Scientific Atlanta
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Continuum® DVP™
eXtra Dense QAM Array 24
Configuration Guide

For Your Safety

Explanation of Warning and Caution Icons

Avoid personal injury and product damage! Do not proceed beyond any symbol until you fully understand the indicated conditions.

The following warning and caution icons alert you to important information about the safe operation of this product:

You may find this symbol in the document that accompanies this product. This symbol indicates important operating or maintenance instructions.

You may find this symbol affixed to the product. This symbol indicates a live terminal where a dangerous voltage may be present; the tip of the flash points to the terminal device.

You may find this symbol affixed to the product. This symbol indicates a protective ground terminal.

You may find this symbol affixed to the product. This symbol indicates a chassis terminal (normally used for equipotential bonding).

You may find this symbol affixed to the product. This symbol warns of a potentially hot surface.

You may find this symbol affixed to the product and in this document. This symbol indicates an infrared laser that transmits intensity-modulated light and emits invisible laser radiation or an LED that transmits intensity-modulated light.

Important

Please read this entire guide. If this guide provides installation or operation instructions, give particular attention to all safety statements included in this guide.

Notices

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Contents

Safe Operations

The software described in this guide is used to monitor and / or manage Cisco equipment. Certain safety precautions should be observed when operating equipment of this nature.

For product specific safety requirements refer to the appropriate section of the documentation accompanying your product.

Preface

Introduction

This configuration guide provides the necessary information to configure and to operate the Continuum® DVP™ eXtra Dense QAM Array 24 system using the web browser user interface of the device. In this configuration guide the Continuum DVP eXtra Dense QAM Array 24 is further indicated by XDQA24.

Audience

The audience of this configuration guide includes authorized and trained personnel who are responsible for the configuration and operation of the XDQA24 system.

Required Knowledge

To use this configuration guide, the personnel should have a basic knowledge about the technology used in relation to this product.

Related Publication

Refer to the following Scientific-Atlanta publications for more information concerning the XDQA24 system:

- *Continuum DVP eXtra Dense QAM Array 24 - System Guide*, part number 4003083
- *Continuum DVP eXtra Dense QAM Array 24 for Video-on-Demand Delivery* - Data Sheet, this data sheet can be found on the Scientific Atlanta web site at the following location:

  http://www.scientificatlanta.com/products/customers/catalog_transmission.htm
- *ROSA Network Management System - User's Guide*, part number 4014778
- *IIOP Protocol Driver - User's Guide*, part number 6985041

Document Version

This is the second release of this configuration guide.

1

Introducing the XDQA24 System

Introduction

This chapter provides an introduction to the Continuum® DVP™ eXtra Dense QAM Array system.

