5. MOUNTING METHOD

5.1 Head End

5.1.1 Rack Mount

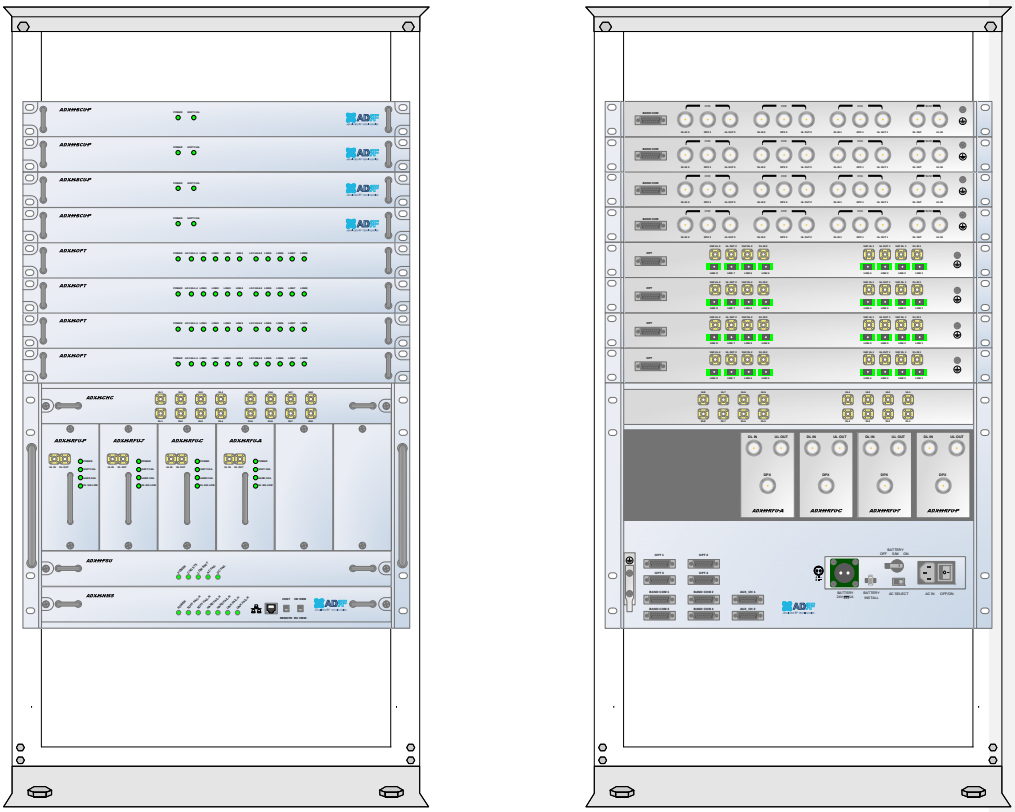


Figure 5-1 HE Rack Mount (Front & Rear view)

- Expandable up to 4 OPTs, 4 BCUs and 2 AUX CHs

5.1.2 Wall Mount

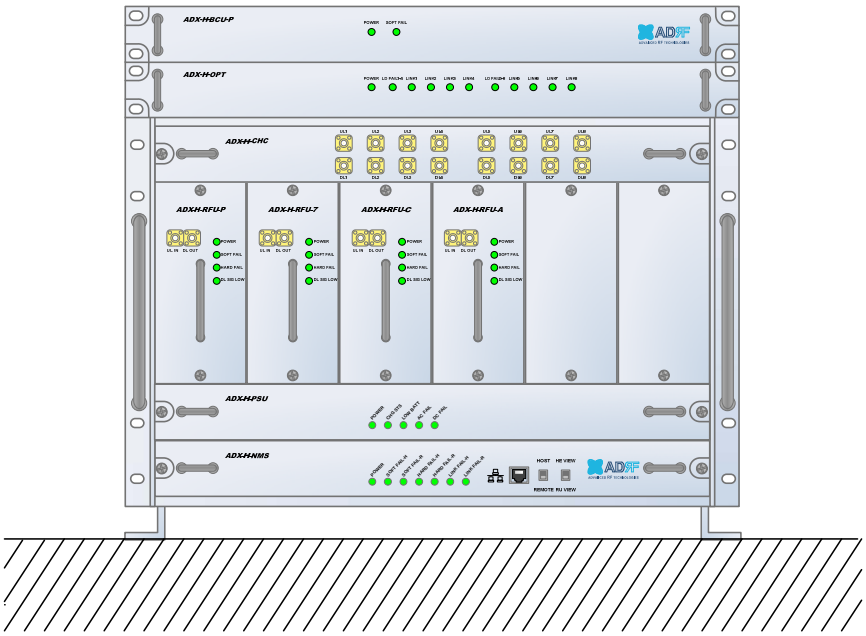


Figure 5-2 HE Wall Mount (Top View)

- Expandable up to 3 units (OPT, BCU) or max 3U (132mm)
  - ODU Rack or BCU will be stacked up above basic 19” HE chassis which includes NMS, RFU, PSU and CHC

5.2 Remote Unit

5.2.1 Rack Mount

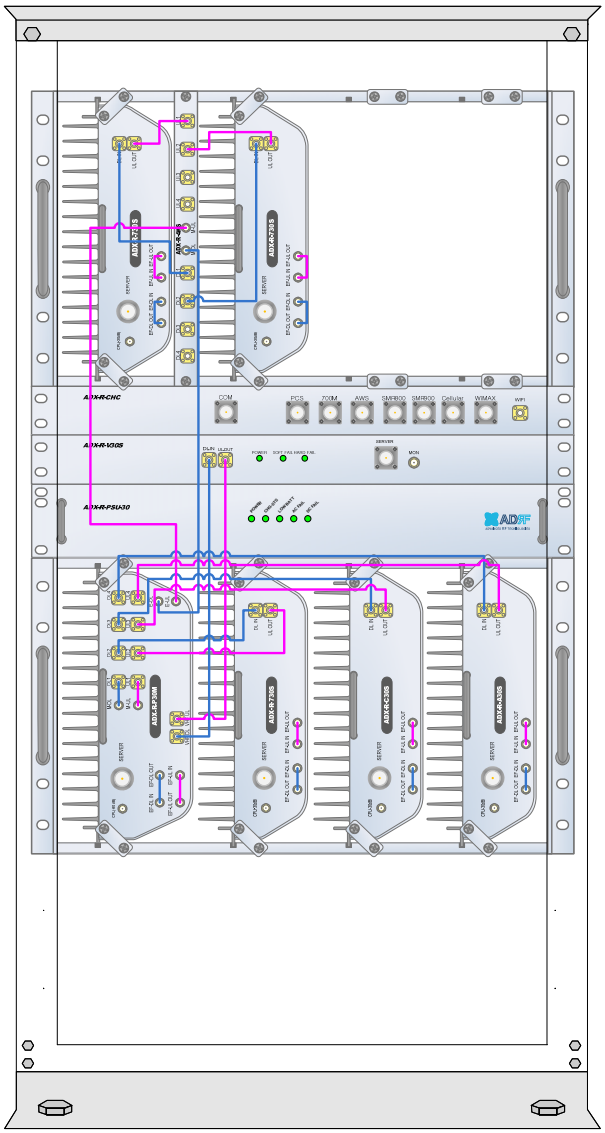


Figure 5-3 RU Rack Mount (Front view)

5.2.2 Wall Mount

5.2.2.1 Remote Unit using RU Chassis (ADX-R-CHA-30)

Wall mount brackets attached to the individual remote modules must be removed before sliding the remote modules into the RU Chassis.

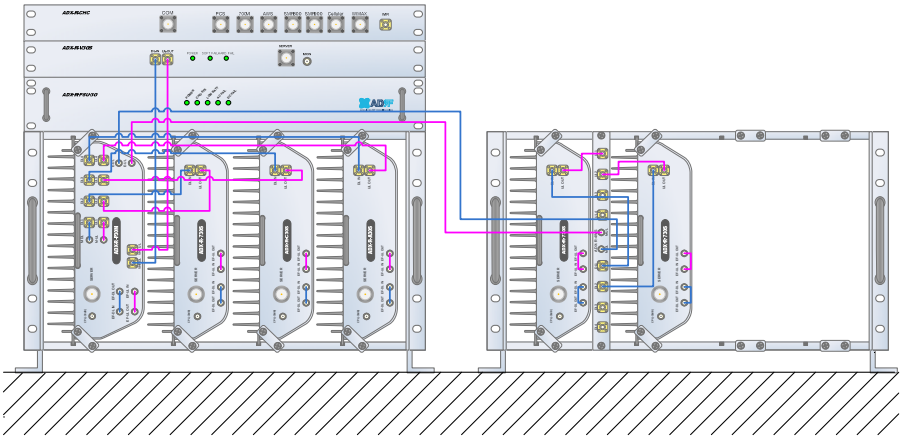


Figure 5-4 19" Shelf type - RU Wall Mount (Top view)

5.2.2.2 Individual Remote Module

Remote modules can be mounted using the attached mounting bracket that ships with the unit.

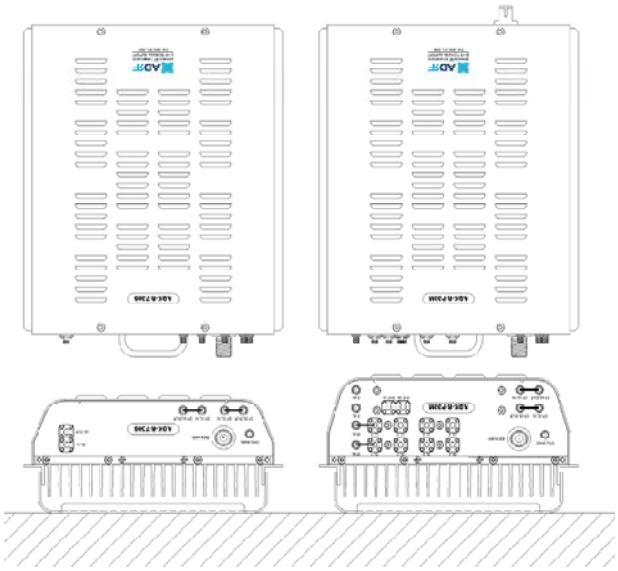


Figure 5-5 Remote Module Wall Mount (Top view)

6. INSTALLATION

6.1 Pre-Installation Inspection

Please follow these procedures before installing ADX equipment:

- Verify the number of packages received against the packing list.
- Check all packages for external damage; report any external damage to the shipping carrier. If there is damage, a shipping agent should be present before you unpack and inspect the contents because damage caused during transit is the responsibility of the shipping agent.
- Open and check each package against the packing list. If any items are missing, contact ADRF customer service.
- If damage is discovered at the time of installation, contact the shipping agent.
- Verify the AC voltage with DVM (Volt meter), then select the either 110V or 220V AC using the selection switch located at the rear of HE and RU PSU. The ADX ships with the AC selection switch set to the 110V position. Incorrect AC selection can damage the ADX equipment.

6.2 ADX DAS Installation Procedure

6.2.1 HE Installation Procedure

CAUTION: ADX DAS HE should be installed inside building only.

6.2.1.1 Installing a ADX DAS HE in a rack

The ADX HE chassis mounts in a standard 19" (483mm) equipment rack. Allow clearance of 3" (76mm) at the front and rear, and 2" (51mm) on both sides for air circulation. No top or bottom clearance is required.

- Consideration:
  - Eight mounting holes are located on 4 corners of ADX HE to attach it to the 19" rack. The ADX HE must be securely attached to a rack that can support the weight of the ADX.
- Mount procedure
  - The following steps should be followed while mounting the ADX HE
    - > Detach the wall mount bracket assembled located at the base of the ADX-HE chassis
    - > Verify that the HE and Mounting holes are in good condition
    - > Set the ADX DAS HE against the 19"rack and secure the unit with screws
    - > Verify that ADX HE is securely attached
    - > Connect the GND cable
    - > Connect the RF cable
    - > Connect the Power
    - > Connect the Optic cable

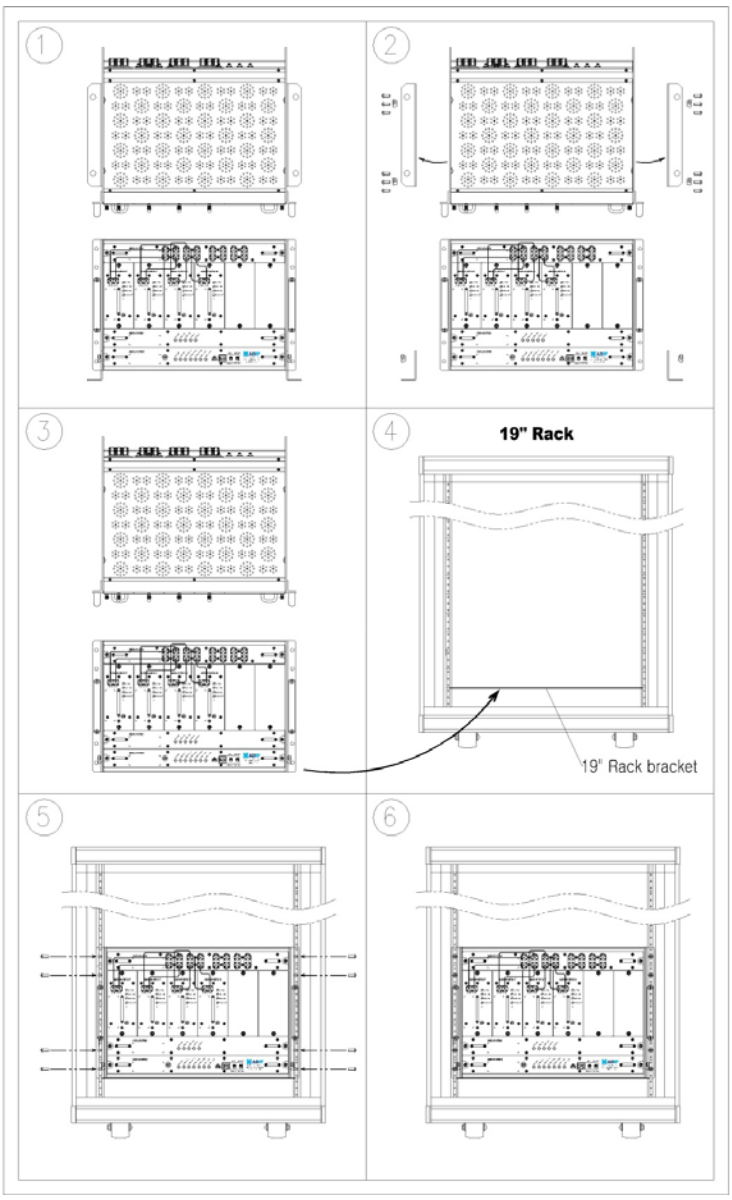


Figure 6-1 ADX HE 19” Rack Mount Instructions

6.2.1.2 Wall mounting the ADX DAS HE

If the ADX HE chassis is being mounted to a wall, then allow clearance of at least 17” (430mm) on the top (front side of HE) and 2” (51mm) on the bottom (rear side of HE) and 2” (51mm) on both sides and front for air circulation.

- Mount procedure
  - The following steps should be followed when wall mounting the ADX HE
    - > Verify that the HE and Mounting hole are in good condition
    - > Place the ADX HE against the wall and mark of the mounting holes
    - > Drill holes(4holes, 18Φmm, 50mm depth) in the installation surface and insert the anchor bolts
    - > Bolt the ADX HE to the wall
    - > Make sure the ADX HE is securely attached
    - > Connect the GND cable
    - > Connect the RF cable
    - > Connect the Power
    - > Connect the Optic cable

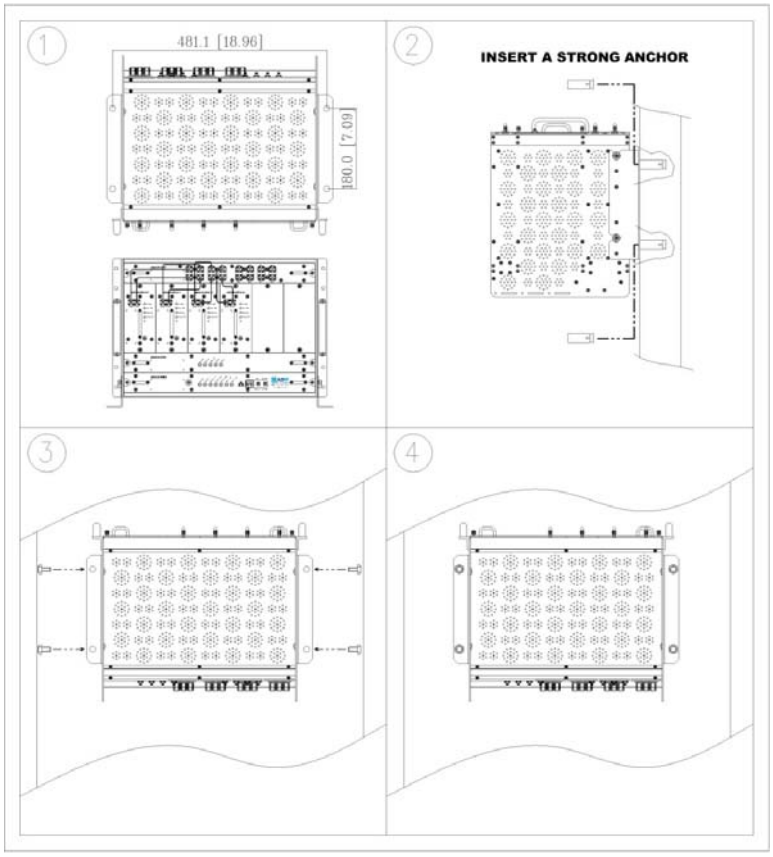


Figure 6-2 ADX HE Wall Mount Instructions

6.2.1.2.1 Installing added rack type modules into basic HE chassis

Additional modules such as the ADX-H-RACK-ODU and ADX-H-BCU can be mounted to the Chassis (ADX-H-CHA) using the included mounting brackets that come with the add-on modules.

- A maximum of up to 3 addon modules (OPT, BCU) can be mounted to the chassis
  - ODU Rack or BCU will be stacked up above basic 19" HE chassis which includes NMS, RFU, PSU and CHC

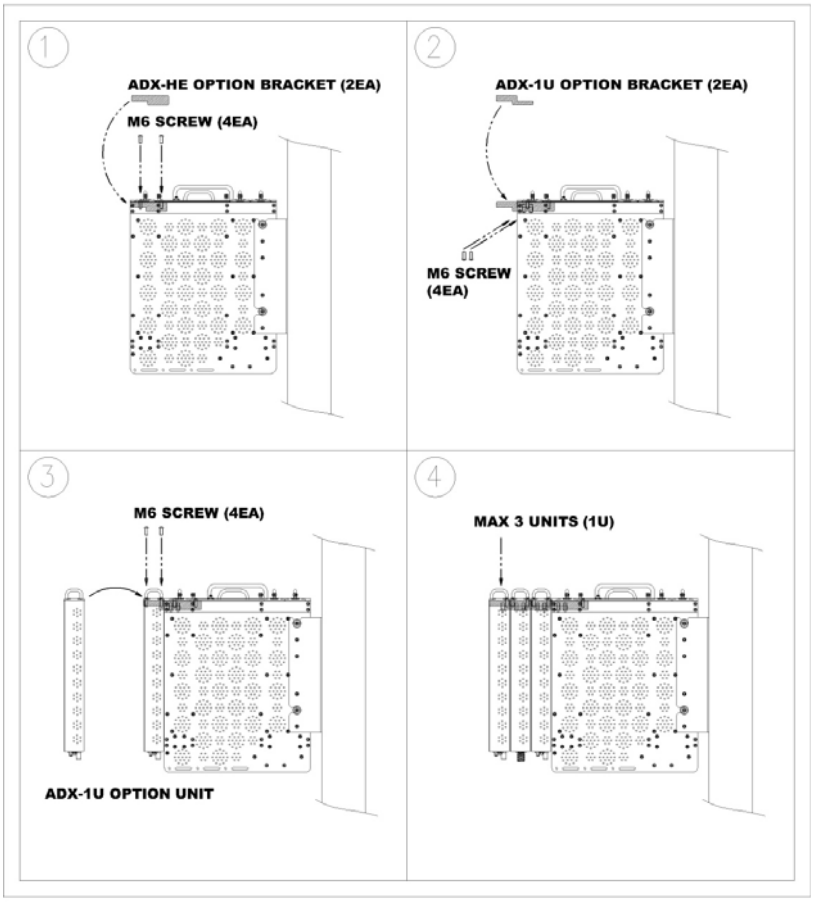


Figure 6-3 Wall Mount Instructions for ADX-HE added 1U Unit

6.2.2 RU Installation Procedure

CAUTION: ADX DAS RU should be installed inside building only.

