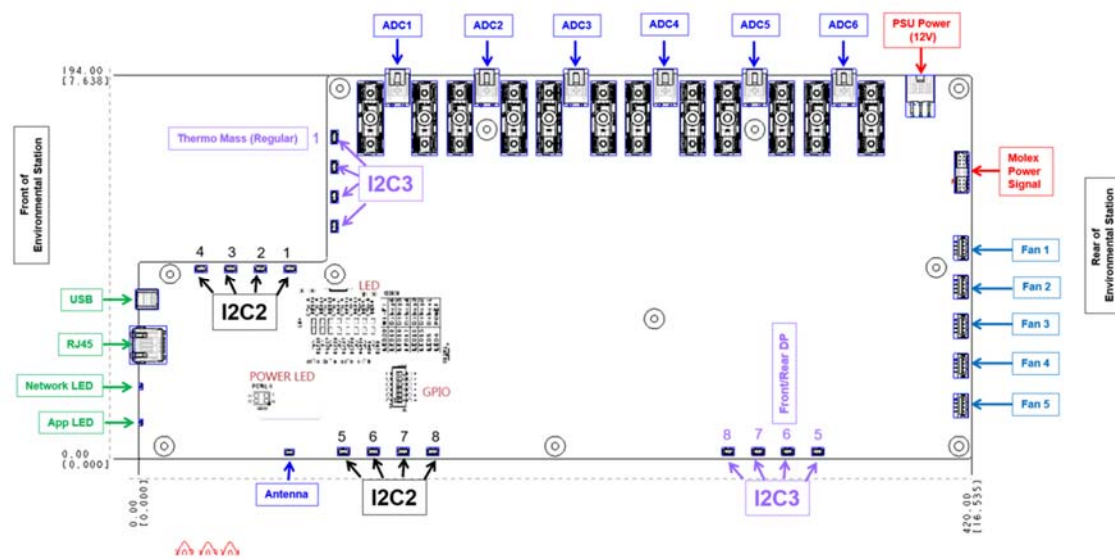


Figure 3: Major Mainboard Components and Connectors

Routing of System:

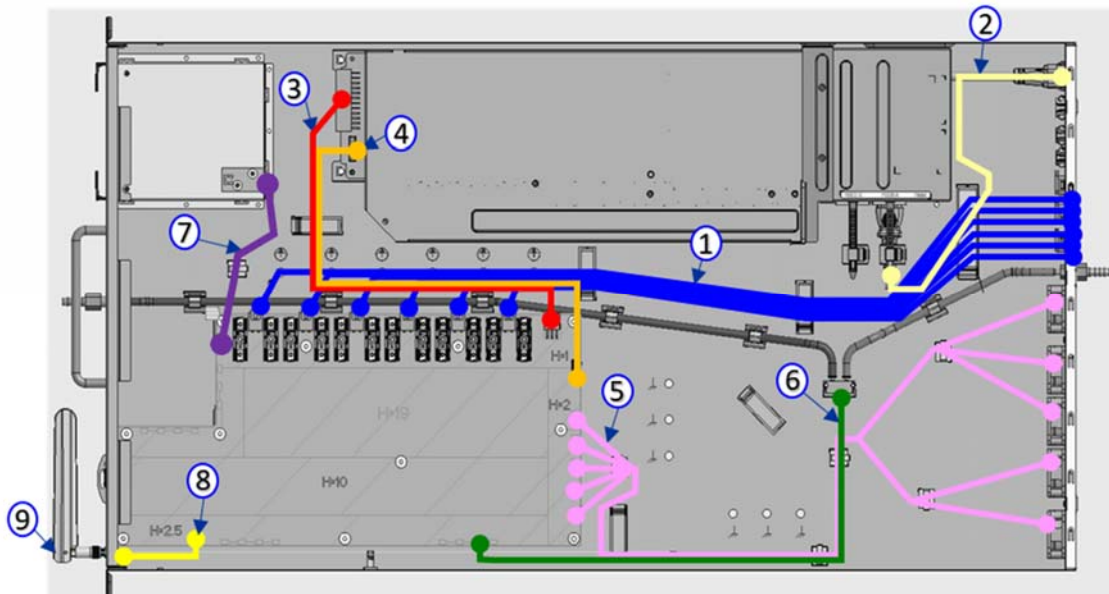


Figure 4: Cable management inside the system

Cable List:

Number	Item
1	ADC power cable x6
2	PA power cord x1 (220V input)
3	PSU power cable
4	PSU signal cable
5	Fan cable x5
6	Pressure sensor cable
7	Temp/RH sensor cable x1
8	RF cable
9	External Antenna

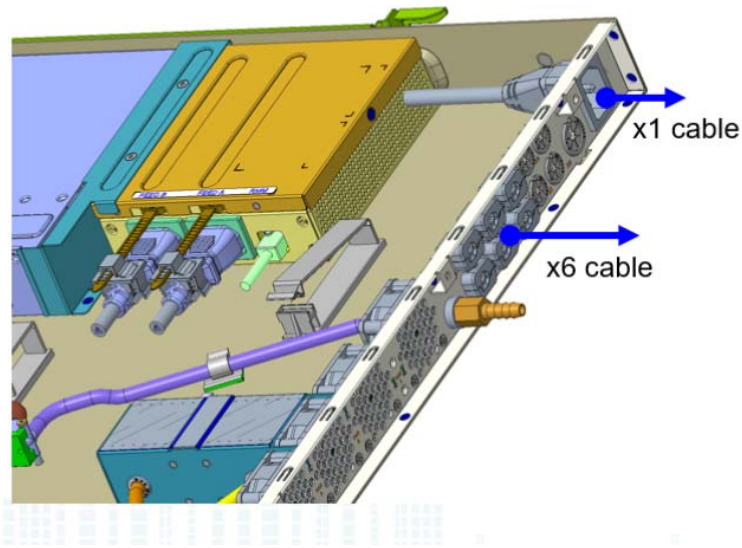


Figure 5: Power connections of the system

Powering on the system:

Connect a power cable (220V) into the C14 PDU input connectors (top one in diagram above) in the rear plate.

Once powered on, the system will run on battery if the power input is no longer available. This means that if the power cable is unplugged, the system will continue to run until the battery is fully depleted.

When powered on, both of front plate LED will be turned on (red or green).

Power Feeds:

Ensure the six power cables coming out of the rear is connected to the PDU before powering on the system. Each cable is labeled with a number from A1-A6. Number A1-A3 are in the same group of phases. Number A4-A6 is in a different group of phases.

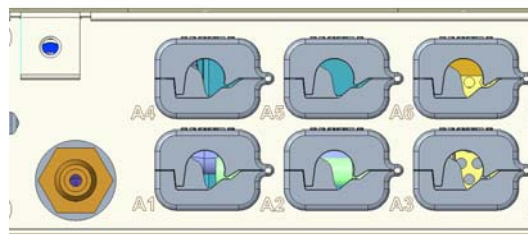


Figure 6: Numbering of the power feeds

Front View:

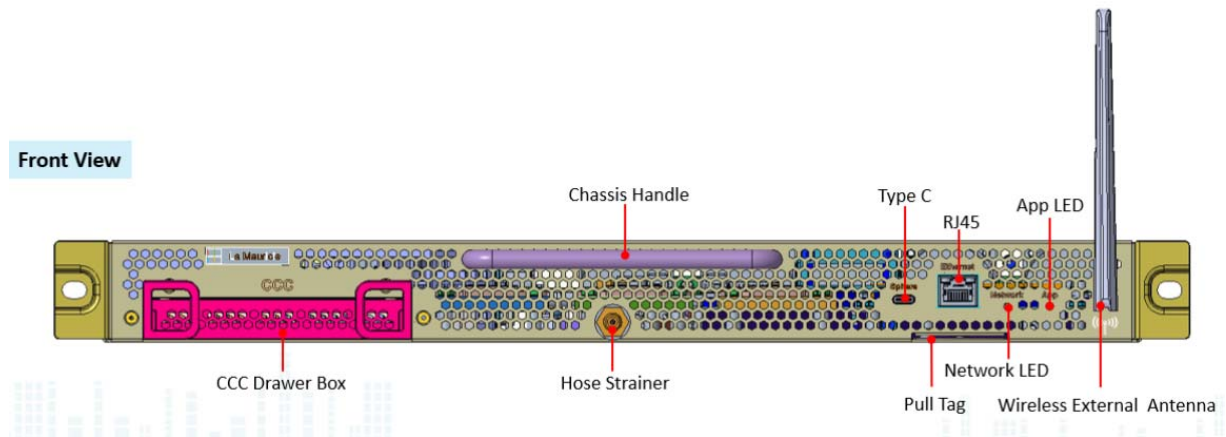


Figure 7: Front view of the chassis

Item	Use
CCC Drawer Box	Storage for CCC (Corrosion Classification Coupon)
Chassis Handle	Handle to lift the system.
Hose Strainer	Measure differential pressure.
USB Type C	The type-c connector can be used to connect to a computer for configuration of the system.
RJ45	Ethernet to connect to internet.
Network LED	The connection status of the system. Green – Connected to network Red – Not connected to network.
App LED	The condition of the environment. Green – Normal environmental condition Red – Hazard environmental condition
Wireless external antenna	To boost wifi connectivity. The antenna should be pointed 90 degrees upwards (as diagram above)

Note:

A corrosion classification coupon (not included in the package) is recommended to be inserted in the CCC drawer box for detection of corrosion.

Rear View:

Rear View

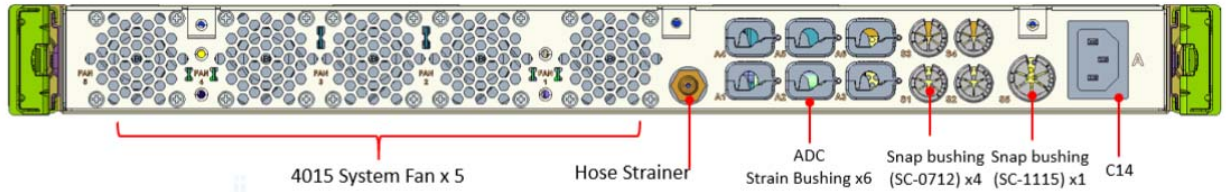


Figure 8: Rear view of the chassis

Item	Use
Fan x 5	Draws the heat in the system out through the rear
Hose Strainer	Measure differential pressure.
ADC Strain Bushing x 6	Openings to pass cables into the system. The cables connect to the PDU.
Snap Bushing x 4	Openings to pass i2c cable into the system. The cables connect to the i2c bridge on the mainboard.
Snap Bushing x 1	Large opening to pass an i2c cable into the system. The cable connects to the i2c bridge on the mainboard.
C14 x 1	Inputs to power on the system.

External I2C Sensor Cable Routing

The EnvStation can support up to six external sensor cables. External sensor cables should pass through the clips (see below). Each of the 4 small rear holes can support 1 cable. The single larger hole can support 2 cables.

