6.4.11 Site

The Site page allows the user to add information identifying the site, including the name of the site, address, contact information, etc. Each item is limited to 35 alphanumeric parameters.

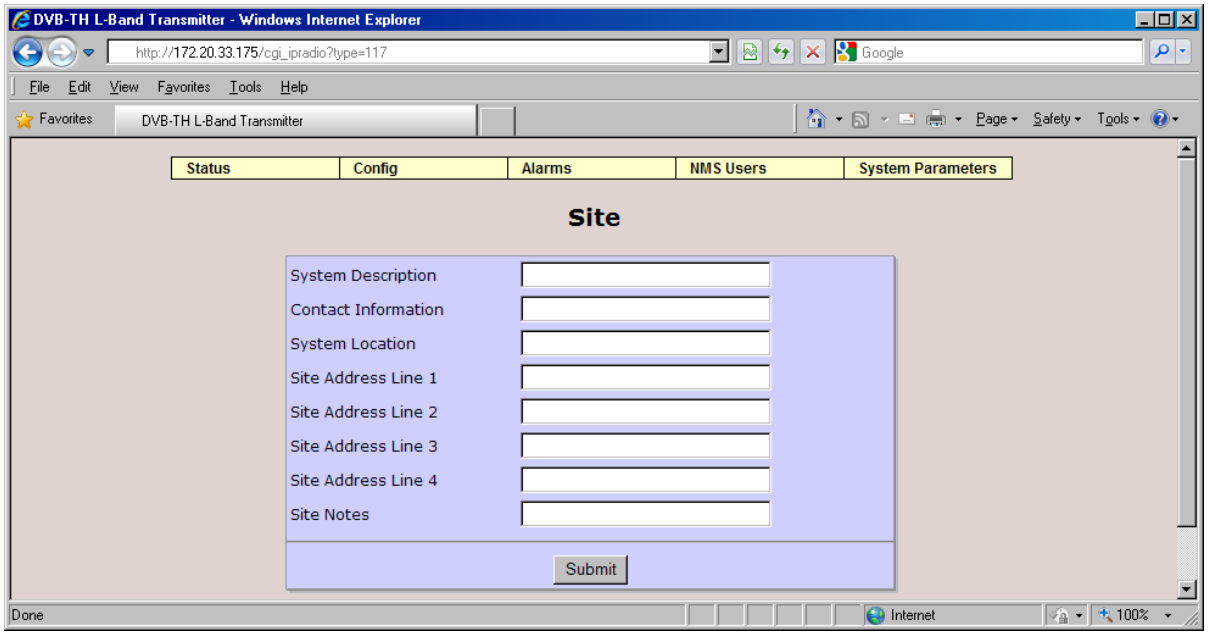


Figure 6-24 Site Information

The available parameters are:

Item	Option
System Description	up to 35 alphanumeric characters
Contact Information	up to 35 alphanumeric characters
System Location	up to 35 alphanumeric characters
Site Address Line 1	up to 35 alphanumeric characters
Site Address Line 2	up to 35 alphanumeric characters
Site Address Line 3	up to 35 alphanumeric characters
Site Address Line 4	up to 35 alphanumeric characters
Site Notes	up to 35 alphanumeric characters

Table 6-11 Site Parameters

6.5 Alarms Menu

The Alarms menu contains the following pull-down items (see Figure 6-25 below):

- Alarm Properties
- External Voltage Alarm Setting
- Log Management
- Alarm Log

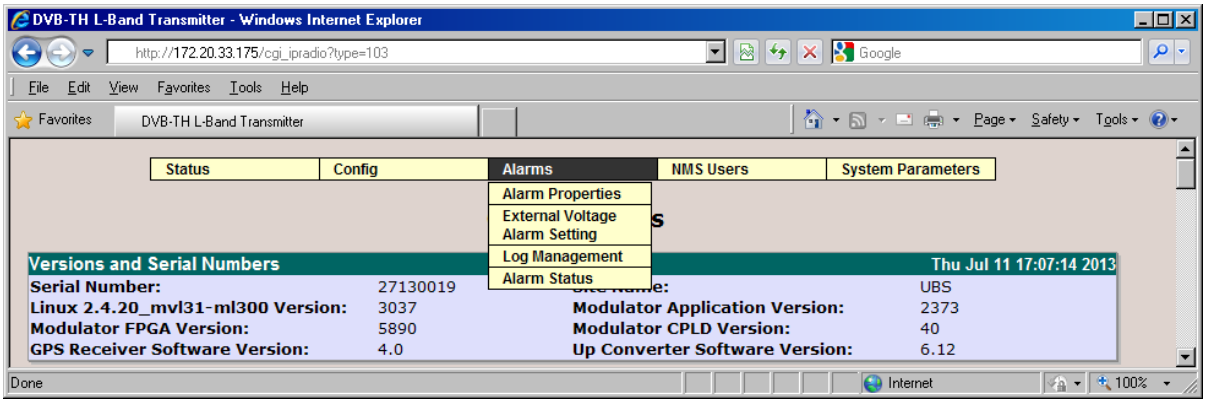


Figure 6-25 Alarms Menu

The Alarms menu allows the user to set the properties of each alarm including system actions as well to view alarm and event logs.

6.5.1 Alarm Properties

The first item in the Alarm Properties page is the Alarm Index. The Alarm Index box has a pull-down menu permitting the user to select a specific alarm from the list for configuration. The list of alarms along with a description of each alarm can be found in Section 10.

The user can configure each alarm to be displayed (Alarm Enabled ON) or ignored (Alarm Enabled OFF) and can configure the modulator to send an SNMP trap for any active alarm. The user can also configure a number of relays on the modulator rear panel to be triggered on alarm.

The integration time can be set to any value between 0 to 360 seconds, allowing the modulator to avoid reporting intermittent alarms. An alarm will only be reported if it is still active after the integration time has elapsed.

The Alarm Properties page also summarizes the current Alarm Properties settings for all system alarms under Alarm Property Setting Summary.

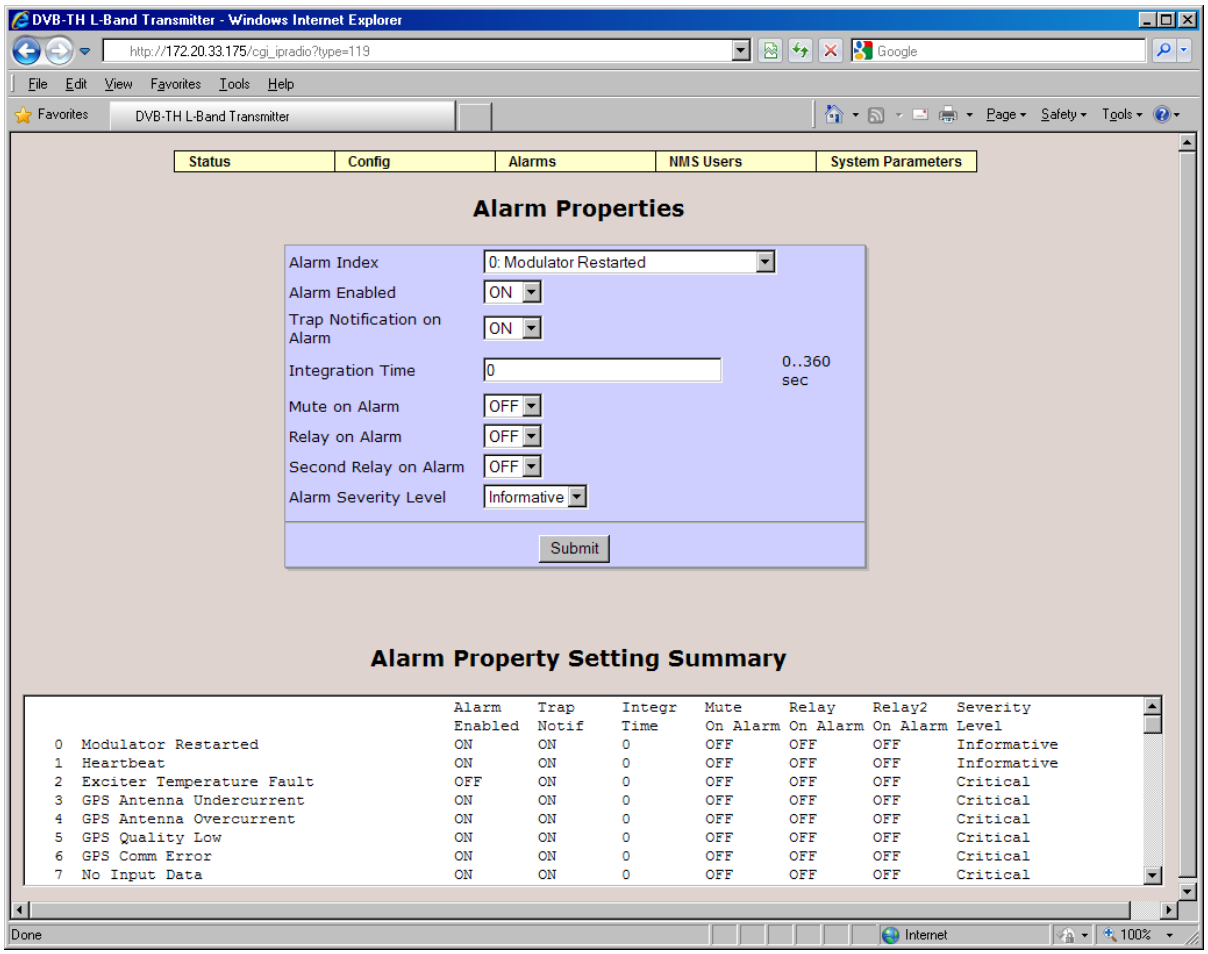


Figure 6-26 Alarm Properties Configuration

For each alarm, the user can set the following:

Item	**Option**
Alarm Enabled	OFF, ON Used to control whether the selected alarm will be displayed (ON) or ignored (OFF).
Trap Notification on Alarm	OFF, ON Used to control whether the selected alarm will produce a SNMP trap notification.
Integration Time	0 to 360 sec Length of time an alarm condition is present before the alarm is declared.
Mute on Alarm	OFF, ON Used to control whether the selected alarm will mute the transmitter output.
Relay on Alarm	OFF, ON Used to control whether the selected alarm will active the first alarm relay.
Second Relay on Alarm	OFF, ON Used to control whether the selected alarm will active the second alarm relay.
Alarm Severity Level	Critical, Warning, Informative, Cleared

Table 6-12 Alarm Properties Parameters

6.5.2 External Voltage Alarm Setting

The External Voltage Alarm Setting page allows the user to set the voltage threshold for each of the I/O port analog inputs (pins). Voltage 1 though Voltage 8 correspond to pins 1 though 8; pin 9 is ground.

For example, the pin 6 settings (Voltage6 Trigger Polarity and Voltage6 Trigger Threshold) seen in Figure 6-27 will create an alarm if the pin 6 output voltage is greater than 2.0 VDC.

NOTE: For this application, Pin 6 has been connected to the cabinet door switch contacts, Pin 7 has been connected to the cabinet smoke detector and the Web interface has been configured accordingly. The External Voltage Alarm Settings should not be modifies by the user.

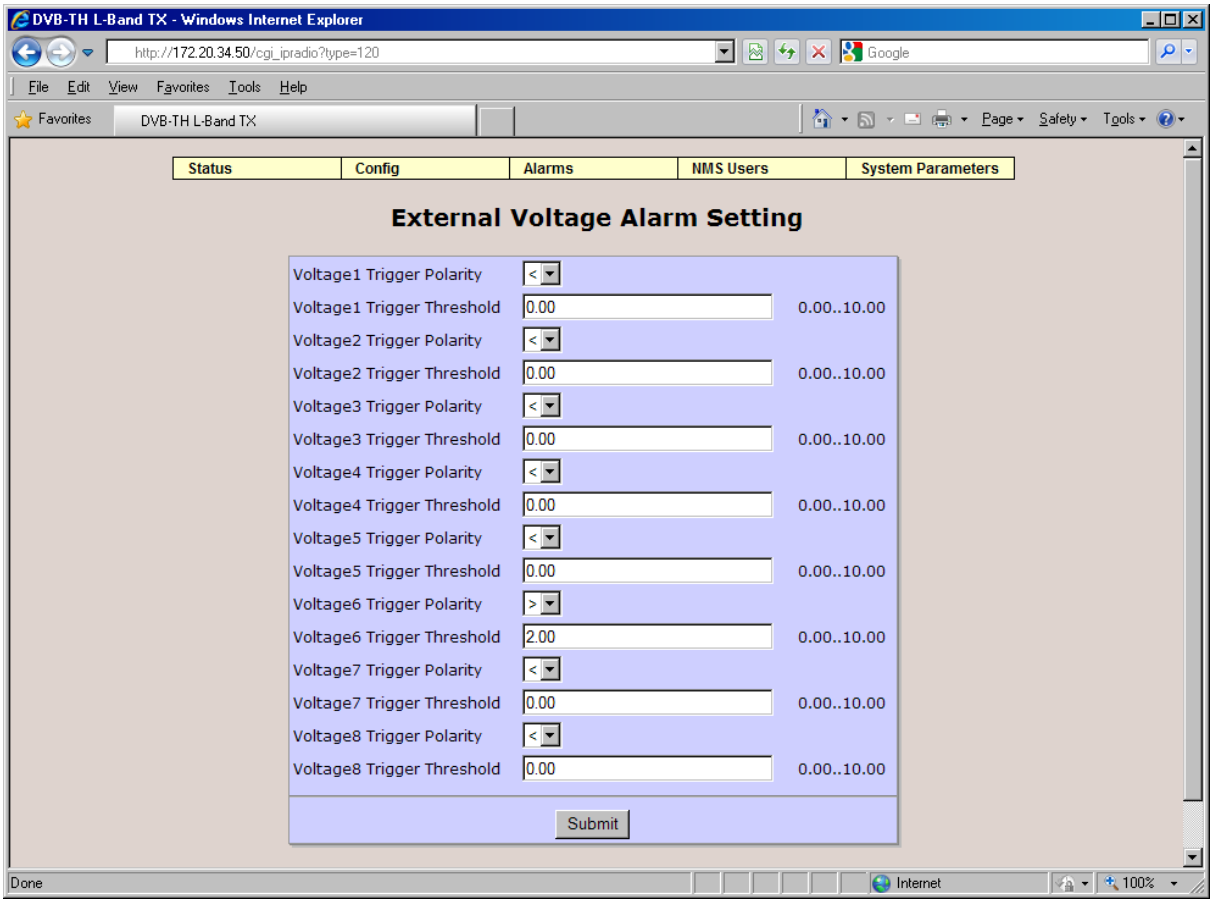


Figure 6-27 External Voltage Alarm Setting Configuration

For each I/O pin, the user can set the following:

Item	Selection
Voltage Trigger Polarity	<, >
Voltage Trigger Threshold	Range: 0.00 .. 10.00

Table 6-13 External Voltage Alarm Setting Parameters

6.5.3 Log Management

The Log Management page can be used to clear the alarm log and/or event log, change the order alarms appear in the logs and change the displayed alarm log.

If the Alarm Log is configured not to display alarms in reverse, the most recent alarm will be at the bottom of the list. If the Alarm Log is configured to display alarms in reverse, the most recent alarm will be at the top of the list.

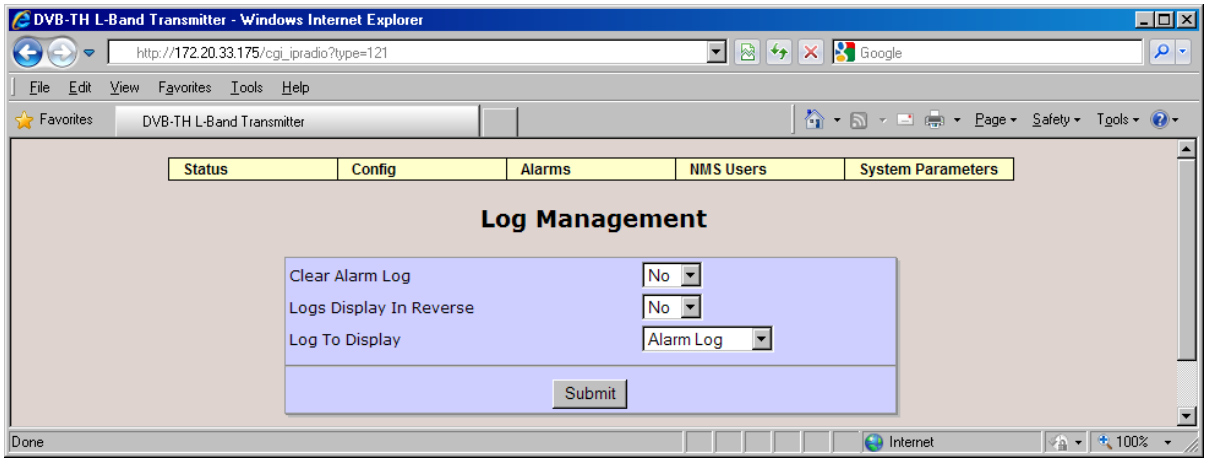


Figure 6-28 Log Management Configuration

The available parameters are:

Item	Option
Clear Alarm Log	No, Yes
Logs Display in Reverse	No, Yes Used to determine the order alarms are displayed in the Alarm Log.
Log To Display	Transient Log, Alarm Log Used to determine if the Alarm Log will display Transient Alarms or Set Alarms.

Table 6-14 Log Management Parameters

6.5.4 Alarm Log

The Alarm Log lists the current alarms as well as all alarm log entries.

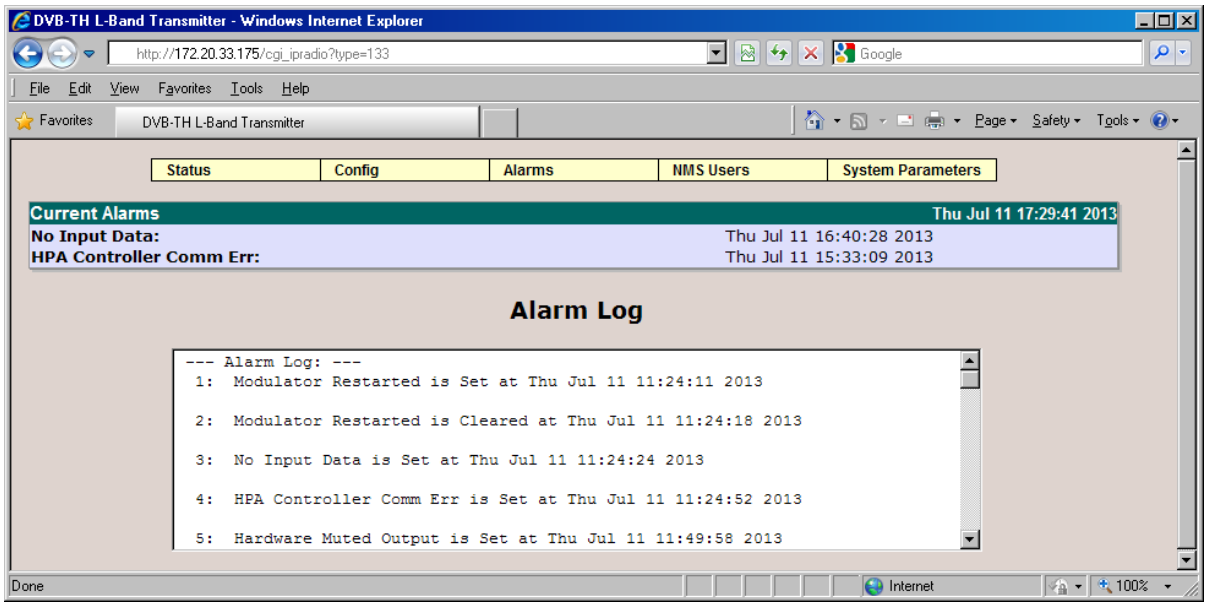


Figure 6-29 Alarm Log

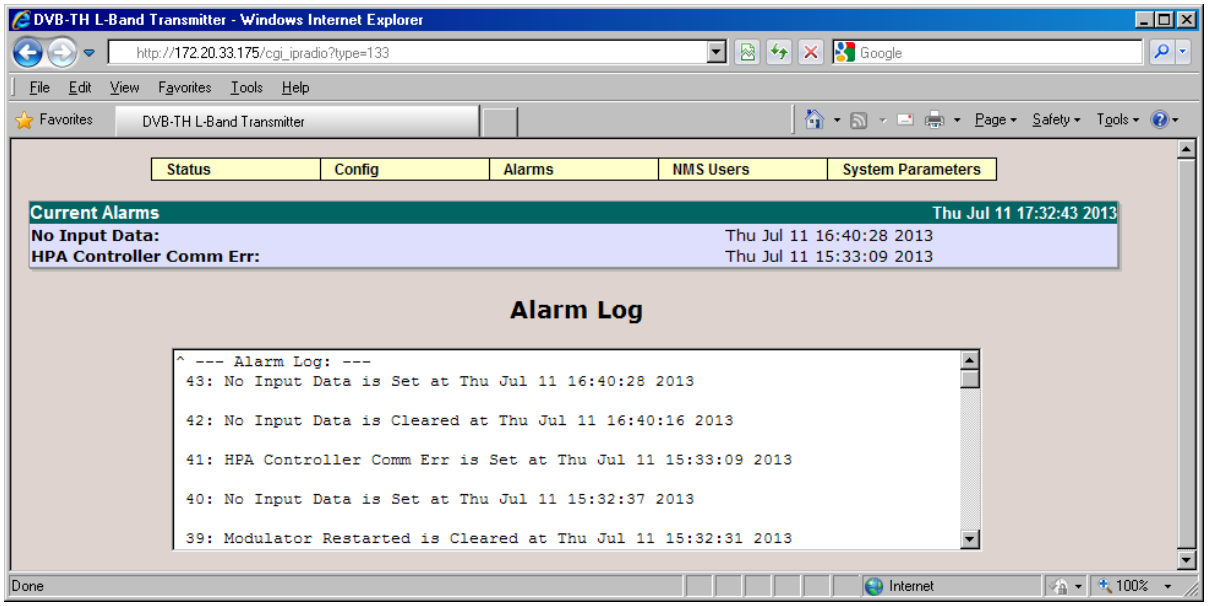


Figure 6-30 Alarm Log (Log Displayed in Reverse)

6.6 NMS Users Menu

The NMS Users menu includes the User Properties menu (see the pull down figure below).

The NMS Users menu sets the parameters required for an individual user to establish communications with the modulator via a SNMP Network Management System (NMS). From the User Properties menu, each NMS user can be configured with a user name, password, Cryptographic Hash Function authentication type (SHA, MD5, none) and Data Encryption mode (DES, AES, none) plus encryption password.

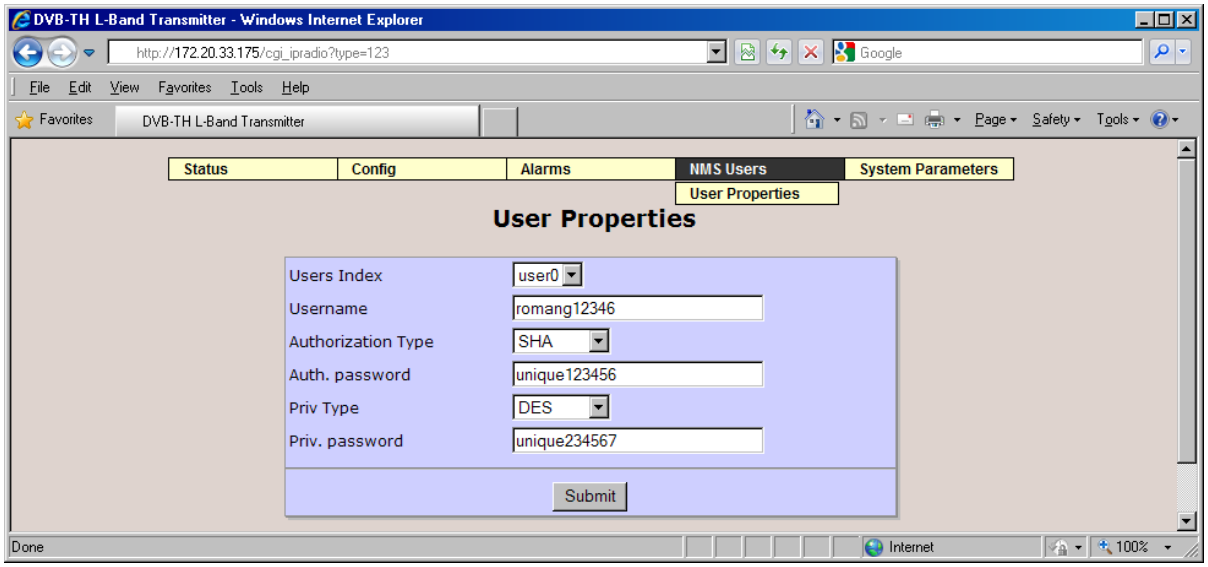


Figure 6-31 User Properties Configuration

For each user, the following authorization parameters can be set.