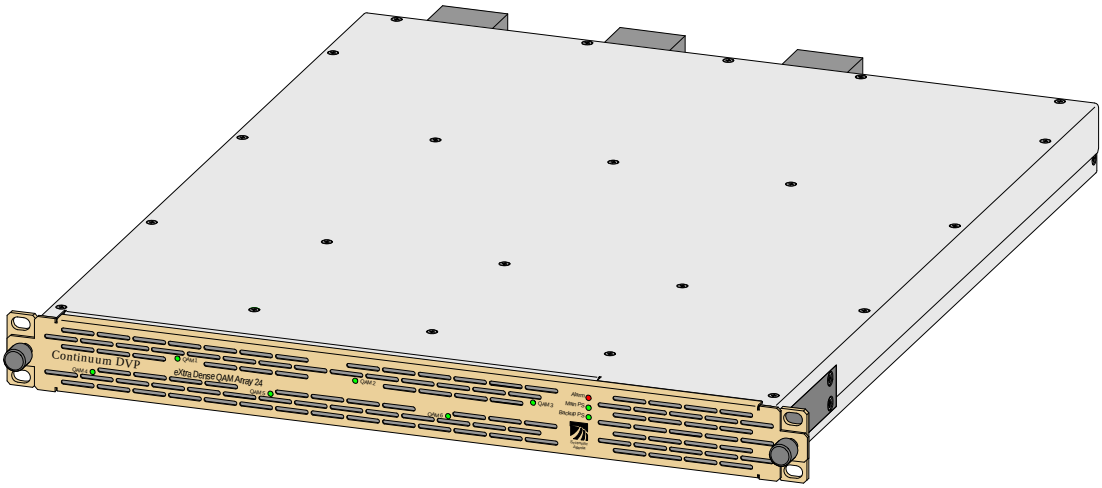
In This Chapter

General

The Continuum DVP eXtra Dense QAM Array 24 (XDQA24) system is a compact QAM array designed for routing, multiplexing, QAM modulation, and RF up-conversion and allows participating into XoD, broadcast, and data applications.

Scientific Atlanta's DirectRF. technology ensures QAM specifications meeting or exceeding the DOCSIS standard. Superior RF performance is especially critical when migrating to IP backbones for distributing broadcast services. The XDQA24 system allows one QAM product for narrowcast and broadcast services.

The XDQA24 system is an ideal bridge between flexible IP and Gigabit Ethernet based backbone networks and existing QAM set-top boxes. Its hot swappable modular design allows for scalability by adding QAM cards only when more capacity is needed. QAM cards are configured automatically when inserted, which reduces set-up and maintenance time to a minimum. The following illustration shows the XDQA24 system.



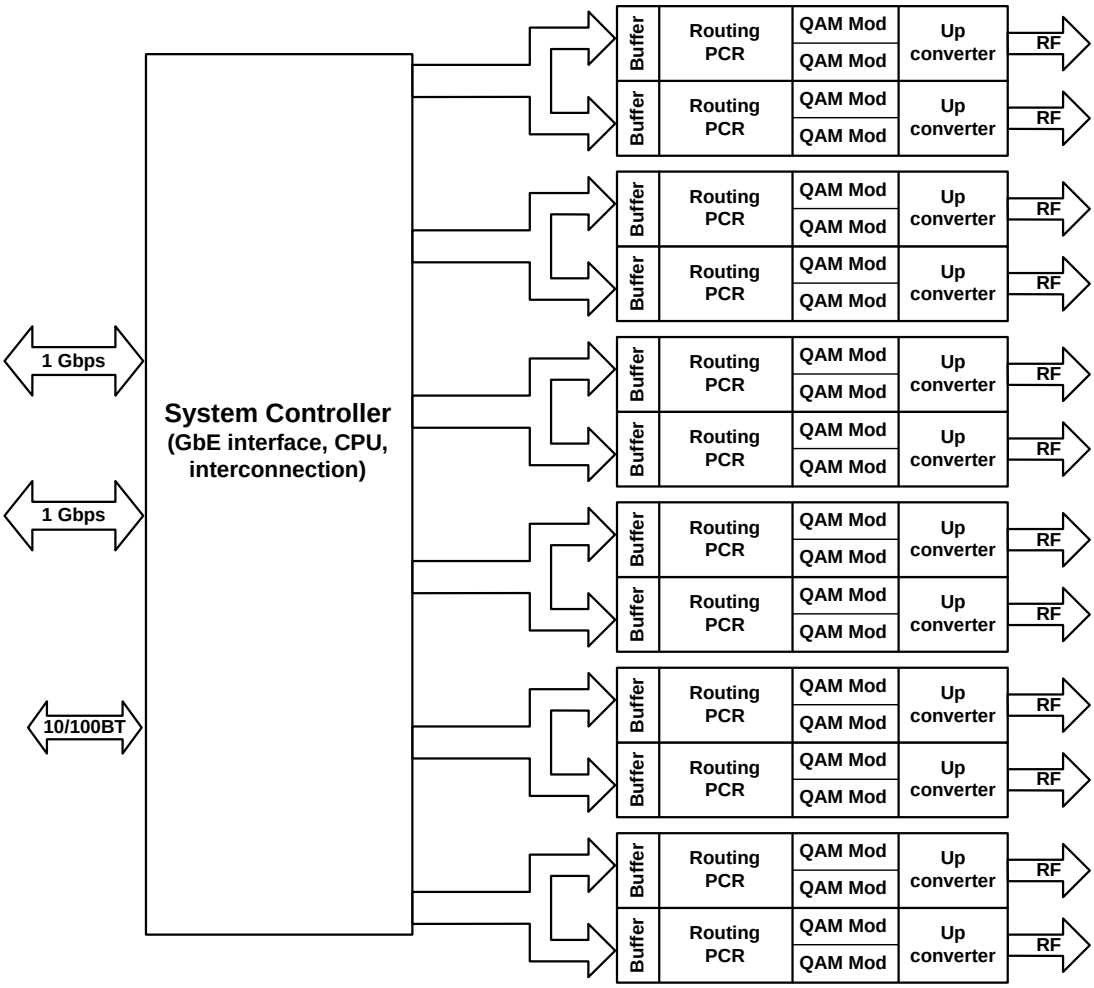
For redundancy reason, the XDQA24 system can be equipped with two power supply units. This features automatic backup switching without service interruption.