6.2.2.1 Installing a ADX DAS RU in a rack

If the ADX RU chassis is being wall mounted then allow clearance of 3” (76mm) front and rear, and 2” (51mm) on both sides for air circulation. No top or bottom clearance is required.

When ADX DAS RU mounts in a standard 19” equipment rack, rack or wall type fan is needed for heat dissipation. The rack type fan (ADX-R-FAN) must have at least 1.75" of clearance.

- Consideration:
  - Eight mounting holes are located on 4 corners of ADX RU to attach it to the 19” rack. The ADX RU must be securely attached to support the weight of the ADX-RU units.
- Mount procedure
  - The following steps should be followed while mounting the ADX-RU units
    - > Detach the wall mount bracket located at the base of the ADX-RU chassis
    - > Verify that the RU and Mounting hole are in good condition
    - > Screw the ADX DAS RU to the 19”rack
    - > Make sure the ADX RU is securely attached
    - > Connect the GND cable
    - > Connect the RF cable
    - > Connect the Power
    - > Connect the Optic cable

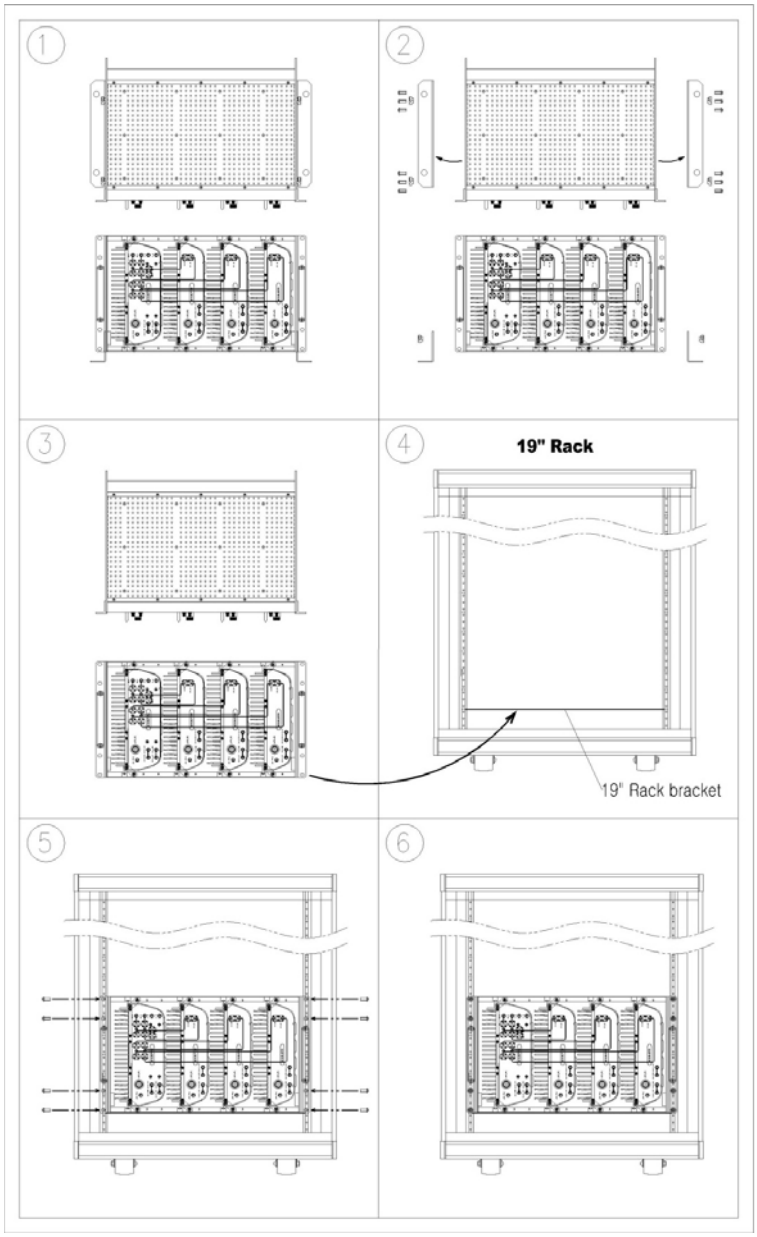


Figure 6-4 ADX-RU 19" Rack Mount Instructions

6.2.2.2 Wall mounting the ADX DAS RU

If the ADX RU chassis is being mounted to a wall, then allow clearance of at least 16” (406mm) on the top (front side of RU), 2” (51mm) on the bottom (rear side of RU) and 2” (51mm) on both sides and front for air circulation.

- Mount procedure
  - The following steps should be followed while mounting the ADX RU

    > Verify that the RU and Mounting hole are in good condition
    > Place the RU chassis up against the wall and mark off the mounting holes
    > Drill holes(4holes, 18Φmm, 50mm depth) in the installation surface and insert the anchor bolts
    > Bolt the RU chassis to the wall
    > Install the individual Sub-RU inside of the chassis
    > Make sure the RU chassis is securely attached
    > Connect the RF cable
    > Connect the Antenna cable
    > Connect the Power
    > Connect the Optic cable

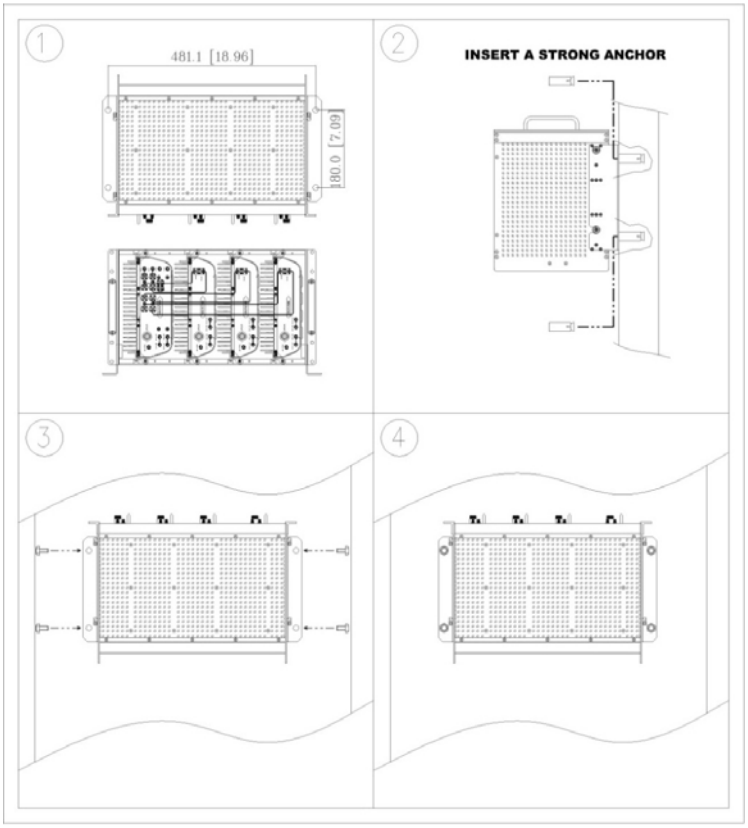


Figure 6-5 ADX-RU Wall Mount Instructions

6.2.2.2.1 Installing added rack type modules into basic HE chassis

Additional modules such as the ADX-R-CHC (channel combiner) and ADX-R-PSU (power supply unit) can be mounted to the Chassis (ADX-R-CHA) using the included mounting brackets that come with the add-on modules.

- A maximum of up to 2 addon modules (ADX-R-CHC and ADX-R-PSU) can be mounted to the chassis.
  - ADX-R-PSU or ADX-R-CHC will be stacked up above basic 19” RU chassis which holds the Master/Slave RU units.

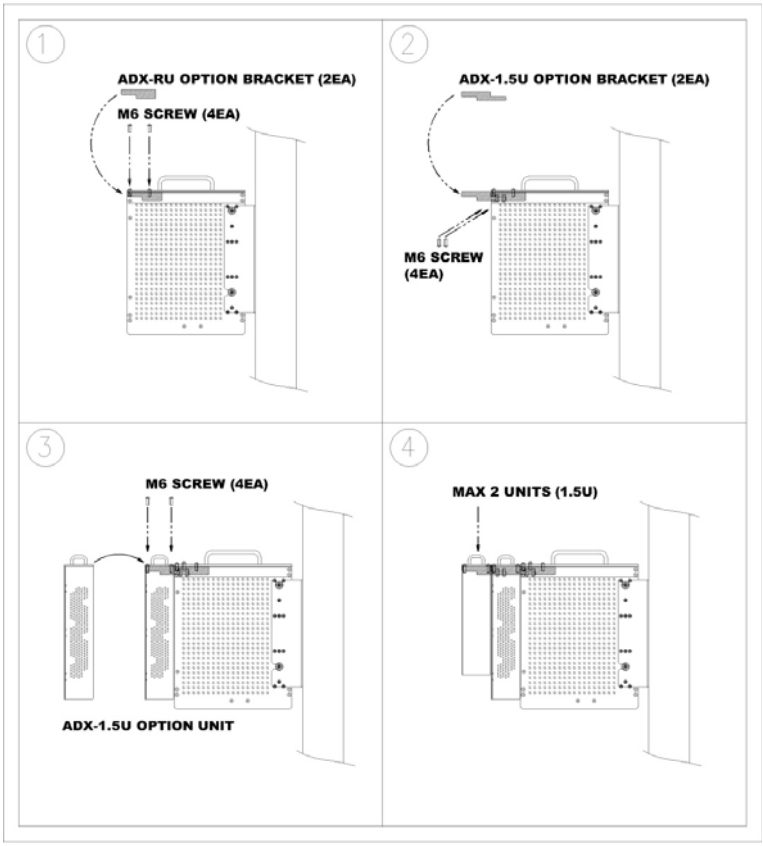


Figure 6-6 Wall Mount Instructions for ADX-RU added 1.5U Unit

6.2.2.3 Wall mounting an ADX Remote Module

- Mount procedure
  - The following steps should be followed while mounting the Remote Module

    > Verify that the RU and Mounting hole are in good condition
    > Separate the wall mount bracket from the Sub-RU
    > Placed the wall mount bracket against the wall and mark off the mounting holes
    > Drill holes(4holes, 6Φmm) in the installation surface then insert the enclosed anchor bolts
    > Bolt the mounting bracket to the wall
    > Install the Sub-RU to the mounting bracket
    > Fasten the Sub-RU to the mounting bracket using the included screws
    > Verify that the Remote Module is securely attached
    > Connect the Antenna cable
    > Connect the Power
    > Connect the Optic cable (if applicable)

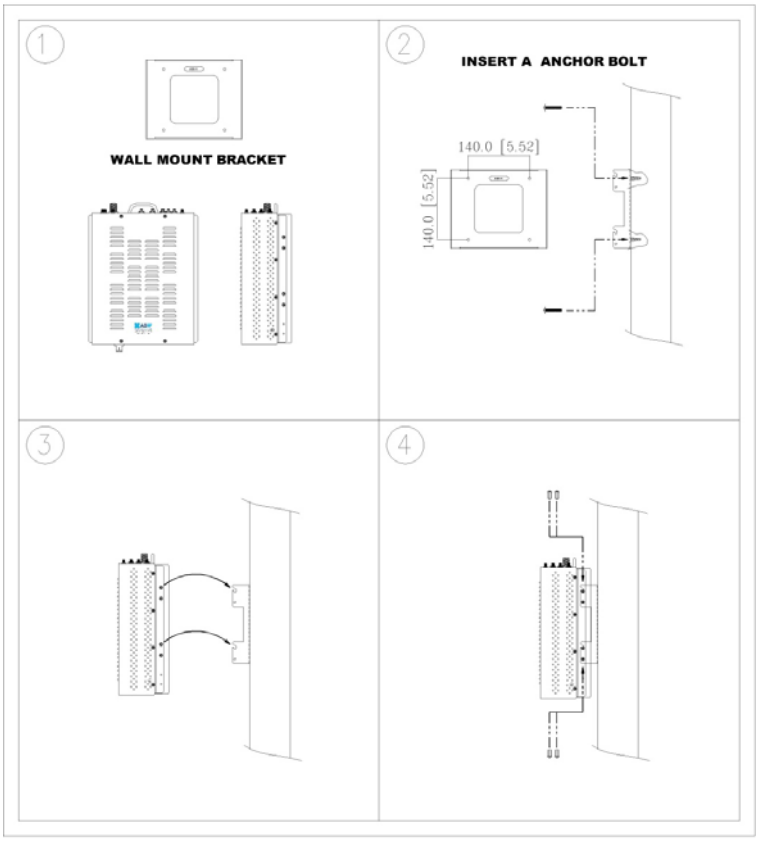


Figure 6-7 Remote Module Wall Mount Instructions

6.2.3 ADX-H-OEU Installation Procedure

CAUTION: ADX-H-OEU should be installed inside building only.

6.2.3.1 Installing a ADX-H-OEU in a Rack

The ADX-H-OEU mounts in a standard 19” (483mm) equipment rack. Allow clearance of 3” (76mm) front and rear, and 2” (51mm) on both sides for air circulation. No top or bottom clearance is required.

- Consideration:
  - Four mounting holes are located on 4 corners of ADX-H-OEU to attach it to the 19” rack. The ADX-H-OEU must be securely attached to support the weight of the unit.
- Mount procedure
  - The following steps should be followed while mounting the ADX-H-OEU
    - > Detach the wall mount brackets located at the base of the ADX-H-OEU
    - > Verify that the OEU and mounting hole are in good condition
    - > Screw the ADX-H-OEU to the 19”rack
    - > Make sure the ADX-H-OEU is securely attached
    - > Connect the GND cable
    - > Connect the RF cable
    - > Connect the Power
    - > Connect the Optic cable

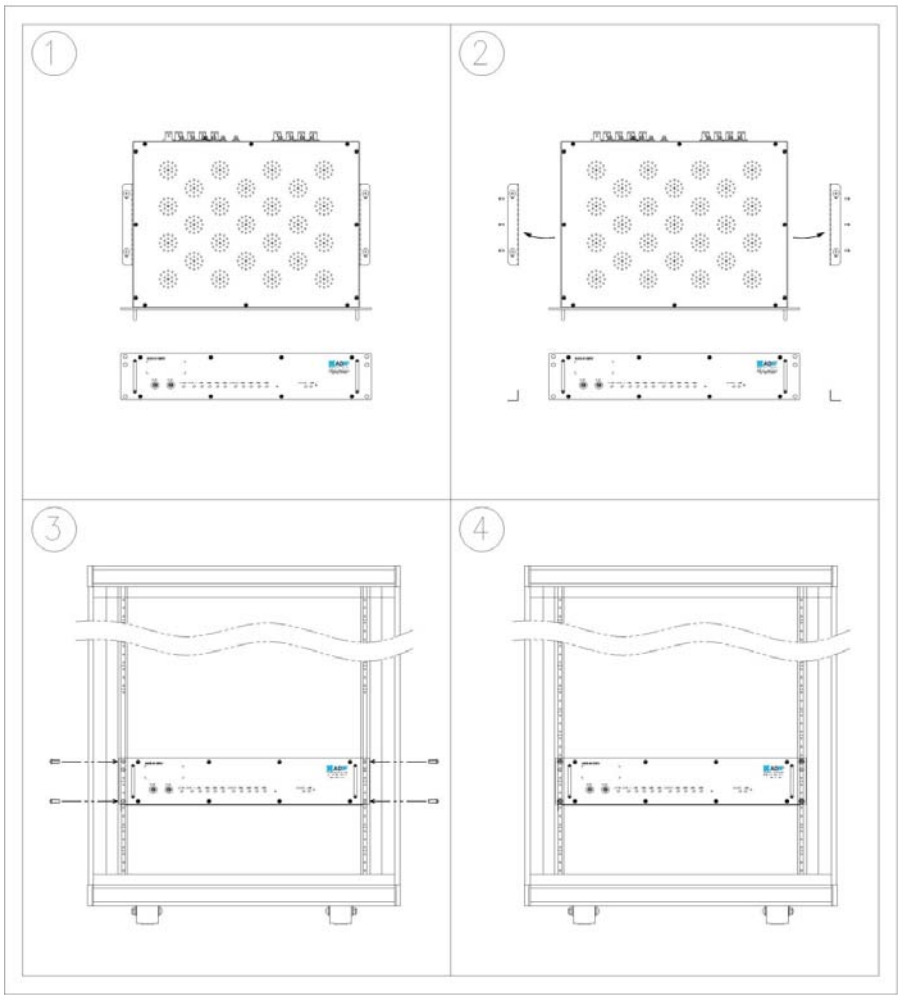


Figure 6-8 ADX-H-OEU Rack Mount Instructions

6.2.3.2 Wall mounting the ADX-H-OEU

- Mount procedure
  - The following steps should be followed while mounting the ADX-H-OEU
    - ▪
    - > Verify that the OEU and Mounting hole are in good condition
    - > Drill holes(4holes, 6Φmm) in the installation surface then insert the enclosed anchor bolts
    - > Set the ADX-H-OEU against the wall
    - > Make sure the OEU is securely attached
    - > Connect the RF cable
    - > Connect the Antenna cable
    - > Connect the Power
    - > Connect the Optic cable

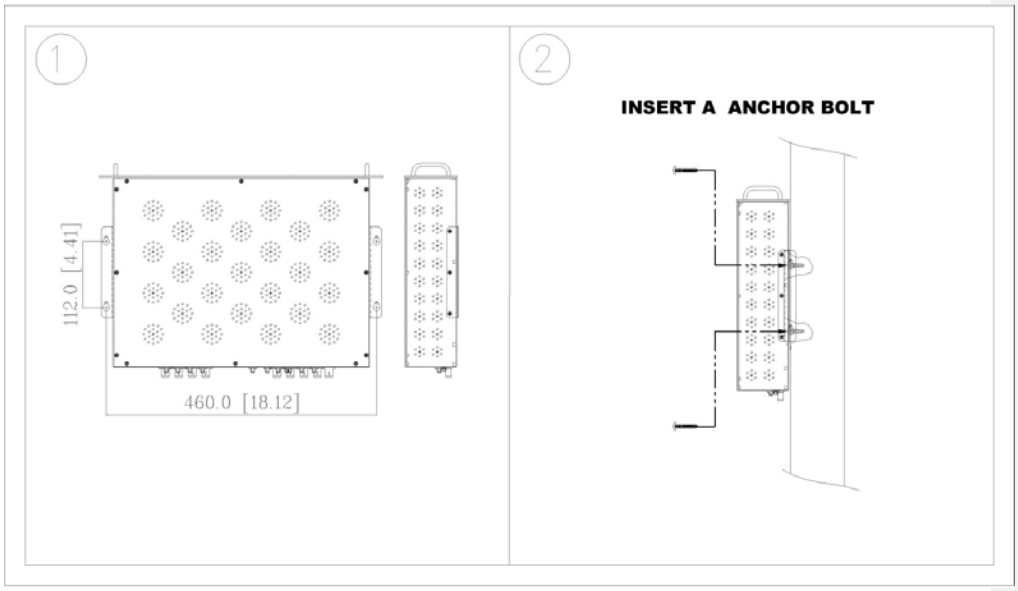


Figure 6-9 ADX-H-OEU Wall Mount Instructions

6.3 Grounding

A ground cable is included in the box. The grounding terminals are located at the rear of the ADX HE and RU. The grounding cable should be properly connected before powering on the equipment.