Item	Option
Username	up to 35 alphanumeric characters
Authorization Type	SHA, Disabled, MD5 "Cryptographic Hash Function"
Auth. Password	up to 35 alphanumeric characters
Priv Type	DES, AES, Disabled "Data Encryption"
Priv. Password	up to 35 alphanumeric characters

Table 6-15 User Properties Parameters

6.7 System Parameters Menu

The System Parameters menu displays the modulator access control, network and SNMP parameters. It is also used for system reset and upgrades.

The System Parameters menu contains the following pull-down menu items (see Figure 6-32 below):

- Identification
- Access Control
- Network Parameters
- SNMP Parameters
- System Time
- Heartbeat Time
- System Reset
- User Configuration
- Download Config Files(s)
- Upgrade and Files Upload
- List Uploaded Files

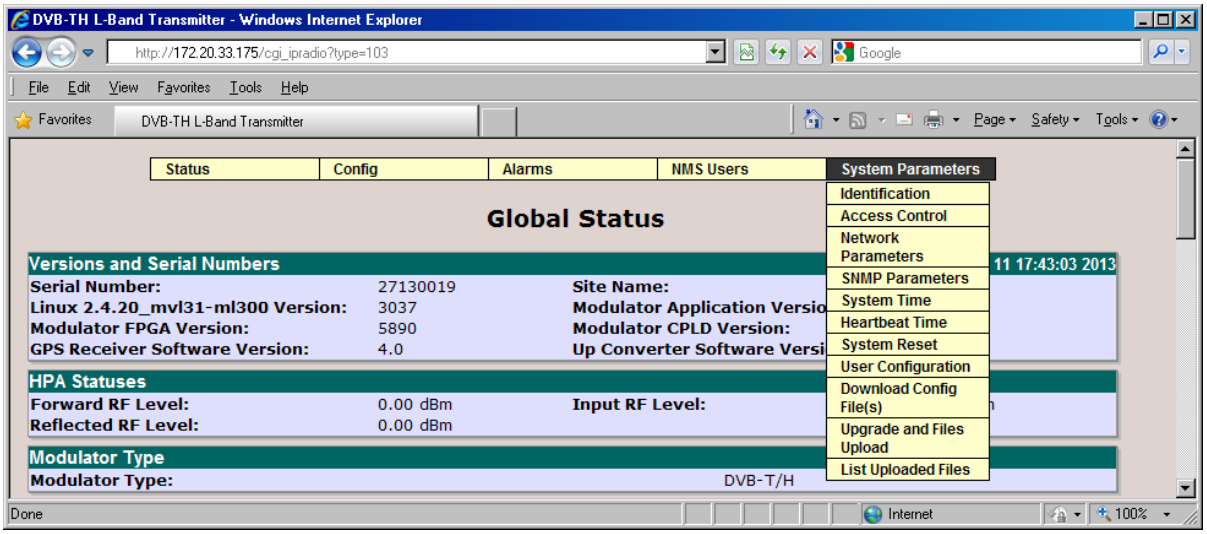


Figure 6-32 System Parameters Menu

6.7.1 Identification

The Identification page allows the user to set the following identifiers:

Item	Option
Site Name	up to 35 alphanumeric characters
Site ID	up to 15 alphanumeric characters

Table 6-16 Identification Parameters

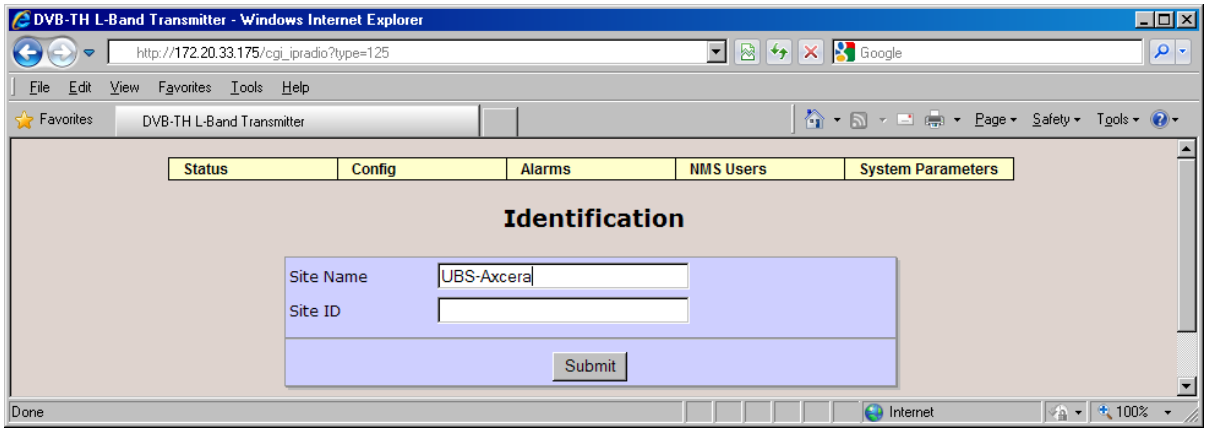


Figure 6-33 Identification Configuration

6.7.2 Access Control

The Access Control page allows the user to set a password for the Web GUI interface.

Item	Option
Web Password	up to 14 alphanumeric characters

Table 6-17 Access Control Parameters

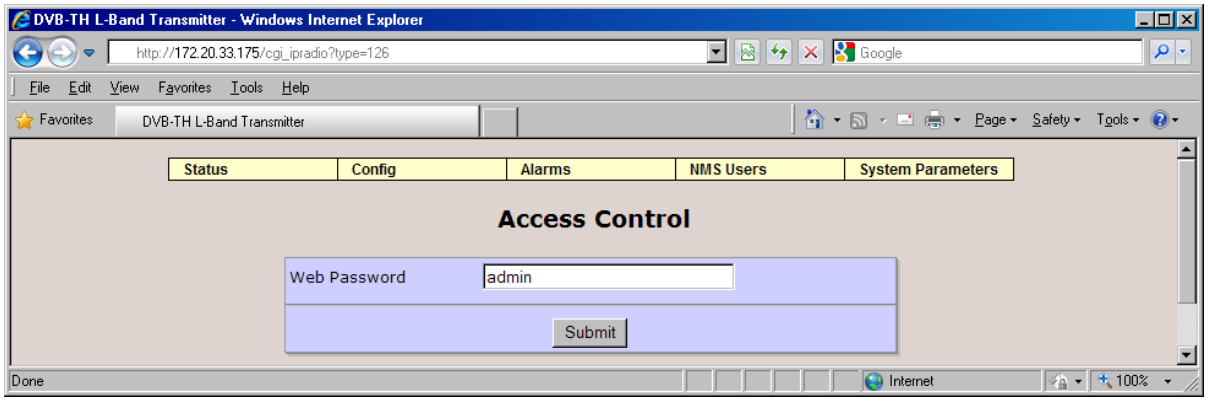


Figure 6-34 Access Control Configuration

6.7.3 Network Parameters

The Network Parameters page allows the user to set the network parameters for the modulator.

Note: The modulator must be reset following a change to any of the Network Parameters.

Item	Option
Management IP	Standard IP address e.g., 172.20.25.80
Management Netmask	Standard netmask field e.g., 255.255.0.0
Default Gateway	Standard IP address e.g., 172.20.1.1
Redundant Peer IP	Standard IP address e.g., 172.21.25.80 Not used for this application and should not be modified by the user.
Second Etherport IP	Standard IP address e.g., 172.20.25.81 Not used for this application and should not be modified by the user.
Second Etherport Netmask	Standard netmask field e.g., 255.255.0.0 Not used for this application and should not be modified by the user.

Table 6-18 Network Parameters

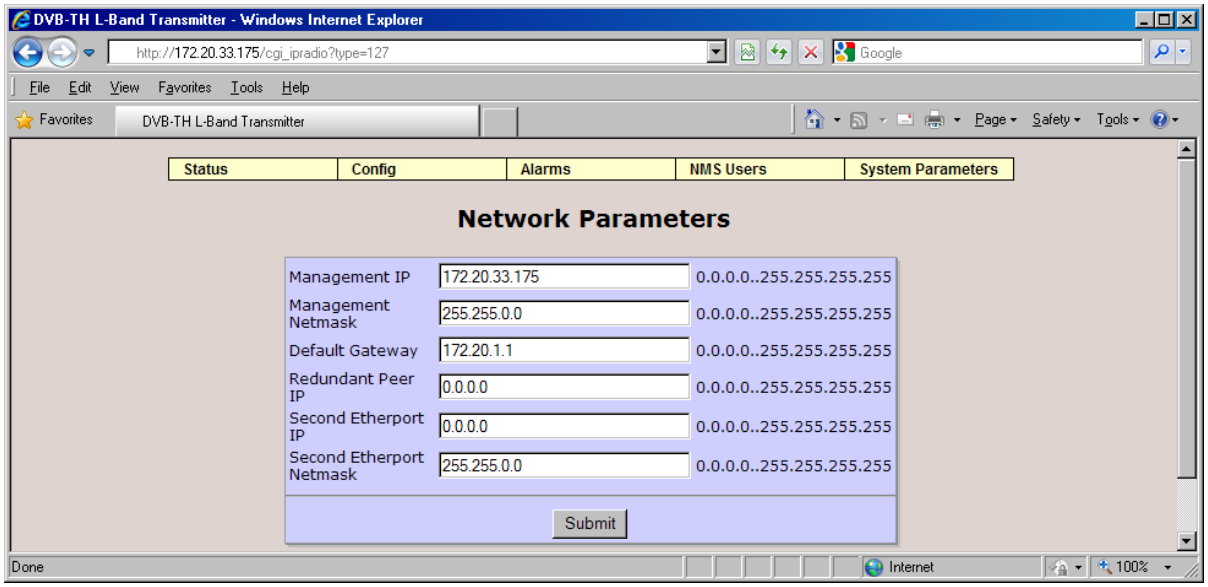


Figure 6-35 Network Parameters

6.7.4 SNMP Parameters

The SNMP Parameters page allows the user to configure the SNMP interface for the modulator.

Item	Option
SNMP Traps On/Off	OFF, ON
SNMP Notification Type	Trap, Inform
SNMP Trap Server IP Address	Standard IP address, e.g., 172.20.1.145

Table 6-19 SNMP Parameters

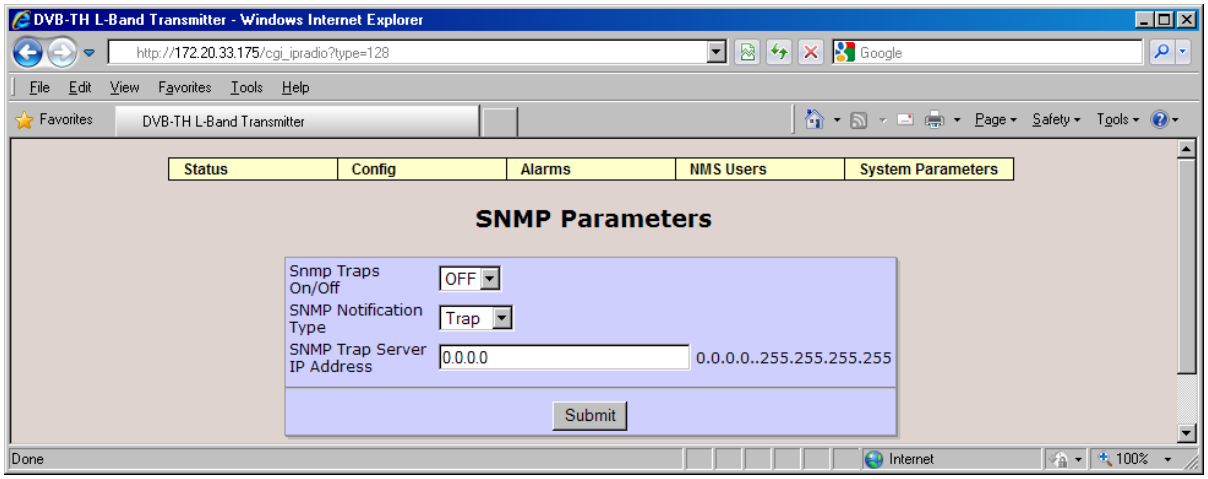


Figure 6-36 SNMP Parameters

6.7.5 System Time

The System Time page allows the user to set the system time.

Note: The modulator must be reset following a change to any of the System Time parameters.

Item	Option
Year	Range: 1900 .. 3000
Month	Range: 1 .. 12
Day	Range: 1 .. 31
Hour	Range: 0 .. 23
Minute	Range: 0 .. 59
Second	Range: 0 .. 59

Table 6-20 System Time Parameters

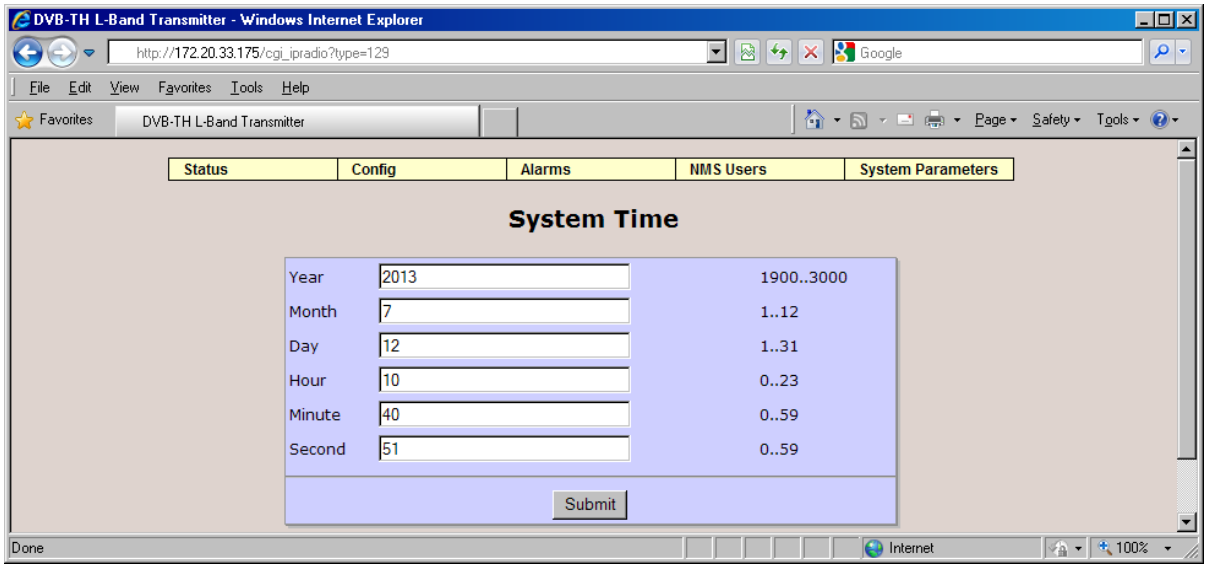


Figure 6-37 System Time

6.7.6 Heartbeat Time

The modulator has the capability to periodically send "Heartbeat" alarms and traps in order to show that it is still operating and that communication is still active. The user can set the Heartbeat Hours Start, Heartbeat Minute Start and repetition frequency for the heartbeat (Heartbeat Pace).

Item	Option
Heartbeat Hour Start	Range: 0 .. 24
Heartbeat Minute Start	Range: 0 .. 60
Heartbeat Pace	0 to 2880 min

Table 6-21 Heartbeat Parameters

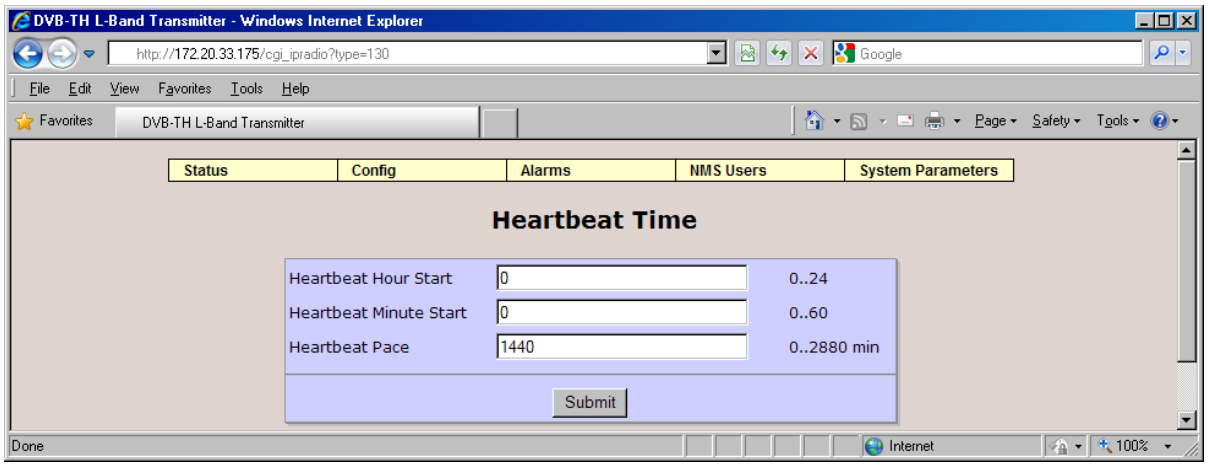


Figure 6-38 Heartbeat Time

6.7.7 System Reset

The modulator can be reset by setting the Modulator Reset pull down box to ”On” and selecting Submit.

Item	Option
Modulator Reset	OFF, ON

Table 6-22 System Reset Parameters

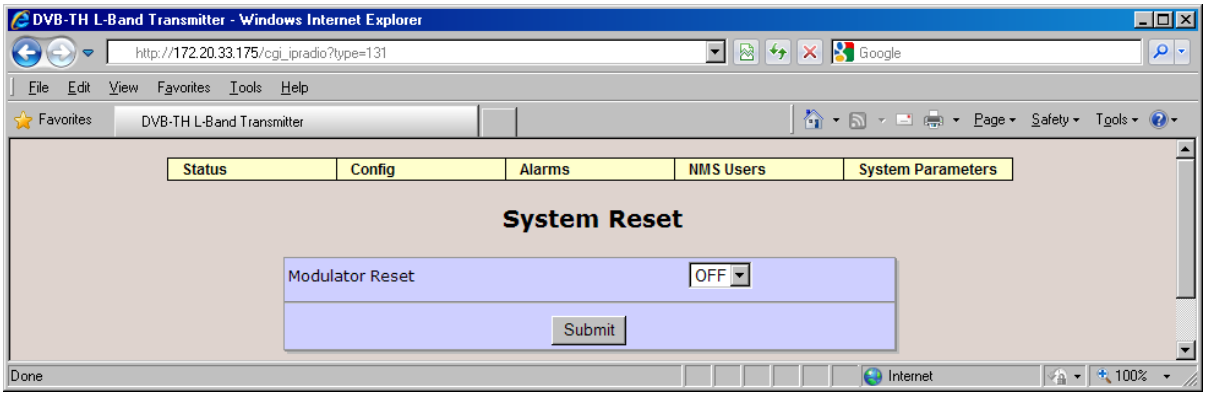


Figure 6-39 System Reset

6.7.8 User Configuration

The User Configuration page allows the user to specify the address of the serial port used for machine-to-machine communication.

Note: User Configuration is for factory configuration only and should not be modified by the user.

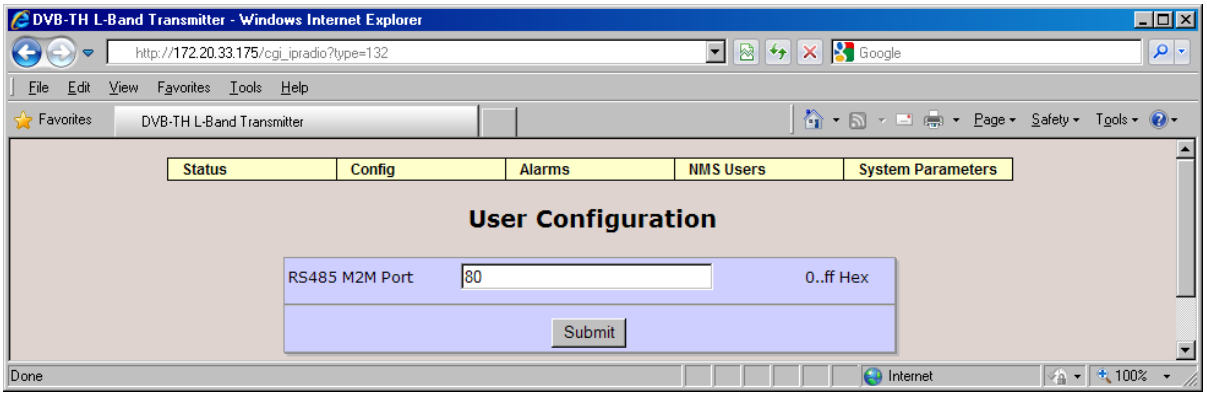


Figure 6-40 User Configuration

6.7.9 Download Config Files(s)

The Download Config File(s) page allows the user to download files located on the modulator.

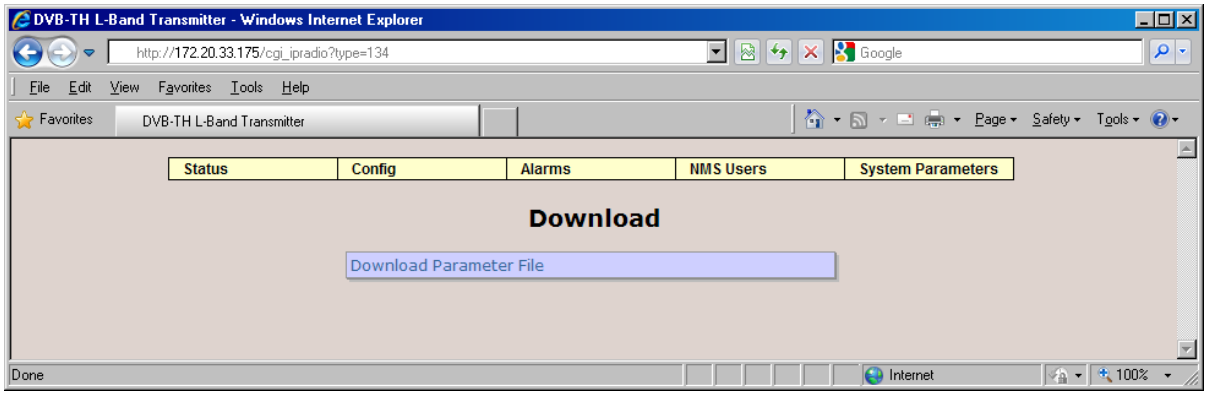


Figure 6-41 Download Config Files(s)

By clicking on the Download Parameter File box the user will see an operating system pop-up window, prompting the user to save the configuration file on their system:

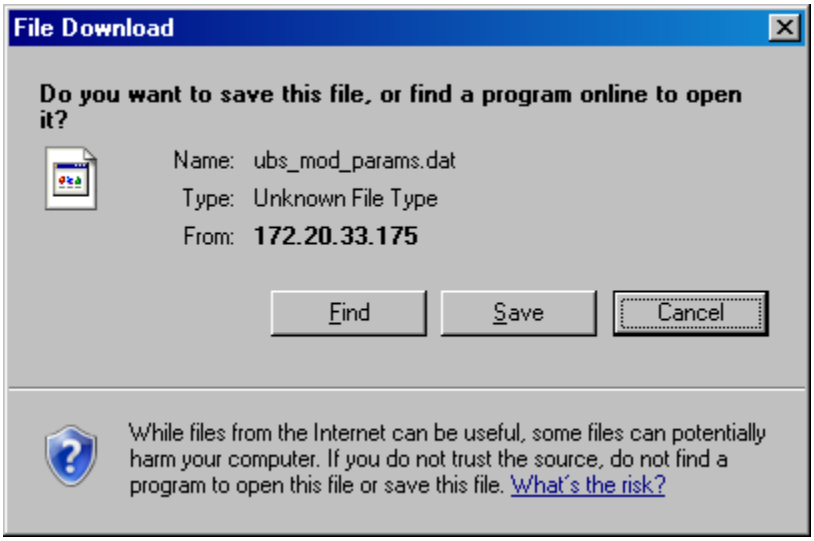


Figure 6-42 Download Pop-Up Window (Windows OS)

6.7.10 Upgrade and Files Upload Procedure

The Upgrade and Files Upload page allows the user to upgrade system software components such as:

- Modulator Application
- Linux Kernel (included in the Modulator Application)
- Modulator FPGA
- Up-converter Software

The first step in the upgrade process is the selection of the proper upgrade file using the "Browse" button (see Figure 6-43). Once the file is selected, click on "Start Download" to initiate the upgrade process.