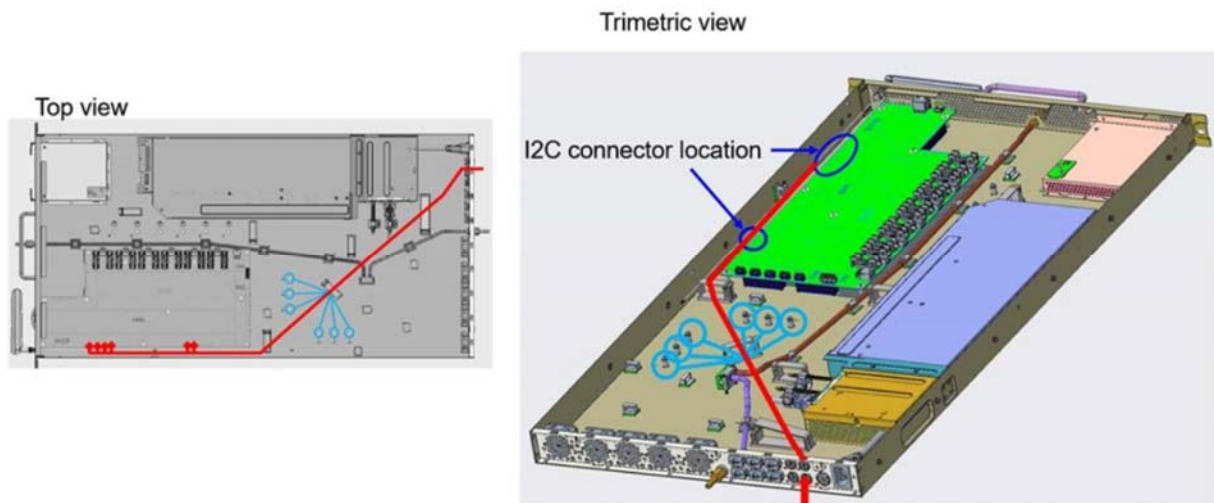


Figure 9: I2C cable passing through the clip

Above are the cables (red) passing through the clip to the rear. The I2C ground (ring terminal) cable goes to 1 of the 6 ground screws (circled in blue).

4. Onboarding the system

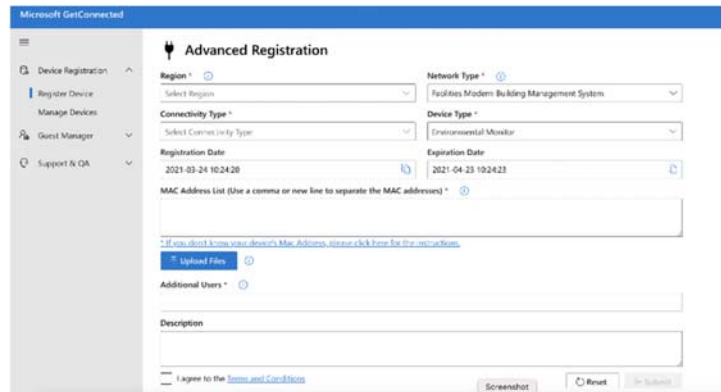
1. On Received shipment from factory, all EnvStation devices need to be claimed to belong to SmartDC tenants which will limit device can only be managed and connected to resources authenticated with SmartDC tenant certificates.

```
# login to SmartDC tenant
$azsphere login
# Claim device to tenant
$azsphere device claim -I <device ID>
```

2. Prior installation, IoT Central resource need to be created and configured to allow connection from device using SmartDC X.509 certificates. EnvStation device template need to be created to allow IoT Central to interact with EnvStation telemetry, properties and commands.
3. Prior installation, FacNet firewall need to be configured to include necessary Azure Sphere network endpoint as documented [here](#) and IoT Central endpoint.
4. Prior installation, use azsphere CLI to get MAC address of each unit and add them into FacNet group from GetConnected site, so they can be allowed to connect to FacNet network switches and gain access to Azure.

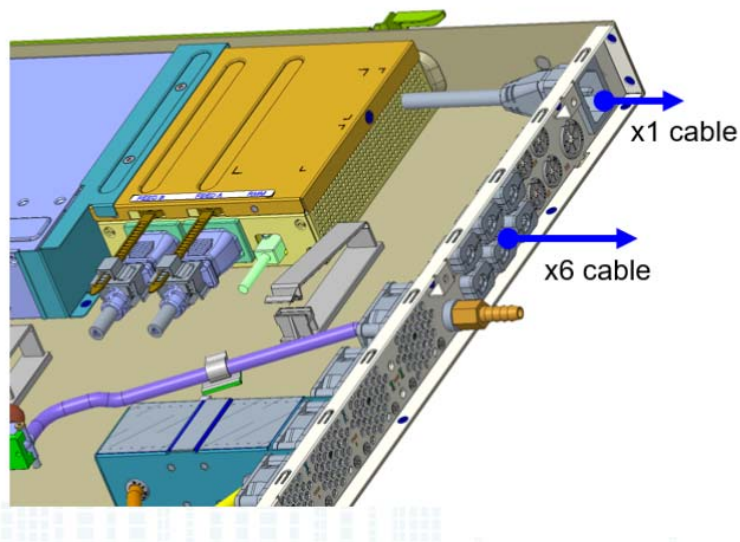
```
$ azsphere device network list-interfaces
```

Interface name : eth0
Network interface up : True
Connected to network : False
Acquired IP address : False
Connected to internet : False
Hardware address : c2:61:e5:16:6c:ba



GetConnected

5. Connect an ethernet cable to the ethernet port along with 7 C14 cables from the PDU to the rear (see Section 3: “About the System – Routing of the System” for more information). The EnvStation will power on for the first time and it will look for a software firmware to load onto the device from cloud. Wait up to 10 mins for both the front plate LEDs to turn green before proceeding to the next step.