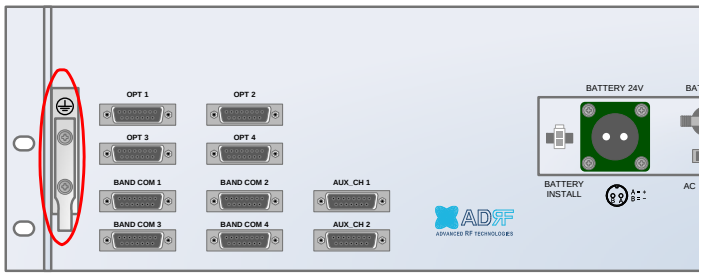


Figure 6-10 Ground Cable Connection (HE rear side)

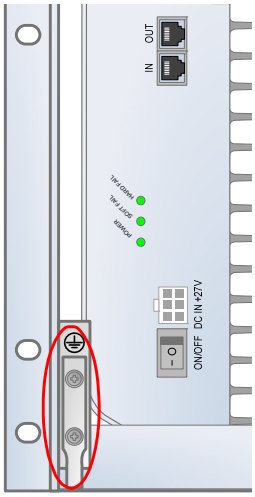


Figure 6-11 Ground Cable Connection (RU rear side)

6.4 Optic Port Cleaning

- We recommend cleaning optic connector using a dry optical cleaning swab or tissue in a dry environment as needed. We recommend cleaning the optic connectors only if the expected optic loss is higher than the loss reported in the Web-GUI by 1.5dBo. (Figure 6-12)
- When optic connector are not in use, the port should be covered with a protective dust cap. (Figure 6-13)

Figure 6-12 Optic Connector Cleaning (left) and Optic Port Cleaning (right)

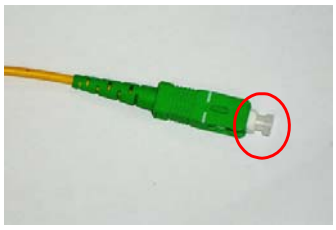


Figure 6-13 SC/APC Optic Connector Dust Cap

7. WARRANTY AND REPAIR POLICY

7.1 General Warranty

The ADX carries a Standard Warranty period of two (2) years unless indicated otherwise on the package or in the acknowledgment of the purchase order.

7.2 Limitations of Warranty

Your exclusive remedy for any defective product is limited to the repair or replacement of the defective product. Advanced RF Technologies, Inc. may elect which remedy or combination of remedies to provide in its sole discretion. Advanced RF Technologies, Inc. shall have a reasonable time after determining that a defective product exists to repair or replace the problem unit. Advanced RF Technologies, Inc. warranty applies to repaired or replaced products for the balance of the applicable period of the original warranty or ninety days from the date of shipment of a repaired or replaced product, whichever is longer.

7.3 Limitation of Damages

The liability for any defective product shall in no event exceed the purchase price for the defective product.

7.4 No Consequential Damages

Advanced RF Technologies, Inc. has no liability for general, consequential, incidental or special damages.

7.5 Additional Limitation on Warranty

Advanced RF Technologies, Inc. standard warranty does not cover products which have been received improperly packaged, altered, or physically damaged. For example, broken warranty seal, labels exhibiting tampering, physically abused enclosure, broken pins on connectors, any modifications made without Advanced RF Technologies, Inc. authorization, will void all warranty.

7.6 Return Material Authorization (RMA)

No product may be returned directly to Advanced RF Technologies, Inc. without first getting an approval from Advanced RF Technologies, Inc. If it is determined that the product may be defective, you will be given an RMA number and instructions in how to return the product. An unauthorized return, i.e., one for which an RMA number has not been issued, will be returned to you at your expense. Authorized returns are to be shipped to the address on the RMA in an approved shipping container. You will be given our courier information. It is suggested that the original box and packaging materials should be kept if an occasion arises where a defective product needs to be shipped back to Advanced RF Technologies, Inc. To request an RMA, please call (800) 313-9345 or send an email to techsupport@adrftech.com.

8. WEB-GUI

8.1 Web-GUI Setup

The Web-GUI allows the user to communicate with the DAS system either locally or remotely. To connect to the DAS system locally, you will need a laptop with an Ethernet port and a RJ-45 crossover cable. To connect to the DAS system remotely, you will need to have an active internet connection and the ADX system must have and external modem box connected to the ADX.

8.1.1 DAS system/PC Connection Using Web-GUI

- Verify that your Local Area Connection is set to Obtain an IP address automatically under the Internet Protocol (TCP/IP) properties
  - If you are connecting to the unit remotely (use of a modem), then skip this and next step.
- Connect the RJ-45 crossover cable between the laptop's Ethernet port and the repeater's Ethernet port
- Launch an Internet Browser
- Type the following IP address into the address bar of Microsoft Internet Explorer: http://192.168.63.1
  - If you are connecting to the unit remotely, then type the IP address of the modem to connect to the unit
- The following login screen will appear:

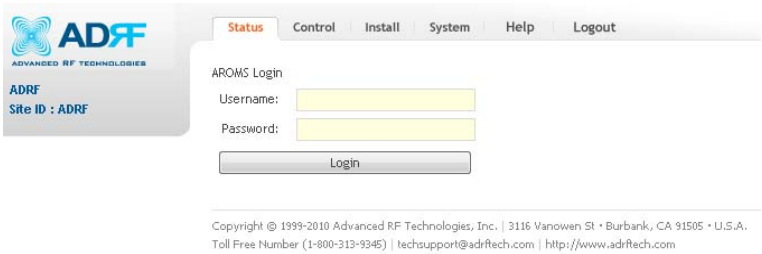


Figure 8-1 Login screen

If you are not the Administrator, please type in your assigned username & password which you should have received from the Administrator.

Table 8-1 Account Information for Login

Account type	Show items	Control Items	Default ID	Default Password
Administrator	all Items	all items	admin	admin
User	restricted items	restricted items	adrf	adrf
Guest	restricted items	read-only	guest	guest

8.2 Administrator/User Mode

8.2.1 Common

8.2.1.1 Navigation tree Lock/Unlock

When the system is “Locked”, a green lock icon will appear above the navigation tree. When the system is locked, new devices cannot be added. Any devices added to the system when the system is “Locked” will not be detected by the NMS. After a system has been commissioned properly, the system should be left in the “Locked” position. To unlock the system, click on the “Unlock System” button to the right of the icon.

When the system is “Unlocked”, an orange icon will appear above the navigation tree. When the system is unlocked, new devices added to the system will be automatically detected. Once the new hardware appears in the system tree, then the system can be locked. To lock the system, click on the “Lock System” button to the right of the icon.

Figure 8-2 Navigation tree Lock/Unlock

8.2.1.2 Navigation Tree

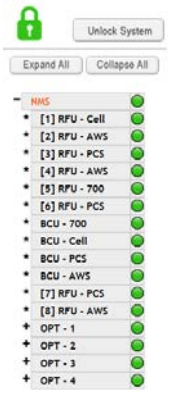


Figure 8-3 Navigation tree

The navigation tree located on the left hand side of the Web-GUI allows the user to switch between the various modules that are connected to the system.

Table 8-2 Navigation tree

Parameters	Description
Expand All	Expands the entire navigation tree
Collapse All	Collapses the entire navigation tree
+	The module has the expandable subordinate modules
–	The branch is currently expanded
	The module has soft fail alarm
	The module has hard fail alarm
	The module has no alarms (normal)
NMS	The selected module will have orange colored text

8.2.1.3 Power Status

Display the power source that is currently being used.

Table 8-3 Power Supply Status

Input Power Status	Display Image
AC	Power
Battery	Battery

8.2.1.4 Commissioning Status

Display whether or not the module has successfully been commissioned.

Table 8-4 Commissioning ICON

Status	Display Image
Commissioned	Commissioned
Not-Commissioned	Not Commissioned

8.2.1.5 Information

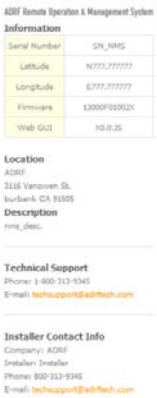


Figure 8-4 ADX DAS General Information

- Information: Displays the serial number, latitude/longitude, firmware version of selected module, and Web GUI version of the NMS.
- Location: Displays the address where the ADX DAS is installed.
- Description: Displays the description of selected module. The description of each module can be edited from the Install tab. It is recommended to use the location of the module as the description. This description information can be seen when hovering over the device tree in order to easily identify each component.
- Technical Support: Displays ADRF's Technical Support contact information.
- Installer Contact Info: Displays the contact information of the installer.

8.2.2 Status Tab

8.2.2.1 Status – NMS

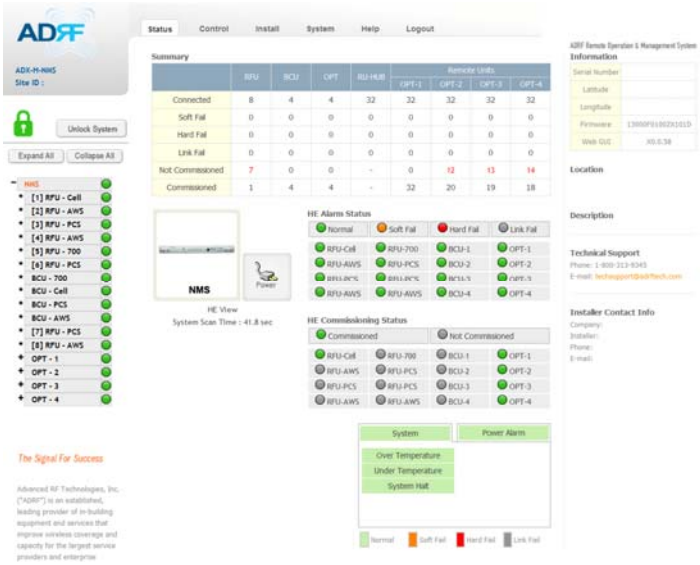


Figure 8-5 Status - NMS

The NMS Status page provides an overall view of how the system is performing. From the NMS Status page, the user can see what modules are connected to ADX DAS. In addition, the user can see if any alarms are present in the system and also the commissioning status of each module.

8.2.2.1.1 System Summary

Summary

	RFU	BCU	OPT	RU-HUB	Remote Units			
					OPT-1	OPT-2	OPT-3	OPT-4
Connected	8	4	4	32	32	32	32	32
Soft Fail	0	0	0	0	0	0	0	0
Hard Fail	0	0	0	0	0	0	0	0
Link Fail	0	0	0	0	0	0	0	0
Not Commissioned	7	0	0	-	0	12	13	14
Commissioned	1	4	4	-	32	20	19	18

Figure 8-6 System Summary

The Summary section provides the user with the number of components physically connected, the number of soft/hard/link fails present in the system, and also the number of commissioned and non-commissioned componnets.

Table 8-5 System Summary Description

Parameters	Description
Connected	Display the number of modules physically connected to ADX DAS
Soft Fail	Display the number of soft fail present on each module
Hard Fail	Display the number of hard fail present on each module
Link Fail	Display the number of link fail present on each module
Not Commissioned	Display the number of non-commissioned or commission failed module
Commissioned	Display the number of successfully commissioned module

8.2.2.1.2 HE View / RU View, System Scan Time

- HE View/RU View
  - Displays whether the NMS is set to HE view or RU view.
  - Refer to section 3.1.1.4
- System Scan Time
  - Displays the time it takes to scan and update the information of all the modules that are on the navigation tree. This time will increase as more components are added to the system.
  - When Navigation Tree is unlocked, the user should wait at least the "System Scan Time" for the system to detect newly added hardware.

Figure 8-7 System scan time, HE view/RU view

8.2.2.1.3 HE Alarm Status

Display the alarm status of each HE component.

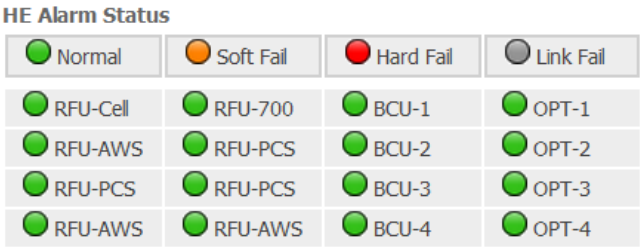


Figure 8-8 HE alarm status

8.2.2.1.4 HE Commissioning Status

Display commissioning status of each HE component.

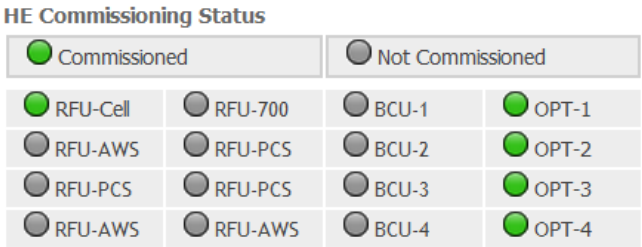


Figure 8-9 HE Commissioning status

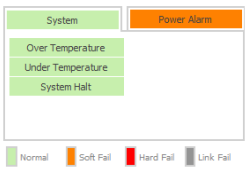
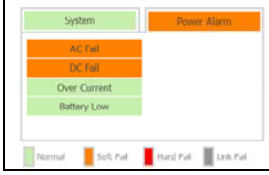
Table 8-6 Description for HE Commissioning status

Status		Display	Description
Installed Status	Physically Installed	RFU-PCS	Text is black
	Physically Not-Installed	RFU-CH5	Text is gray
Commissioning Status	Success		Green
	Failed or not commissioned		Gray

8.2.2.1.5 Alarm

Displays alarm status of the NMS. If an alarm is present in the system, the color of the system alarm tab will change according to the type of failure.

Table 8-7 Description for NMS alarm

Alarm		Severity	Description
System 	Over Temperature	Hard Fail / Soft Fail	Temperature of NMS is higher than the threshold level for over temperature alarm
	Under Temperature	Soft Fail	Temperature of the NMS is lower than the threshold level for under temperature alarm
	System Halt	Hard Fail	HE system halt
Power Alarm 	AC Fail	Soft Fail	AC power is operating outside of its normal range
	DC Fail	Soft Fail	DC power is operating outside of its normal range
	Over Current	Hard Fail	Total current of HE is higher than the threshold level for over current alarm
	Battery Low	Soft Fail	Voltage of battery connected to HE PSU is lower than the defined threshold

8.2.2.2 Status – BCU

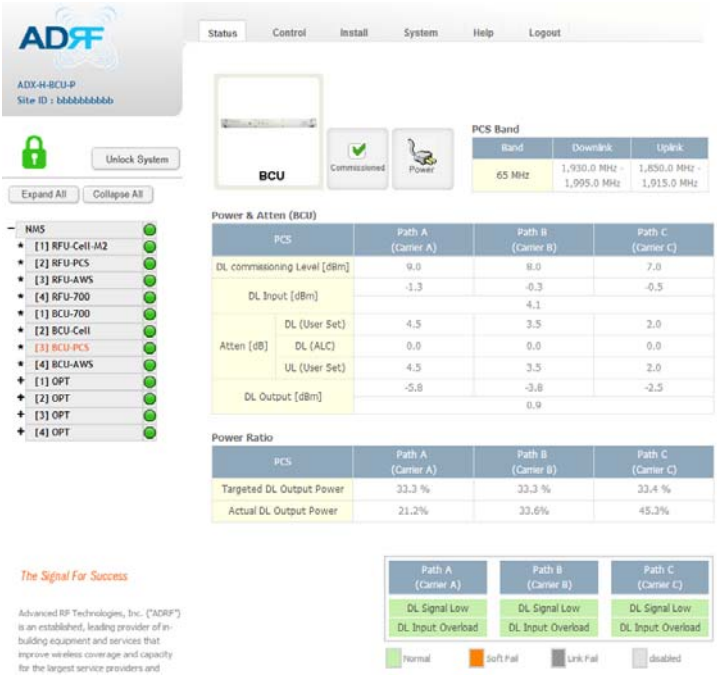


Figure 8-10 Status – BCU

8.2.2.2.1 Band

Displays the bandwidth and the frequency ranges for DL and UL of the BCU module.

PCS Band

Band	Downlink	Uplink
65 MHz	1,930.0 MHz - 1,995.0 MHz	1,850.0 MHz - 1,915.0 MHz

Figure 8-11 Status – BCU Band

8.2.2.2.2 Power & Atten

Power & Atten (BCU)

PCS		Path A (Carrier A)	Path B (Carrier B)	Path C (Carrier C)
DL commissioning Level [dBm]		9.0	8.0	7.0
DL Input [dBm]		-1.3	-0.3	-0.5
		4.1		
Atten [dB]	DL (User Set)	4.5	3.5	2.0
	DL (ALC)	0.0	0.0	0.0
	UL (User Set)	4.5	3.5	2.0
DL Output [dBm]		-5.8	-3.8	-2.5
		0.9		

Figure 8-12 Status – BCU Power & Atten

- *DL Commissioning Level*: Displays the commissioning level for each individual RF path. If unit has not been commissioned, "Not Commissioned" will be displayed.
- *DL Input*: Displays the currently incoming signal strength of each RF path along with the composite DL input power of all 3 RF paths.
- *Atten*: Displays the attenuation values that the system is currently using which is defined by the power ratios specified by the user.
- *DL Output*: Displays the output value for each RF path along with the composite DL output power of all 3 RF paths. The DL Output level for each RF path will not exceed 5dBm and the composite output power will not exceed 10 dBm.

8.2.2.2.3 Power Ratio

Power Ratio

PCS	Path A (Carrier A)	Path B (Carrier B)	Path C (Carrier C)
Targeted DL Output Power	33.3 %	33.3 %	33.4 %
Actual DL Output Power	21.2%	33.6%	45.3%

Figure 8-13 Status – BCU Power Ratio

- *Targeted DL Output Power*: Displays desired power ratios specified by the user. If unit has not been commissioned, "Not Commissioned" will be displayed.
- *Actual DL Output Power*: Displays the currently power ratios that the system is using. These values will fluctuate based on the amount of traffic that is in the system.

8.2.2.2.4 Alarm

Displays the current alarm status of each individual RF path. Parameters for both DL Signal Low and DL Input Overload can be specified from the Control tab.

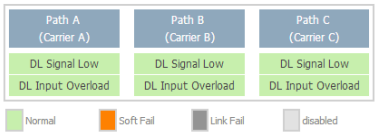


Figure 8-14 Status – BCU Alarm

8.2.2.3 Status – RFU

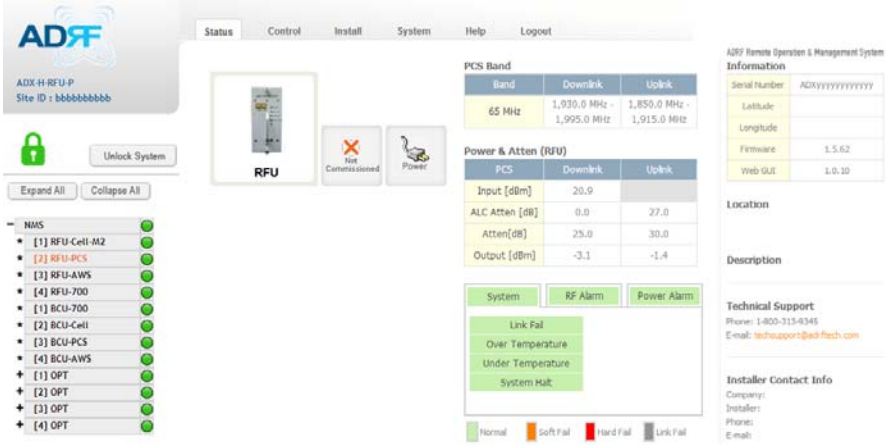


Figure 8-15 Status – RFU

8.2.2.3.1 Band

Displays the bandwidth and the frequency ranges for DL and UL of the RFU module.

PCS Band

Band	Downlink	Uplink
65 MHz	1,930.0 MHz - 1,995.0 MHz	1,850.0 MHz - 1,915.0 MHz

Figure 8-16 Status – RFU Band

8.2.2.3.2 Power & Gain (Admin/User)

- Admin Mode- Displays the Downlink Input/output, Downlink/Uplink Attenuation, and Uplink Output.
- User Mode- Displays the Downlink Input, Downlink/Uplink Attenuation, and Uplink Output.