The XDQA24 system also supports GbE loop-through.

Functional Description

Block Diagram of the XDQA24 system

The following illustration shows the block diagram of the XDQA24 system.



The XDQA24 system is provided with two Gigabit Ethernet ports, which receive up to 256 IP-encapsulated MPEG2 Single Program Streams (SPTS).

After de-encapsulating and buffering, the switch engine routes a number of input program streams to the 24 QAM modulators and creates the necessary PSI tables (PAT and PMT).

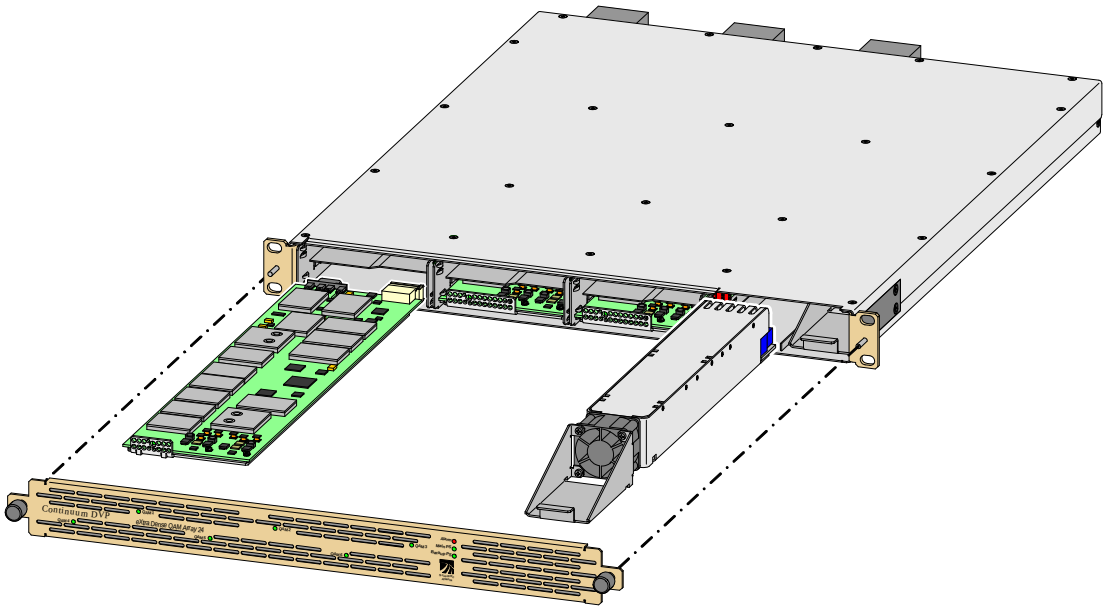
The Quad Channel QAM Cards buffer, re-stamp and route the signals to one of the QAM modulators on the card.

Modular Concept

Introduction

The XDQA24 system is a fully modular concept built around a 1 RU high housing. The flexible modular concept ensures easy system capacity upgrades.

The following illustration is a view of a XDQA24 system.