Please note that the Web server is a single threaded server which only allows one connection at a time. Therefore if the upgrade is performed via a phone line, the file transfer can take 10 minutes depending on the connection speed and file size. The contents of the pop-up dialog will be blank. It will only start showing the upgrade information when the file is completely transferred.

The upgrade file contains all the information required to define the component which is being upgraded.

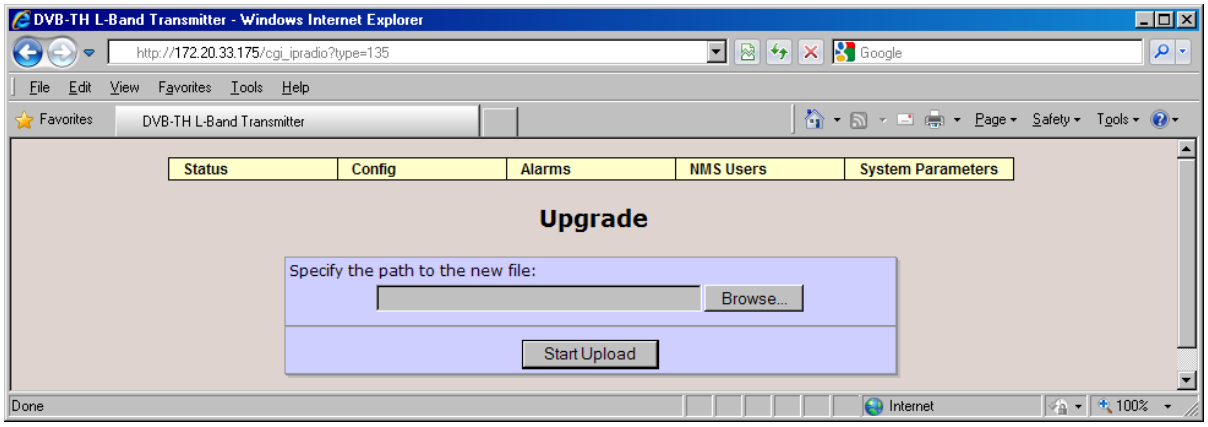


Figure 6-43 Upgrade and Files Upload

As the upgrade starts a pop-up dialog will appear with the current upgrade process information.

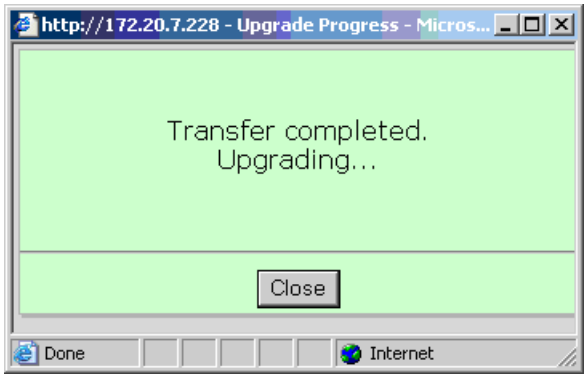


Figure 6-44 Upgrade Begin Pop-Up

Once the upgrade is complete the pop up dialog will display a corresponding message.

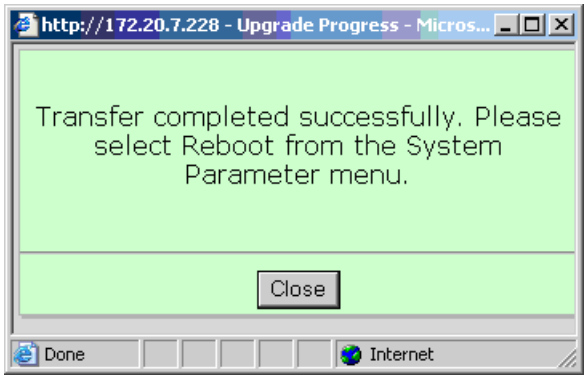


Figure 6-45 Upgrade Complete Pop-Up

6.7.11 List Uploaded Files

The List Uploaded Files page provides a list of uploaded files on the modulator.

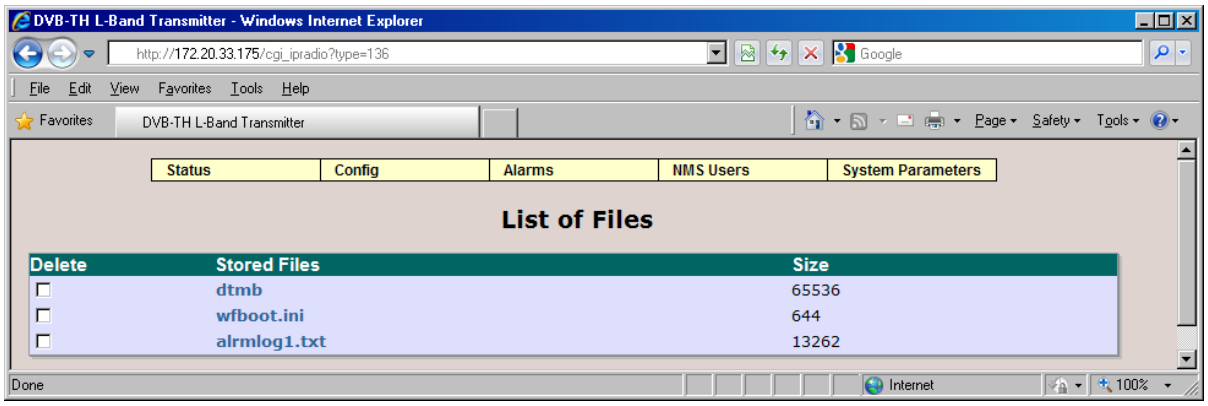


Figure 6-46 List Uploaded Files

7 Command Line Interface (CLI)

7.1 Introduction

The transmitter can be controlled and monitored from the Command Line Interface (CLI) in addition to the Web GUI and front panel.

The CLI is accessible from the USB port or via a Telnet session through the Ethernet management port.

7.2 Using the USB Port to access the CLI

The modulator must be connected to a PC using a USB-to-USB cable. The cable will require a USB Type B connector to mate with the modulator USB port, while the other connector has to mate with the PC USB port.

Open a Hyperterminal (or HyperACCESS depending on the operating system) session on the PC and set the parameters as shown below:

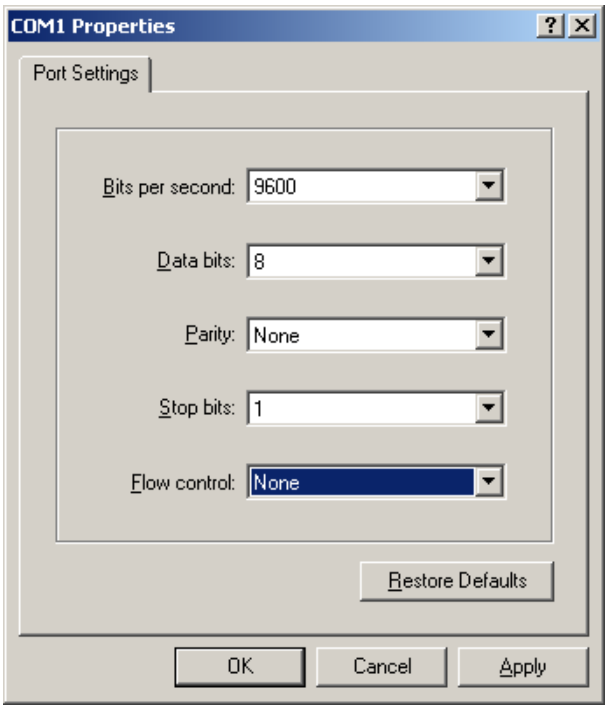


Figure 7-1 COM settings

7.3 Using Ethernet Port to access the CLI

The modulator can be connected directly to a PC or through a hub/switch using an RJ-45 straight-through cable.

The modulator and PC must be configured to be on the same IP network so that a connection can be established.

A Telnet client can be opened from the "Start/Run" button on the PC. Enter the IP address assigned to the modulator followed by the number 26 – see below.

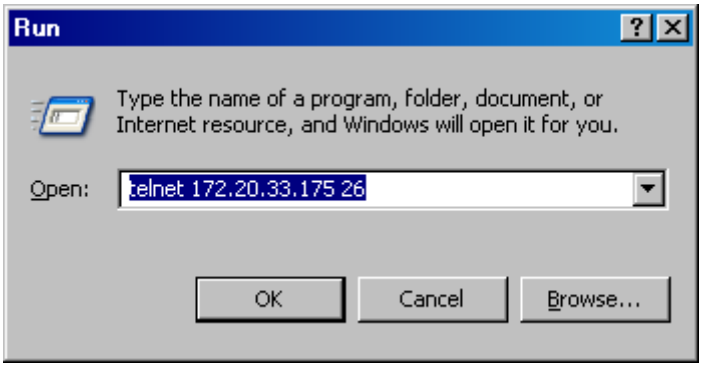


Figure 7-2 Starting the Telnet session

A HyperTerminal session can also be used to access the CLI through the Ethernet port – see Figure 7-1.

7.4 CLI Login Procedure

1. Once the connection has been established, press enter to get to the login prompt.
2. Enter the password and press enter. **NOTE:** The password is "admin" by default, but can be changed through the Web GUI, CLI or SNMP.
3. After the password has been verified, the main menu will appear.

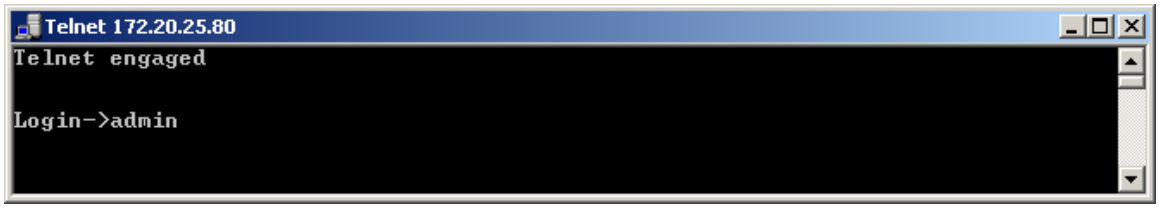


Figure 7-3 Telnet Login Prompt

7.5 CLI Menu System

The CLI contains a three level menu system where parameters can be viewed and changed.

7.5.1 Navigation

Each menu has been assigned a numeric value for navigation purposes. To navigate through the CLI menu system, enter the number assigned to the desired menu. Depending on the menu accessed, the user may have the option to enter a sub-menu, or change a system parameter.

The following menu prompts are available for navigation and for changing system parameters:

- Enter Selection – allows the user to change menus or exit the CLI
- Enter New Value – allows the user to change a system parameter

At the "Enter Selection" prompt, the user may also use the following keys to navigate or exit the CLI menu system:

- r – return to the previous menu
- e – exit the CLI

If the user accesses the "Enter New Value" prompt by mistake or decides that they do not want to change a parameter, the prompt can be exited without making a parameter change. Simply clear all alphanumeric parameters and press enter. See the following example below:

```
Identification
1. Site Name
2. Site ID
r. Return to previous menu
e. Exit CLI
Enter selection : 2 Site ID
Current Value:
Enter New value: No Changes
```

7.5.2 Parameter Values

In some cases, such as entering the Guard Interval or Code Rate, the selectable parameters have been assigned a numeric value. This allows the user to change the parameter by simply entering the number assigned to a different parameter. In other cases, such as entering the transmitter IP address or Site Information, the user can enter a range of alphanumeric characters.

All parameter changes are made at the "Enter New Value" prompt.

```
Enter selection : 6 RF Output Frequency
Current Value: 1670000000 Hz
Range: 1670000000 .. 1675000000
Enter New value:
```

7.5.3 Menu Tree

The CLI Menu tree is listed below with a total of 3 levels.

```
Main Menu:
1. Status
2. Config
3. Alarms
4. NMS Users
5. System Parameters
6. Display Alarms
7. Firmware Upgrade
r. Return to previous menu
e. Exit CLI
Enter selection:
```

Main Menu	**Level 2**	**Level 3**
1. Status	1. Global Status 2. GPS Status 3. HPA	
2. Config	1. Modulator Mode	
2. Config	2. Transmission	1. SFN 2. Config From Stream 3. Fixed Delay 4. Input_Output Fixed Delay 5. MIP Time Offset Function 6. MIP Frequency Offset Function 7. MIP Power Function 8. MIP CellId Function 9. Hierarchical Mode 10. IFFT 11. Coderate 12. Constellation 13. Guard Interval 14. Interleaver Flag 15. Time Slice Indicator 16. MPE-FEC Flag, HP 17. Cell Id 18. Transmitter ID 19. Local DelayOffset
2. Config	3. Input	1. Selected Input 2. IP Input Interface 3. Input Stream Dst IP 4. Input Stream Dst Port 5. FEC Mode 6. IP Input Buffer Depth
2. Config	4. Output	1. Mute ON/OFF 2. Bandwidth 3. Spectrum Inversion 4. Window Enable 5. External Amplifier Gain 6. RF Output Frequency 7. RF Power Level 8. RF Channel Grid

Main Menu	Level 2	Level 3
2. Config	4. Output	9. Base Frequency 10. Base Channel
2. Config	5. RF Channels	Select RF Channel
2. Config	6. User RF Channels	Select RF Channel
2. Config	7. Non-Linear Precorrector	1. NLP State 2. NLP Profile
2. Config	8. Linear Precorrector	1. LP State 2. LP Profile
2. Config	9. HPA Control	1. RF Output Power Level 2. Transmitter Operating Mode
2. Config	10. GPS	1. Max GPS Holdover Time, min 2. Update System Clock From GPS 3. System Timezone
2. Config	11. Site	1. System Description 2. Contact Information 3. System Location 4. Site Address Line 1 5. Site Address Line 2 6. Site Address Line 3 7. Site Address Line 4 8. Site Notes
3. Alarms	1. Alarm Properties	1. Alarm Index 2. Alarm Enabled 3. Trap Notification on Alarm 4. Integration Time 5. Mute on Alarm 6. Relay on Alarm 7. Second Relay on Alarm 8. Alarm Severity Level
3. Alarms	2. External Voltage Alarm Setting	1. Voltage1 Trigger Polarity 2. Voltage1 Trigger Threshold 3. Voltage2 Trigger Polarity 4. Voltage2 Trigger Threshold 5. Voltage3 Trigger Polarity 6. Voltage3 Trigger Threshold 7. Voltage4 Trigger Polarity 8. Voltage4 Trigger Threshold 9. Voltage5 Trigger Polarity 10. Voltage5 Trigger Threshold 11. Voltage6 Trigger Polarity 12. Voltage6 Trigger Threshold 13. Voltage7 Trigger Polarity 14. Voltage7 Trigger Threshold 15. Voltage8 Trigger Polarity 16. Voltage8 Trigger Threshold
3. Alarms	3. Log Management	1. Clear Alarm Log 2. Logs Display In Reverse 3. Log To Display

Main Menu	Level 2	Level 3
4. NMS Users	1. User Properties	1. User Index 2. Username 3. Authorization Type 4. Auth. Password 5. Priv Type 6. Priv. Password
5. System Parameters	1. Identification	1. Site Name 2. Site ID
5. System Parameters	2. Access Control	Enter Web Password
5. System Parameters	3. Network Parameters	1. Management IP 2. Management Netmask 3. Default Gateway 4. Redundant Peer IP 5. Second Etherport IP 6. Second Etherport Netmask
5. System Parameters	4. SNMP Parameters	1. SNMP Traps On/Off 2. SNMP Notification Type 3. SNMP Trap Server IP Address
5. System Parameters	5. System Time	1. Year 2. Month 3. Day 4. Hour 5. Minute 6. Second
5. System Parameters	6. Heartbeat Time	1. Heartbeat Hour Start 2. Heartbeat Minute Start 3. Heartbeat Pace
5. System Parameters	7. System Reset	Modulator Reset
5. System Parameters	8. User Configuration	Set RS485 port address
6. Display Alarms		
7. Firmware Upgrade	Enter URL	

Table 7-1 CLI Menu Tree

7.5.3.1 Status Sub-menu

```
Status:
1. Global Status
2. GPS Status
3. HPA
r. Return to previous menu
e. Exit CLI
Enter selection :
```

Status Sub-menu	Description
1. Global Status	Displays general status information for network management, alarms, modulation, transmitter output and reflected power values as well as transmitter frequency.
2. GPS Status	Displays detailed GPS information such as site co-ordinates, altitude, GPS PLL and 3D fix status and satellite tracking.
3. HPA	Displays detailed HPA status information such as forward, reflected and input power levels, current values for the pre-driver, driver and PA modules, heat sink temperature, as well as power supply voltage.

Table 7-2 Status Sub-menu

7.5.3.2 Config Sub-menu

```
Config:
1. Modulator Mode
2. Transmission
3. Input
4. Output
5. RF Channels
6. User RF Channels
7. Non-Linear Precorrecto
8. Linear Precorrector
9. HPA Control
10. GPS
11. Site
r. Return to previous menu
e. Exit CLI
Enter selection :
```

Config Sub-menu	**Sub-menu**	**Selectable Parameters**
1. Modulator Mode		0. Normal 1. CW 2. Test 1(Carriers Removed) 3. Record 4. Playback
2. Transmission	1. SFN	0. OFF 1. ON
2. Transmission	2. Config From Stream	0. ON 1. OFF
2. Transmission	3. Fixed Delay	0. OFF 1. ON
2. Transmission	4. Input_Output Fixed Delay	Range: 13000 .. 1000000 µsec
2. Transmission	5. MIP Time Offset Function	0. OFF 1. ON
2. Transmission	6. MIP Frequency Offset Function	0. OFF 1. ON
2. Transmission	7. MIP Power Function	0. OFF 1. ON
2. Transmission	8. MIP Cell Id Function	0. OFF 1. ON
2. Transmission	9. Hierarchical Mode	0. None 1. 1 2. 2 3. 4
2. Transmission	10. IFFT	0. 2k 1. 8k 2. 4k
2. Transmission	11. Coderate	0. 1/2 1. 2/3 2. 3/4 3. 5/6 4. 7/8
2. Transmission	12. Constellation	0. QPSK 1. 16 QAM 2. 64 QAM
2. Transmission	13. Guard Interval	0. 1/32 1. 1/16 2. 1/8 3. 1/4
2. Transmission	14. Interleaver Flag	0. OFF 1. ON
2. Transmission	15. Time Slice Indicator, HP	0. OFF 1. ON
2. Transmission	16. MPE-FEC Flag, HP	0. OFF 1. ON
2. Transmission	17. Cell ID	Range: 0 .. 65535

Config Sub-menu	**Sub-menu**	**Selectable Parameters**
2. Transmission	18. Transmitter ID	Range: 0 .. 100
2. Transmission	19. Local Delay Offset	Range: -500000 .. 500000
3. Input	1. Selected Input	0. A 1. B 2. Auto 3. IP
3. Input	2. IP Input Interface	0. Ethernet 2 1. Ethernet 1
3. Input	3. Input Stream Dst IP	Range: 0.0.0.0 .. 255.255.255.255
3. Input	4. Input Stream Dst Port	Range: 1025 .. 65535
3. Input	5. FEC Mode	0. None 1. Column Only 2. Column+Row
3. Input	6. IP Input Buffer Depth	Range: 0 .. 500 Packets
4. Output	1. Mute ON/OFF	0. OFF 1. ON
4. Output	2. Bandwidth	0. 5 MHz
4. Output	3. Spectrum Inversion	0. OFF 1. ON
4. Output	4. Window Enable	0. OFF 1. ON
4. Output	5. External Amplifier Gain	Range: 0 .. 6553.5 dB
4. Output	6. RF Output Frequency	Range: 1670000000 .. 1675000000 Hz
4. Output	7. RF Power Level	Range: -10.0 .. 0.0 dBm
4. Output	8. RF Channel Grid	0. DVBT UHF 8M 474-858 MHz 1. User Defined
4. Output	9. Base Frequency	Range: 1670000000 .. 1675000000 Hz
4. Output	10. Base Channel	Range: 1 .. 200
5. RF Channels		1. CH 21 (474 MHz) to 49. CH 69 (858 MHz)
6. User RF Channels		User Defined
7. Non-Linear Pre-corrector	1. NLP State	0. OFF 1. ON
7. Non-Linear Pre-corrector	2. NLP Profile	0 .. 9
8. Linear Pre-corrector	1. LP State	0. OFF 1. ON

Config Sub-menu	**Sub-menu**	**Selectable Parameters**
8. Linear Pre-corrector	2. LP Profile	0 .. 9
9. HPA Control	1. RF Output Power Level	Range: 46.00 .. 56.00 dBm
9. HPA Control	2. Transmitter Operating Mode	0. Standby 1. Broadcast 2. Manual
10. GPS	1. Max GPS Holdover Time, min	Range: 0 .. 65535
10. GPS	2. Update System Clock from GPS	0. No 1. Yes
10. GPS	3. System Timezone	0. n11 12. 1 1. n10 13. 2 2. n9 14. 3 3. n8 15. 4 4. n7 16. 5 5. n6 17. 6 6. n5 18. 7 7. n4 19. 8 8. n3 20. 9 9. n2 21.10 10. n1 22.11 11. 0
11. Site	1. System Description	up to 35 characters
11. Site	2. Contact Information	up to 35 characters
11. Site	3. System Location	up to 35 characters
11. Site	4. Site Address Line 1	up to 35 characters
11. Site	5. Site Address Line 2	up to 35 characters
11. Site	6. Site Address Line 3	up to 35 characters
11. Site	7. Site Address Line 4	up to 35 characters
11. Site	8. Site Notes	up to 35 characters

Table 7-3 Config Sub-menu

7.5.3.3 Alarms Sub-menu

```
Alarms:
1. Alarm Properties
2. External Voltage Alarm Setting
3. Log Management
r. Return to previous menu
e. Exit CLI
Enter selection :
```

Alarms Sub-menu	Sub-menu	Selectable Parameters
1. Alarm Properties	1. Alarm Index	See Table 10-1
1. Alarm Properties	2. Alarm Enabled	0. OFF 1. ON
1. Alarm Properties	3. Trap Notification on Alarm	0. OFF 1. ON
1. Alarm Properties	4. Integration Time	Range: 0 .. 360
1. Alarm Properties	5. Mute Output on Alarm	0. OFF 1. ON
1. Alarm Properties	6. Relay on Alarm	0. OFF 1. ON
1. Alarm Properties	7. Second Relay on Alarm	0. OFF 1. ON
1. Alarm Properties	8. Alarm Severity Level	0. Critical 1. Warning 2. Informative 3. Cleared
2. External Voltage Alarm Setting	1. Voltage1 Trigger Polarity	0. < 1. >
2. External Voltage Alarm Setting	2. Voltage1 Trigger Threshold	Range: 0 .. 10
2. External Voltage Alarm Setting	3. Voltage2 Trigger Polarity	0. < 1. >
2. External Voltage Alarm Setting	4. Voltage2 Trigger Threshold	Range: 0 .. 10
2. External Voltage Alarm Setting	5. Voltage3 Trigger Polarity	0. < 1. >
2. External Voltage Alarm Setting	6. Voltage3 Trigger Threshold	Range: 0 .. 10
2. External Voltage Alarm Setting	7. Voltage4 Trigger Polarity	0. < 1. >
2. External Voltage Alarm Setting	8. Voltage4 Trigger Threshold	Range: 0 .. 10
2. External Voltage Alarm Setting	9. Voltage5 Trigger Polarity	0. < 1. >
2. External Voltage Alarm Setting	10. Voltage5 Trigger Threshold	Range: 0 .. 10
2. External Voltage Alarm Setting	11. Voltage6 Trigger Polarity	0. < 1. >

2. External Voltage Alarm Setting	12. Voltage6 Trigger Threshold	Range: 0 .. 10
2. External Voltage Alarm Setting	13. Voltage7 Trigger Polarity	0. < 1. >
2. External Voltage Alarm Setting	14. Voltage7 Trigger Threshold	Range: 0 .. 10
2. External Voltage Alarm Setting	15. Voltage8 Trigger Polarity	0. < 1. >
2. External Voltage Alarm Setting	16. Voltage8 Trigger Threshold	Range: 0 .. 10
3. Log Management	1. Clear Alarm Log	0. No 1. Yes
3. Log Management	2. Logs Display in Reverse	0. No 1. Yes
3. Log Management	3. Log to Display	0. Transient Log 1. Alarm Log

Table 7-4 Alarms Sub-menu

7.5.3.4 NMS Users Sub-menu

```
NMS Users:
1. User Properties
r. Return to previous menu
e. Exit CLI
Enter selection :
```

NMS Users Sub-menu	Sub-menu	Selectable Parameters
1. User Properties	1. User Index	
1. User Properties	2.Username	up to 35 characters
1. User Properties	3. Authorization Type	0. Disabled 1. MD5 2. SHA
1. User Properties	4. Auth. Password	up to 35 characters
1. User Properties	5. Priv Type	0. Disabled 1. DES 2. AES
1. User Properties	6. Priv. Password	up to 35 characters

Table 7-5 NMS Users Sub-menu

7.5.3.5 System Parameters Sub-menu

```
System Parameters:
1. Identification
2. Access Control
3. Network Parameters
4. SNMP Parameters
5. System Time
6. Heartbeat Time
7. System reset
r. Return to previous menu
e. Exit CLI
Enter selection:
```

System Parameters Sub-menu	Sub-menu	Selectable Parameters
1. Identification	1. Site Name	up to 35 characters
1. Identification	2. Site ID	up to 15 characters
2. Access Control	Web Password	up to 14 characters
3. Network Parameters	1. Management IP	Range: 0.0.0.0 .. 255.255.255.255
3. Network Parameters	2. Management Netmask	Range: 0.0.0.0 .. 255.255.255.255
3. Network Parameters	3. Default Gateway	Range: 0.0.0.0 .. 255.255.255.255
3. Network Parameters	4. Redundant Peer IP	Range: 0.0.0.0 .. 255.255.255.255
3. Network Parameters	5. Second Etherport IP	Range: 0.0.0.0 .. 255.255.255.255
3. Network Parameters	6. Second Etherport Netmask	Range: 0.0.0.0 .. 255.255.255.255
4. SNMP Parameters	1. SNMP Traps On/Off	0. OFF 1. ON
4. SNMP Parameters	2. SNMP Trap Server IP Address	Range: 0.0.0.0 .. 255.255.255.255
5. System Time	1. Year	Range: 1900 .. 3000
5. System Time	2. Month	Range: 1 .. 12
5. System Time	3. Day	Range: 1 .. 31
5. System Time	4. Hour	Range: 0 .. 23
5. System Time	5. Minute	Range: 0 .. 59
5. System Time	6. Second	Range: 0 .. 59
6. Heartbeat Time	1. Heartbeat Hour Start	Range: 0 .. 24
6. Heartbeat Time	2. Heartbeat Minute Start	Range: 0 .. 60
6. Heartbeat Time	3. Heartbeat Pace	Range: 0 .. 99999999
7. System Reset	Modulator Reset	0. OFF 1. ON

Table 7-6 System Parameters Sub-menu

7.5.3.6 Display Alarms Sub-menu

This Sub-menu simply displays any active alarms. See below as an example:

```
Enter Selection : 6Alarms:
 No Input Data
 HPA Controller Comm Err
```

7.5.3.7 Firmware Upgrade

This Sub-menu allows the user to enter a URL address from which the transmitter can obtain a firmware upgrade.

```
Enter URL:
```

8 Modulator Front Panel Interface

8.1 Introduction

The front panel system includes both Status Displays where important parameters are prominently displayed and the four-level Config Menu system where system parameters can be entered. A picture of the modulator front panel is shown below.