Power & Gain (RFU)

Cell	Downlink	Uplink
Input [dBm]	9.9	
ALC Atten [dB]	0.0	0.0
Atten[dB]	10.0	10.0
Output [dBm]	-4.1	-22.4

Figure 8-17 Power & Gain Display (Admin)

Power & Gain (RFU)

Cell	Downlink	Uplink
Input [dBm]	--.-	
Atten[dB]	25.0	35.0
Output [dBm]		--.-

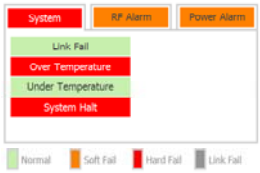
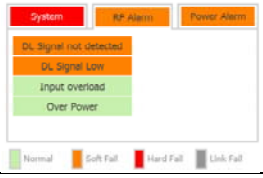
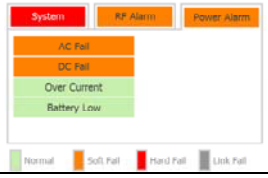
Figure 8-18 Power & Gain Display (User)

- Input [dBm]: Displays the Downlink RF input level which comes from the ADX-H-BCU, BTS. This value should be between 0 to 25 dBm.
- ALC Atten [dB]: The amount of attenuation that is being used by the system when ALC is active.
- Atten [dB]: The amount of attenuation that has been set manually by the user.
- Output [dBm]: The downlink/uplink output power of the RFU and NOT the output power of the RU.

8.2.2.3.3 Alarm

Displays System, RF, and Power Alarms. If an alarm is present in the system, then the color of the tab will change according to the type of failure.

Table 8-8 RFU Alarm Status

Alarm		Severity	Description
System 	Link Fail	Soft Fail	A component is physically connected, but the NMS is unable to communicate with it.
	Over Temperature	Hard Fail / Soft Fail	The temperature of NMS is higher than the threshold level for over temperature alarm.
	Under Temperature	Soft Fail	The temperature of NMS is lower than the threshold level for under temperature alarm.
	System Halt	Hard Fail	System will go into a "System Halt" state when a hard fail alarm does not clear after 10 checks. System Halt can only be cleared with a power cycle, reboot, or factory settings.
RF Alarm 	DL Signal not detected	Soft Fail	Downlink input signal is lower than the defined threshold by user.
	DL Signal Low	Soft Fail	Downlink input signal is lower than the defined threshold by user.
	Input Overload	Hard Fail / Soft Fail	Downlink input signal is higher than the defined threshold.
	Overpower	Hard Fail / Soft Fail	Uplink output signal is higher than the defined threshold by user.
Power Alarm 	AC Fail	Soft Fail	AC power is not operating within parameters.
	DC Fail	Soft Fail	DC power is not operating within parameters.
	Over Current	Hard Fail	Total current of HE is higher than the threshold level for over current alarm.
	Battery Low	Soft Fail	Voltage of battery connected to HE PSU is lower than the defined threshold.

8.2.2.4 Status – ODU

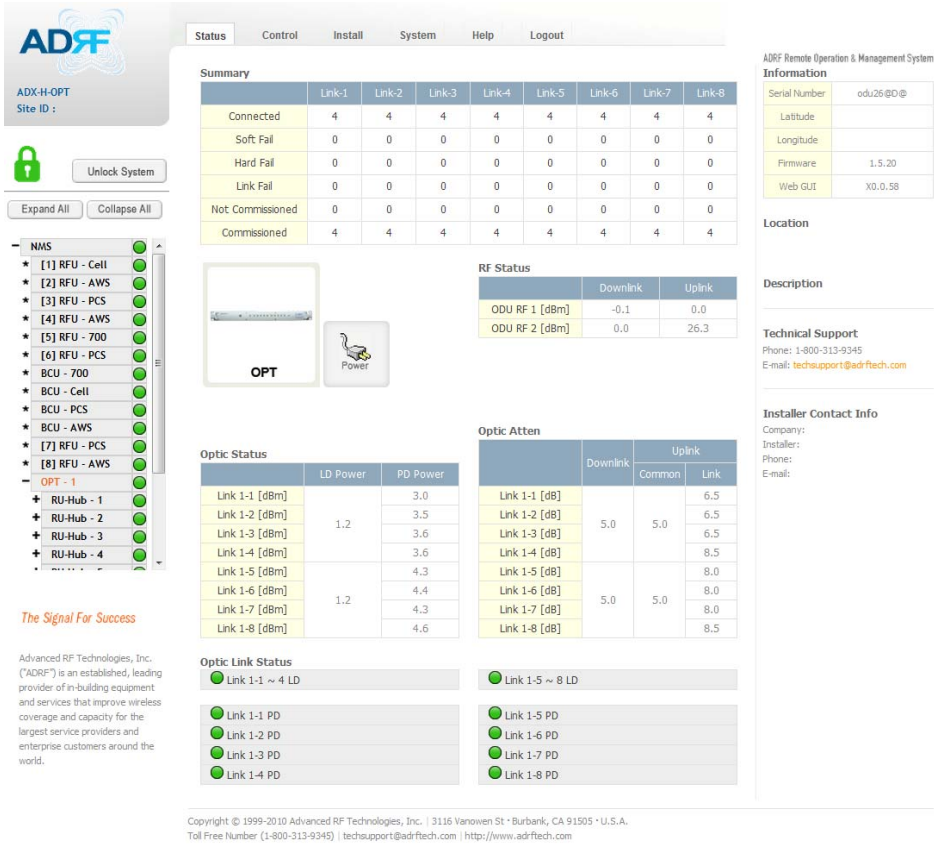


Figure 8-19 Status - OPT

8.2.2.4.1 Summary

The Summary section displays the number of remote modules that are physically connected, the number of soft/hard/link fail alarms, and the number of Remote Module that have been commissioned and the number of Remote Module that need to be commissioned.

Summary

	Link-1	Link-2	Link-3	Link-4	Link-5	Link-6	Link-7	Link-8
Connected	4	4	4	4	4	4	4	4
Soft Fail	0	0	0	0	0	0	0	0
Hard Fail	0	0	0	0	0	0	0	0
Link Fail	0	0	0	0	0	0	0	0
Not Commissioned	0	0	0	0	0	0	0	0
Commissioned	4	4	4	4	4	4	4	4

Figure 8-20 Summary (Status – OPT)

Table 8-9 Summary Description

Parameters	Description
Connected	Displays the number of Remote Module's connected to the ADX-H-OPT.
Soft Fail	Displays the total number of soft fail present.
Hard Fail	Displays the number of hard fail present on each module.
Link Fail	Displays the number of link fail present on each module.
Not Commissioned	Displays the number of non-commissioned or commission failed module.
Commissioned	Display the number of successfully commissioned module

8.2.2.4.2 RF Status

Displays the DL input power and the UL output power for each ODU.
An ODU Rack is composed of 2 ODUs.

RF Status

	Downlink	Uplink
ODU RF 1 [dBm]	-0.1	0.0
ODU RF 2 [dBm]	0.0	26.3

Figure 8-21 RF Status (Status – OPT)

8.2.2.4.3 Optic Status

Display LD Power and PD Power for each optic path. LD Power is the power that is being sent to the RU and PD Power is the power that is being received from the RU.

Optic Status

	LD Power	PD Power
Link 1-1 [dBm]	1.2	3.0
Link 1-2 [dBm]		3.5
Link 1-3 [dBm]		3.6
Link 1-4 [dBm]		3.6
Link 1-5 [dBm]	1.2	4.3
Link 1-6 [dBm]		4.4
Link 1-7 [dBm]		4.3
Link 1-8 [dBm]		4.6

Figure 8-22 Optic Status (Status – ODU)

8.2.2.4.4 Optic Atten (Admin Only)

The ADX-H-ODU has 3 types of attenuators.

- Downlink Common Attenuator- Displays the common attenuation level on the DL path.
- Uplink Common Attenuator- Displays the common attenuation level on the UL path.
- Uplink Optic Attenuator- Displays the amount of attenuation used at each optical link.

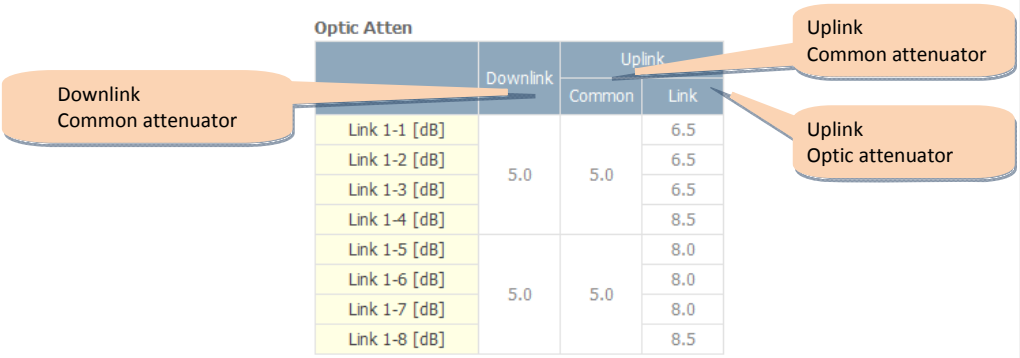


Figure 8-23 Optic Attenuation (Status – OPT)

8.2.2.4.5 Optic Path Status

Displays the optic status for each optic path

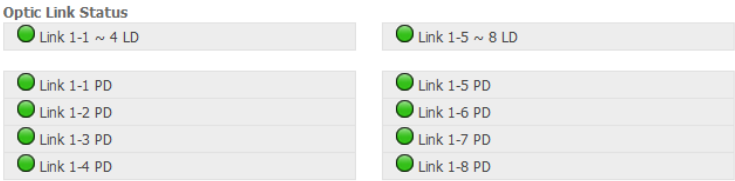


Figure 8-24 Optic Path Status (Status – OPT)

Table 8-10 Description for optic path status

Status		Display	Description
LD Status	Normal		Green, optic signal being sent to Master RU is > -5dBm
	LD fail		Orange, optic signal being sent to Master RU is < -5dBm
	Not Connected		Gray, no connection between ODU and Master RU
PD Status	Normal		Green, optic signal being received from Master RU is > -10dBm
	PD fail		Orange, optic signal being received from Master RU is < -10dBm
	Comm Fail or Not Connected		Gray, no connection between ODU and Master RU

8.2.2.5 Status – RU Hub

RU-Hub is not separate module but is integrated into the master RU. The picture of RU Hub displayed on web based GUI is same as the picture of master RU.

Figure 8-25 Status - RU Hub

8.2.2.5.1 RU Alarm Status

The RU Hub can support up to 8 remote modules. The RU alarm status displays the alarm status of each remote module.

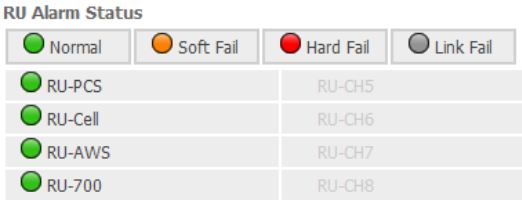


Figure 8-26 RU Alarm Status (Status - RU Hub)

8.2.2.5.2 RU Commissioning Status

Display the Commissioning status of each Remote Module.

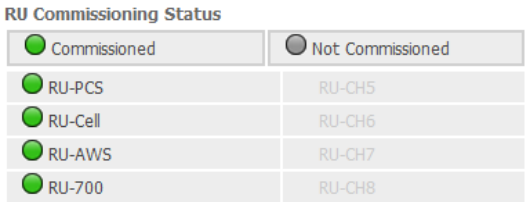


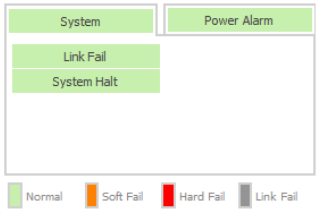
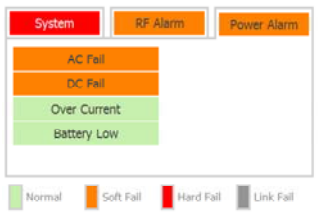
Figure 8-27 RU Commissioning Status (Status - RU Hub)

Table 8-11 Description for RU Commissioning status

Status		Display	Description
Installed Status	Installed	RU-PCS	Text is black
	Not-Installed	RU-CH7	Text is gray
Commissioning Status	Success		Green
	Fail or not yet		Gray

8.2.2.5.3 Alarm

Table 8-12 Alarm Status (Status - RU Hub)

Alarm		Severity	Description
System  	Link Fail	Soft Fail	Present when a module cannot communicate with the NMS
	System Halt	Hard Fail	System will go into a "System Halt" state when a hard fail alarm does not clear after 10 checks. System Halt can only be cleared with a power cycle, reboot, or factory settings.
Power Alarm  	AC Fail	Soft Fail	AC power is not within parameters.
	DC Fail	Soft Fail	DC power is not within parameters.
	Over Current	Hard Fail	Total current of RU is higher than the threshold level for over current alarm
	Battery Low	Soft Fail	Voltage of battery connected to RU PSU is lower than the defined threshold

8.2.2.6 Status – Remote module

Figure 8-28 Status – Remote Module

8.2.2.6.1 Band

Display the spectrum that is being used. The band column displays the bandwidth that has been used. The downlink column displays the center frequency of the used downlink band. The uplink column displays the center frequency of the used uplink band.

PCS Band

Band	Downlink	Uplink
65 MHz	1962.5 MHz	1882.5 MHz

Figure 8-29 PCS Band Information (Status – Remote Module)

8.2.2.6.2 Power & Gain (Admin/User)

Display the Downlink output, Downlink/Uplink Attenuation, and Uplink Input/output.

Power & Gain

PCS	Downlink	Uplink
Input [dBm]		-50.8
ALC Atten [dB]	0.0	0.0
Atten [dB]	6.5	0.0
[M]Output [dBm]	-16.1	-17.8
[H]Output [dBm]	16.8	

Figure 8-30 Power & Gain (Admin)

Power & Gain

PCS	Downlink	Uplink
Input [dBm]		--.-
Atten [dB]	9.0	7.5
Output [dBm]	25.6	

Figure 8-31 Power & Gain (User)

- Admin
  - Input [dBm]: Displays the RF input level for Uplink only for the Remote Module.
  - ALC Atten [dB]: The amount of attenuation used when ALC is activate.
  - Atten [dB]: The amount of attenuation manually set by the user.
  - [M]Output [dBm]: Output power of RF transceiver (1st stage amplification).
  - [H]Output [dBm]: Output power of downlink HPA (2nd stage amplification).
- User
  - Input [dBm]: Displays the RF input level for Uplink only for the Remote Module.
  - Atten [dB]: The amount of attenuation manually set by the user.
  - Output [dBm]: Displays the total composite output power.

8.2.2.6.3 Optic Power (Master-RU Only)

Display the LD Power and PD Power of optic module inside the Master RU.

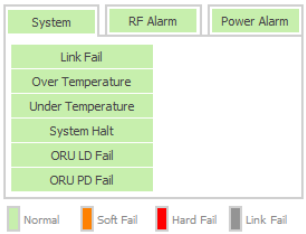
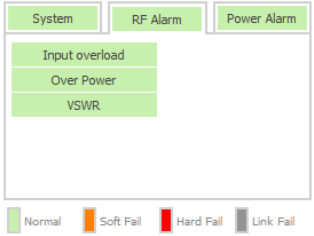
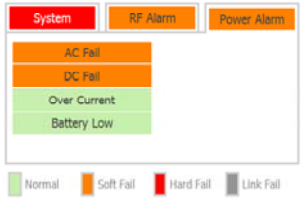
Optic Power

---	PD Power	LD Power
Power	0.3	6.9

Figure 8-32 Optic Power (Status – Master RU only)

8.2.2.6.4 Operating Status

Table 8-13 Operating Status (Status – Remote Module)

Alarm		Severity	Description
System 	Link Fail	Soft Fail	No communication with NMS.
	Over Temperature	Hard Fail / Soft Fail	Temperature is higher than the threshold level for over temperature alarm.
	Under Temperature	Soft Fail	Temperature is lower than the threshold level for under temperature alarm.
	System Halt	Hard Fail	System halt on either the Master RU or Slave RU. System halt occurs when a hard fail alarm fails to clear after 10 checks.
	ORU LD Fail	Soft Fail	LD Fail present in the Master RU's optic unit.
	ORU PD Fail	Soft Fail	PD Fail present in the Master RU's optic unit.
RF Alarm 	Input Overload	Hard Fail	Uplink input signal is higher than the defined threshold.
	Over Power	Hard Fail / Soft Fail	Downlink output signal is higher than the defined threshold by user.
	VSWR	Soft Fail	Triggered when power is being reflected back to the system, typically due to a loose connector.
Power Alarm 	AC Fail	Soft Fail	AC power is not operating within parameters.
	DC Fail	Soft Fail	DC power is not operating within parameters.
	Over Current	Hard Fail	Total current of RU is higher than the threshold level for over current alarm.
	Battery Low	Soft Fail	Voltage of battery connected to HE PSU is lower than the defined threshold.

8.2.3 Control Tab

8.2.3.1 Control – NMS

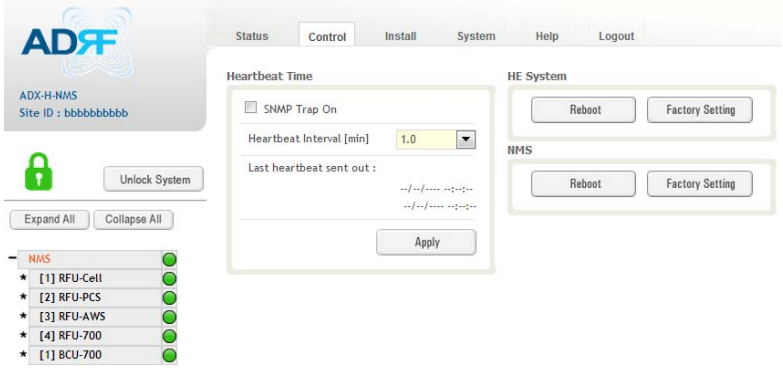


Figure 8-33 Control - NMS

8.2.3.1.1 Heartbeat Time

Allows the user to enable or disable SNMP traps from being sent out and also specify the Heartbeat interval. Time and date stamps of the last 2 heartbeats will be displayed in the "Last heartbeat sent out" section.

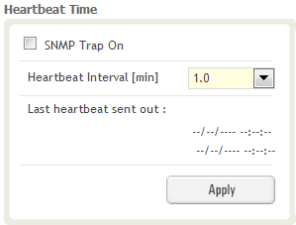


Figure 8-34 Heartbeat (Control – NMS)

8.2.3.1.2 HE System

Allows the user to perform a HE system reboot or HE full system factory settings

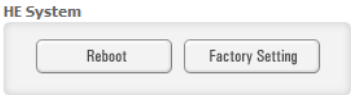


Figure 8-35 HE System Reboot & Factory Setting (Control – NMS)

8.2.3.1.3 NMS System

Allows the user to perform a NMS Unit reboot or NMS factory settings

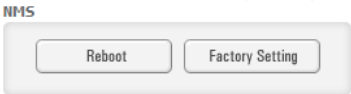


Figure 8-36 NMS System Reboot & Factory Setting (Control – NMS)

8.2.3.2 Control – BCU

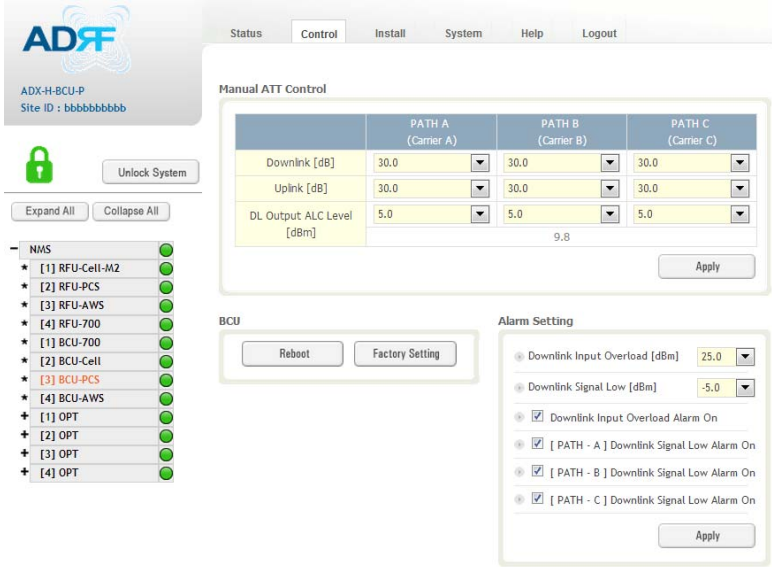


Figure 8-37 Control – BCU

8.2.3.2.1 Manual ATT Control

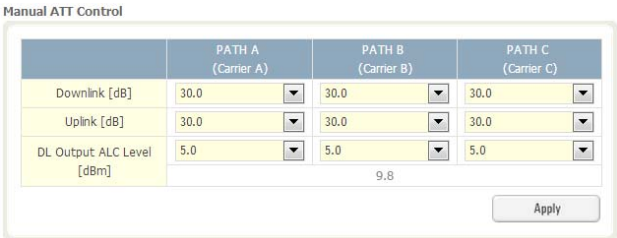


Figure 8-38 Control – BCU Manual ATT Control

- *Downlink*: Allows the user to manually adjust the DL attenuation levels for each RF path. Adjusting these settings is not recommended since it will change the power ratios set by the user.
- *Uplink*: Allows the user to manually adjust the UL attenuation levels for each RF path. Adjusting these settings is not recommended, unless additional attenuation is needed on the UL path.
- *DL Output ALC Level*: Allows the user to manually set the DL Output ALC Levels for each RF path. Adjusting these settings is not recommended since it will change the power ratios set by the user. These settings are automatically set by the system during the BCU commissioning process. This section also displays the composite DL Output ALC Level which is the value that can be used to commission the RFU.