The following XDQA24 equipment is available:

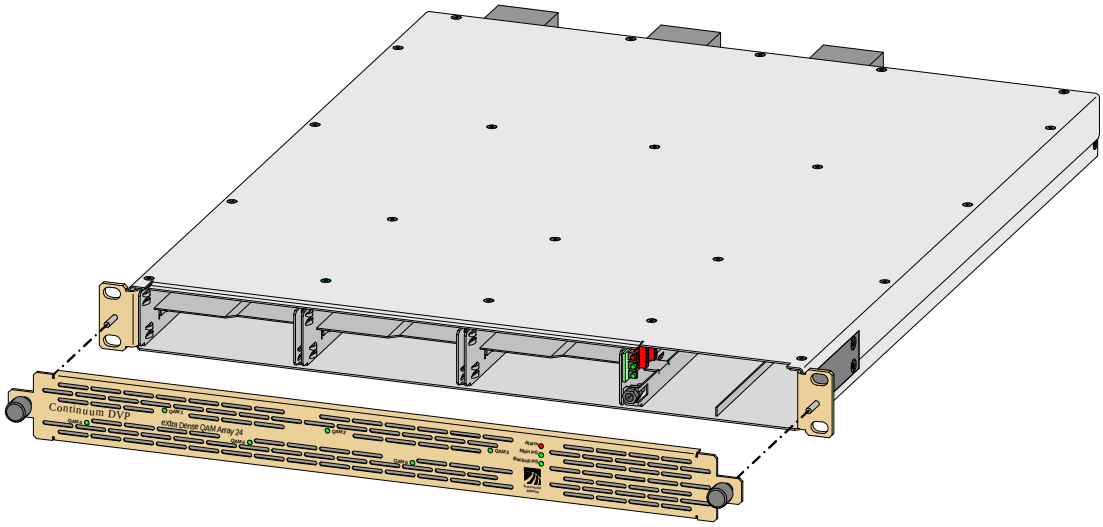
- -48 V dc or 100 – 240 V ac Power Supply Unit (PSU)
- Quad Channel QAM Card

Continuum DVP eXtra Dense QAM Array 24 Housing

The XDQA24 housing is a compact, modular 1RU high 19-inch housing provided with a system controller / input board, which controls the Quad Channel QAM Cards in the housing. This system controller / input board is equipped with an integrated network interface for system management and control. This board is provided with 2 Gigabit Ethernet (GbE) ports (electrical or optical SFP type modules).

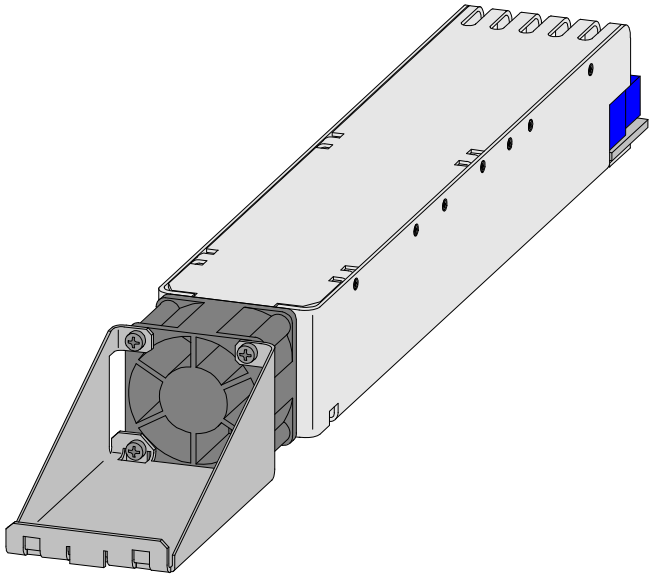
The fans mounted at the back of the device and in the PSU modules create an optimal airflow inside the housing by which the XDQA24 system does not require an open rack space above nor underneath.

The following illustration is a front view of an empty XDQA24 housing.