Figure 8-1 Modulator Front Panel

The modulator front panel offers all the same access as the Web GUI (normal access level only) with the obvious exception of files download, file listing and system upgrade utilities of the Web GUI (Sections 6.7.9 to 6.7.11). Refer to the Web-GUI section of the manual for a more detailed description of all parameters.

8.2 Controls

8.2.1 Navigation

Navigation between menu items makes use of the five buttons on the front panel display.

◄ (left)
► (right)
▲ (up)
▼ (down)
EXECUTE

The ▲ button is used to scroll through the different status display windows, exit the current menu and enter a higher-level menu, increase alpha-numerical parameters or abort confirmation of a change

The ▼ button is used to scroll through the different status display windows, exit the current menu and enter a sub-menu, decrease alpha-numerical parameters or abort confirmation of a change

The ◄ and ► buttons are used to scroll horizontally through the Config menus, the parameter listings and the parameter characters, in the case of editable parameters. They are also used to increase and decrease % parameters.

The EXECUTE button is used to enter the configuration menu system (GENERIC or SPECIFIC) from a status display window, to enter a sub-menu and confirm changes made to configurable parameters.

Examples A and B display the menu system top level. The character string "DVB-TH L-Band TX" is always positioned in the top left corner of the display. The available menu items are shown on the second line and may be selected using the ◄ and ► buttons.

The "current" menu item is always shown in capitalized format with "< >" brackets. If there are more menu items than the LCD can display, three (3) dots are shown in the lower right position – see Example A.

Example A

```
----------------------------------------
DVB-TH L-Band TX
<CONFIG> Alarms  NMS Users  System Pa...
----------------------------------------
```

If the user presses the ▸ button, the display will shift to the left and the next menu item will be selected – see Example B.

Example B

```
----------------------------------------
DVB-TH L-Band TX
<ALARMS> NMS Users  System Parameters...
----------------------------------------
```

If the user presses the ▾ button in Example A, the highlighted menu item will be selected and the user will enter the sub-menu – see Example C.

The character string "DVB-TH L-Band TX" is always positioned in the top left corner of the display, followed by the menu name. The available menu items are shown on the second line and may be selected using the ◂ and ▸ buttons. The "current" menu item is always shown in capitalized format with "< >" brackets. If there are more menu options than the LCD can display, three (3) dots are shown in the lower right position.

Example C

```
----------------------------------------
DVB-TH L-Band TX, Config
<MODULATOR MODE> Transmission  Input ...
----------------------------------------
```

The lowest level of any particular "branch" produces a window that displays the available parameter list; the selected value is shown in square brackets – see Example D.

The parameter name is shown in the top left corner of the display, followed by the "current" value. The available menu items are shown on the second line and may be selected using the ◂ and ▸ buttons. The "current" menu item is always shown in capitalized format with "[ ]" brackets.

Example D

```
----------------------------------------
 Spectrum Inversion = OFF
[OFF]  ON
----------------------------------------
```

If an alpha numeric parameter is selected, the first digit of the "current" parameter flashes and a cursor shows the position of the digit which can be edited (in this case, "a" from "admin") – see Example E.

Example E

```
--------------------------------------
 Web Password = admin
admin
--------------------------------------
```

8.2.2 Configuring Parameters

8.2.2.1 Selection of Enumerated Values

```
--------------------------------------
 Modulator Mode = Normal
[Normal]  CW  Test 1(Carriers Removal...
--------------------------------------
```

(the square brackets flash at approx. 2 Hz)

The current value is shown as the first item in the list, in square brackets.

Navigating:

- ◂ Scrolls the previous item into the "current position".
- ▸ Scrolls the next item into the "current position".
- ▾ No effect.
- ▴ Aborts editing and returns to the previous menu level.

<EXECUTE> Saves the "current" item as the active parameter and returns to the previous menu level.

8.2.2.2 Editing a Numeric Value

```
--------------------------------------
 RF Output Frequency = 1670000000
1670000000      [167000000..1675000000]
--------------------------------------
```

(the character **0** alternates between '0' and '_' at approximately 2 Hz)

The configurable value that appears on the display is always the current value and the cursor is initially positioned on the last digit. The valid range is displayed in square brackets on the right hand side of the bottom line.

Navigating:

- ◂ Positions the cursor on the previous character or moves to the last character when the cursor is on the first character.
- ▸ Positions the cursor on the next character or moves to the first character when the cursor is on the last character.
- ▾ Decrements the value of the highlighted character. If the character value is '0', the ▾ button will change the value to '9'. If the parameter can be set to a negative number, the ▾ button will toggle between a negative sign (-) and a blank (positive) when the first character is highlighted.
- ▴ Increments the value of the highlighted character. If the character value is '9', the ▴ button will change the value to '0'. If the parameter can be set to a negative number, the ▴ button will toggle between a negative sign (-) and a blank (positive) when the first character is highlighted.

EXECUTE Completes editing.

Note 1: If a configurable numeric item has a minimum and/or maximum value, the user cannot modify the value below the minimum or above the maximum.

Note 2: Incrementing one character above '9' will change this character to '0' and will increment the next character to the left by one ("carry-on digit"). Similarly, decrementing one character below '0' will change this character to '9' and decrement the next character to the left by one.

8.2.2.3 Editing a Text Value

```
----------------------------------------
 Web Password
admin
----------------------------------------
```

(the character 'a' alternates between 'a' and '_' at approximately 2 Hz)

The current text string is shown as the editable value. The characters A..Z, a..z, 0..9, -(minus), _(underscore) and " "(space) are all supported.

Navigating:

◂ Positions cursor on previous character.

▸ Positions cursor on next character.

▾ Decrements the value of the highlighted character in a circular manner.

▴ Increments the value of the highlighted character in a circular manner.

EXECUTE Completes editing.

8.2.2.4 Saving Changes

To save changes to a menu item press the EXECUTE button. The following display will appear:

```
----------------------------------------
Save = EXECUTE, Cancel = other keys

----------------------------------------
```

Press the EXECUTE button again to save the change or any other button to cancel. After a short period of time with no input, the operation is cancelled automatically and the display reverts to the menu directly above the menu just visited.

8.3 Modulator Boot-up

The user will see the following displays in sequence.

```
---------------------------------------
Front  Panel  v1.22  Loading......
>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
---------------------------------------


---------------------------------------
DVB-TH/SH 5000 Modulator

---------------------------------------


---------------------------------------
CL1TC-4 Transmitter

---------------------------------------
```

When boot-up is complete the user will see the default status display which is screen b of the Status display set:

```
---------------------------------------
Input  HP Input: Auto  Status: Locked
                                     b
---------------------------------------
```

Note the flashing letter b that appears in the lower right hand corner. If there is no activity for a period of several minutes the modulator will automatically revert to this status display.

8.4 Status Displays

There are nine main status displays from "a" to "i". To navigate between status displays, use the up ▲ or down ▼ front panel buttons. The nine main status displays are:

Status Display a - this window displays the following transmission (modulation) settings:

```
---------------------------------------
Transmission  SFN: OFF  IFFT: 8k
Coderate: 1/2   Guard: 1/32   Cons: QPSa
---------------------------------------
```

Status Display b - this window displays the following input interface settings:

```
---------------------------------------
Input  HP Input: Auto  Status: Locked
                                     b
---------------------------------------
```

Status Display c - this window displays the following RF output settings:

```
---------------------------------------
Output  Bandwidth: 5 MHz
Spectrum Inversion: OFF              c
---------------------------------------
```

Status Display d - this window displays the software versions as seen below:

```
----------------------------------------
DVB-TH       FPGA: 5889  CPLD: 40
Kern: 3037   Soft: 2376               d
----------------------------------------
```

Status Display e - this window displays the active alarms as seen below:

```
----------------------------------------
Alarms: 2 alarms
 No Input Data                        e
----------------------------------------
```

If more than one alarm is active, this window will automatically be updated, every few seconds, to display one alarm at a time.

Status Display f - This window displays the following network management settings:

```
----------------------------------------
Management IP: 172.20.33.175
Management Netmask: 255.255.0.0       f
----------------------------------------
```

Status Display g - this window displays the following modulator settings:

```
----------------------------------------
UPConv  RF Lev: 0.0
                                      g
----------------------------------------
```

Status Display h - this window displays the following modulator mode settings:

```
----------------------------------------
Modulator Mode: Normal
Playback File: None                   h
----------------------------------------
```

Status Display i – this window displays the following transmitter RF parameters:

```
----------------------------------------
HPA Forward RF Level: 56.02
Reflected RF Level: 30.80             i
----------------------------------------
```

8.5 Config Menu Displays

From any of the status displays the user can navigate to the Config menu system. From a status screen press the right ▶ button on the front panel. The following display will appear:

```
----------------------------------------
Entering the GENERIC Config. Menu
Press EXECUTE to Continue...
----------------------------------------
```

Press the EXECUTE button on the front panel to enter the Config Menu.

To return to the status display, press the up ▲ button on the front panel interface. You may need to press the up ▲ button multiple times depending on how deep the user is located in the sub-menu chain.

The start point in the Config Menu is:

```
--------------------------------------
DVB-TH L-Band TX
<CONFIG> Alarms  NMS Users  System Pa...
--------------------------------------
```

The full list of the level 1 menu items are:

- Config
- Alarms
- NMS Users
- System Parameters

There are a total of 3 menu levels in the Config Menu chain. Use the left ◄ and right ► buttons to navigate between different sub-menu items. Use the down ▼ button to enter a sub-menu or the up ▲ button to return to a higher level.

8.6 Config Menu Tree

The Config Menu tree is listed below. There are a total of 3 levels. In some cases there is a shortcut to reach a specific menu directly from a specific Status Display by pressing the EXECUTE button. The place where such a shortcut exists is denoted by a bracketed letter (e.g., **[f]**) to represent the Status Display where the shortcut exists.

Note that the Config → Transmission menu has three possible structures. This reflects the fact that the menu is different whether the transmitter is operating in MFN mode, SFN mode or SFN mode with Config From Stream On.

Level 1	**Level 2**	**Level 3**
Config	Modulator Mode	Operating Mode
Config	Transmission **[a]**	**<u>MFN Mode</u>** •SFN •Config From Stream •Fixed Delay •Input_Output Fixed Delay •Hierarchical Mode •IFFT •Coderate •Constellation •Guard Interval •Interleaver Flag •Time Slice Indicator, HP •MPE-FEC Flag, HP •Cell Id **<u>SFN Mode</u>** •SFN •Config From Stream •Fixed Delay •Input_Output Fixed Delay •Hierarchical Mode •IFFT •Coderate

Level 1	Level 2	Level 3
		•Constellation •Guard Interval •Interleaver Flag •Time Slice Indicator, HP •MPE-FEC Flag, HP •Cell Id •Transmitter ID •Local DelayOffset **SFN Mode (Config From Stream On)** •SFN •Config From Stream •Fixed Delay •Input_Output Fixed Delay •MIP Time Offset Function •MIP Frequency Offset Function •MIP Power Function •MIP CellId Function •Hierarchical Mode •Cell Id •Transmitter ID •Local DelayOffset
Config	Input **[b]**	•Selected Input •IP Input Interface •Input Stream Dst IP •Input Stream Dst Port •FEC Mode •IP Input Buffer Depth
Config	Output **[c]**	**MFN Mode** •Mute ON/OFF •Bandwidth •Spectrum Inversion •Window Enable •External Amplifier Gain •RF Output Frequency •RF Power Level •RF Channel Grid •Base Frequency •Base Channel **SFN Mode (Config From Stream On)** •Mute ON/OFF •Spectrum Inversion •Window Enable •External Amplifier Gain •RF Output Frequency •RF Power Level •RF Channel Grid •Base Frequency •Base Channel

Level 1	**Level 2**	**Level 3**
Config	RF Channels	•RF Freq Channel
Config	User RF Channels	•User Frequency Channel
Config	Non-Linear Precorrector	•NLP State •NLP Profile
Config	Linear Precorrector	•LP State •LP Profile
Config	HPA Control	•RF Output Power Level •Transmitter Operating Mode
Config	GPS	•Max GPS Holdover Time, min •Update System Clock From GPS •System Timezone
Config	Site	•System Description •Contact Information •System Location •Site Address Line 1 •Site Address Line 2 •Site Address Line 3 •Site Address Line 4 •Site Notes
Alarms	Alarm Properties	•Alarm Index •Alarm Enabled •Trap Notification on Alarm •Integration Time •Mute on Alarm •Relay on Alarm •Second Relay on Alarm •Alarm Severity Level
Alarms	External Voltage Alarm Setting	•Voltage1 Trigger Polarity •Voltage1 Trigger Threshold •Voltage2 Trigger Polarity •Voltage2 Trigger Threshold •Voltage3 Trigger Polarity •Voltage3 Trigger Threshold •Voltage4 Trigger Polarity •Voltage4 Trigger Threshold •Voltage5 Trigger Polarity •Voltage5 Trigger Threshold •Voltage6 Trigger Polarity •Voltage6 Trigger Threshold •Voltage7 Trigger Polarity •Voltage7 Trigger Threshold •Voltage8 Trigger Polarity •Voltage8 Trigger Threshold
Alarms	Log Management **[e]**	•Clear Alarm Log •Logs Display in Reverse •Log To Display
NMS Users	User Properties	•User Index •Username •Authorization Type •Auth. Password •Priv Type •Priv. Password

Level 1	Level 2	Level 3
System Parameters	Identification	•Site Name •Site ID
System Parameters	Access Control	•Web Password
System Parameters	Network Parameters **[f]**	•Management IP •Management Netmask •Default Gateway •Redundant Peer IP •Second Etherport IP •Second Etherport Netmask
System Parameters	SNMP Parameters	•SNMP Traps On/Off •SNMP Notification Type •SNMP Trap Server IP Address
System Parameters	System Time	•Year •Month •Day •Hour •Minute •Second
System Parameters	Heartbeat Time	•Heartbeat Hour Start •Heartbeat Minute Start •Heartbeat Pace
System Parameters	System Reset	•Modulator Reset
System Parameters	User Configuration	•RS485 M2M Port

Table 8-1 Front Panel Menu Tree

8.7 Config

```
---------------------------------------
DVB-TH L-Band TX, Config
<MODULATOR MODE> Transmission  Input ...
---------------------------------------
```

The additional menu items for this sub-menu are:

- Modulator Mode
- Transmission
- Input
- Output
- RF Channel
- User RF Channels
- Non-Linear Precorrector
- Linear Precorrector
- HPA Control
- GPS
- Site

8.7.1 Config → Modulator Mode

```
---------------------------------------
Config, Modulator Mode
<MODULATOR MODE>
---------------------------------------
```

The options are:

Item	Option
Modulator Mode	Normal, CW, Test1 (Carriers Removal), Record , Playback

8.7.2 Config →Transmission

```
---------------------------------------
Config, Transmission
<SFN> Config From Stream  Fixed Delay...
---------------------------------------
```

There are three possibilities for this menu depending on if the transmitter is currently operating in MFN mode, SFN mode or SFN mode with Config From Stream On.

Shortcut: To directly reach this menu Press EXECUTE from Status Display **a**

The options are:

MFN Mode

Item	Option
SFN	OFF, ON
Config From Stream	ON, OFF
Fixed Delay	OFF, ON
Input_Output Fixed Delay	Range: 13000 μsec .. 1 second
Hierarchical Mode	None, aEq1, aEq2, aEq4
IFFT	2k, 8k, 4k
Coderate	1/2, 2/3, 3/4, 5/6, 7/8
Constellation	QPSK, 16 QAM, 64 QAM
Guard Interval	1/32, 1/16, 1/8, 1/4
Interleaver Flag	OFF, ON
Time Slice Indicator, HP	OFF, ON
MPE-FEC Flag, HP	OFF, ON
Cell ID	Range: 0 .. 65535

SFN Mode

Item	Option
SFN	OFF, ON
Config From Stream	ON, OFF
Fixed Delay	OFF, ON
Input_Output Fixed Delay	Range: 13000 μsec .. 1 second
Hierarchical Mode	None, aEq1, aEq2, aEq4
IFFT	2k, 8k, 4k
Coderate	1/2, 2/3, 3/4, 5/6, 7/8
Constellation	QPSK, 16 QAM, 64 QAM
Guard Interval	1/32, 1/16, 1/8, 1/4
Interleaver Flag	OFF, ON
Time Slice Indicator, HP	OFF, ON
MPE-FEC Flag, HP	OFF, ON
Cell ID	Range: 0 .. 65535
Transmitter ID	Range: 0 .. 100
Local Delay Offset	Range: -500000.0 .. +500000.0 μsec

SFN Mode (with Config From Stream On)

Item	Option
SFN	OFF, ON
Config From Stream	ON, OFF
Fixed Delay	OFF, ON
Input_Output Fixed Delay	Range: 13000 μsec .. 1 second
MIP Time Offset Function	OFF, ON
MIP Frequency Offset Function	OFF, ON
MIP Power Function	OFF, ON
MIP Cell ID Function	OFF, ON
Cell ID	Range: 0 .. 65535
Transmitter ID	Range: 0 .. 100
Local Delay Offset	Range: -500000.0 .. +500000.0 μsec

8.7.3 Config →Input

```
---------------------------------------
Config, Input
<SELECTED INPUT> IP Input Interface  ...
---------------------------------------
```

Shortcut: To directly reach this menu Press EXECUTE from Status Display **b**

The options are:

Item	Selection
Selected Input	A, B, Auto, IP
IP Input Interface	Ethernet 1, Ethernet 2
Input Stream Dst IP	Standard IP address: 0.0.0.0..255.255.255.255
Input Stream Dst Port	Range: 1025 .. 65535
FEC Mode	None, Column Only, Column + Row
IP Input Buffer Depth	Range: 0 .. 500 Packets

8.7.4 Config →Output

```
---------------------------------------
Config, Output
<MUTE ON/OFF> Bandwidth  Spectrum Inv...
---------------------------------------
```

There are two possibilities for this menu depending on if the transmitter is currently operating in MFN mode or SFN mode with Config From Stream On.

Shortcut: To directly reach this menu Press EXECUTE from Status Display **c**

The options are:

MFN Mode

Item	Selection
Mute ON/OFF	OFF, ON
Bandwidth	5 MHz
Spectrum Inversion	OFF, ON
Window Enable	OFF, ON
External Amplifier Gain	Range: 0.0.. 6553.5 dB
RF Output Frequency	Range: 167000000 .. 167500000 Hz
RF Power Level	Range: -10.0 .. 0.0 dBm
RF Channel Grid	DVBT UHF 8M 474-858 MHz, User Defined
Base Frequency	Range: 167000000 .. 167500000 Hz
Base Channel	Range: 1 .. 200

SFN Mode (with Config From Stream On)

Item	Selection
Mute ON/OFF	OFF, ON
Spectrum Inversion	OFF, ON
Window Enable	OFF, ON
External Amplifier Gain	Range: 0.0.. 6553.5 dB
RF Output Frequency	Range: 167000000 .. 167500000 Hz
RF Power Level	Range: -10.0 .. 0.0 dBm
RF Channel Grid	DVBT UHF 8M 474-858 MHz, User Defined
Base Frequency	Range: 167000000 .. 167500000 Hz
Base Channel	Range: 1 .. 200

8.7.5 Config →RF Channels

```
---------------------------------------
Config, RF Channels
<RF FREQ CHANNEL>
---------------------------------------
```

Note: RF Channels is not used for this application and should not be modified by the user.

8.7.6 Config →User RF Channels

```
---------------------------------------
Config, User RF Channels
<USER FREQUENCY CHANNELS>
---------------------------------------
```

Note: User RF Channels is not used for this application and should not be modified by the user.

8.7.7 Config →Non-Linear Precorrector

```
---------------------------------------
Config, Non-Linear Precorrector
<NLP STATE> NLP Profile
---------------------------------------
```

The options are:

Item	Selection
NLP State	OFF, ON
NLP Profile	A selection of different NLP profile files

8.7.8 Config →Linear Precorrector

```
--------------------------------------
Config, Linear Precorrector
<LP STATE> LP Profile
--------------------------------------
```

The options are:

Item	Selection
LP State	OFF, ON
LP Profile	A selection of different LP profile files

8.7.9 Config →HPA Control

```
--------------------------------------
Config, HPA Control
<RF OUTPUT POWER LEVEL> Transmitter O...
--------------------------------------
```

The options are:

Item	Selection
RF Output Power Level	Range: 46.00 .. 56.00 dBm
Transmitter Operating Mode	Standby, Broadcast, Manual

8.7.10Config → GPS

```
--------------------------------------
Config, GPS
<MAX GPS HOLDOVER TIME, MIN> Update S...
--------------------------------------
```

The options are:

Item	Option
Max GPS Holdover Time	Range: 0 .. 65535 min
Update System Clock From GPS	No, Yes
System Timezone	-11 to 11 hours

8.7.11Config → Site

```
---------------------------------------
Config, Site
<SYSTEM DESCRIPTION> Contact Informat...
---------------------------------------
```

The options are:

Item	Option
System Description	up to 35 alphanumeric characters
Contact Information	up to 35 alphanumeric characters
System Location	up to 35 alphanumeric characters
Site Address Line 1	up to 35 alphanumeric characters
Site Address Line 2	up to 35 alphanumeric characters
Site Address Line 3	up to 35 alphanumeric characters
Site Address Line 4	up to 35 alphanumeric characters
Site Notes	up to 35 alphanumeric characters

8.8 Alarms

```
---------------------------------------
DVB-TH L-Band TX, Alarms
<ALARM PROPERTIES> External Voltage A...
---------------------------------------
```

The additional menu items for this sub-menu are:

- Alarm Properties
- External Voltage Alarm Setting
- Log Management

8.8.1 Alarms → Alarm Properties

```
---------------------------------------
Alarms, Alarm Properties
<ALARM INDEX> Alarm Enabled  Trap Not...
---------------------------------------
```

The options are:

Item	Option
Alarm Index	See Table 10-1
Alarm Enabled	OFF, ON
Trap Notification on Alarm	OFF, ON
Integration Time	0 to 360 sec
Mute on Alarm	OFF, ON
Relay on Alarm	OFF, ON
Second Relay on Alarm	OFF, ON
Alarm Severity Level	Critical, Warning, Informative, Cleared

To select a specific alarm to set its properties in other menus the user must first set the Alarm Index value in the Alarm Index sub-menu screen. Upon entering the Alarm Index menu the user will see:

```
--------------------------------------
 Alarm Index = 0
[ Modulator Restarted]   Heartbeat   ...
--------------------------------------
```

The Alarm Index menu lists all 66 alarms available in the system, with index values from 0 to 65. The full list of alarms available can be found in Table 10-1.