8.2.3.2.2 Reboot / Factory Setting

Allows the user reboot or restore factory settings of the BCU.

Figure 8-39 Control – BCU Reboot/Factory Setting

8.2.3.2.3 Alarm Setting

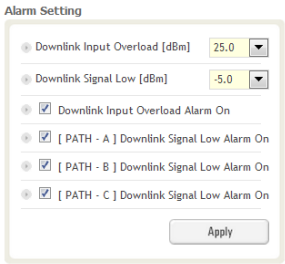


Figure 8-40 Control – BCU Alarm Setting

- *Downlink Input Overload:* Allows the user to specify the level at which the DL Input Overload alarm is triggered. Values range from 0 dBm to +25 dBm.
- *Downlink Signal Low:* Allows the user to specify the level at which the DL Signal Low alarm is triggered. Values range from -10 dBm to +20 dBm.
- *Downlink Input Overload Alarm On:* Allows to user to enable or disable the Input Overload Alarm
- *[Path – A/B/C] Downlink Signal Low Alarm On:* Allows the user to enable or disable the DL Signal Low alarm for each RF path.

8.2.3.3 Control – RFU

Figure 8-41 Control - RFU

8.2.3.3.1 General Setting

To enable any of the settings, click on the checkbox and click the Apply button.

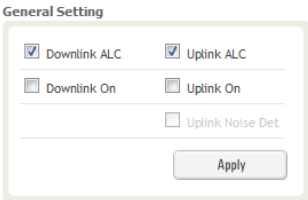


Figure 8-42 General Setting (Control – RFU) (Admin)

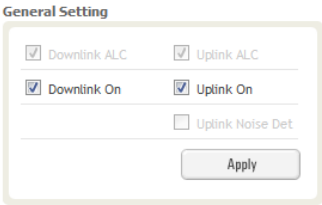


Figure 8-43 General Setting (Control – RFU) (User)

Table 8-14 Description for General Setting

Name	Description	Available Accounts
Downlink ALC	Enables or disables Downlink ALC	Administrator
Uplink ALC	Enables or disables Uplink ALC	Administrator
Downlink ON	Enables or disables the RFU Downlink path	Administrator, User
Uplink ON	Enables or disables the RFU Uplink path	Administrator, User
Uplink Noise Det	Displays if the module is turned on or off due to the UL Noise Detection Routine	Administrator

8.2.3.3.2 Reboot / Factory Setting

Allows the user reboot or restore factory settings of the RFU.

Figure 8-44 Reboot & Factory Setting (Control – RFU)

8.2.3.3.3 Uplink Noise Detection (Admin Only)

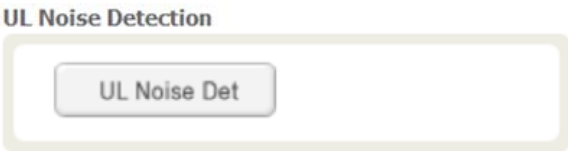


Figure 8-45 UL Noise Detection (Control – RFU)

The “UL Noise Det” button will take you to the UL Noise Detection page which will allow you to run the UL Noise Detection routine.

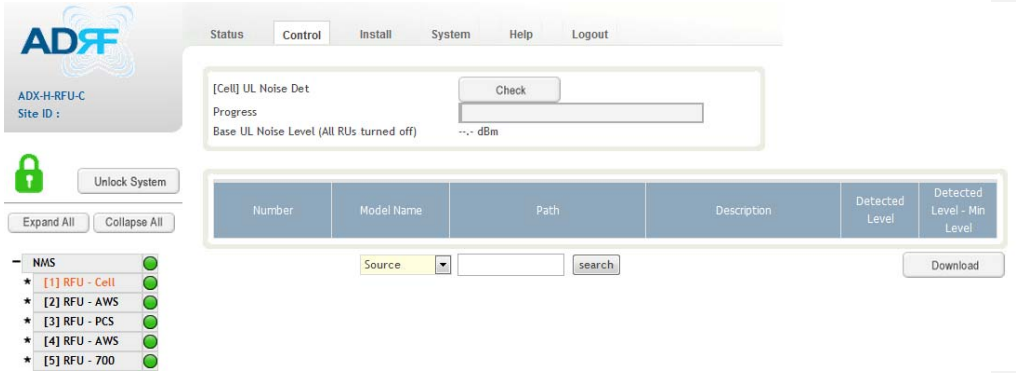


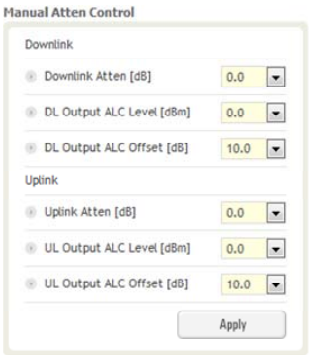
Figure 8-46 UL Noise Detection - PCS band

The Auto UL noise measurement routine can be run by clicking on the Check button. After all UL noise measurement have been taken, the levels for each UL path will be displayed and along with the difference between minimum detect level and measured detect level.

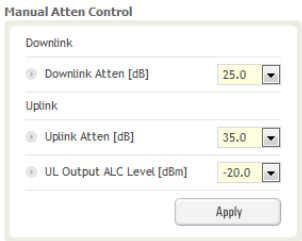
The user will be able to see which path is generating the elevated UL noise level based on the measured detect level and difference value.

To navigate back to the RFU control page, click on the Control tab again.

8.2.3.3.4 Manual Atten Control



(Admin)



(User)

Figure 8-47 Manual Attenuator Control Setting (Control – RFU)

Table 8-15 Description for Main Gain Control Setting (Control – RFU)

Name	Description	Range	Step	Available Accounts
Downlink Atten	Downlink Attenuator to be adjusted manually	0 ~ 25dB	0.5dB	Administrator, User
Uplink Atten	Uplink Attenuator to be adjusted manually	0 ~ 35dB	0.5dB	Administrator, User
DL Output ALC Level	To set the Max output ALC level	-10 ~ 0dBm	0.5dBm	Administrator
UL Output ALC Level	To set the Max output ALC level	-20 ~ 0dBm	0.5dBm	Administrator, User

DL Output ALC Offset	To set the Max output ALC Offset	-10 ~ 0dBm	0.5dBm	Administrator
UL Output ALC Offset	To set the Max output ALC Offset	-20 ~ 0dBm	0.5dBm	Administrator

8.2.3.3.5 Alarm Setting

Figure 8-48 Alarm Threshold Setting (Control – RFU)

Table 8-16 Description for Alarm Threshold Setting (Control – RFU)

Name	Description	Range	Default threshold
Downlink Signal Low	Allows the user to specify the minimum incoming DL input signal level before triggering a “Downlink Signal Low” soft-fail alarm.	-10 ~ 20dBm	-5dBm
Downlink Signal Not Detected	Allows the user to specify the minimum incoming DL input signal level before triggering a “Downlink Signal Not Detected” soft-fail alarm.	-10 ~ 20dBm	-10dBm
Uplink Over Power	Allows the user to specify the how strong the output signal of uplink can be before triggering an “Uplink Over Power” Hard Fail alarm.	-20 ~ 0dBm	0dBm

8.2.3.4 Control – ODU

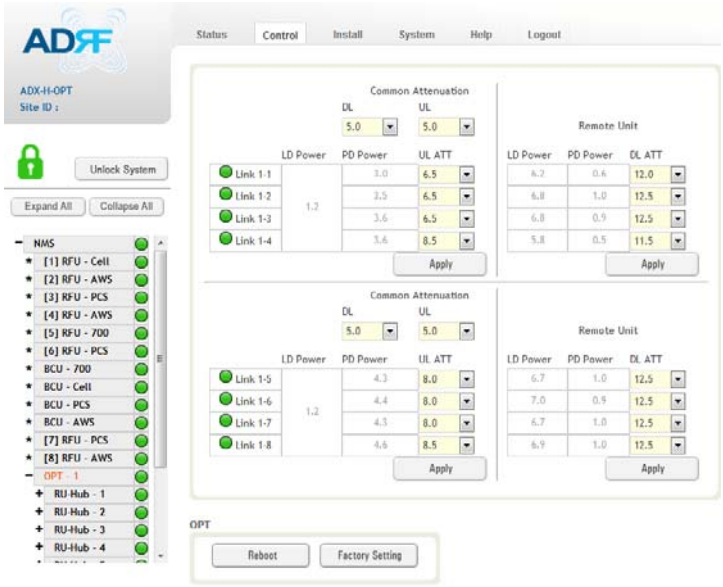


Figure 8-49 Control – OPT

8.2.3.4.1 Optic Attenuation (Admin Only)

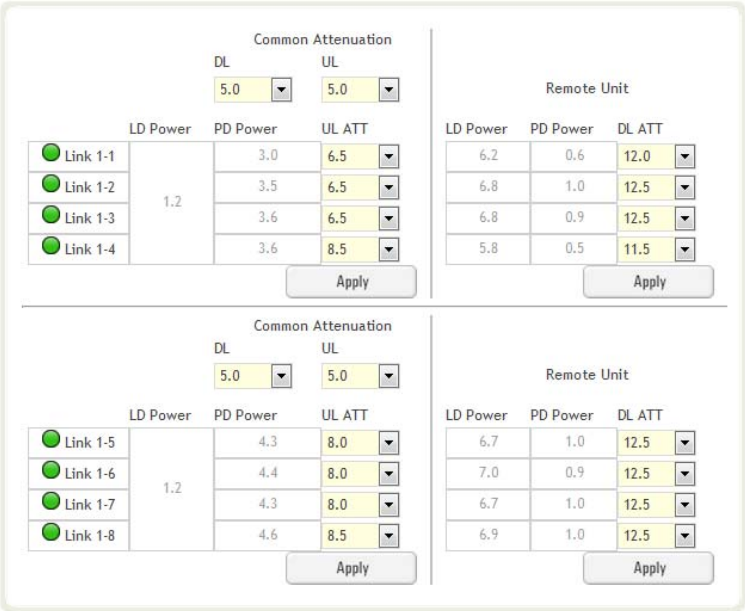


Figure 8-50 Optic Attenuation – OPT

Table 8-17 Description for Optic Attenuation (Control – OPT)

Name	Description	Range	Default threshold
DL/UL common ATT	Allows the user to control overall optic DL/UL path gain.	0 ~ 30dB	5dB
DL ATT	Used to compensate DL optic loss.	0 ~ 13dB	13dB
UL ATT	Used to compensate UL optic loss.	0 ~ 13dB	13dB

8.2.3.4.2 Reboot/Factory Setting

Allows the user to perform ODU reboot or ODU factory settings.

Figure 8-51 Reboot & factory Setting (Control – OPT)

8.2.3.5 Control – RH Hub

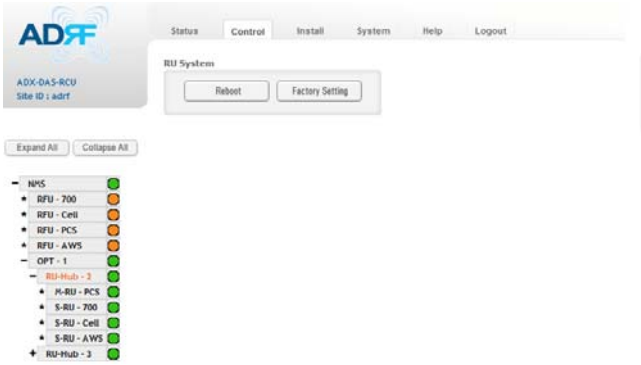


Figure 8-52 Control – RU Hub

8.2.3.5.1 Reboot/Factory Setting

Allows the user to perform RU Hub reboot or RU Hub factory settings

Figure 8-53 Reboot & Factory Setting (Control – RU Hub)

8.2.3.6 Control – Remote Module (Master or Slave RU)

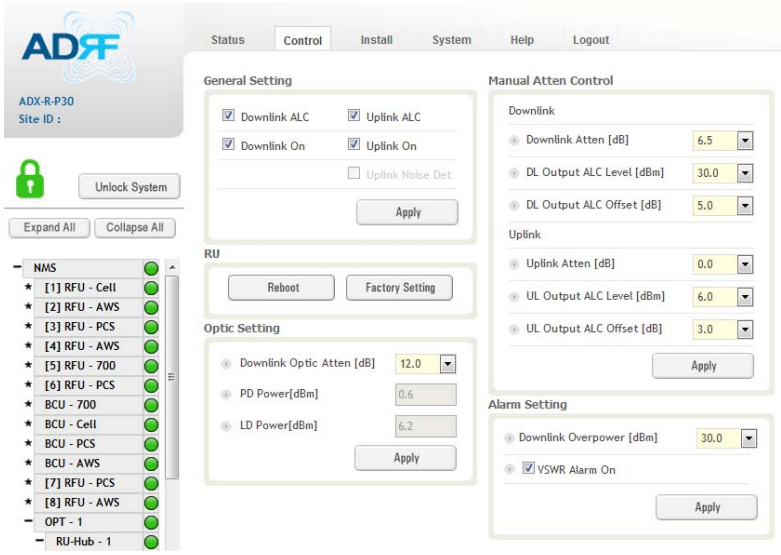
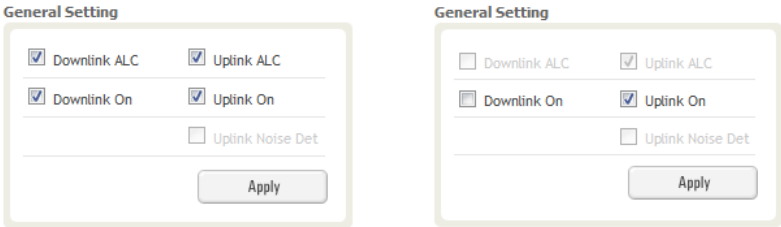


Figure 8-54 Control – Remote Module

8.2.3.6.1 General Setting (Admin/User)



(Admin) (User)

Figure 8-55 General Setting (Control - RU)

Table 8-18 Description for General Setting (Control - RU)

Name	Description	Available Accounts
Downlink ALC	This setting allows you to enable or disable the downlink ALC function. When ALC is enabled, the downlink output power will not exceed the Downlink Output Level specified in the Manual Atten Control section.	Administrator
Downlink On	This setting allows you to enable or disable the Downlink path.	Administrator, User
Uplink ALC	This setting allows you to enable or disable the uplink ALC function. When ALC is enabled, the Uplink output power will not exceed the Uplink Output Level specified in the Manual Atten Control section.	Administrator
Uplink On	This setting allows you to enable or disable the Uplink path.	Administrator, User

8.2.3.6.2 Reboot/Factory Setting

Allows the user to Reboot or restore Factory Settings on the remote module.

Figure 8-56 Reboot & factory Setting (Control - RU)

8.2.3.6.3 Optic Setting (Only Master RU) (Admin Only)

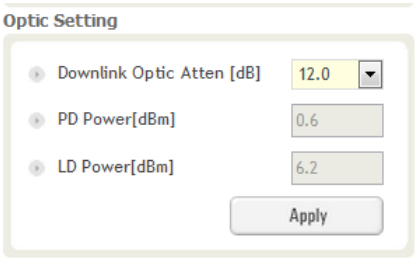
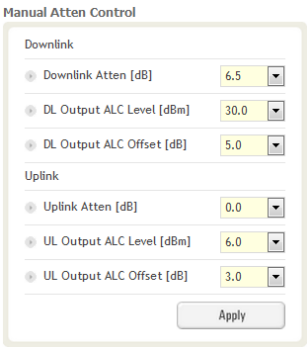


Figure 8-57 Optic Setting (Control - RU)

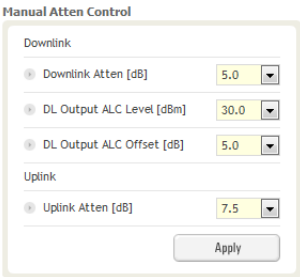
Table 8-19 Description for Optic Setting (Control - RU)

Name	Description	Range	Step	Available Accounts
Downlink Optic Atten	RF attenuator to compensate the optic loss of downlink	0~ 13.0 dB	0.5 dB	Administrator
PD Power	Incoming power level from the ODU			Administrator
LD Power	Outgoing power level to the ODU			Administrator

8.2.3.6.4 Manual Attenuator Control



(Admin)



(User)

Figure 8-58 Manual Atten Control (Control - RU)

Table 8-20 Description for Manual Atten Control (Control - RU)

Name	Description	Range	Default threshold	Available Accounts
Downlink Atten	Allows the user to specify how much attenuation to use.	0 ~ 30dB	30dB	Administrator, User
Uplink Atten	Allows the user to specify how much attenuation to use.	0 ~ 25dB	25dB	Administrator, User
DL Output ALC Level	The remote module will prevent the downlink output power from exceeding the specified value.	5 ~ 30dB	30dBm	Administrator, User
UL Output ALC Level	The system will prevent the output power to exceed the specified value.	0 ~ 10dBm	5 or 6dBm	Administrator
DL Output ALC Offset	When the incoming signal level increases, the system will not adjust the gain levels until it reaches the ALC Offset Level.	0 ~ 10dB	5dB	Administrator, User
UL Output ALC Offset	When the incoming signal level increases, the system will not adjust the gain levels until it reaches the ALC Offset Level.	0 ~ 10dB	3dB	Administrator

8.2.3.6.5 Alarm Setting

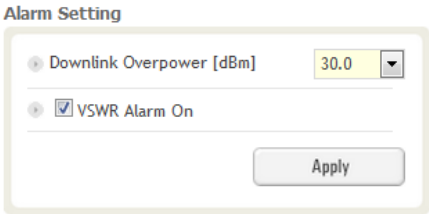


Figure 8-59 Alarm Setting (Control - RU)

- DL Over Power Limit: The overpower alarm threshold can be adjusted from 5~30dBm. +2dB from the DL overpower limit will trigger a soft fail and >2dB will trigger a hard fail alarm
- VSWR Alarm ON : Enable or disables the VSWR Alarm.