XDQA24 Power Supply Unit

The XDQA24 system has 1+1 redundancy concept. This means the system can tolerate the removal or failure of one of the power supplies and remains fully operational. Each power supply generates a 12V dc supply voltage, capable of supplying the whole unit. The following illustration shows a XDQA24 Power Supply Unit (PSU).

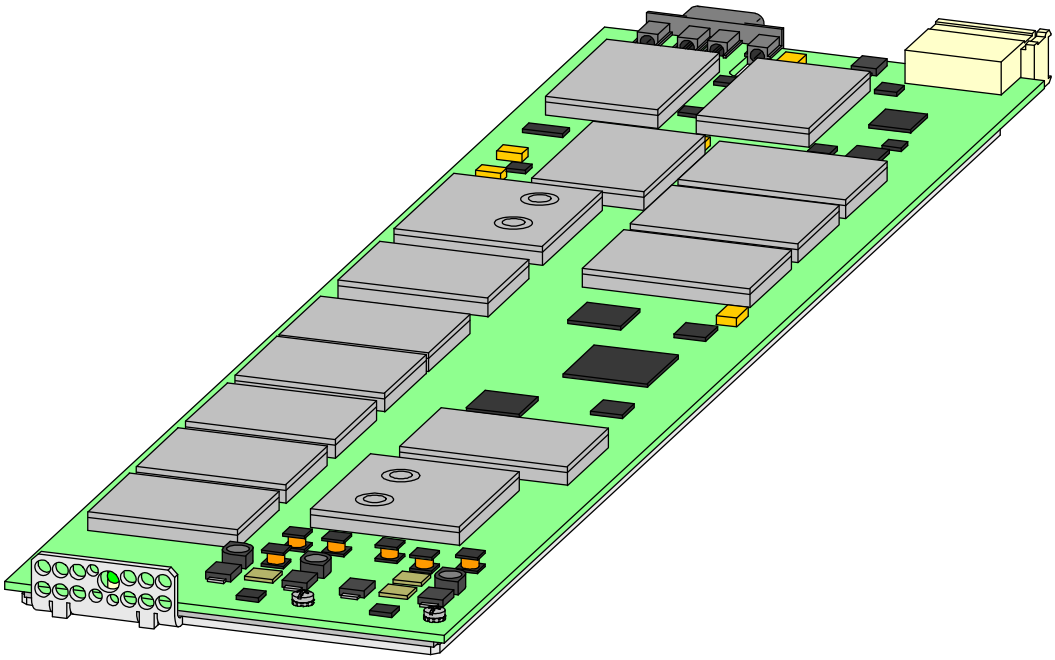


Two PSU versions are available, a 100 - 240V ac version (part number 1001815) and a DC version (part number 1001773).