To select a specific alarm to set its properties, scroll through this list using the left ◄ and right ► button until the desired alarm is enclosed in square brackets and press EXECUTE. The Alarm Index value will be updated to match this alarm. For example, Modulator Restarted is Alarm Index 0, Heartbeat is Alarm Index 1, and so on. In the other menus the name of the alarm being configured will be displayed. For example, if Heartbeat is selected and the user navigates to the Alarm Severity Level menu the following will be displayed:

```
--------------------------------------
 Heartbeat Alarm Severity Level = Inform
[Informative]  Critical  Warning
--------------------------------------
```

8.8.2 Config ➔External Voltage Alarm Setting

```
--------------------------------------
Alarms, External Voltage Alarm Setting
<VOLTAGE1 TRIGGER POLARITY> Voltage1 ...
--------------------------------------
```

For Voltage1 through Voltage8 the user can set the following:

Item	**Selection**
Voltage Trigger Polarity	<, >
Voltage Trigger Threshold	Range: 0.00 .. 10.00

8.8.3 Alarms ➔ Log Management

```
--------------------------------------
Alarms, Log Management
<CLEAR ALARM LOG> Logs Display In Rev...
--------------------------------------
```

Shortcut: To directly reach this menu Press EXECUTE from Status Display **e.**

The options are:

Item	**Option**
Clear Alarm Log	No, Yes
Logs Display in Reverse	No, Yes
Log To Display	Transient Log, Alarm Log

8.9 NMS Users

```
---------------------------------------
DVB-TH L-Band TX, NMS Users
<USER PROPERTIES>
---------------------------------------
```

The additional menu items for this sub-menu are:

- User Properties

8.9.1 NMS Users → User Properties

```
---------------------------------------
NMS Users, User Properties
<USERS INDEX> Username  Authorization...
---------------------------------------
```

The additional menu items for this sub-menu are:

Item	**Option**
User Index	user0
Username	up to 35 alphanumeric characters
Authorization Type	SHA, Disabled, MD5
Auth. Password	up to 35 alphanumeric characters
Priv Type	DES, AES, Disabled
Priv. Password	up to 35 alphanumeric characters

8.10 System Parameters

```
---------------------------------------
DVB-TH L-Band TX, System Parameters
<IDENTIFICATION> Access Control  Netw...
---------------------------------------
```

The additional menu items for this sub-menu are:

- Identification
- Access Control
- Network Parameters
- SNMP Parameters
- System Time
- Heartbeat Time
- System Reset
- User Configuration

8.10.1 System Parameters → Identification

```
--------------------------------------
System Parameters, Identification
<SITE NAME> Site ID
--------------------------------------
```

The additional menu items for this sub-menu are:

Item	Option
Site Name	up to 35 alphanumeric characters
Site ID	up to 15 alphanumeric characters

8.10.2 System Parameters → Access Control

```
--------------------------------------
System Parameters, Access Control
<WEB PASSWORD>
--------------------------------------
```

The additional menu items for this sub-menu are:

Item	Option
Web Password	up to 14 alphanumeric characters

8.10.3 System Parameters → Network Parameters

```
--------------------------------------
System Parameters, Network Parameters
<MANAGEMENT IP> Management Netmask  D...
--------------------------------------
```

Shortcut: To directly reach this menu Press EXECUTE from Status Display **f.**

The additional menu items for this sub-menu are:

Item	Option
Management IP	Standard IP address e.g., 172.20.25.80
Management Netmask	Standard netmask field e.g., 255.255.0.0
Default Gateway	Standard IP address e.g., 172.20.1.1
Redundant Peer IP	Standard IP address e.g., 172.21.25.80 Not used for this application and should not be modified by the user.
Second Etherport IP	Standard IP address e.g., 172.20.25.81 Not used for this application and should not be modified by the user.
Second Etherport Netmask	Standard netmask field e.g., 255.255.0.0 Not used for this application and should not be modified by the user.

Note: The modulator must be reset following a change to any of the Network Parameters.

8.10.4 System Parameters → SNMP Parameters

```
--------------------------------------
System Parameters, SNMP Parameters
<SNMP TRAPS ON/OFF> SNMP Trap Server ...
--------------------------------------
```

The additional menu items for this sub-menu are:

Item	**Option**
SNMP Traps On/Off	OFF, ON
SNMP Notification Type	Trap, Inform
SNMP Trap Server IP Address	Standard IP address, e.g., 172.20.1.145

8.10.5 System Parameters → System Time

```
--------------------------------------
System Parameters, System Time
<YEAR> Month  Day  Hour  Minute  Seco...
--------------------------------------
```

The additional menu items for this sub-menu are:

Item	**Option**
Year	Range: 1900 .. 3000
Month	Range: 1 .. 12
Day	Range: 1 .. 31
Hour	Range: 0 .. 23
Minute	Range: 0 .. 59
Second	Range: 0 .. 59

Note: The modulator must be reset following a change to any of the System Time parameters.

8.10.6 System Parameters → Heartbeat Time

```
--------------------------------------
System Parameters, Heartbeat Time
<HEARTBEAT PACE>
--------------------------------------
```

The additional menu items for this sub-menu are:

Item	**Option**
Heartbeat Hour Start	Range: 0 .. 24
Heartbeat Minute Start	Range: 0 .. 60
Heartbeat Pace	0 to 2880 min

8.10.7 System Parameters → System Reset

```
---------------------------------------
System Parameters, System Reset
<MODULATOR RESET>
---------------------------------------
```

The additional menu items for this sub-menu are:

Item	Option
Modulator Reset	OFF, ON

8.10.8 System Parameters → User Configuration

```
---------------------------------------
System Parameters, System Reset
<MODULATOR RESET>
---------------------------------------
```

Note: User Configuration is for factory configuration only and should not be modified by the user.

8.11 Config Menu Shortcuts

Config → Transmission
 	
`----------`
`Config, Transmission`
`<SFN> Config From Stream  Fixed Delay...`
`----------`
	Press EXECUTE from Status Display **a**

Config → Input
 	
`----------`
`Config, Input`
`<SELECTED INPUT> IP Input Interface  ...`
`----------`
	Press EXECUTE from Status Display **b**

Config → Output
 	
`----------`
`Config, Output`
`<BANDWIDTH> Spectrum Inversion  Windo...`
`----------`
	Press EXECUTE from Status Display **c**

Alarms → Log Management
 	
`----------`
`Alarms, Log Management`
`<CLEAR ALARM LOG> Logs Display In Rev...`
`----------`
	Press EXECUTE from Status Display **e**

System Parameters → Network Parameters
 	
`----------`
`System Parameters, Network Parameters`
`<MANAGEMENT IP> Management Netmask  D...`
`----------`
	Press EXECUTE from Status Display **f**

9 SNMP

The transmitter supports a SNMP interface for remote management of the transmitter via a SNMP Network Management System (NMS). Refer to sections 6.7.4 and 6.6 as to how to use the web interface to configure the SNMP interface and set up a NMS user account.

Once the SNMP interface is established it is possible to use standard SNMP Network Managers (e.g., SNMPc, HP OpenView etc.) or a custom SNMP Network Manager for SNMP access. The required Management Information Base (MIB) file for the transmitter SNMP interface is included on the same CD delivered with the unit or is available upon request. SNMP Traps can be emitted for each of the possible alarms in the transmitter system. The next section details the alarm system for the transmitter.

The SNMP parameters list is nearly identical to those used in the Web GUI, CLI and Front panel interfaces. The exceptions are the controls for creating a NMS User account and the management of transmitter configuration files for backup or software upgrades. This set of functions is purely local to each transmitter and is not suitable for SNMP global access. Of course, these functions are still accessible for remote access via the system web interface or CLI interface.

Below is the menu tree for the web interface. The items enclosed in a grey box are excluded from the SNMP interface. All other menu items are accessible via SNMP.

Status	**Config**	**Alarms**	**NMS Users**	**System Parameters**
⬇	⬇	⬇	⬇	⬇
Global Status	Modulator Mode	Alarm Properties	User Properties	Identification
GPS Status	Transmission	External Voltage Alarm Setting		Access Control
HPA	Input	Log Management		Network Parameters
	Output	Alarm Log		SNMP Parameters
	RF Channels			System Time
	User RF Channels			Heartbeat Time
	Non-linear Pre-corrector			System Reset
	Linear Pre-corrector			Download Config Files(s)
	HPA Control			Upgrade and Files Upload
	GPS			List Uploaded Files
	Site			

Table 9-1 SNMP Menu Structure

10 Alarms

10.1 Alarm List

This section lists all system alarms available for the CL1TC-4 transmitter. Each alarm is described along with associated events and triggering conditions. The complete set of 66 alarms is listed below:

0. Modulator Restarted	33. External Voltage 8
1. Heartbeat	34. UP Converter Communication Error
2. Exciter Temperature Fault	35. UP Converter Unlock
3. GPS Antenna Undercurrent	36. Up Converter Level Set Failure
4. GPS Antenna Overcurrent	37. HPA Controller Comm Err
5. GPS Quality Low	38. Pre-Driver Current Fault
6. GPS Comm Error	39. Driver Current Fault
7. No Input Data	40. Power Module 1 Current Fault
8. LP No Input Data	41. Power Module 2 Current Fault
9. 10 MHz Reference Loss	42. Power Module 3 Current Fault
10. 1PPS Reference Loss	43. Power Module 4 Current Fault
11. Mega Frame Loss	44. Power Module 5 Current Fault
12. LP Mega Frame Loss	45. Power Module 6 Current Fault
13. HP Data Too High	46. Temperature Sensor 1 Fault
14. LP Data Too High	47. Temperature Sensor 2 Fault
15. Bandwidth Not Supported	48. Temperature Sensor 3 Fault
16. Input Bitrate Is Out Of Limit	49. HPA Input Warning
17. Output bitrate is out of limit	50. HPA Input Err
18. Hardware Muted Output	51. HPA Forward Power Warning
19. HP LP Mega Frame Not Match	52. HPA Forward Power Err
20. IP Input Fifo Overflow	53. HPA Reflected Power Err
21. IP Input Payload Error	54. HPA Failure
22. IP Input Column Fec Error	55. HPA Controller Error Shutdown
23. IP Input Row Fec Error	56. RF Switch Fault
24. IP Input Fifo Underrun	57. RF Interlock Fault
25. Channel Sync Loss Happened	58. Power Supply 1 Fault
26. External Voltage 1	59. Power Supply 2 Fault
27. External Voltage 2	60. HPA Pallet Current Misbalance Fault
28. External Voltage 3	61. HPA Pallet Current Misbalance Warning
29. External Voltage 4	62. Door Opened
30. External Voltage 5	63. Fire Alarm
31. External Voltage 6	64. Fan 1 Stalled
32. External Voltage 7	65. Fan 2 Stalled

Table 10-1 System Alarms

NOTE: The operator can decide, using the Web-GUI, whether the transmitter shall or shall not mute itself when an alarm occurs. If the mute option is set, transmission will be restored once the alarm is cleared.

NOTE: A number of HPA alarms automatically shut down the HPA when critical levels are reached. The Web-GUI interface has no control over this action.

10.2 Informative Alarms

Informative alarms are event alarms, they have no alarm Begin/End conditions.

10.2.1 Modulator Restarted

A transient Informative alarm; sent at system boot time.

10.2.2 Heartbeat

A periodic Informative alarm; sent periodically at an interval determined by the system "Heartbeat Pace" parameter. The Heartbeat Pace parameter can be set via SNMP or through the modulator's Web-GUI and Command Line interfaces.

10.3 Temperature Sensor Faults

10.3.1 Temperature Sensor 1 Fault

Temperature Sensor 1 Fault – set when the HPA power module heat sink temperature (at temperature sensor 1 location) reaches 75º C.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached. The Web-GUI interface has no control over this action. Transmission is restored when the alarm is cleared.

10.3.2 Temperature Sensor 2 Fault

Temperature Sensor 2 Fault – set when the HPA power module heat sink temperature (at temperature sensor 2 location) reaches 75º C.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached. The Web-GUI interface has no control over this action. Transmission is restored when the alarm is cleared.

10.3.3 Temperature Sensor 3 Fault

Temperature Sensor 3 Fault – set when the HPA pre-driver heat sink temperature reaches 75º C.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached. The Web-GUI interface has no control over this action. Transmission is restored when the alarm is cleared.

10.3.4 Exciter Temperature Fault

Exciter Temperature Fault – set when the modulator temperature reaches 70º C.

NOTE: The transmitter output is automatically muted as a result. Transmission is restored when the alarm is cleared.

10.4 GPS Alarms

Please note that the internal GPS receiver is located on the modulator board.

10.4.1 GPS Comm Error

GPS Comm Error - set when communications with the GPS receiver has failed.

10.4.2 GPS Antenna Undercurrent

GPS Antenna Undercurrent – set when the antenna current value is low (antenna open).

10.4.3 GPS Antenna Overcurrent

GPS Antenna Overcurrent – set when the antenna current value is high (antenna short).

10.4.4 GPS Quality Low

GPS Quality Low – set by the internal GPS when the quality of the received GPS signals fall below a minimum reception level or the number of available satellite is too low. The event that contributes to a GPS Quality Low alarm is:

- PLL Status Unlocked

But, the GPS Quality Low alarm is only triggered when the GPS Max Holdover Time expires. Once a PLL Status Unlocked event occurs, the GPS reference signals will be considered to be in "Holdover" mode and the Holdover time counter begins. Once the Max Holdover Time is exceeded the system controller will declare a GPS Quality Low alarm.

A PLL (Phase Locked Loop) Status Unlocked event can be the result of an antenna under-current (antenna open) or antenna over-current (short), a poor GPS 3D Fix (minimum requirement is 4 satellites). In general, conditions that result in a poor GPS signal quality.

Note: The GPS alarm is set at the system start-up and will be reset when the GPS receiver obtains a 3D fix (4 satellites tracked).

Note: The GPS PLL Status and 3D Fix Status can be viewed from the Web-GUI interface; from the Status drop down menu select GPS Status.

Note: It is recommended that the user set the modulator to mute on this alarm in SFN or MFN mode.

10.5 Modulator Alarms

Also see GPS alarms for the internal GPS. For the modulator temperature alarm see section 10.3.

10.5.1 10 MHz Reference Loss

10 MHz Reference Loss - Loss of 10 MHz Reference from GPS.

This alarm is only raised if the 10 MHz reference is completely lost which is more likely to occur if there is a hardware failure. Even when the GPS is operating in holdover it still transmits a 10 MHz signal, albeit the 10 MHz signal is no longer locked to the satellite master reference.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.2 1PPS Reference Loss

1PPS Reference Loss - Loss of One Pulse-per-second signal from GPS.

This alarm is only raised if the 1PPS reference is completely lost which is more likely to occur if there is a hardware failure. Even when the GPS is operating in holdover it still transmits a 1PPS signal, albeit the 1PPS signal is no longer locked to the satellite master reference.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.3 Channel Sync Loss Happened

Channel Synch Loss Happened - set when the modulator cannot synchronize to the input DVB-ASI transport stream.

10.5.4 No Input Data

No Input Data - set when the modulator has no input data in non-hierarchical mode, or when the high priority input has no data in hierarchical mode.

10.5.5 LP No Input Data

LP No Input Data - set when the modulator low priority input has no data in hierarchical mode.

10.5.6 Mega Frame Loss

Mega Frame Loss - set when the modulator cannot detect valid mega frames in the input stream.

MIP packets are used to define the mega frame structure for DVB-T/H and the alarm is raised when MIP packets are not detected in the input stream or are invalid.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.7 HP LP Mega Frame Not Matched

HP LP Mega Frame Not Match - set when the Mega Frame in the high priority stream does not match with the Mega Frame in the low priority stream.

Note: Alarm is valid in hierarchical mode, is only reported in SNF mode and is factory configured to mute the modulator.

10.5.8 LP Mega Frame Loss

LP Mega Frame Loss - set when the modulator cannot detect valid mega frames in the low priority input stream.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.9 HP Data Too High

HP Data Too High - set when the high priority input bit rate is too high.

This alarm is raised set when the high priority input bit rate is too high and the internal input FIFO buffer is almost full. The buffer is capable of storing about 2 seconds of stream data.

10.5.10 LP Data Too High

LP Data Too High - set when the low priority input bit rate is too high.

10.5.11 Input Bitrate Is Out Of Limit

Input Bit Rate Is Out Of Limit - set when the input bit-rate is 10% higher or lower than the ideal bit rate corresponding to the selected mode.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.12 Output Bitrate Is Out Of Limit

Output bit rate is out of limit - a hardware failure alarm set when the output bit-rate is 10% higher or lower than the ideal bit rate corresponding to the selected mode.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.13 Bandwidth Not Supported

Bandwidth Not Support - set when the modulator "Config from stream" is enabled and an incorrect bandwidth value is specified

The modulator has factory settings for different transmission bandwidths (menu selectable). If the factory setting does not match the desired bandwidth signaled in the MIP packets then the alarm is raised.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.14 Hardware Muted Event

Hardware Muted Output - set when the modulator hardware mutes its RF output due to a short input stream interruption or SFN resynchronization.

The rationale for this alarm is not to disturb the greater SFN network in case an erroneous stream enters a modulator or a modulator detects a shift of the mega frame start points.

Note: This alarm is only reported in SNF mode and is factory configured to mute the modulator.

10.5.15 IP Input FIFO Overflow

IP Input Fifo Overflow - set when IP input channel bitrate is too high, causing a FIFO overflow.

10.5.16 IP Input FIFO Underrun

IP Input Fifo Underrun - set when the IP input channel bitrate is too low.

Note: This alarm is only reported in MFN mode.

10.5.17 IP Input Payload Error

IP Input Payload Error - set when the IP input packet payload content does not start with sync byte 0x47.

10.5.18 IP Input Column FEC Error

IP Input Column Fec Error - set when the IP input column FEC packet format is incorrect.

10.5.19 IP Input Row FEC Error

IP Input Row Fec Error - set when the IP input row FEC packet format is incorrect.

10.5.20 Upconverter Communication Error

Up Converter Communication Error - set when communications with the Upconverter has failed.

Note: The alarm is hard coded to mute the modulator in SFN and MFN mode. Transmission is restored when the alarm is cleared.

Note: The Alarm Properties -> Mute On Alarm setting for this alarm should always be set to OFF.

10.5.21 Upconverter Unlock

Up Converter Unlock - set when the internal Voltage Controlled Oscillator (VCO) is unlocked.

Note: The alarm is hard coded to mute the modulator in SFN and MFN mode. Transmission is restored when the alarm is cleared.

Note: The Alarm Properties -> Mute On Alarm setting for this alarm should always be set to OFF.

10.5.22 Upconverter Level Set Failure

Up Converter Level Set Failure - set when the Up Converter output level fails to meet the targeted value +/- 1 dB.

Note: The alarm is hard coded to mute the modulator in SFN and MFN mode. Transmission is restored when the alarm is cleared.

Note: The Alarm Properties -> Mute On Alarm setting for this alarm should always be set to OFF.

10.5.23 External Voltage 1

External Voltage 1 - set when the I/O port pin 1 voltage is greater than or less than the user defined value.

10.5.24 External Voltage 2

External Voltage 2 - set when the I/O port pin 2 voltage is greater than or less than the user defined value.

10.5.25 External Voltage 3

External Voltage 3 - set when the I/O port pin 3 voltage is greater than or less than the user defined value.

10.5.26 External Voltage 4

External Voltage 4 - set when the I/O port pin 4 voltage is greater than or less than the user defined value.

10.5.27 External Voltage 5

External Voltage 5 - set when the I/O port pin 5 voltage is greater than or less than the user defined value.

10.5.28 External Voltage 6 (Door Alarm)

External Voltage 6 - set when the I/O port pin 6 voltage is greater than or less than the user defined value.

NOTE: For this application, Pin 6 has been connected to the cabinet door switch contacts.

10.5.29 External Voltage 7 (Smoke Detector Alarm)

External Voltage 7 - set when the I/O port pin 7 voltage is greater than or less than the user defined value.

NOTE: For this application, Pin 7 has been connected to the cabinet smoke detector.

10.5.30 External Voltage 8

External Voltage 8 - set when the I/O port pin 8 voltage is greater than or less than the user defined value.

10.6 High Power Amplifier (HPA) Alarms and Warnings

When a critical alarm occurs (except for thermal shutdown) the HPA will wait several seconds then try to re-start. If the critical alarm causes the HPA to shutdown again, the procedure will be repeated. After three repeated failures, within approximately 50 seconds, the HPA will stay in shutdown mode. In this case, the amplifier will remain in this state until the alarms are cleared and the user issues a command to place the transmitter in broadcast mode.

10.6.1 HPA Controller Comm Err

HPA Controller Comm Err - set when communication between the modulator and HPA controller has failed.

NOTE: The Alarm Properties settings in the Web-GUI for this alarm should be set such that the transmitter output is muted as a result. Transmission is restored when the alarm is cleared.

10.6.2 RF Switch Fault

RF Switch Fault - set when one of the following alarms occurs:

- HPA Forward Power Err
- HPA Reflected Power Err
- HPA Input Err

NOTE: When a RF Switch Fault has occurred, the amplifier RF will be turned OFF, instead of a complete shutdown. After several seconds, the internal controller will turn the RF ON again. After three repeated failures, within approximately 50 seconds, the RF will be turned OFF. User intervention will be required to turn the RF back on. The Web-GUI interface has no control over this action.

10.6.3 HPA Forward Power Warning

Note: HPA Forward Power Warning is not implemented at this point in time.

10.6.4 HPA Forward Power Err

HPA Forward Power Err (Critical)
58.5 dBm

HPA Forward Power Err – set when the forward (output) power reaches 58.5 dBm.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached and a RF Switch Fault alarm is raised. The Web-GUI interface has no control over this action.

10.6.5 HPA Reflected Power Err

HPA Reflected Power Err (Critical)
47.0 dBm

HPA Reflected Power Err - set when the reflected power reaches 47.0 dBm.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached and a RF Switch Fault alarm is raised. The Web-GUI interface has no control over this action.

10.6.6 HPA Input Warning

HPA Input Warning – set when the input power is less than -5.0 dBm.

NOTE: The ALC loop is frozen when the warning level is reached. The Web-GUI interface has no control over this action.

10.6.7 HPA Input Err

HPA Input Err (Critical)	
Low	High
-5.0 dBm	6.0 dBm

HPA Input Err - set when the input power is out of the HPA allowable range and has reached the critical limits.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached and a RF Switch Fault alarm is raised. The Web-GUI interface has no control over this action.

10.6.8 HPA Failure

HPA Failure - set when one of the following alarms occurs:

- Pre-Driver Current Fault
- Driver Current Fault
- Power Module Current Fault
- Power Supply Fault
- Temperature Sensor Fault occurs.

NOTE: Automatic HPA shutdown is initiated by the HPA when any of these alarms/faults occur. The Web-GUI interface has no control over this action.

10.6.9 HPA Current Misbalance Warning

HPA Current Misbalance Warning - set when the lowest current (A) reading on one of the power modules is less than 20% of the highest current (A) reading on one of the power modules.

NOTE: The maximum output power level of the HPA will be limited to 53 dBm if a HPA Current Misbalance Warning alarm occurs. The Web-GUI interface has no control over this action.