8.2.4 Install Tab

8.2.4.1 Install – NMS

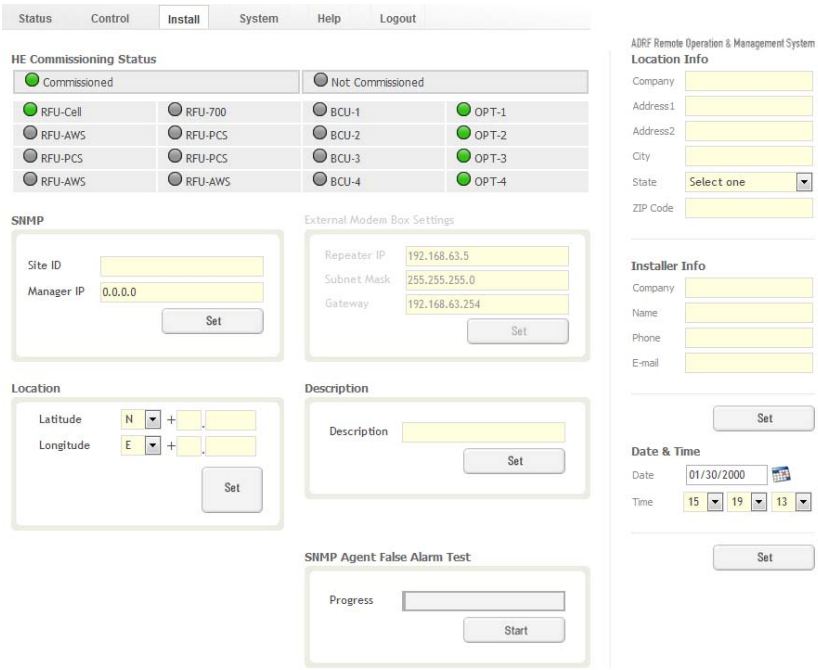


Figure 8-60 Install - NMS

8.2.4.1.1 HE Commissioning Status

Figure 8-61 HE Commissioning Status (Install – NMS)

Table 8-21 Description for HE Commissioning Status (Install – NMS)

Status		Display	Description
Installed Status	Physically Installed	RFU-PCS	Text is black
	Physically Not-Installed	RFU CH5	Text is gray
Commissioning Status	Success		Green
	Fail or not commissioned		Gray

8.2.4.1.2 SNMP

Figure 8-62 SNMP (Install – NMS)

The SNMP section allows you to specify the Site ID and Manager IP. The Site-ID is the code that is used to identify a particular module. The Manager IP field is where the user inputs the IP address of the NOC system that is being used to monitor the SNMP traps.

8.2.4.1.3 Location

This section allows the user to input the latitude and the longitude of the repeater.

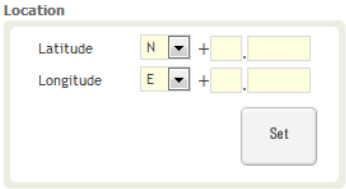


Figure 8-63 Location Setting (Install – NMS)

- Select N or S from the dropdown menu for Latitude
- Select E or W from the dropdown menu for Longitude
- Input the first 3 numbers of the latitude/longitude in the text area after the "+" and before the "."
- Input the last 6 numbers of the latitude/longitude in the text area after the "."

8.2.4.1.4 External Modem Box Settings

This section allows the user to specify an alternative IP, Subnet Mask, and Gateway settings. These settings are enabled when the Host/Remote switch is set to the Remote position.

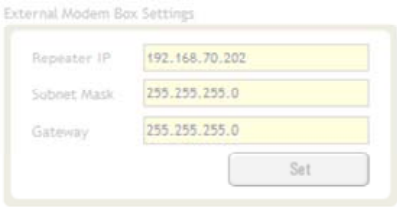


Figure 8-64 External Modem Box Setting (Install – NMS)

8.2.4.1.5 Description

This section allows the user to save the description of NMS.

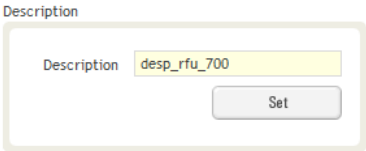


Figure 8-65 Description (Install – NMS)

8.2.4.1.6 SNMP Agent False Alarm Test

This section allows the user to generate both soft and hard fail alarms. After alarms are generated, the NOC can poll the ADX to see if alarms are present. All alarms generated during this test are false alarms.

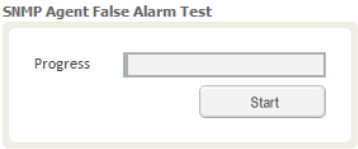


Figure 8-66 SNMP Agent False Alarm Test (Install – NMS)

8.2.4.1.7 Location Info / Installer Info

This section allows the user to specify the address of the repeater and also the information of the installer.

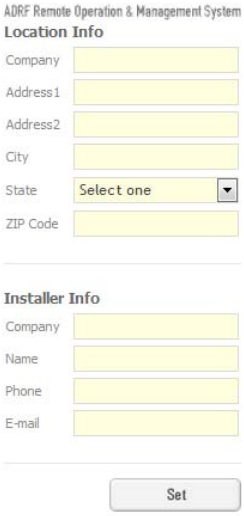


Figure 8-67 Location Info / Installer Info (Install – NMS)

8.2.4.1.8 Date & Time

This section allows the user to specify the current date and time.

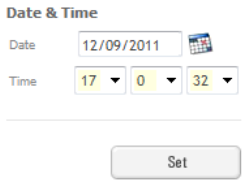


Figure 8-68 Date & Time Setting (Install – NMS)

8.2.4.2 Install – RFU

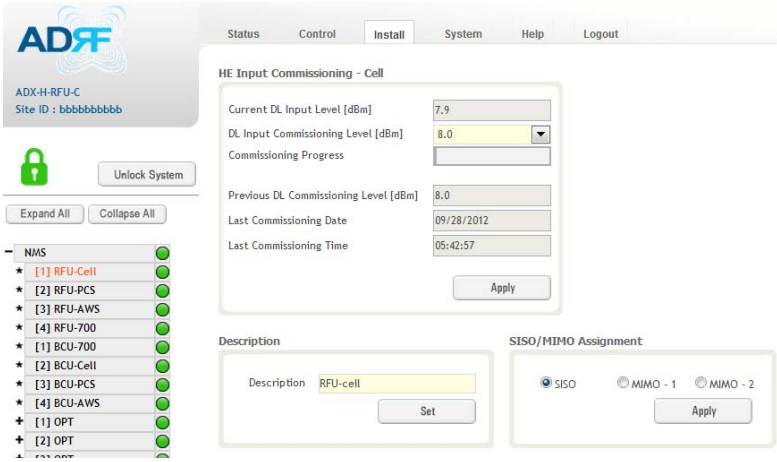


Figure 8-69 Install - RFU

8.2.4.2.1 RFU Commissioning

This section allows the user to perform RFU commission. To perform RFU commissioning, select a DL Input Commissioning Level from the dropdown menu and click Apply. The commissioning progress is displayed on the Commissioning Progress bar. Any errors, warnings, and messages will appear via a popup window. Please refer to the ADX Installation Guide to determine the proper RFU commissioning levels.

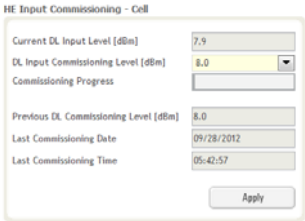


Figure 8-70 RFU Commissioning (Install – RFU)

8.2.4.2.2 Description

This section allows the user to set the description of RFU.

Figure 8-71 Description (Install – RFU)

8.2.4.3 Install – OPT

Figure 8-72 Install – OPT

8.2.4.3.1 Optic Commissioning

This section will allow the user to perform any optic compensation if it is necessary. The Commissioning button will turn orange if optic compensation is needed.

Figure 8-73 Optic control (Control – OPT)

Table 8-22 Description for Optic control (Control – OPT)

Display & Control	Description
	Optic loss is less than 5dBo
	Optic loss is more than 5dBo
	Not connected to a RU
Commissioning	No optic loss compensation is needed.
Commissioning	Optic loss compensation is needed.
Commissioning	Not connected to a RU

8.2.4.3.2 Description

This section allows the user to save the description of OPT.

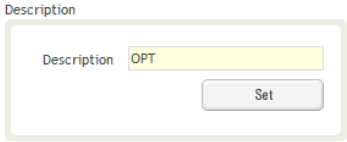


Figure 8-74 Description (Install – OPT)

8.2.4.4 Install – RU Hub

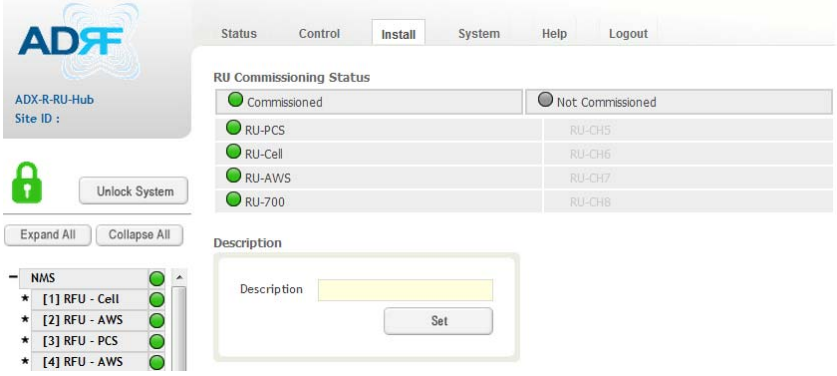


Figure 8-75 Install-RU Hub

8.2.4.4.1 RU Commissioning Status

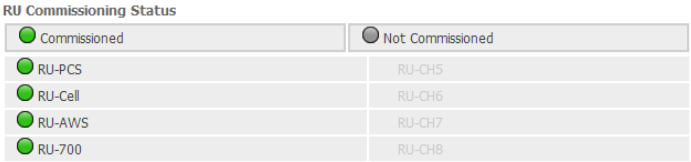


Figure 8-76 RU Commissioning Status (Install-RU Hub)

Table 8-23 Description for RU Commissioning status

Status		Display	Description
Installed Status	Physically Installed	RU-PCS	Text is black
	Physically Not-Installed	RU-CH7	Text is gray
Commissioning Status	Success		Green
	Fail or not commissioned		Gray

8.2.4.4.2 Description

This section allows the user to save the description of RU Hub.

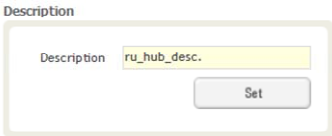


Figure 8-77 Description (Install-RU Hub)

8.2.4.5 Install – Remote Module (Master or Slave RU)

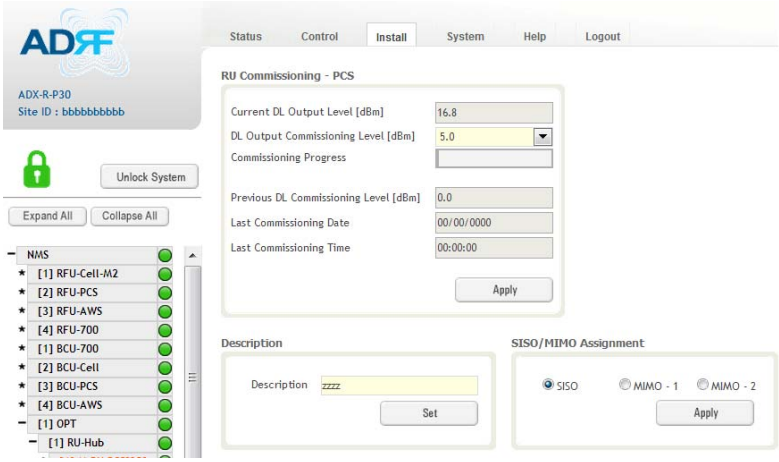


Figure 8-78 Install-Remote Module

8.2.4.5.1 RU Output Commissioning

This section allows the user to perform RU commission. To perform RU commission, select a DL Output Commissioning Level from the dropdown menu and then click Apply. The commissioning progress is displayed on the Commissioning Progress bar. Any errors, warnings, and messages will appear via a popup window.

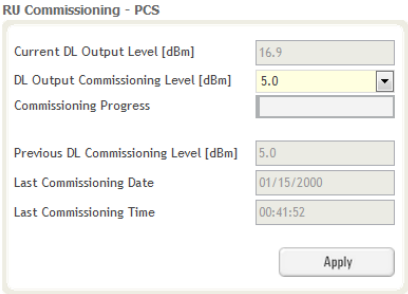


Figure 8-79 RU Output Commissioning (Install-RU)

8.2.4.5.2 Description

This section allows the user to save the description of remote module.

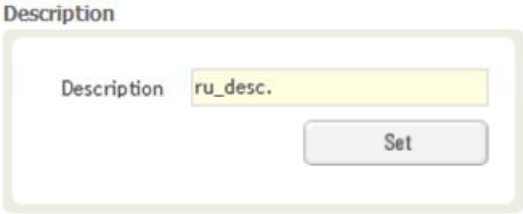


Figure 8-80 Description (Install-Remote Module)

8.2.5 System

The System tab allows the user to perform firmware updates, upload closeout packages, view any changes to the system, backup existing configuration, and add/remove user accounts, and change the login credentials of the Administrator.

8.2.5.1 System: Account

8.2.5.1.1 System: Account - Account Management (Admin Only)

The Account Management section allows the Administrator to delete any user/guest account. Please note that the Account Management section is only available if you are logged into the system as the Administrator. To delete a user/guest account click on the Account Management link and under the Delete column, click on the delete button.

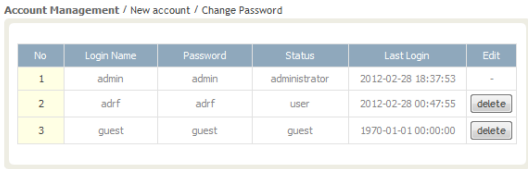


Figure 8-81 Account Management

8.2.5.1.2 System: Account - New Account (Admin Only)

The New account section allows the Administrator to create a new user/guest account. Please note that the new account section is only available if you are logged into the system as the Administrator. To create a new user/guest account click on the new account link and fill in the fields highlighted in yellow as shown below.

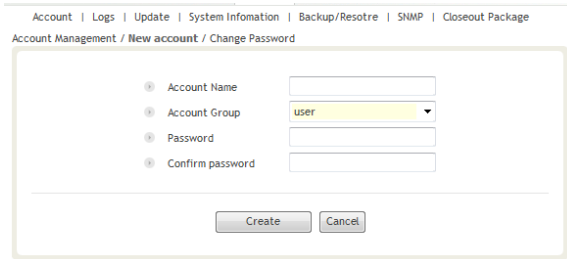


Figure 8-82 New Account

8.2.5.1.3 System: Account - Change Password

The Change Password section allows the current user who is logged into the system to change their login credentials.

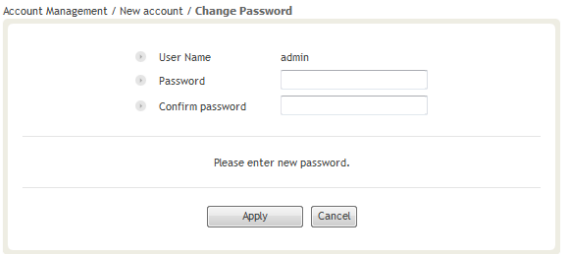


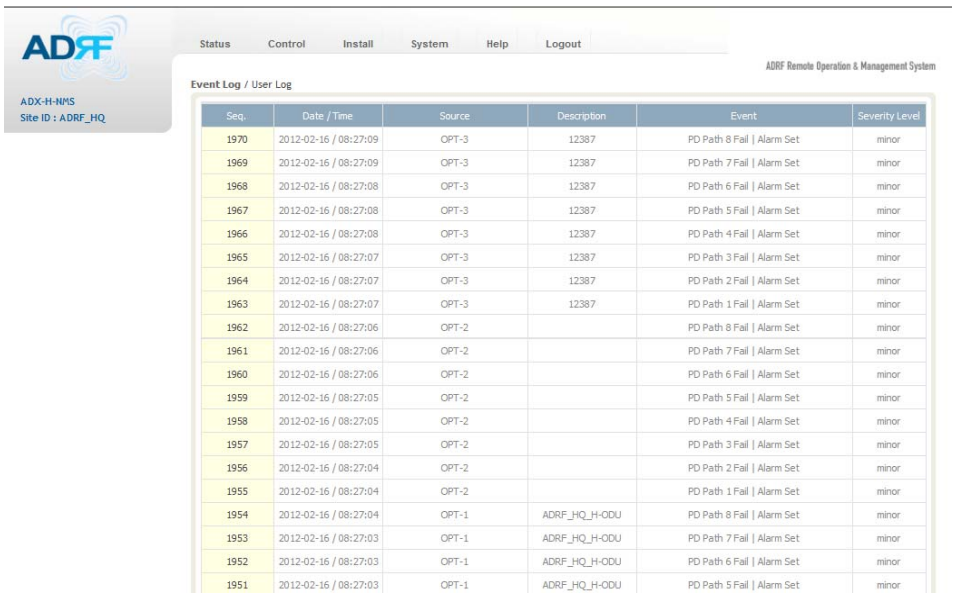
Figure 8-83 Change Password

8.2.5.2 System: Logs

8.2.5.2.1 System: Logs - Event Log

This section displays system events that have taken place. The Event Log displays who has made the changes, the time and date of when the event took place, and what changes were made to the system. The System Log tracks the following events:

- System Initiation
- Alarm Set
- Alarm Clear



Seq.	Date / Time	Source	Description	Event	Severity Level
1970	2012-02-16 / 08:27:09	OPT-3	12387	PD Path 8 Fail | Alarm Set	minor
1969	2012-02-16 / 08:27:09	OPT-3	12387	PD Path 7 Fail | Alarm Set	minor
1968	2012-02-16 / 08:27:08	OPT-3	12387	PD Path 6 Fail | Alarm Set	minor
1967	2012-02-16 / 08:27:08	OPT-3	12387	PD Path 5 Fail | Alarm Set	minor
1966	2012-02-16 / 08:27:08	OPT-3	12387	PD Path 4 Fail | Alarm Set	minor
1965	2012-02-16 / 08:27:07	OPT-3	12387	PD Path 3 Fail | Alarm Set	minor
1964	2012-02-16 / 08:27:07	OPT-3	12387	PD Path 2 Fail | Alarm Set	minor
1963	2012-02-16 / 08:27:07	OPT-3	12387	PD Path 1 Fail | Alarm Set	minor
1962	2012-02-16 / 08:27:06	OPT-2		PD Path 8 Fail | Alarm Set	minor
1961	2012-02-16 / 08:27:06	OPT-2		PD Path 7 Fail | Alarm Set	minor
1960	2012-02-16 / 08:27:06	OPT-2		PD Path 6 Fail | Alarm Set	minor
1959	2012-02-16 / 08:27:05	OPT-2		PD Path 5 Fail | Alarm Set	minor
1958	2012-02-16 / 08:27:05	OPT-2		PD Path 4 Fail | Alarm Set	minor
1957	2012-02-16 / 08:27:05	OPT-2		PD Path 3 Fail | Alarm Set	minor
1956	2012-02-16 / 08:27:04	OPT-2		PD Path 2 Fail | Alarm Set	minor
1955	2012-02-16 / 08:27:04	OPT-2		PD Path 1 Fail | Alarm Set	minor
1954	2012-02-16 / 08:27:04	OPT-1	ADRF_HQ_H-ODU	PD Path 8 Fail | Alarm Set	minor
1953	2012-02-16 / 08:27:03	OPT-1	ADRF_HQ_H-ODU	PD Path 7 Fail | Alarm Set	minor
1952	2012-02-16 / 08:27:03	OPT-1	ADRF_HQ_H-ODU	PD Path 6 Fail | Alarm Set	minor
1951	2012-02-16 / 08:27:03	OPT-1	ADRF_HQ_H-ODU	PD Path 5 Fail | Alarm Set	minor

Figure 8-84 Event Log

8.2.5.2.2 System: Logs - User Log

This section tracks user activity within the system. The User Log displays who has made the changes, the time and date of when the event took place, and what changes were made to the system. The User Log tracks the following items:

- Log in / Log out activity
- Changes to gain/attenuation/output values
- System event generated by user(firmware update, backup/resote, create/delete account)
- DAS Navigation Tree Lock/Unlock
- Description change
- Repeater/installer information change
- Setting date/time

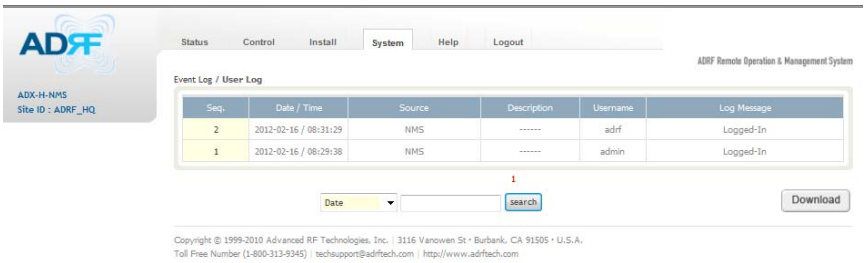


Figure 8-85 User Log

8.2.5.3 System: Update

- To perform a firmware update, click on the System:Update tab and the following screen will show up.