Quad Channel QAM Card

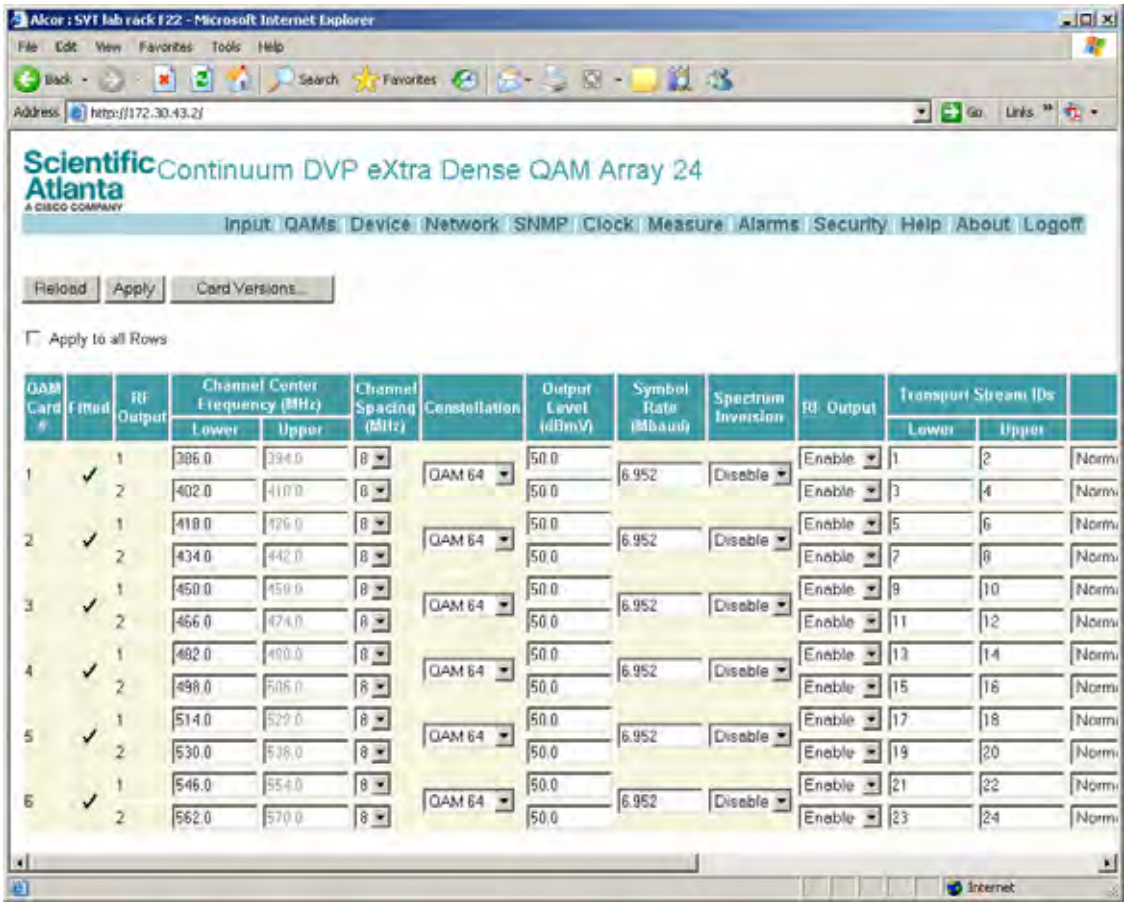
The Quad Channel QAM Card contains four QAM modulators and two up converter. Each RF output signal contains two combined adjacent QAM channels.

You can install a maximum of six Quad Channel QAM Cards inside the XDQA24 Housing. When installing a Quad Channel QAM Card in the housing, all settings are automatically loaded from the system controller/input board and the Quad Channel QAM Card is immediately in service.



Introducing the Web Browser User Interface

The web browser user interface of the XDQA24 is a pure HTML based Graphical User Interface (GUI) that can be opened using Microsoft Internet Explorer 6.0 or higher. By entering the IP Address of the XDQA24 in the address box of Internet Explorer web browser, the web browser user interface of the device will be opened. The following illustration shows the opening page of the XDQA24 web browser user interface.



Notes:

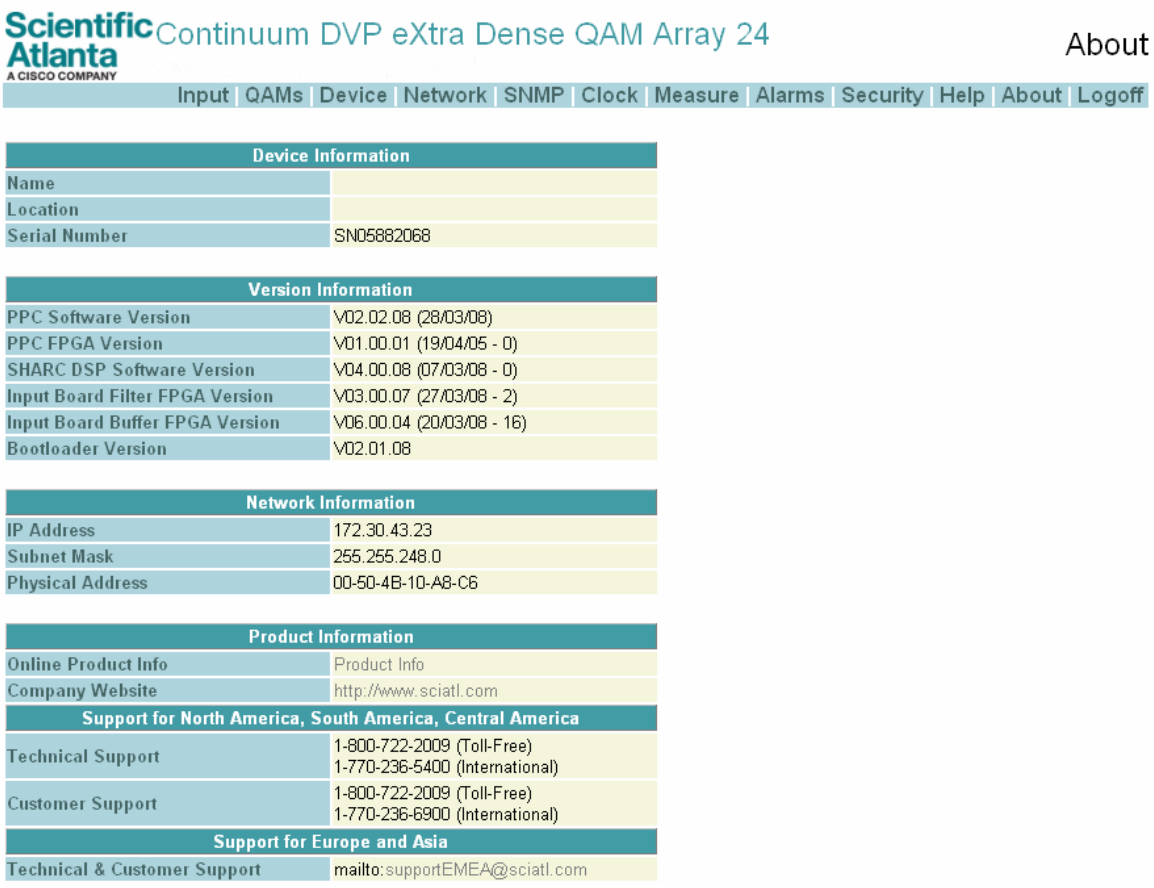
- When the security feature of the XDQA24 system is enabled, a logon page is displayed. After entering the correct username and password the web browser user interface will be opened.
- Particular information is given by the XDQA24 system using popup windows. When popup blocking software is active on your computer, these popup windows might be blocked. Deactivate this popup blocking software if you use the web browser user interface of the XDQA24.

Viewing Information

To View the System Information

With the exception of the Quad Channel QAM card information all information concerning the XDQA24 system is categorized on the **About** page.
The following steps explain how to view the system information of the XDQA24.

1 On the web browser user interface of the XDQA24 system site, click on the **About** link.



Device Information	
Name	
Location	
Serial Number	SN05882068

Version Information	
PPC Software Version	V02.02.08 (28/03/08)
PPC FPGA Version	V01.00.01 (19/04/05 - 0)
SHARC DSP Software Version	V04.00.08 (07/03/08 - 0)
Input Board Filter FPGA Version	V03.00.07 (27/03/08 - 2)
Input Board Buffer FPGA Version	V06.00.04 (20/03/08 - 16)
Bootloader Version	V02.01.08

Network Information	
IP Address	172.30.43.23
Subnet Mask	255.255.248.0
Physical Address	00-50-4B-10-A8-C6

Product Information	
Online Product Info	Product Info
Company Website	http://www.sciatl.com
Support for North America, South America, Central America	
Technical Support	1-800-722-2009 (Toll-Free) 1-770-236-5400 (International)
Customer Support	1-800-722-2009 (Toll-Free) 1-770-236-6900 (International)
Support for Europe and Asia	
Technical & Customer Support	mailto:supportEMEA@sciatl.com

Result: The following information can be checked.