Rear Connections

6. Once both LEDs are green, scan the QR code to retrieve the device ID of the unit. Go to IoT Central (<https://env-station.azureiotcentral.com/devices>) and look for the device id that matches the QR code.



QR Code under the ethernet port

Click on the device id and fill in the information based on where it is installed (ie. Datacenter, colo, rack).

Devices > EnvStation > EnvStation-MNZ20-CR2-AE214

EnvStation-MNZ20-CR2-AE214
Connected | Last data received: 3/8/2022, 8:02:12 PM | Status: Provisioned | Organization: Env Station

About Accelerometer Battery Condensation Event History Fan Heat Stress Humidity Pressure Temperature (°C) Temperature (°F) Voltage Commands Raw data Mapped aliases

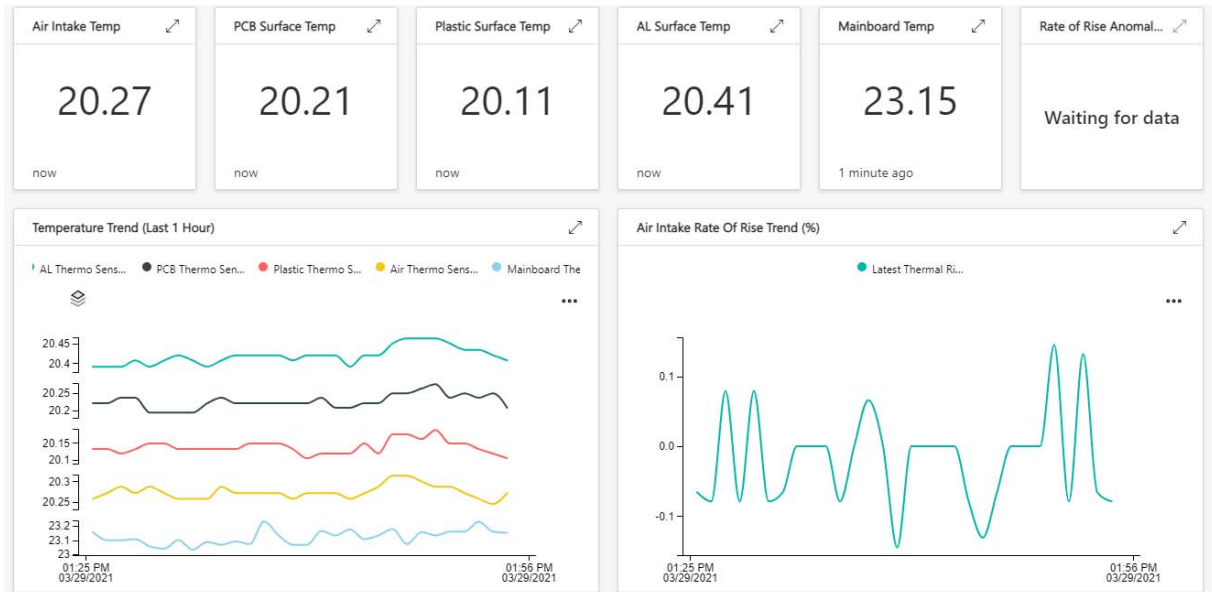
Save

Version App Version envs-hi-22.02	Location Datacenter MNZ20
Settings Suppress Circuit 1 True Accepted: 8 days ago Suppress Circuit 2 True Accepted: 8 days ago Target Fan Speed PWM 25 Accepted: 8 days ago	Rack AE214 Room CR2 Location2 Source One Circuit ID [Red] 02B3-09-AE215.1 Source Two Circuit ID [Blue] 02A3-20-AE214.1 U Position 8

About Page

Rename the device name to “EnvStation-NN-XX” where “NN” is the datacenter and XX is the rack number.