- If the output power level is > 53 dBm, it will be automatically reduced to 53 dBm.
- If the output power level is < 53 dBm, no reduction will occur.

10.6.10 HPA Current Misbalance Fault

Note: HPA Current Misbalance Fault is not implemented at this point in time.

10.6.11 Pre-Driver Current Fault

Pre-Driver Current Fault (Critical)
5.0 A

Pre-Driver Current Fault – set when the pre-driver current reaches 5.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.12 Driver Current Fault

Driver Current Fault (Critical)
7.0 A

Driver Current Fault – set when the driver current reaches 7.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.13 Power Module 1 Current Fault

Power Module 1 Current Fault (Critical)
14.0 A

Power Module 1 Current Fault – set when the power module 1 current reaches 14.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.14 Power Module 2 Current Fault

Power Module 2 Current Fault (Critical)
14.0 A

Power Module 2 Current Fault – set when the power module 2 current reaches 14.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.15 Power Module 3 Current Fault

Power Module 3 Current Fault (Critical)
14.0 A

Power Module 3 Current Fault – set when the power module 3 current reaches 14.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.16 Power Module 4 Current Fault

Power Module 4 Current Fault (Critical)
14.0 A

Power Module 4 Current Fault – set when the power module 4 current reaches 14.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.17 Power Module 5 Current Fault

Power Module 5 Current Fault (Critical)
14.0 A

Power Module 5 Current Fault – set when the power module 5 current reaches 14.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.18 Power Module 6 Current Fault

Power Module 6 Current Fault (Critical)
14.0 A

Power Module 6 Current Fault – set when the power module 6 current reaches 14.0 A.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical levels are reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.19 HPA Power Supply 1 Fault

HPA Power Supply 1 Fault (Critical)	
Low	High
27.0 VDC	32.0 VDC

HPA Power Supply 1 Fault – set when HPA power supply 1 DC voltage is out of the HPA allowable range and has reached the critical limits.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.20 HPA Power Supply 2 Fault

HPA Power Supply 2 Fault (Critical)	
Low	High
27.0 VDC	32.0 VDC

HPA Power Supply 2 Fault – set when HPA power supply 2 DC voltage is out of the HPA allowable range and has reached the critical limits.

NOTE: Automatic HPA shutdown is initiated by the HPA when the critical level is reached and a HPA Failure alarm is raised. The Web-GUI interface has no control over this action.

10.6.21 Fan 1 Stalled

Fan 1 Stalled – set when front panel fan #1 ceases operation (stalls).

10.6.22 Fan 2 Stalled

Fan 2 Stalled – set when front panel fan #2 ceases operation (stalls).

10.6.23 RF Interlock Fault

Note: RF Interlock Fault is not used for this application.

10.7 HPA I/O Serial Port Alarms

10.7.1 Door Opened

Note: Door Opened is not used for this application. For the cabinet door alarm, please refer to section 10.5.28.

10.7.2 Fire Alarm

Note: Fire Alarm is not used for this application. For the smoke detector alarm, please refer to section 10.5.29.

APPENDIX A:

CL1TC-4
DVB-H L-Band Transmitter System and Drawers
Drawings and Parts Lists

CL1TC-4 DVB-H L-Band Transmitter System Drawing List

CL1TC-4 Transmitter System w/Digital Modulator
(Consists of one DVU 5000 Modulator Drawer driving one L-Band Amplifier Drawer)

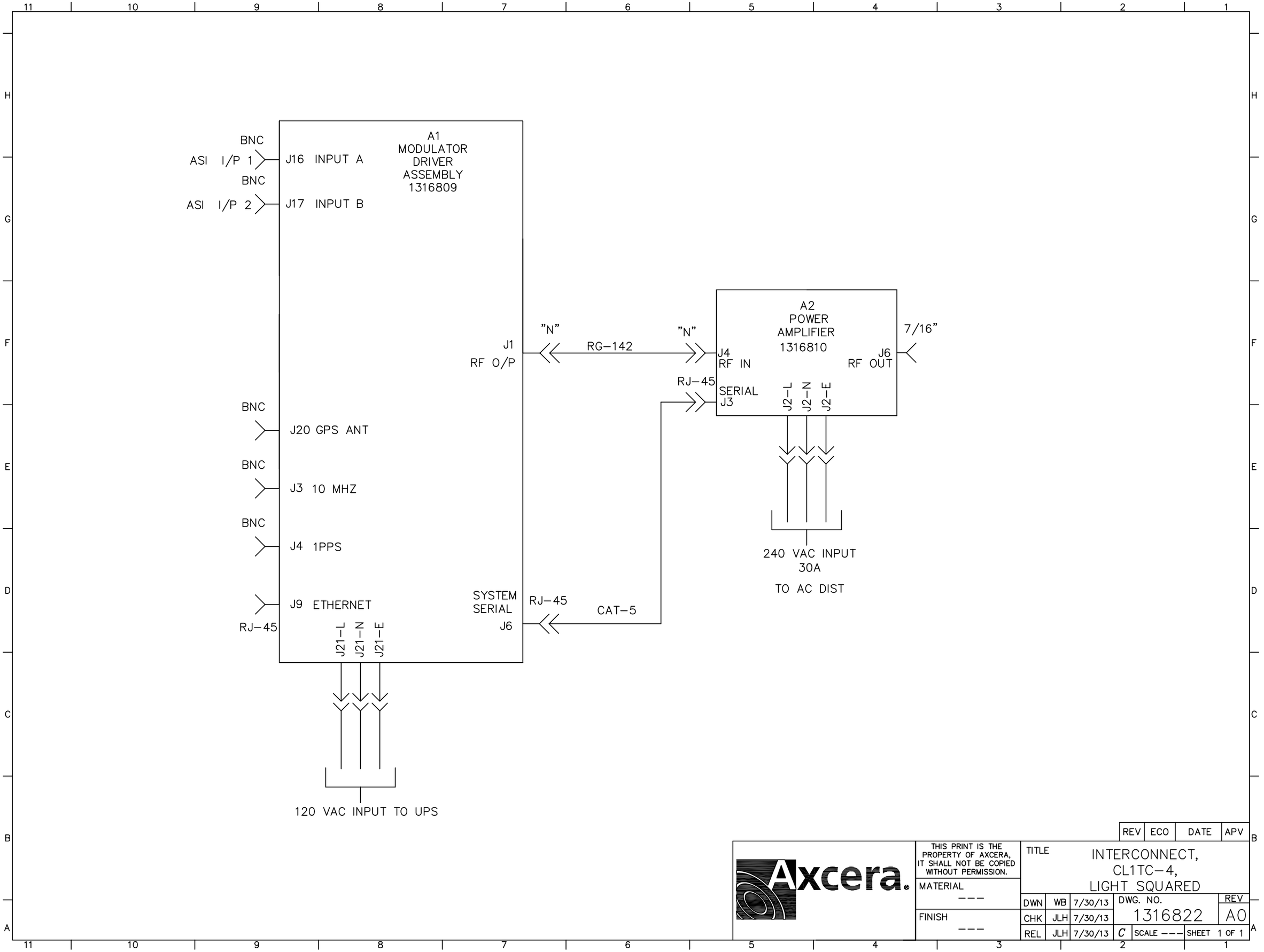
CL1TC-4, Interconnect.....1316822
CL1TC-4, AC Block Diagram 1316823

DVU 5000 Modulator Drawer

DVU 5000 Modulator Drawer Wiring Diagram 56830-43-D01
DVU 5000 Modulator Drawer Mechanical Drawing 56803-43-D01

L-Band Amplifier Drawer

L-Band Amplifier Drawer Wiring Diagram 59175-01-D01
L-Band Amplifier Drawer Mechanical Drawing 59132-01-D01



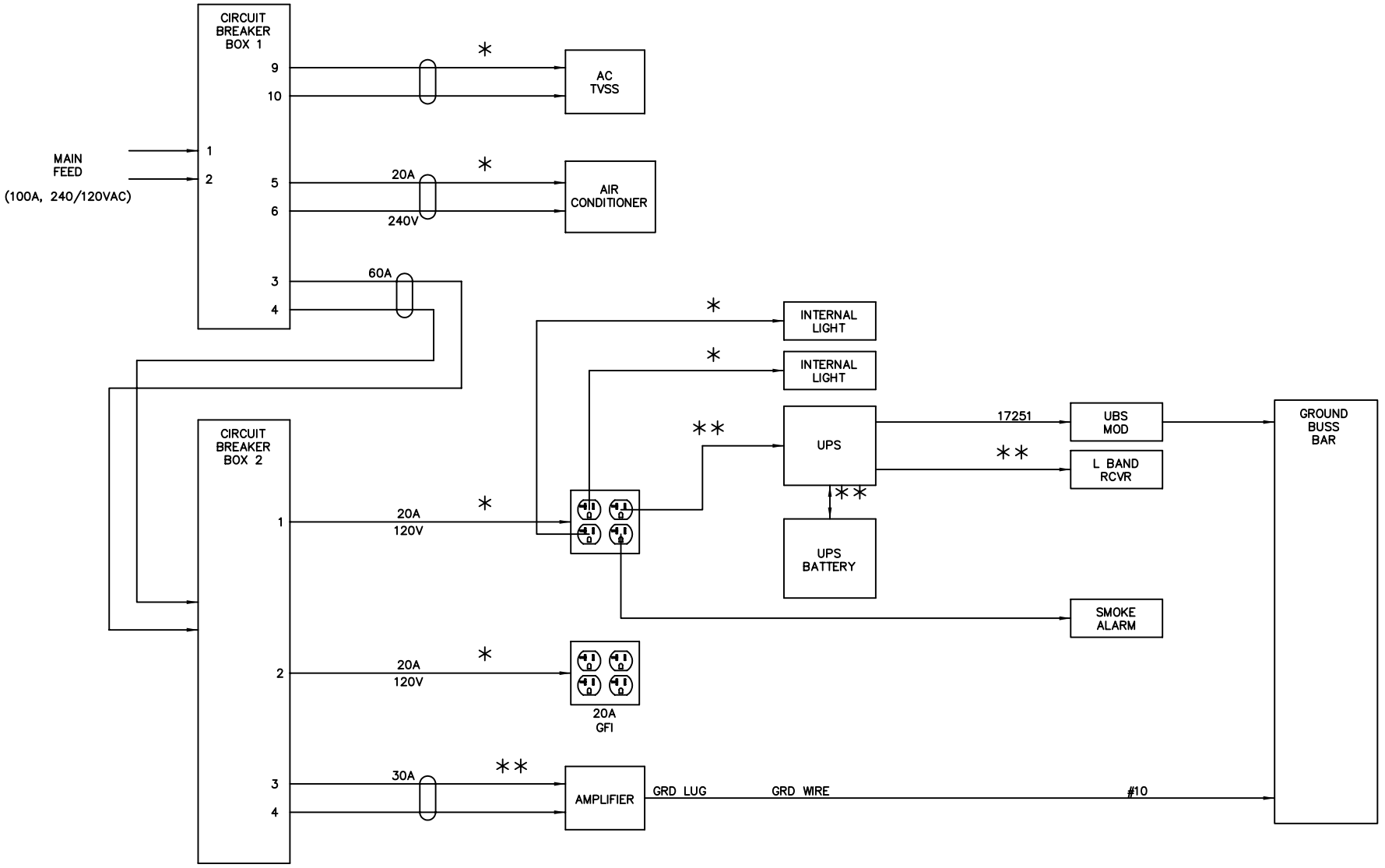
REV	ECO	DATE	APV

MATERIAL ---

FINISH ---

TITLE: INTERCONNECT, CL1TC-4, LIGHT SQUARED

DWN	WB	7/30/13	DWG. NO.		REV
CHK	JLH	7/30/13	1316822		A0
REL	JLH	7/30/13	C	SCALE ---	SHEET 1 OF 1



* EXISTING WIRING

** SUPPLIED WIRING

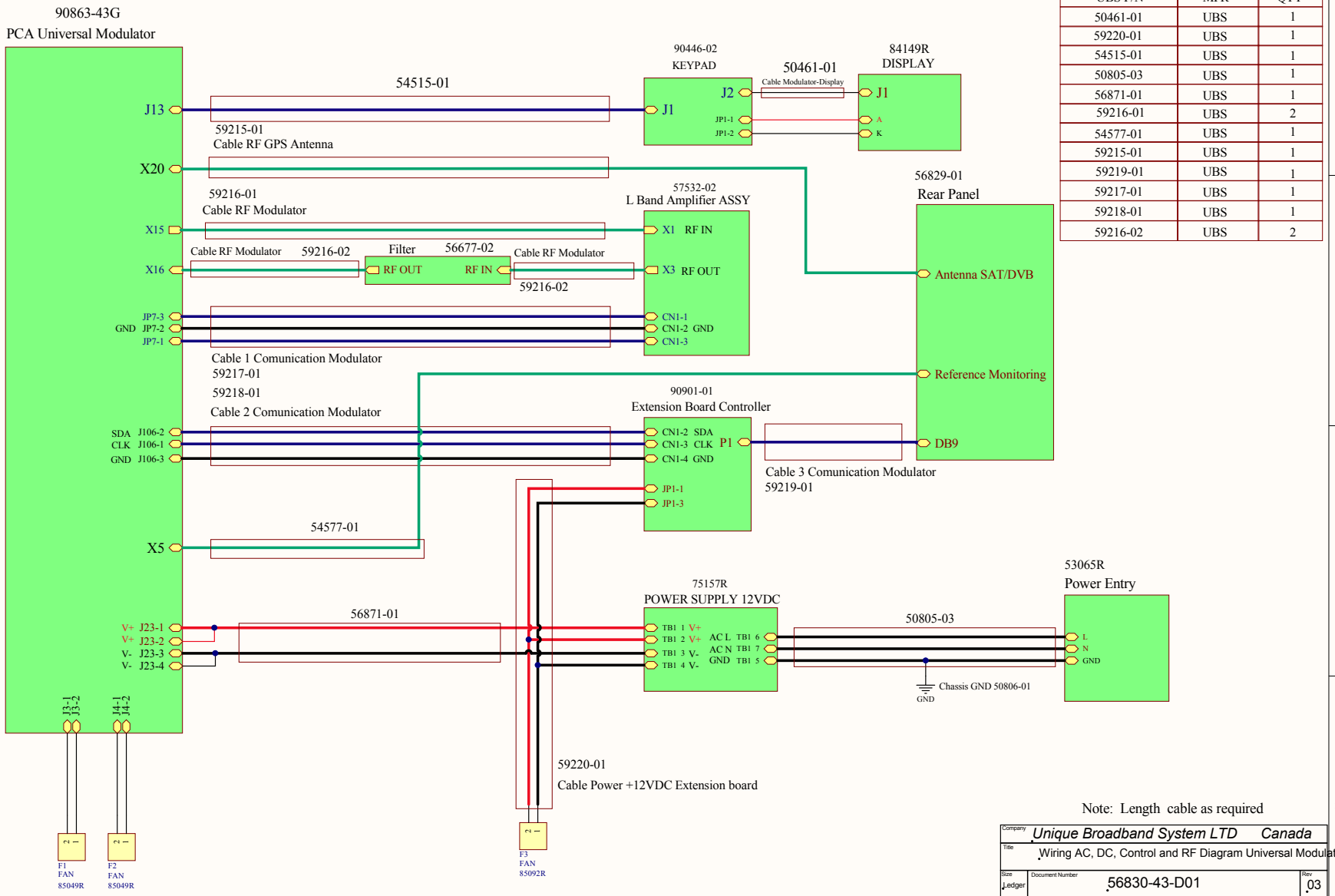
REV	ECO	DATE	APV

MATERIAL ---

FINISH ---

TITLE: BLOCK DIAGRAM, LIGHT SQUARED, ELECTRICAL

DWN	WB	8/5/13	DWG. NO. 1316823 REV A0
CHK	JLH	8/5/13	
REL	JLH	8/5/13	C SCALE --- SHEET 1 OF 1



UBS P/N	MFR	QTY
50461-01	UBS	1
59220-01	UBS	1
54515-01	UBS	1
50805-03	UBS	1
56871-01	UBS	1
59216-01	UBS	2
54577-01	UBS	1
59215-01	UBS	1
59219-01	UBS	1
59217-01	UBS	1
59218-01	UBS	1
59216-02	UBS	2

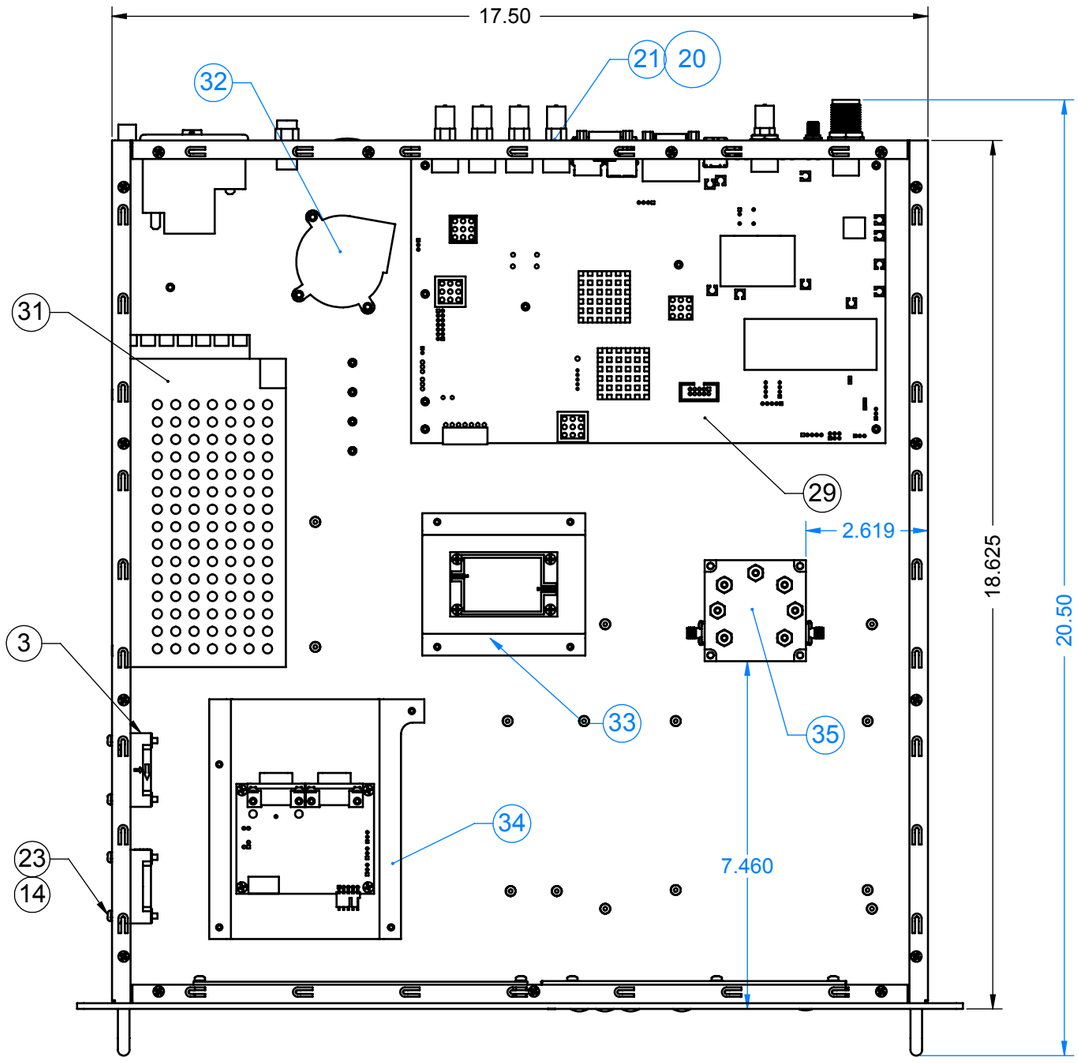
Note: Length cable as required

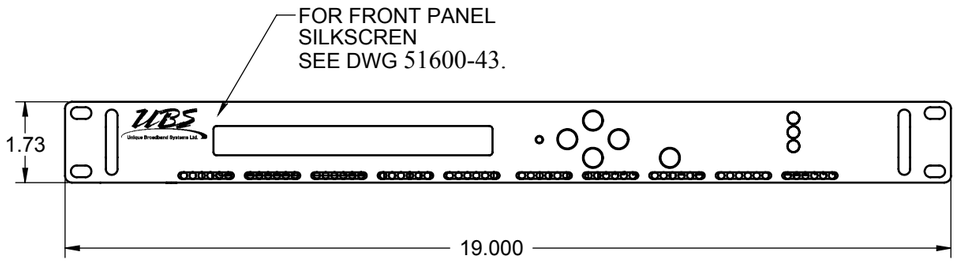
Company	Unique Broadband System LTD Canada
Title	Wiring AC, DC, Control and RF Diagram Universal Modulator
Size	Ledger
Document Number	56830-43-D01
Rev	03
Date	Apr. 2013
Drawn by	Koste Bor
Sheet	of

PRINTED ON: July-08-13

REVISIONS

REV.	DESCRIPTION	ECO #	DATE	APPROVED
01	FIRST RELEASE		06/05/2013	
02	ADD ITEM 35		10/06/2013	
03	REPLACED ITEM 35		08/07/2013	





Item	Qty	Manufacturer	Model	Description	UBS Part #
1	1	UBS		1U CASE ASS'Y (Rev-07)	55438-03
2	1	UBS		TOP COVER	51598-01
3	2	UBS		FAN CABLE ASSEMBLY	50467-01
4	1	UBS		FRONT PANEL, 1U, MODULATOR	51599-01
5	1	UBS		SHIELDING FENCE	50749-01
6	1	UBS		PLEXIGLAS SCREEN	54809-01
7	1	UBS		KEYPAD	90446-02
8	1	UBS		DISPLAY ASSEMBLY	51744-01
9	1	SOUTHWALL TECHN.	ALTAIR M20,24" W., .007	OPTICAL FILTER	47241
10	1	CORCOM	PSOSXDS3B	SWITCH POWER ENTRY MODULE	53065
11	1	BUSSMANN	S500-2.5A-R	2.5A, 250V FAST ACTING FUSE	83114R
12	1	KEYSTONE	7624	CABLE CLAMP	76680
13	2	GLOBE ELECTRONIC	A-47000-632-0	HANDLE, 6-32 TH, 1.150" MOUNT	97941R
14	8	STD		#4 SS, LOCKWASHER	91988
15	6	STD		#6 SPLIT LOCK WASHER	91241
16	10			M3x0.5 SPLIT LOCK WASHER	92424
17	5	GOULD FASTENERS		6-32 x .625" SS PANHEAD SCREW	91307
18	10			SS M3 x 0.5 x 5mm PAN HEAD SCREW	92420
19	3	CHICAGO MINIATURE	7611D2-S	CML SERIES OPTICAL LIGHT PIPE	84041
20	6	TYCO	1-329632-2	#1/2 LOCKWASHER FOR BNC CONNECTOR	92338
21	6	AMP	1-329631-2	1/2-28 JAM NUT FOR BNC CONNECTOR	91996
22	4	AMP	5205817-3	KIT, SCREWLOCK FEMALE	1000570R
23	8	STD		#4-40 x 1" SS PAN HEAD SCREW	91043
24	8	STD		4-40 SS, HEX NUT	91206
25	15	GOULD FASTENERS		4-40x3/16.SS 100 DGR SCREW	92471
26	1	UBS		WIRING DIAGRAM	56830-43
27	1	RICHCO	PGM-10	.375" HOLE PLUG	91255
28	1	UBS		CUT OUT COVERS	55563-03
29	1	UBS		PCA-UNIVERSAL RF MODULATOR	90863-43G
30	4	STD		M3 X 5 FLAT HEAD SCREW	92427
31	1	COSEL	PBA150F-12TH	POWER SUPPLY 12V, 150W	75157R
32	1	UBS	BFB05-12HD	FAN ASSY FOR MODULATOR MINI BOX	56870-01
33	1	UBS		L- BAND AMPLIFIER ASSY	57532-02
34	1	UBS	59177-01	EXTENSION BOARD ASSY	59177-01
35	1	HONGKE MICROWAVE	HBF-1675/8-01	FILTER 1675MHZ 8MHZ BW	73055

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.TOLERANCES ARE:
DECIMALS .XX ± .02 .XXX ± .003
ANGLES ± 0.5°
MACHINED SURFACES: 32

CAD GENERATED DRAWING DO NOT MANUALLY UPDATE OR SCALE

MATERIAL

FINISH

APPROVALS	DATE
DRAWN NIMAL.D	08/07/2013
CHECKED	
RESP ENG	
Q.A.	

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Unique Broadband Systems Ltd.