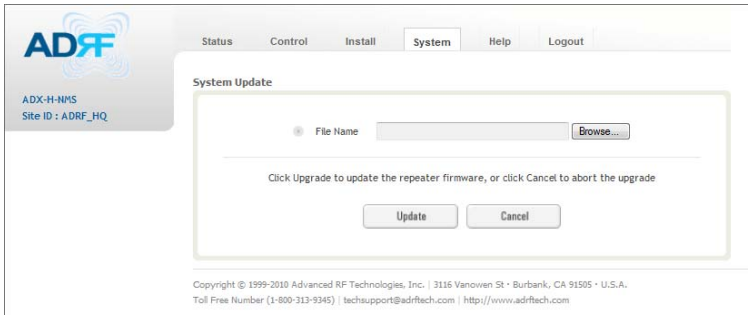


Figure 8-86 System update

- Click on the 'Browse' button and locate the firmware file.
- Click on the Update button to perform the firmware update.

8.2.5.4 System: System Information

8.2.5.4.1 System: System Information

ADRF Remote Operation & Management System

System Infomation Check | Check

System Infomation

Name	Status
Web GUI Version	X0.0.58
External Modem Box Setting	192.168.63.5 / 255.255.255.0 / 192.168.63.254
Time	01/30/2000 15:52:58

System Notification

[OPT-1 / RU-Hub-3 / S-RU-PCS] Multiple (PCS) remote units have been detected.
[OPT-2 / RU-Hub-2 / S-RU-PCS] Multiple (PCS) remote units have been detected.
[OPT-2 / RU-Hub-2 / S-RU-PCS] Multiple (PCS) remote units have been detected.

BOM

Seq.	Model Name	Source	Serial Number	Firmware Version	Description	Alarm Status	Commissioned	Module Status (DL / UL)
140	ADX-CELL-S-30R	OPT-4 / RU-Hub-8 / S-RU-Cell		1.5.63		Normal	----	On / On
139	ADX-AWS-S-30R	OPT-4 / RU-Hub-8 / S-RU-AWS		1.5.63		Normal	----	On / On
138	ADX-PCS-S-30R	OPT-4 / RU-Hub-8 / S-RU-PCS		1.5.63		Normal	----	On / On
137	ADX-700-M-30R	OPT-4 / RU-Hub-8 / M-RU-700		1.5.63		Normal	----	On / On
136	ADX-CELL-S-30R	OPT-4 / RU-Hub-7 / S-RU-Cell		1.5.63		Normal	----	On / On
135	ADX-PCS-S-30R	OPT-4 / RU-Hub-7 / S-RU-PCS		1.5.63		Normal	----	On / On
134	ADX-AWS-S-30R	OPT-4 / RU-Hub-7 / S-RU-AWS		1.5.63		Normal	----	On / On

- System Information Check

  The System Information Check button will check the ADX configuation and report possible discrepancies.

  System Infomation Check | Check

- System Information

  This section displays the general system information of the ADX DAS.

System Infomation

Name	Status
Web GUI Version	X0.0.49
External Modem Box Setting	192.168.63.44 / 255.255.255.0 / 192.168.63.254
Time	02/16/2012 09:07:35

Figure 8-87 System Information

- System Notification

  This section is displayed only when the following conditions are present:
  - When multiple remote modules with same frequency band exist in a RU.
  - When the remote module does not match with the RFU being used.

System Notification

[OPT-1 / RU-Hub-3 / S-RU-PCS] Multiple (PCS) remote units have been detected.
[OPT-2 / RU-Hub-2 / S-RU-PCS] Multiple (PCS) remote units have been detected.
[OPT-2 / RU-Hub-2 / S-RU-PCS] Multiple (PCS) remote units have been detected.

Figure 8-88 System Notification

- BOM

BOM displays all parts that are connected to the ADX-H-NMS.
The BOM can be downloaded as a CSV file by clicking the 'Download' button at the bottom right.

Seq.	Model Name	Serial Number	Firmware Version	Description	Alarm Status	Commissioned	Module Status (DL / UL)
16	ADX-AWS-S-30R		1.5.5D	3rd chassis(bottom)	Normal	—	On / Off
15	ADX-AWS-S-30R		1.5.5D	2nd chassis(top)	Normal	—	Off / Off
14	ADX-700-S-30R		1.5.5D	yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy	Normal	—	Off / On
13	ADX-CELL-S-30R		1.5.5D	abcde	Normal	—	Off / Off
12	ADX-AWS-S-30R		1.5.5D	1st chassis	Normal	—	On / On
11	ADX-700-S-30R		1.5.5D	s-ru-700	Normal	—	On / On
10	ADX-CELL-S-30R		1.5.5D	yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy	Normal	—	On / On
9	ADX-PCS-M-30R		1.5.5D	yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy	Normal	—	On / On
8	ADX-H-OPT		1.5.1C	12387	Normal	—	— / —
7	ADX-H-OPT		1.5.1C		Normal	—	— / —
6	ADX-H-OPT		1.5.1C	ADRF_HQ_H-ODU	Normal	—	— / —
5	ADX-H-RFU-A		1.5.52	ADRF_HQ_H-A	Normal	Not Commissioned	Off / Off
4	ADX-H-RFU-C		1.5.52	ADRF_HQ_H-C	Normal	Not Commissioned	On / On
3	ADX-H-RFU-7		1.5.52	ADRF_HQ_H-7	Normal	Not Commissioned	On / On
2	ADX-H-RFU-P		1.5.52	ADRF_HQ_H-P	Soft Fail	Commissioned	On / On
1	ADX-H-NMS		13000F01002X1017	——	Normal	—	— / —

1

Model Name ▾ search Download

Figure 8-89 Bill of material

8.2.5.5 System: Backup/Restore

- Settings Backup

Clicking the Backup will create a temporary backup file stored inside of the ADX. Once the file is created, it will need to be downloaded to a computer. A download button will appear after the backup file has been created. If the ADX is power cycled or rebooted, then the temporary backup file will be lost. We recommend downloading the backup file immediately after it has been created. Click on the Download button to download the backup file.

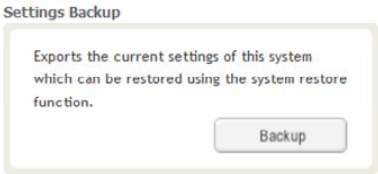


Figure 8-90 Setting Backup (Before)

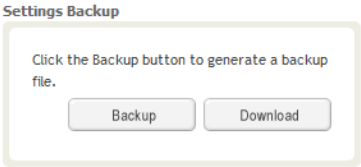


Figure 8-91 Setting Backup (After)

- Setting Restore

Restore function can be used to restore the saved settings from the backup file. Once the backup file is loaded, the tree in the figure below will appear. Check the boxes of the modules that you would like to restore and then click the "Restore" button at the bottom on this section.

We recommend creating a new backup file if adding or removing modules from the ADX. Discrepancies between the backup file and the existing tree could cause restore errors.

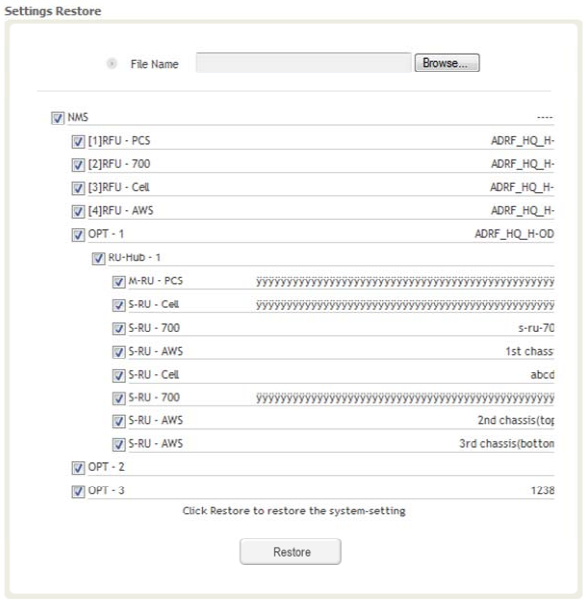


Figure 8-92 Setting Restore

8.2.5.6 System: SNMP

- SNMP V1/V2

This section allows you to add community strings for SNMP v1 and v2.

Figure 8-93 SNMP V1/V2

- SNMP V3

  This section allows the user to add accounts for SNMP v3.

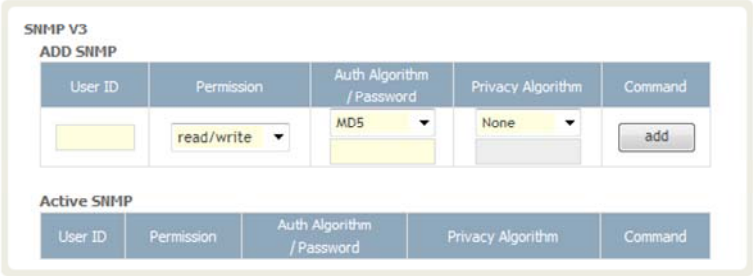


Figure 8-94 SNMP V3

8.2.5.7 System: Closeout Package

The closeout package section will allow the user to upload documents to the ADX-H-NMS. The maximum file size for each upload is limited to 10 MB. The total amount of space available for uploading document is 100 MB. Please do not use this section as the primary storage location of your documents. Documents may become unavailable if the system goes down.

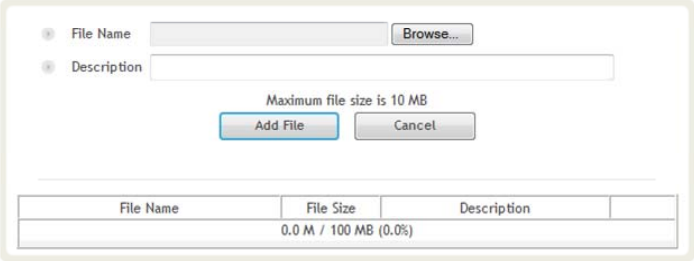


Figure 8-95 System- Closeout Package

To upload documents to the module, click on the "Browse" button and locate the file that you would like to upload, then enter in a Description of the file being uploaded. Afterwards, click on the "Add File" button to upload the file. Below is what you will see after the file upload. To delete the file, click on the delete button located in the last column.

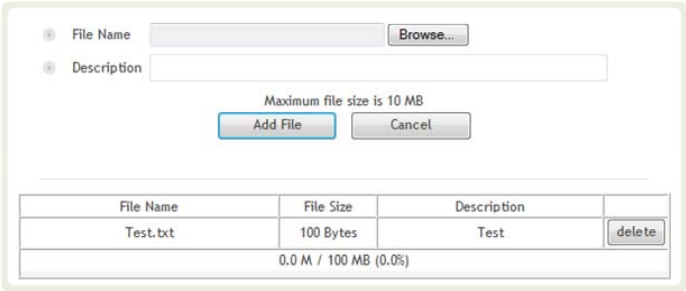


Figure 8-96 System- Closeout Package after the file upload

8.2.6 Help

If an internet connection is available, clicking on the Help Tab will redirect the user to our Technical Support page.

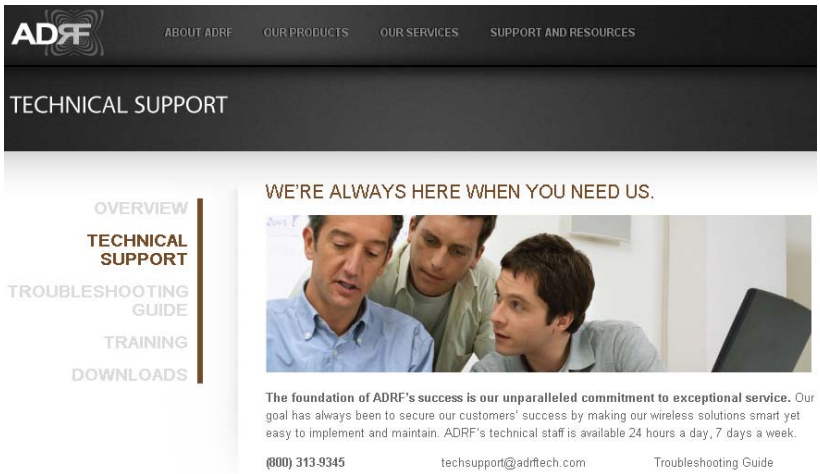


Figure 8-97 Help

8.2.7 Logout

Clicking the Logout button will log the current user off the system.

8.3 Guest Mode

When logging into the system as a guest, the guest will only have read-only privileges and will not be able to make any changes to the system.

9. SYSTEM SPECIFICATION

9.1 Specification for PS78, SMR

Parameters		PS78		SMR	
Frequency	Downlink	P7	758-775MHz	S8	851-869MHz
				S9	929-930MHz 935-940MHz
	Uplink	P7	788-805MHz	S8	806-824MHz
				S9	896-901MHz
Input Power Range		0~+25dBm			
Gain	Downlink	5~30dB, 0.5dB step, ATT range: 0~25dB			
	Uplink	-5~30dB, 0.5dB step, ATT range: 0~35dB			
Maximum Output Power[1]	Downlink at RU	30dBm±2dB			
	Uplink at HE	-15dBm±2dB			
Noise Figure		< 10dB@maximum gain			
VSWR		< 1:1.5			
Optical Loss		0~5dBo			
System Delay		< 2us			
Spurious		Meet FCC rules, 3GPP TS 36.104, 3GPP2 C.S0010-C			
Nominal Band/BW for Industry Canada	Downlink	P7	749-781 MHz	S8	840-880MHz
				S9	925-949MHz
	Uplink	P7	782-831 MHz	S8	811-834MHz
				S9	887-911MHz
Dimension (WXDXH)	Head-End Shelf	19.0 x 14.6 x 12.2 inches (482 x 370 x 311 mm)			
	Remote-Unit Shelf	19.0 x 12.9 x 10.5 inches (482 x 328.2 x 266.5 mm)			
	Master RU	11.8 x 9.8 x 4.5 inches (300 x 249.6 x 114.5 mm)			
	Slave RU	11.8 x 9.8 x 3.7 inches (300 x 249.6 x 94.5 mm)			
Weight	Head-End Shelf	83.7 lbs (38.0 Kg) @4 RFU, CHC-H, PSU and NMS			
	Remote-Unit Shelf	61.0 lbs (27.7 kg) @ 1 master RU, 3 Slave RU			
	Master RU	13.2 lbs (6.0 kg)			
	Slave RU	11.7 lbs (5.3 kg)			
Operating Temperature		14-122°F(-10-50°C)			
Operating Humidity		5~90%RH			
Power Input		110/220V, 50-60Hz, 24V or -48V DC(optional)			
Power	Head-End	52W@4 RFU, 1 ODU Rack with 2 ODUs and NMS			

메모 [H5]: 주파수 범위 수정 15/05/19

메모 [Y6]: 실제로 측정하셔서 기입요청합니다.
15/02/03

[1] The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device

consumption		28W@1 RFU, , 1 ODU Rack with 2 ODUs and NMS	
	Remote-Unit	60W	53W
Network Management System		Ethernet(RJ45)	
RF connector	Head-End	N-type(Female)	
	Remote-Unit	N-type(Female)	
Input/output Impedance		50Ω	

9.2 Specification for VU, BT

Parameters		BT	TBD
Frequency	Downlink	2496-2690MHz (BRS TDD)	
	Uplink	2496-2690MHz (BRS TDD)	
Input Power Range		-15~+37dBm	
Gain	Downlink	0~52dB, 0.5dB step, ATT range: 0~52dB	
	Uplink	-5~30dB, 0.5dB step, ATT range: 0~35dB	
Maximum Output Power[2]	Downlink at RU	37dBm±2dB	
	Uplink at HE	-15dBm±2dB	
Noise Figure		< 10dB@maximum gain	
VSWR		< 1:1.5	
Optical Loss		0~5dBo	
System Delay		< 2us	
Spurious		Meet FCC rules, 3GPP TS 36.104, 3GPP2 C.S0010-C	
Dimension (WXDXH)	Master RU	11.8 x 9.8 x 4.5 inches (300 x 249.6 x 114.5 mm)	
	Slave RU	11.8 x 9.8 x 3.7 inches (300 x 249.6 x 94.5 mm)	
Weight	Master RU	13.2 lbs (6.0 kg)	
	Slave RU	11.7 lbs (5.3 kg)	
Operating Temperature		14-122°F(-10-50°C)	
Operating Humidity		5~90%RH	
Power Input		110/220V, 50-60Hz, 24V or -48V DC(optional)	
Power consumption	Head-End	52W@4 RFU, 1 ODU Rack with 2 ODUs and NMS	
		28W@1 RFU, 1 ODU Rack with 2 ODUs and NMS	
	Remote-Unit	87W	
Network Management System		Ethernet(RJ45)	
RF	Head-End	N-type(Female)	

[2] The Manufacturer's rated output power of this equipment is for single carrier operation. For situations when multiple carrier signals are present, the rating would have to be reduced by 3.5 dB, especially where the output signal is re-radiated and can cause interference to adjacent band users. This power reduction is to be by means of input power or gain reduction and not by an attenuator at the output of the device

connector	Remote-Unit	N-type(Female)
Input/output Impedance		50Ω

9.3 FCC Certification

메모 [Y7]: FCC part 명기
15/02/03

Item	FCC Certification
ADX-R-SMR	Part 20, Part 90
ADX-R-78P	Part 90
ADX-R-BT	Part 20

10. ANTENNA SPECIFICATIONS

10.1 Omni Antenna

메모 [Y8]: 안테나 규격 추가
15/02/03

Frequency	698-960MHz	1710-2690MHz
Polarization	Vertical	
Gain	2dBi	3dBi
VSWR	<1.7:1	<1.5:1
Impedance	50Ω	
Power Rating	50W	

Note.
Please note that integrators, end-users or installers should not use the antenna with more gain than 3dBi(For Model: ADX-R-BT), 2dBi (For Model: ADX-R-SMR, ADX-R-78P) to meet the RF exposure requirement.

Part 90.635 requirement
Antennas must be installed in accordance with FCC 90.635. With 2 dBi gain antennas the height of the antenna above average terrain (HAAT) is permitted over 1372m. For different gain antennas refer to the relevant rules.

Part 90.219 requirement
The radiated power must be limited to 1W. Therefore, this device meet the 90.219 (e)(1) 5W ERP limitation requirement.