7. Verify your device is receiving telemetry from the dashboard interface. Go to any of the pages (i.e. Temperature, Pressure, etc).



Temperature Page

8. Repeat steps 5 ~ 7 for each unit.
9. Operation team use IoT Central to monitor device status and interact with device.
10. Development team use Azure Sphere Security Service to control firmware rollout to all devices.

5. Troubleshooting the system

When the device power port is connected, you will know the system is powered on by the noise coming from the PSU.

After 30 seconds, you will notice that the LED on the front plate will be turned on.

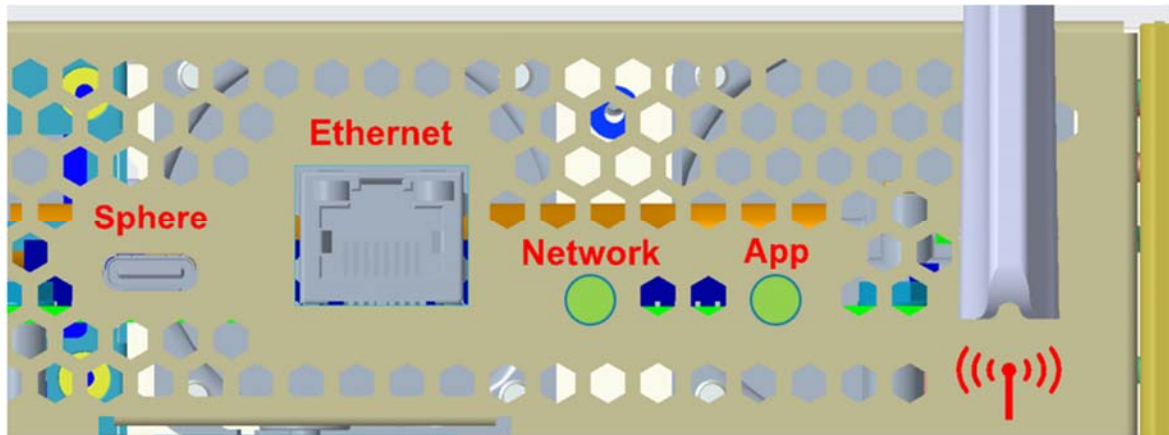


Figure 10: Default LED Status

If the EnvStation is functioning normally, both LEDs should emit **green** light. If the “Network LED” is red, it means that the EnvStation is not connected to a network (i.e. ethernet or WIFI).

If the "App LED" is not turned on, it means that the firmware has not been deployed. And if the LED is red, it could mean that either it is sensing an anomaly in the environment (i.e. temperature above normal threshold).

Please note that when you disconnect the PSU cable, the system will still be powered on for about 20 minutes because the battery is keeping the system running by default.

#	Issue	Description (manually side the images with laptop)	Solution
1	No Color Network LED	Ethernet Image not loaded on the device To check: azsphere dev image list-installed	Sideload ethernet imagepackage file to device manually
2	Red Network LED	Corpnet internet access is denied or not available	Download this file and connect the ethernet cable to your laptop. Run the file to see if the internet access is blocked or not available
3	Yellow Network LED	Able to connect to local network but no internet connectivity	Ask network engineer for assistance
4	Device Crash	If Azure Sphere Command Prompt is unresponsive and the device is not sending data to cloud, it is likely because of the eth/i2c bug	Check OS has latest 21.08 image after Aug 11th azsphere device show-os-version

			Install the latest by power cycling device
5	Device Is Unable to Receive OTA updates	Device is not in the device group or has enable-development mode on	<p>Add device to device group and disabling enable-development mode by using the second command from "devices" tab in this spreadsheet</p> <p>Confirm the device id is in the device group</p>
6	Device Is Not Receiving Voltage Reading	Ensure the circuit diagram and what is cabled is aligned.	Ensure the cables are routed correctly to the PDU