PROJECT #: 243

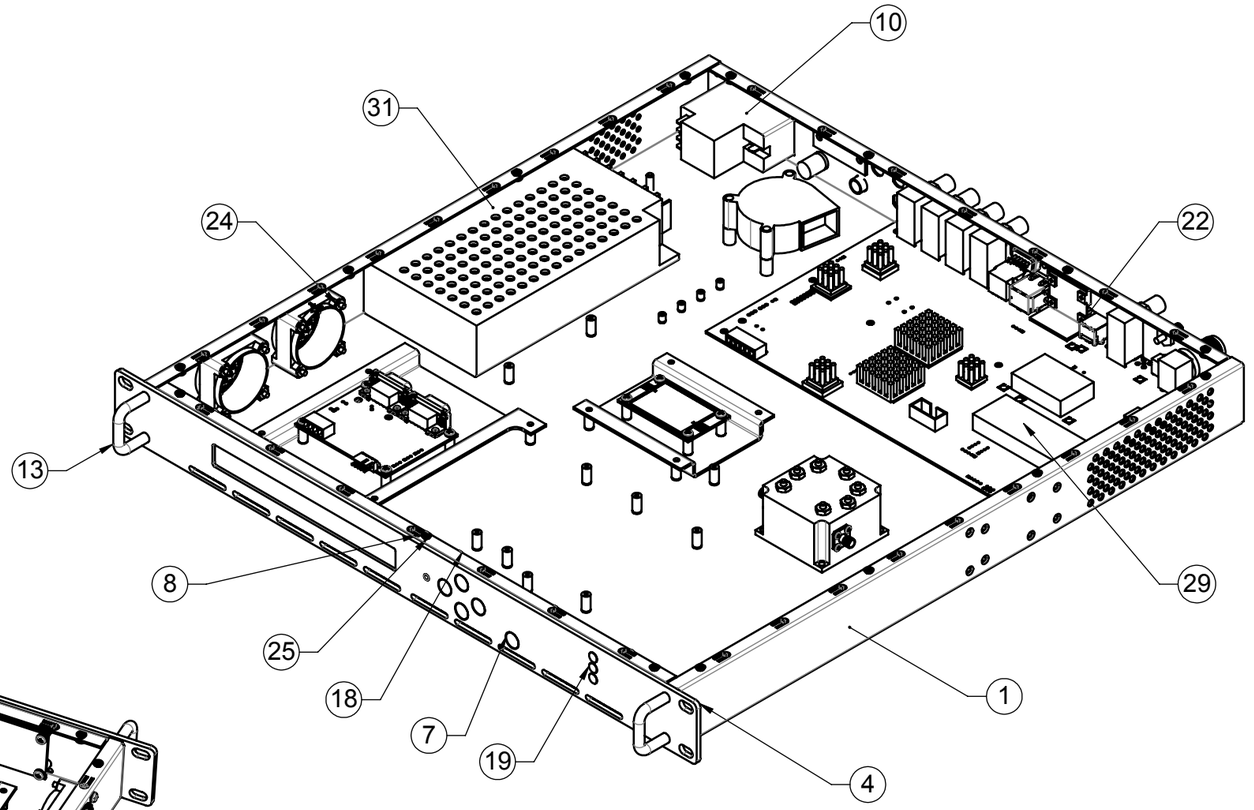
Univ. Mod DVB-H L-Band, with GPS, and additional I/O

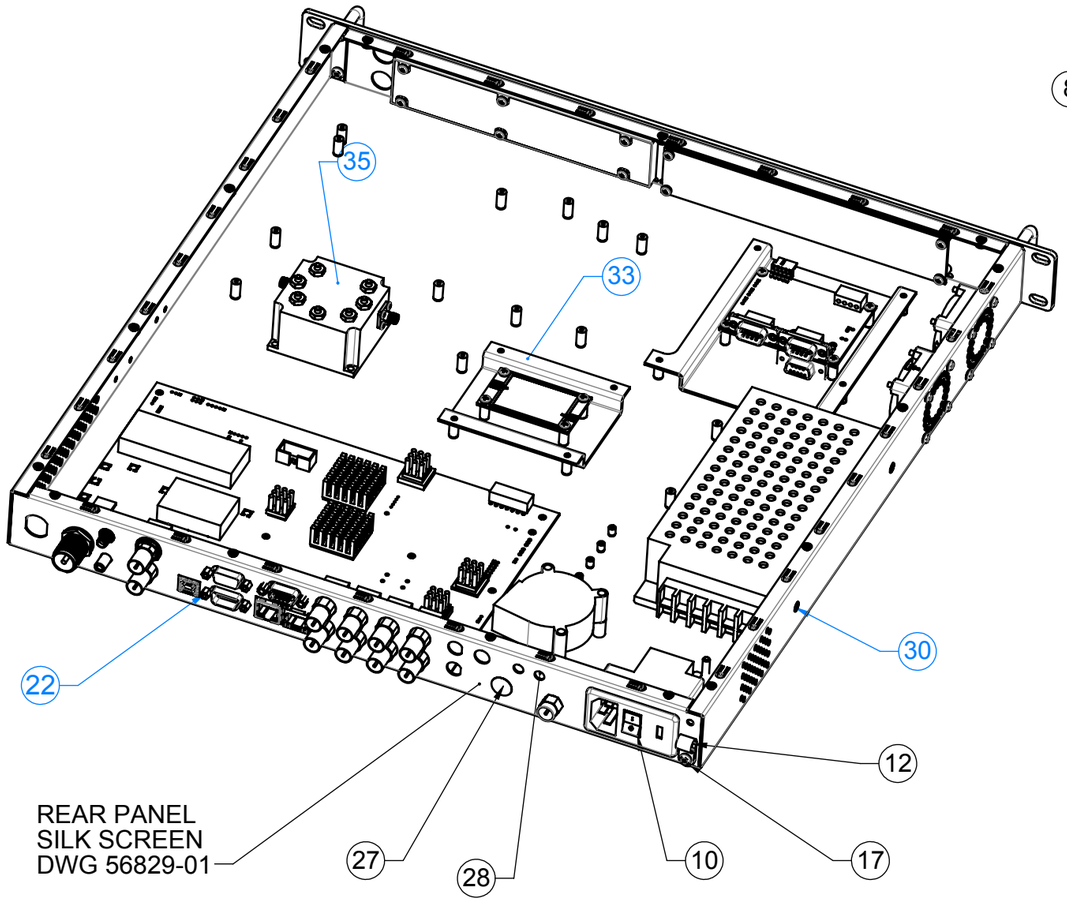
SIZE	DWG. #	REV.
B	56803-43-D01	03

PART # | DOC. TYPE

SCALE 1:1 | SHEET 1 OF 2

July-08-13





REAR PANEL
SILK SCREEN
DWG 56829-01

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APPROVALS	DATE
DRAWN NIMAL.D	
CHECKED	
RESP ENG	
Q.A.	

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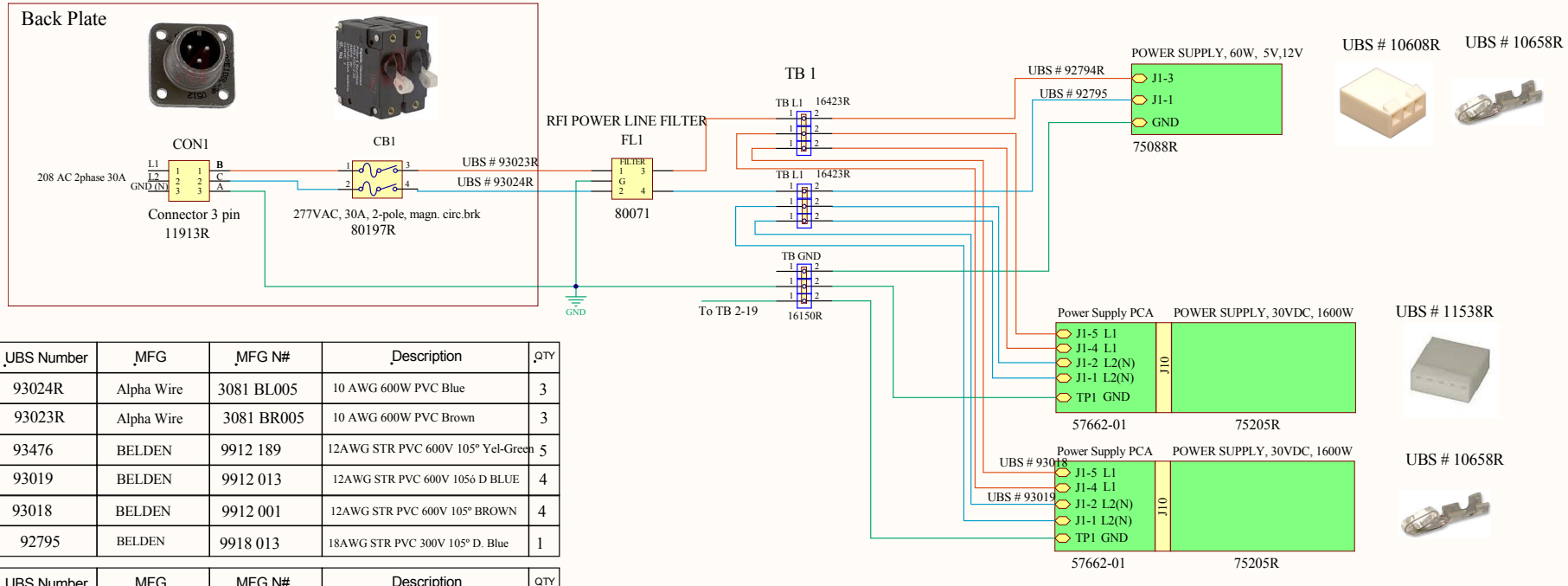
TITLE 243

Univ. Mod DVB-H L-Band, with GPS, and additional I/O

SIZE	DWG. #	REV.
B	56803-43-D01-03	01
SCALE 1:3.5	PART # / DOC. TYPE	SHEET 2 OF 2

REV.	DATE	DESCRIPTION	ECO#	APPROVED
2	26/06/2013	Removed small cooling fan 30VDC		
3	22/07/2013	Changed copnnection HPA to Current Sense		
4	24/07/2013	Removed connection 12VDC from Current Sense		
5	07/31/2013	Changed terminal connection		



NN	UBS Number	MFG	MFG N#	Description	QTY
1	93024R	Alpha Wire	3081 BL005	10 AWG 600W PVC Blue	3
2	93023R	Alpha Wire	3081 BR005	10 AWG 600W PVC Brown	3
3	93476	BELDEN	9912 189	12AWG STR PVC 600V 105° Yel-Green	5
4	93019	BELDEN	9912 013	12AWG STR PVC 600V 1056 D BLUE	4
5	93018	BELDEN	9912 001	12AWG STR PVC 600V 105° BROWN	4
6	92795	BELDEN	9918 013	18AWG STR PVC 300V 105° D. Blue	1

NN	UBS Number	MFG	MFG N#	Description	QTY
7	10608R	MOLEX	26-03-4030	.156" Pitch Crimp Terminal Housing 3pos	1
8	11538R	MOLEX	09-91-0500	.156" Pitch Crimp Terminal Housing 5pos	2
9	10658R	MOLEX	08-52-0072	.156" Pitch Crimp Terminal,Female	13
10	10090R	MOLEX	19067-0008	Ring Terminal1/4" for 8AWG Wire,Red	5
11	16101R	Altech Corporation	2402.0	Ferrule Insulated Std 12AWG Gray	4
12	16102R	Altech Corporation	2210.0	Ferrule Insulated Std 10AWG Black	2
13	92794R	BELDEN	9918 001	18AWG STR PVC 300V 105° BROWN	1
14	16423R	Altech Corporation	CTS4U-N	TERMINAL BLOCK 35A, DIN RAIL	6
15	16150R	Altech Corporation	CGT4U	TERMINAL BLOCK, 25A, DIN rail , GND	3
16	16321R	Altech Corporation	CTS2.5U-N	TERMINAL BLOCK, DIN RAIL	3
17	86185R	Altech Corporation	CTS2.5U-N/R	TERMINAL BLOCK, DIN RAIL, RED	3
18	86186R	Altech Corporation	CTS2.5U-N/W	TERMINAL BLOCK, DIN RAIL, White	3

Note 1:
Recommended Hand Crimp Tool - 0638117500 for 0638117500 pins
Recommended Hand Crimp Tool - 1212045 for ferrules
Recommended Hand Crimp Tool - MAC 2210 for ring terminals

APPROVALS	DATE
Drawn by: Kosta Bor	05/15/2013
Checked by:	
Approved by:	

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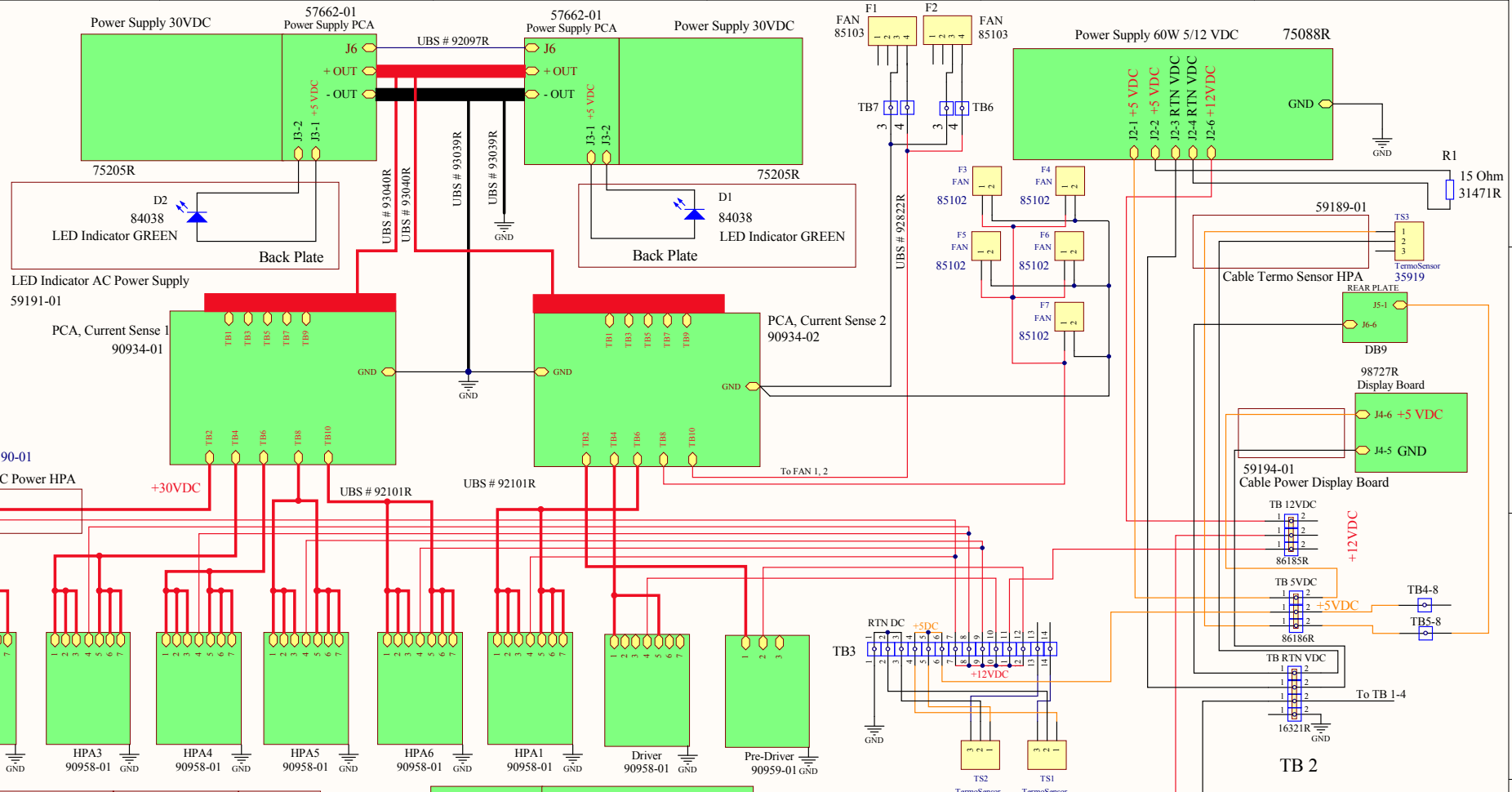
Title: 400W L-Band HPA Wiring AC Diagram

Size: B | Document Number: 59175-02-D01 | Rev: 05

Sheet 1 of 4



UBS P/N	MFR	QTY
59190-01	UBS	6
59189-01	UBS	3
59191-01	UBS	2
59192-01	UBS	1
59194-01	UBS	1
93040R	Dongguan QS electronic	2
93039R	Dongguan QS electronic	2
92097R	BELDEN	1
93034R	QUALTEC ELECTRONICS	1

REV.	DATE	DESCRIPTION	ECO#	APPROVED
2	26/06/2013	Removed small cooling fan 30VDC		
3	22/07/2013	Changed connection HPA to Current Sense		
4	24/07/2013	Removed connection 12VDC from Current Sense		
5	07/31/2013	Changed terminal connection		

APPROVALS	DATE
Drawn by: Kosta Bor	05/15/2013
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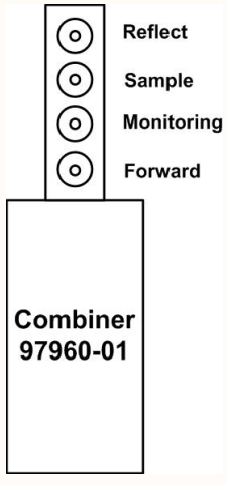
Title: 400W L-Band HPA Wiring DC Diagram

Size: B | Document Number: 59175-02-D01 | Rev: 05

Scale: NONE | Sheet 2 of 4

REV.	DATE	DESCRIPTION	ECO#	APPROVED
2	26/06/2013	Added RF Monitor port		
3	22/07/2013	Changed copnnection HPA to Current Sense		
4	24/07/2013	Removed connection 12VDC from Current Sense		
5	07/31/2013	Changed terminal connection		



RF from MODULATOR

RF IN

Cable RF SMA connectors
59199-01

AGC BOARD
90945-01
RF IN
RF OUT
RF F
RF R
Forward
Reflect

59199-02
Cable RF SMA connectors

PRE-DRIVER
RF IN
RF OUT
90959-01

Cable RF SMA connectors
59199-02

DRIVER
RF IN
RF OUT
90958-01

SPITER 6 WAY
73054
RF IN
RF OUT 1
RF OUT 2
RF OUT 3
RF OUT 4
RF OUT 5
RF OUT 6

Cable RF SMA connectors
59199-03

Cable RF SMA connectors
59199-06

Cable RF SMA connectors
59199-06

HPA1
90958-01
RF IN
RF OUT

HPA2
90958-01
RF IN
RF OUT

HPA3
90958-01
RF IN
RF OUT

Soldering
Soldering
Soldering

COMBINER
97960-01
RF IN 1
RF IN 4
RF IN 5
RF IN 2
RF IN 3
RF IN 6
RF FRW
RF SMPL
RF REFL
RF MONITOR
RF OUT

Forward
Reflect

HPA4
90958-01
RF OUT
RF IN

HPA5
90958-01
RF OUT
RF IN

HPA6
90958-01
RF OUT
RF IN

Soldering
Soldering
Soldering

59199-04
Cable RF SMA connectors

Cable RF SMA - N-Type connectors
59199-05

Sample
J6

RF OUT
J7

UBS P/N	MFR	QTY
59199-01	UBS	1
59199-02	UBS	2
59199-03	UBS	1
59199-04	UBS	2
59199-05	UBS	1
59199-06	UBS	6

APPROVALS	DATE
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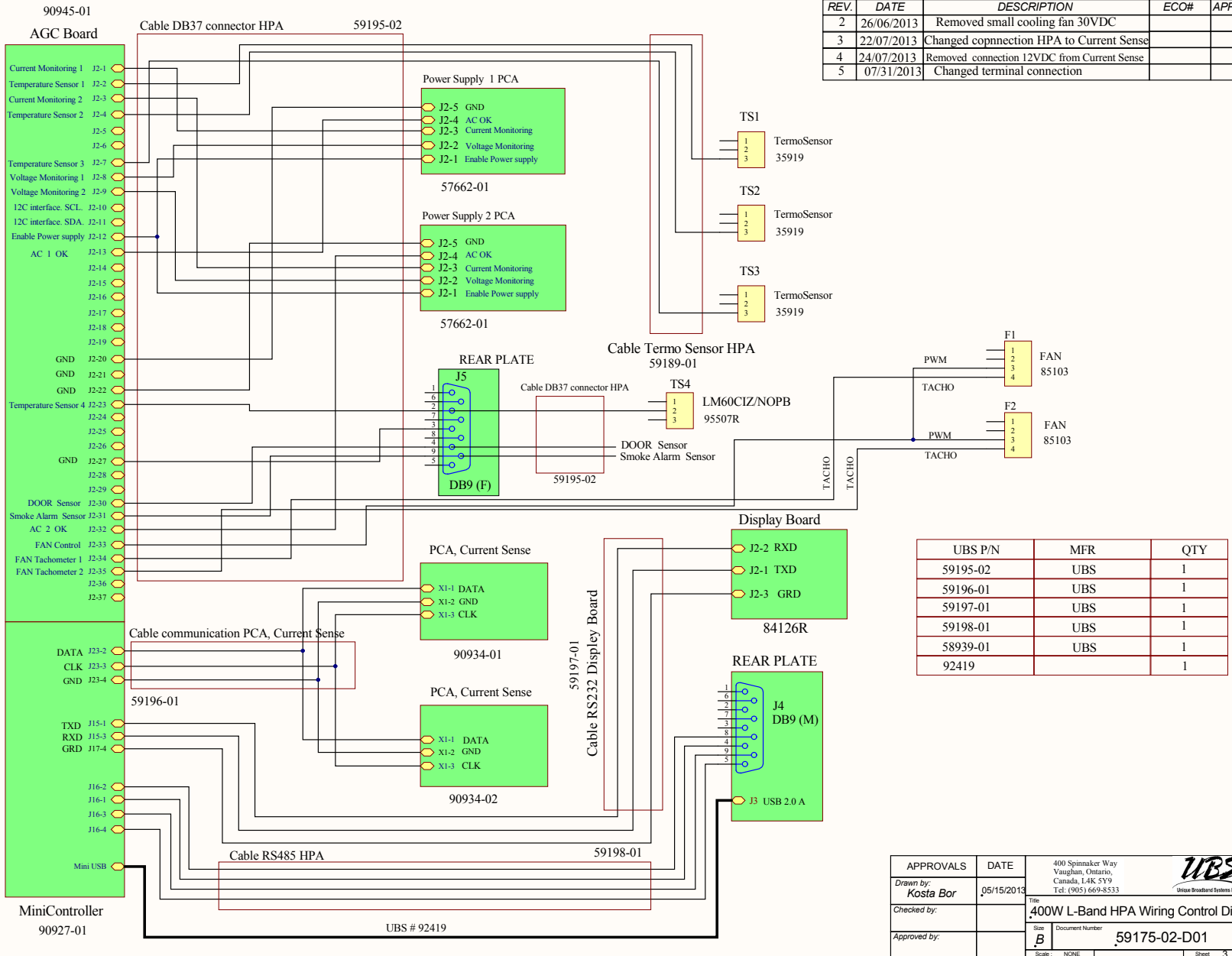
Title: 400W L-Band HPA Wiring RF Diagram

Size: B | Document Number: 59175-02-D01 | Rev: 05

Scale: NONE | Sheet 4 of 4



REV.	DATE	DESCRIPTION	ECO#	APPROVED
2	26/06/2013	Removed small cooling fan 30VDC		
3	22/07/2013	Changed copnnection HPA to Current Sense		
4	24/07/2013	Removed connection 12VDC from Current Sense		
5	07/31/2013	Changed terminal connection		

UBS P/N	MFR	QTY
59195-02	UBS	1
59196-01	UBS	1
59197-01	UBS	1
59198-01	UBS	1
58939-01	UBS	1
92419		1

APPROVALS	DATE
Drawn by: Kosta Bor	05/15/2013
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Title: 400W L-Band HPA Wiring Control Diagram

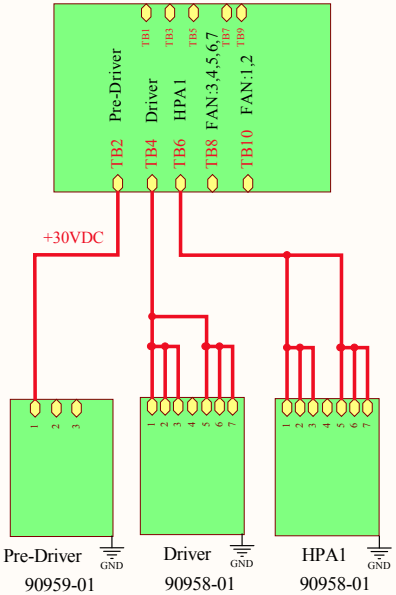
Size: B | Document Number: 59175-02-D01 | Rev: 05