Prior to equipment use the service must be registered with the FCC. This can be done through the FCC's website at https://signalboosters.fcc.gov/signal-boosters

11. MECHANICAL DRAWING

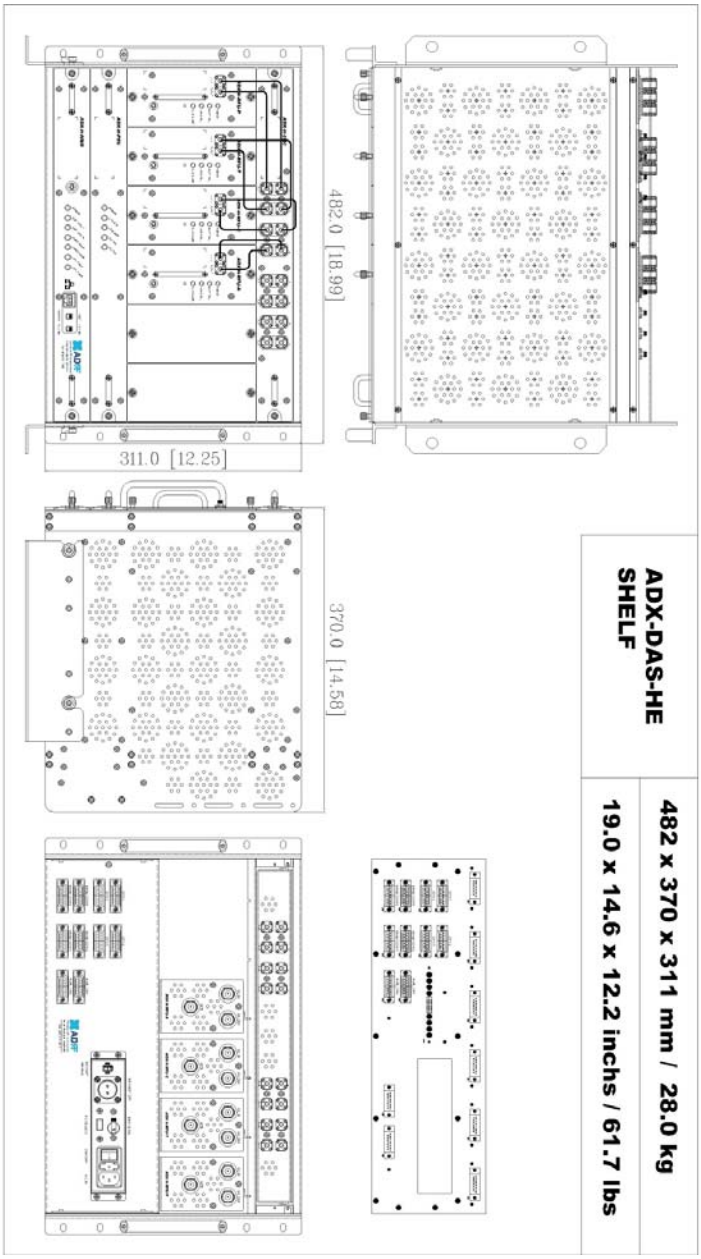


Figure 11-1 HE Drawing

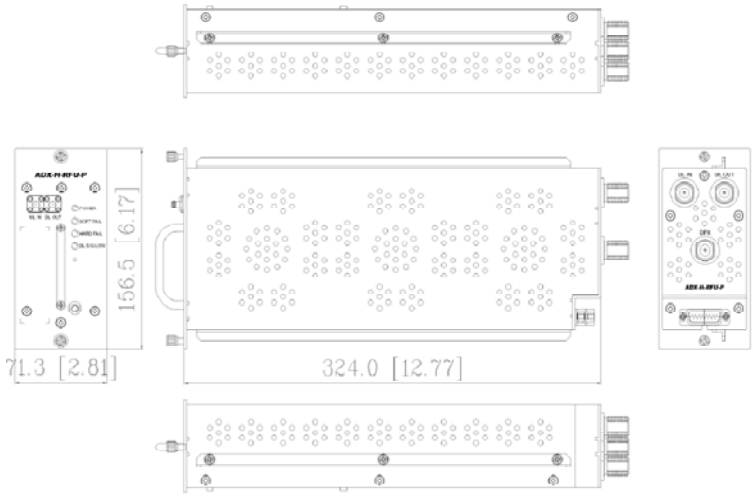


Figure 11-2 RFU Drawing for SMR/PS

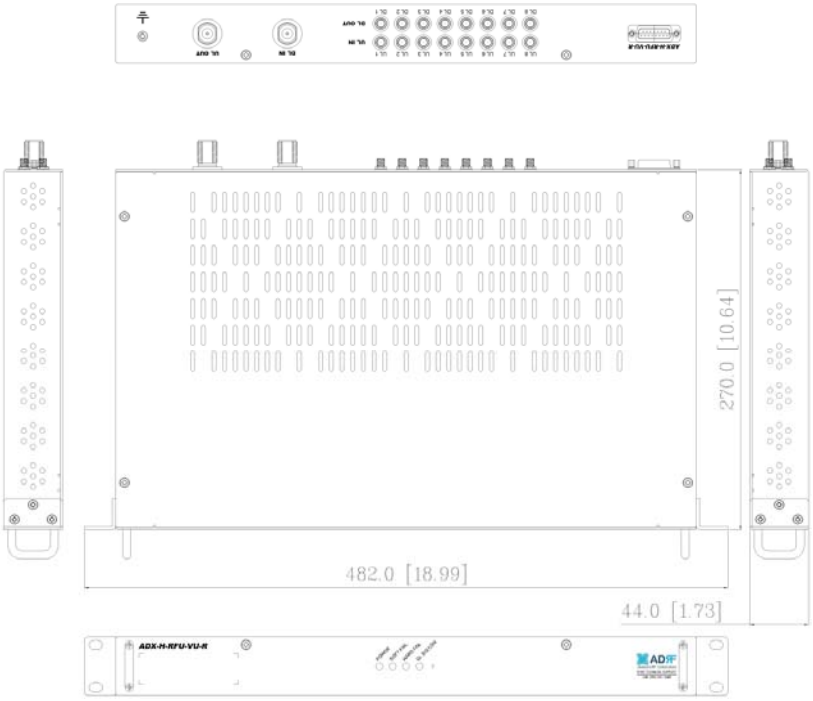


Figure 11-3 RFU Drawing for VU

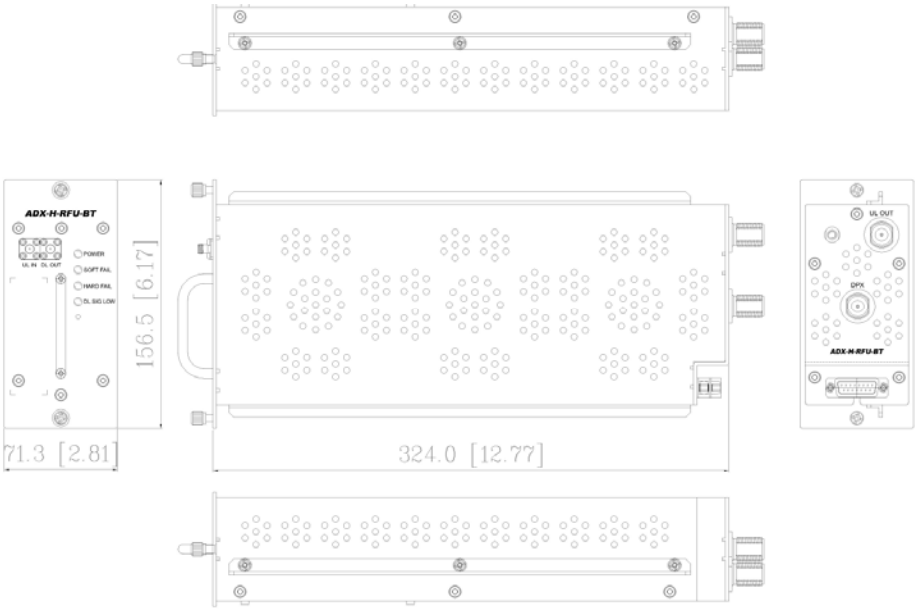


Figure 11-4 RFU Drawing for BT

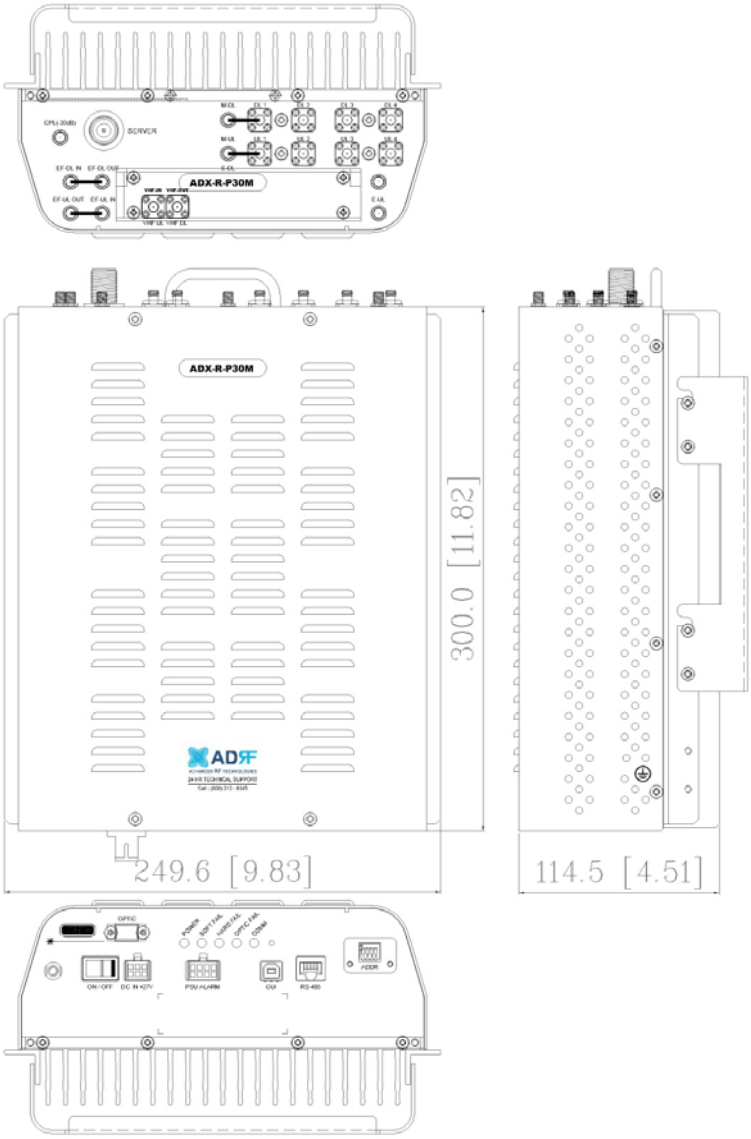


Figure 11-5 Master RU Drawing for PS

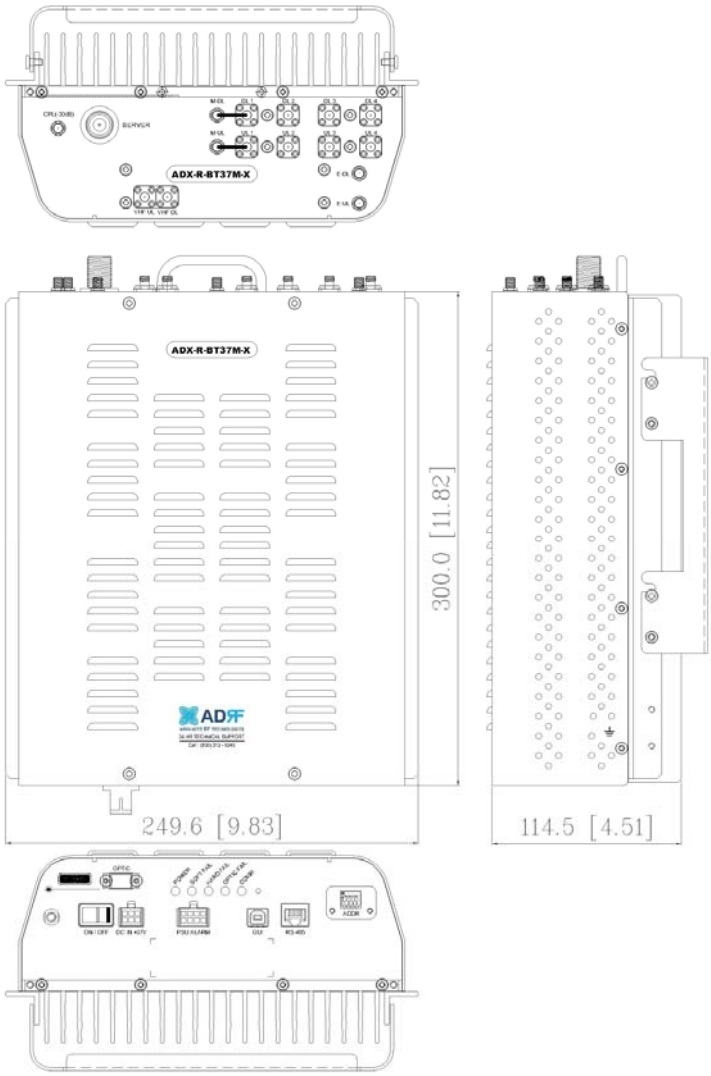


Figure 11-6 Master RU Drawing for BT

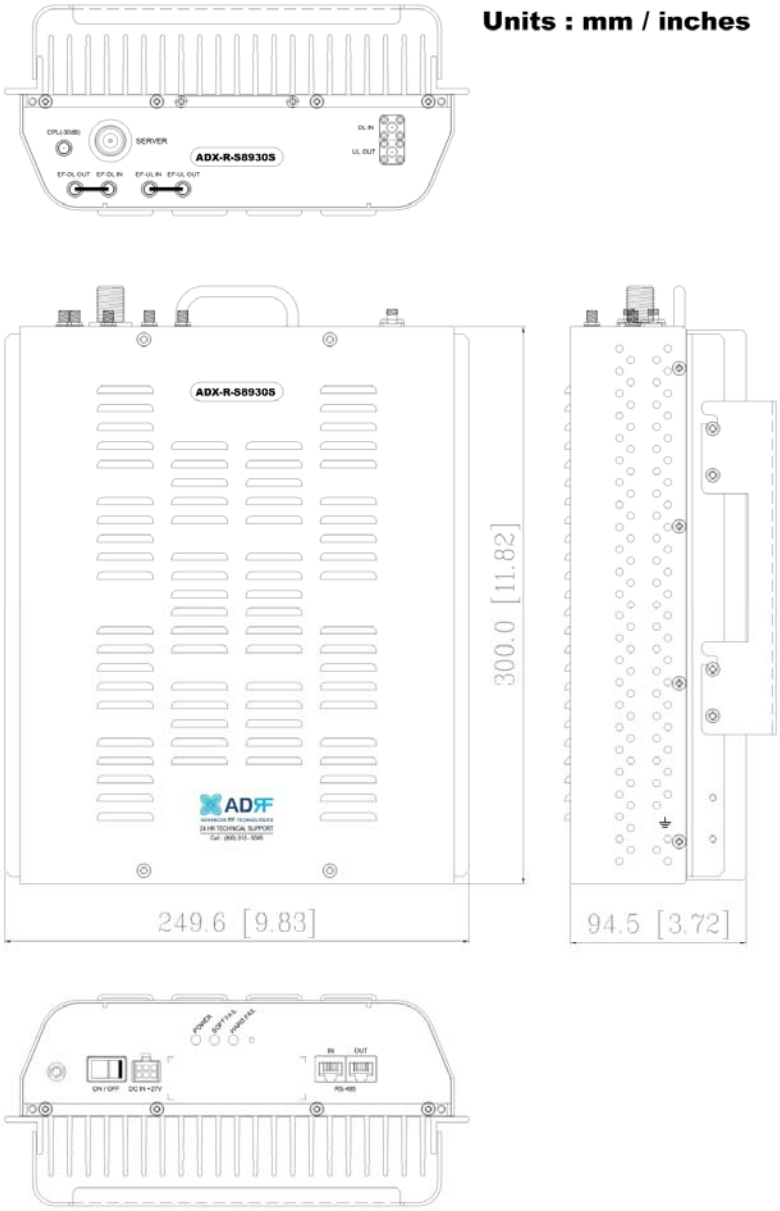


Figure 11-7 Slave RU Drawing for SMR

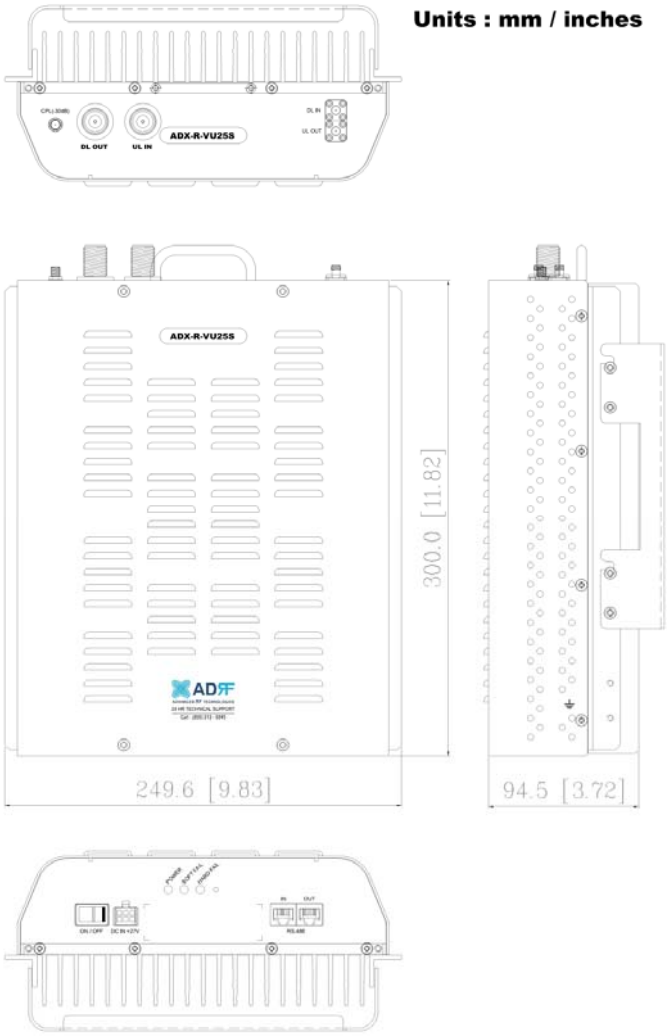


Figure 11-8 Slave RU Drawing for VU

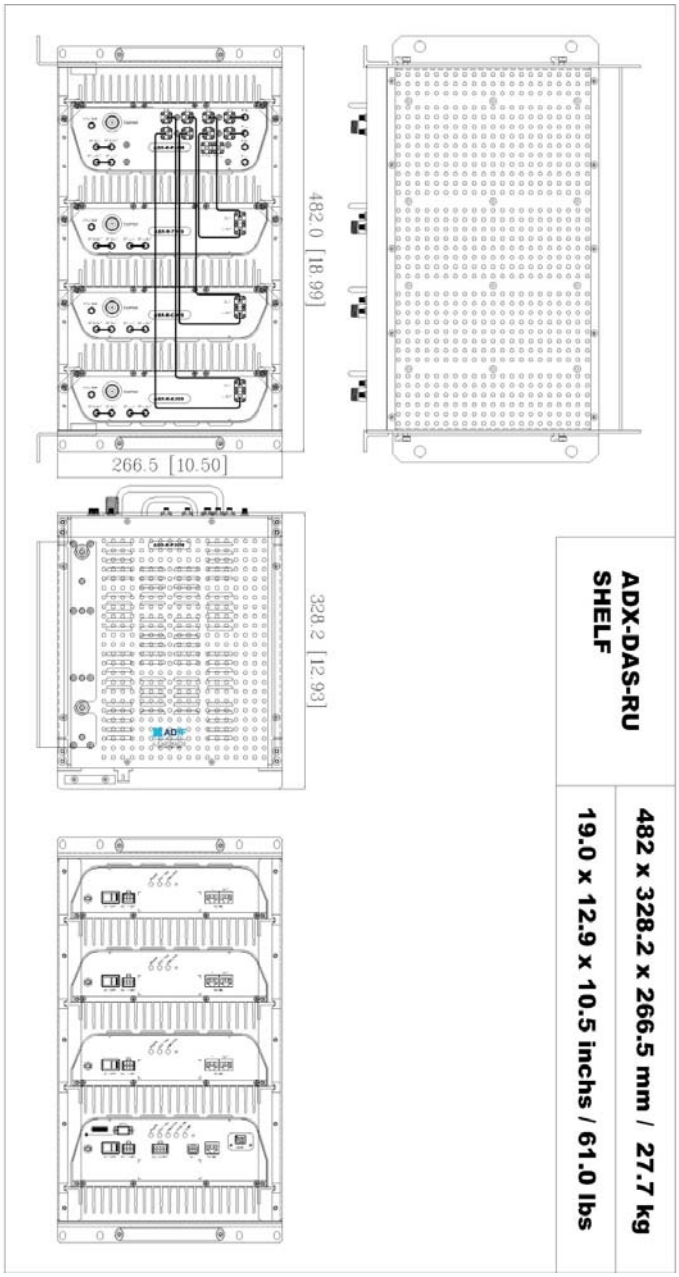


Figure 11-9 RU Rack Shelf Drawing