Scale: NONE | Sheet 3 of 4

REV.	DATE	DESCRIPTION	ECO#	APPROVED
2	26/06/2013	Removed small cooling fan 30VDC		
3	22/07/2013	Changed copnnection HPA to Current Sense		
4	24/07/2013	Removed connection 12VDC from Current Sense		
5	07/31/2013	Changed terminal connection		

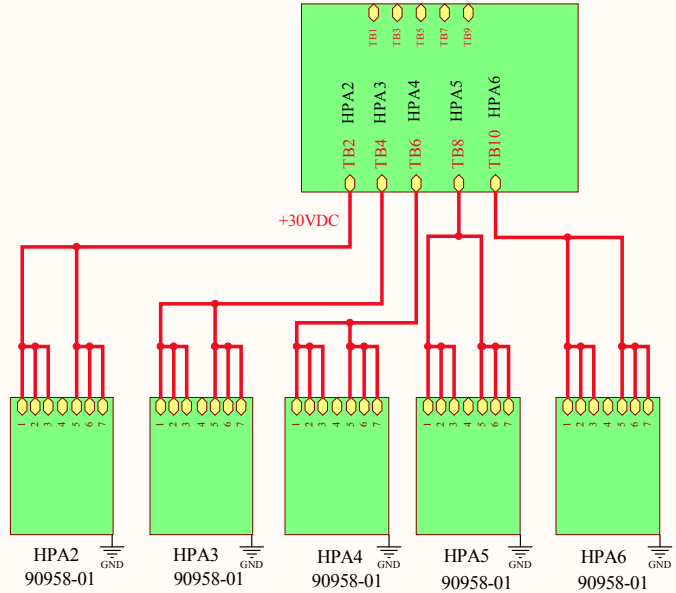
PCA, Current Sense 2

90934-02



PCA, Current Sense 1

90934-01



APPROVALS	DATE
Drawn by: Kosta Bor	05/15/2013
Checked by:	
Approved by:	

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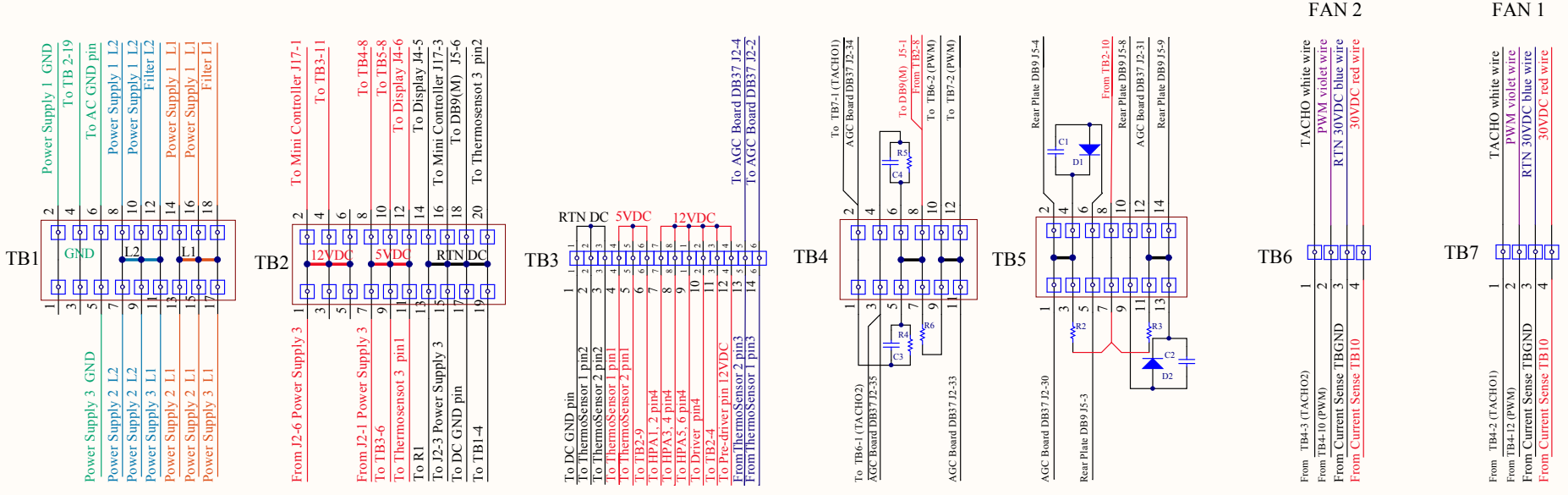
Title: 400W L-Band HPA Schematic Connection to Current Sense

Size: B | Document Number: 59175-02-D01 | Rev: 05

Sheet 1 of 4

REV.	DATE	DESCRIPTION	ECO#	APPROVED
2	26/06/2013	Removed small cooling fan 30VDC		
3	22/07/2013	Changed copnnection HPA to Current Sense		
4	24/07/2013	Removed connection 12VDC from Current Sense		
5	07/31/2013	Changed terminal connection		



APPROVALS	DATE
Drawn by: Kosta Bor	05/15/2013
Checked by:	
Approved by:	

400 Spinnaker Way
Vaughan, Ontario,
Canada, L4K 5Y9
Tel: (905) 669-8533

UBS Unique Broadband Systems Ltd.

Title: 400W L-Band HPA Diagram Terminals Connection

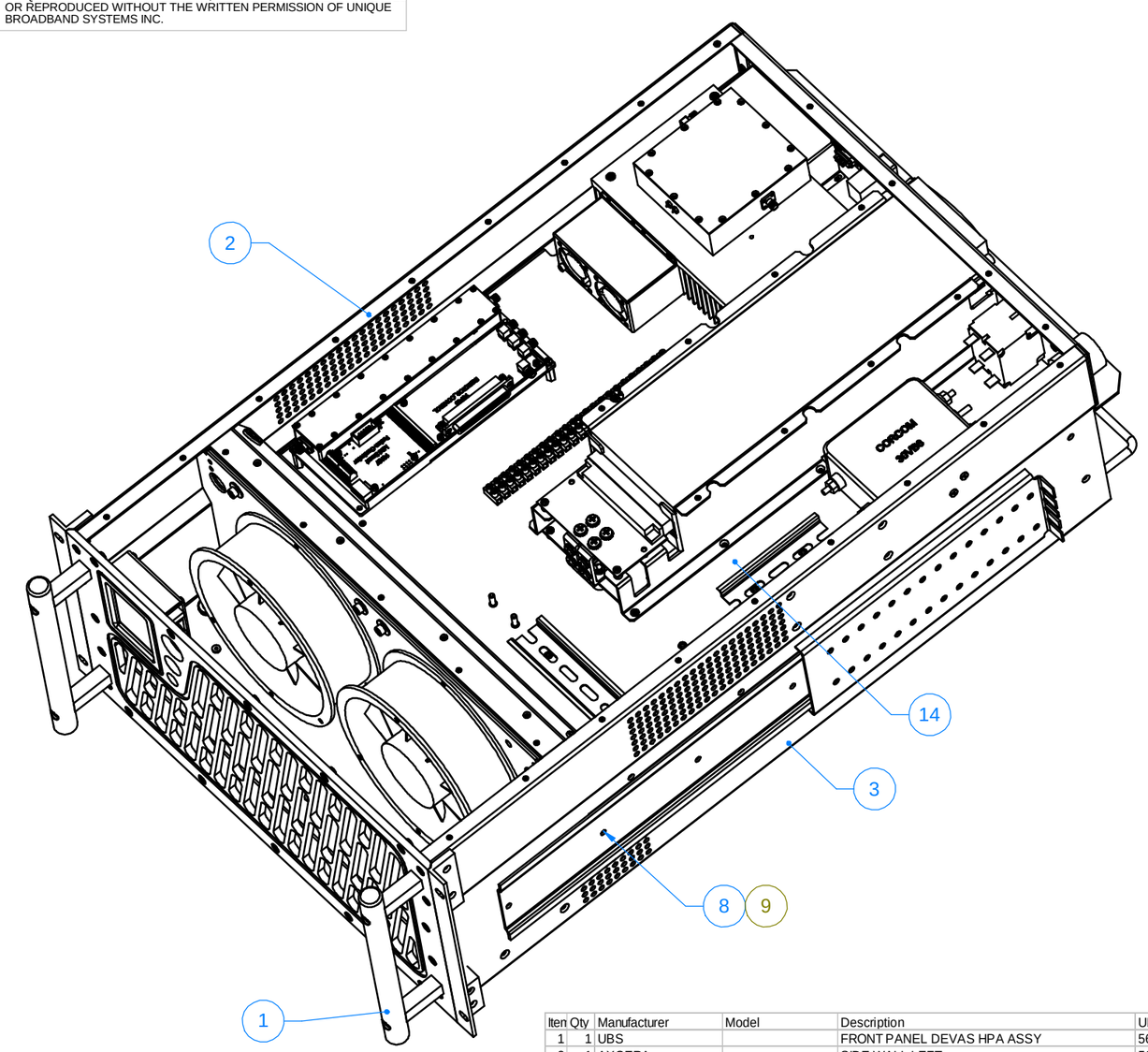
Size: B | Document Number: 59175-02-D01 | Rev: 05

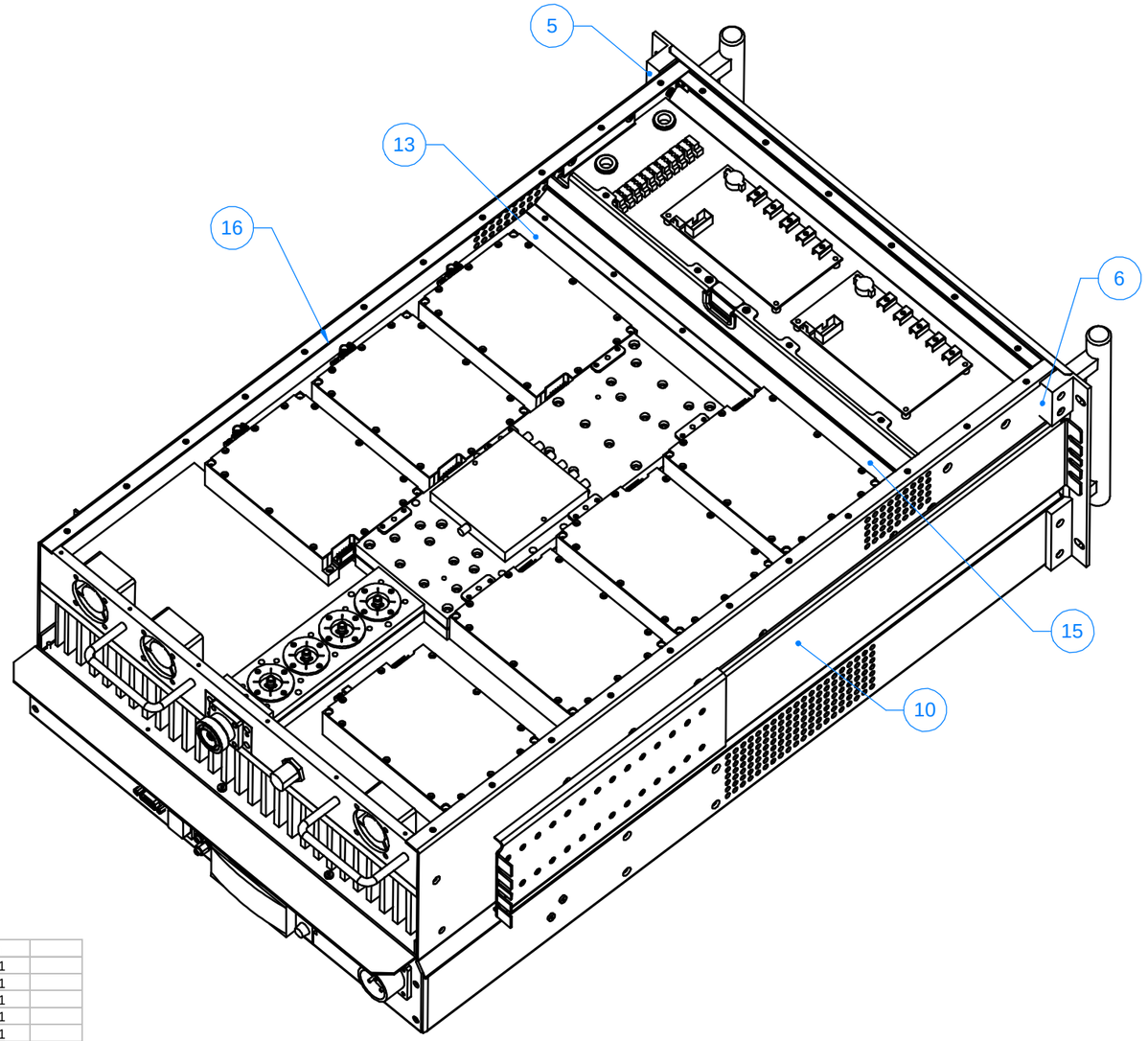
Sheet 1 of 4

August-06-13

REVISIONS

REV.	DESCRIPTION	ECO #	DATE	APPROVED
01	FIRST RELEASE			
02	RELOCATION OF COMPONENTS ON HSK AND P/S SIDE		02 07 13	
03	ADDED SHT 2		23 07 13	





Iten	Qty	Manufacturer	Model	Description	UBS P/n	
1	1	UBS		FRONT PANEL DEVAS HPA ASSY	56646-01	
2	1	AXCERA		SIDE WALL LEFT	56664-01	
3	1	UBS		SIDE WALL RIGHT	56670-01	
4	1	UBS		TOP COVER (NOT SHOWN)	56650-01	
5	1	UBS		LEFT MOUNTING BRACKET	56740-01	
6	1	UBS		RIGHT MOUNTING BRACKET	56741-01	
7	1	UBS		FAN ASSEMBLY	56671-01	
8	2	UBS		SPACER	56663-01	
9	2	STD		#6-32x 1/4" SS FL HD SCREW 82 DEGREES	91025	
10	2	GENERAL DEVICES		SLIDE CHASSIS 20"LG (PAIR)	95546R	
11	2	STD		#6-32x 3/8" SS FL HD SCREW	91135	
12	2	STD		#6-32x 1/4" SS FL HD SCREW	91111	
13	1	UBS		HIGH PWR AMP SUB ASSY	59135-01	
14	1	UBS		CONTROL MODULE	59207-01	
15	1	UBS		CONTROLLER PLATE	56727-01	
16	1	UBS		HIGH PWR AMP COVER (sht 2)	59277-01	
17	1	UBS		CONTROL MODULE COVER (sht 2)	56630-01	
18	2	WECO	323-HDS/06	TERMINAL BLOCK-6 POLE	11963R	
19	1	EOS	VLT60-3000	POWER SUPPLY 12V,-12V,5V	75088	
20	2	RICHCO	HG-6	3/8 RUBBER GROMETT	98682	
21	1	UBS		WIRING DIAGRAM	59190-01	
22	2	GENERAL DEVICES		SLIDE MTG. BKT B307-2	95547R	
23	1	UBS		OUTPUT SUPPORT PLATE w/ N-TYPE (sht 2)	59319-01	
24	1	UBS		NEW REAR PANEL	59321-01	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.TOLERANCES ARE:
DECIMALS .XX ± .02 .XXX ± .003
ANGLES ± 0.5°
MACHINED SURFACES: 32

MATERIAL

FINISH SEE NOTE

CAD GENERATED DRAWING DO NOT MANUALLY UPDATE OR SCALE

APPROVALS	DATE
DRAWN H. VASSELL	17.10.2012
CHECKED	
RESP ENG	
Q.A.	

400 Spinnaker Way
Vaughan, Ontario
Canada, L4K 5Y9
Tel: (905) 669-8533
Fax (905) 669-8516
Unique Broadband Systems Ltd.

TITLE

400W L BAND HPA ASSY

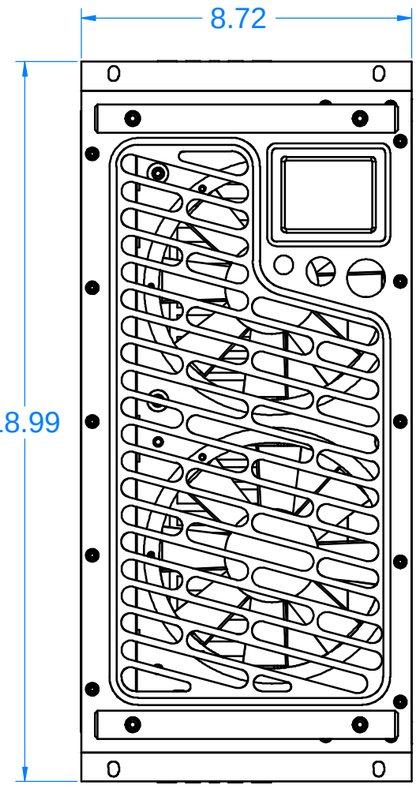
SIZE B | DWG. # 59132-01-D01 | REV. 03
PART # | DOC TYPE
SCALE 1:4 | SHEET 1 OF 2

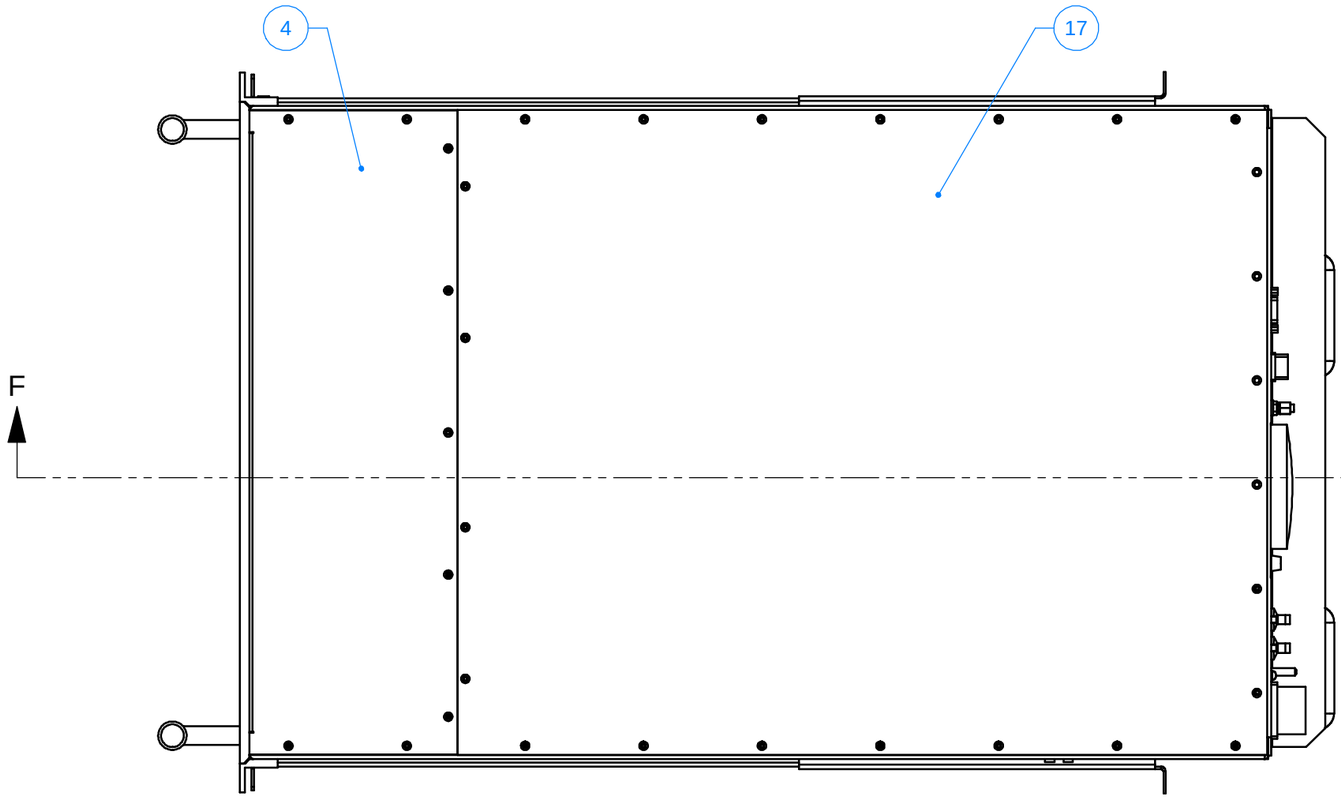
CREATED May-23-13 4:47:24 PM

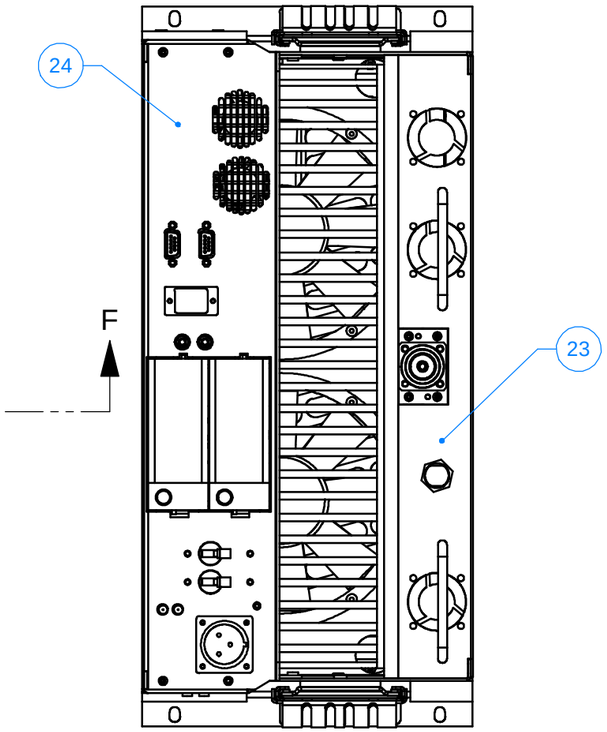
August-06-13

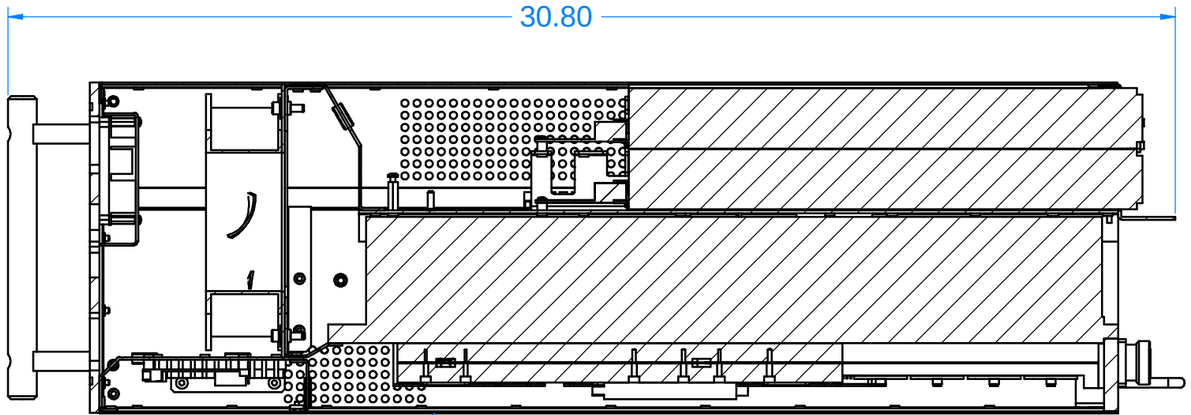
REVISIONS

REV.	DESCRIPTION	ECO #	DATE	APPROVED
01	FIRST RELEASE			









SECTION F-F

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.TOLERANCES ARE:
DECIMALS .XX ± .02 .XXX ± .003
ANGLES ± 0.5°
MACHINED SURFACES: 32

MATERIAL

FINISH SEE NOTE

CAD GENERATED DRAWING DO NOT MANUALLY UPDATE OR SCALE

APPROVALS	DATE
DRAWN	07.12.2012
CHECKED	
RESP ENG	
Q.A.	

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Unique Broadband Systems Ltd.

TITLE
400W L BAND HPA ASS'Y

SIZE B | DWG. # 59132-01-D01 | REV. 03
SCALE 1:4 | PART # | DOC TYPE | SHEET 2 OF 2

CREATED May-23-13 4:47:24 PM