- Device information
- Version information
- Network information
- Product information

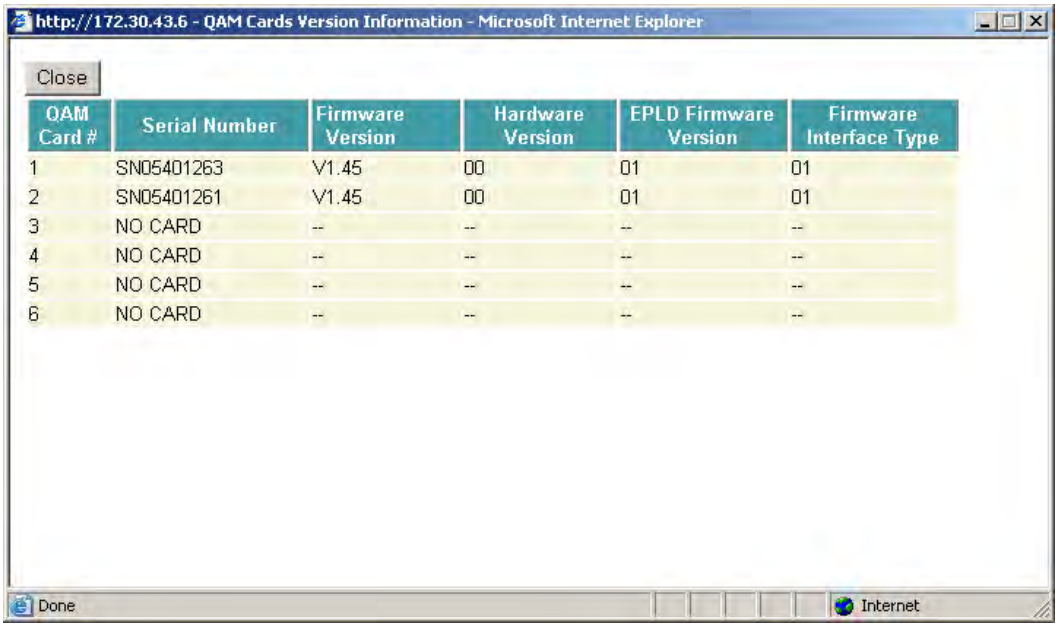
Viewing the Dual QAM Card Information

The information about the QAM card can be found on the **QAMs** page. The following explains how to view the QAM card information.

1 On the web browser user interface of the XDQA24 system, click the **QAMs** link.

Result: The **QAMs** page is displayed.

2 Press the **Card Versions...** command button.



Result: The **QAM Cards Version Information** popup is displayed with the following information:

- **Serial Number**
- **Firmware Version**
- **Hardware Version**
- **EPLD Firmware Version**: firmware version of the electrically programmable logic device (EPLD)
- **Firmware Interface Type**: version of the interface between the Dual QAM Card firmware and the CPU.

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Securing the XDQA24 System

Introduction

This chapter describes the security feature of the Continuum® DVP™ eXtra Dense QAM Array system and gives information on how to configure this security feature.

In This Chapter

Introducing the Security

To prevent people from gaining access to the XDQA24 system, the system is provided with a security feature. This system security feature confirms the identity of the users who are attempting to access the device, protects the device configuration from inappropriate access by users, and provides a simple and efficient way to set up and maintain the security on the device.

To configure the XDQA24 system security, user accounts should be defined. A user account consists of a unique user name with password. By assigning access levels to user accounts, particular access permissions and rights can be given to users. Three access levels are defined, viz.:

- **Guest**: read-only access
- **User**: read-write access (without security configuration)
- **Administrator**: full control (with security configuration)

The XDQA24 system security is provided with three pre-defined user accounts. The table below shows these pre-defined user accounts.

Username	Password	Access Level
Guest	Guest	(Guest) read-only access
User	User	(User) read-write access
Administrator	Administrator	(Administrator) full control

Notes:

- At least one user account with *full control* access level must be defined.
- Maximum 20 user accounts can be defined.

The XDQA24 system security is default disabled. This means that the web browser user interface of the system is opened without **Logon** page. When the security is enabled the web browser user interface will be opened after entering a correct username and password on the **Logon** page.

Note: When a user doesn't access the device using the web browser user interface within a particular time period (default 10 minutes), the user account of this user is automatically logged off.

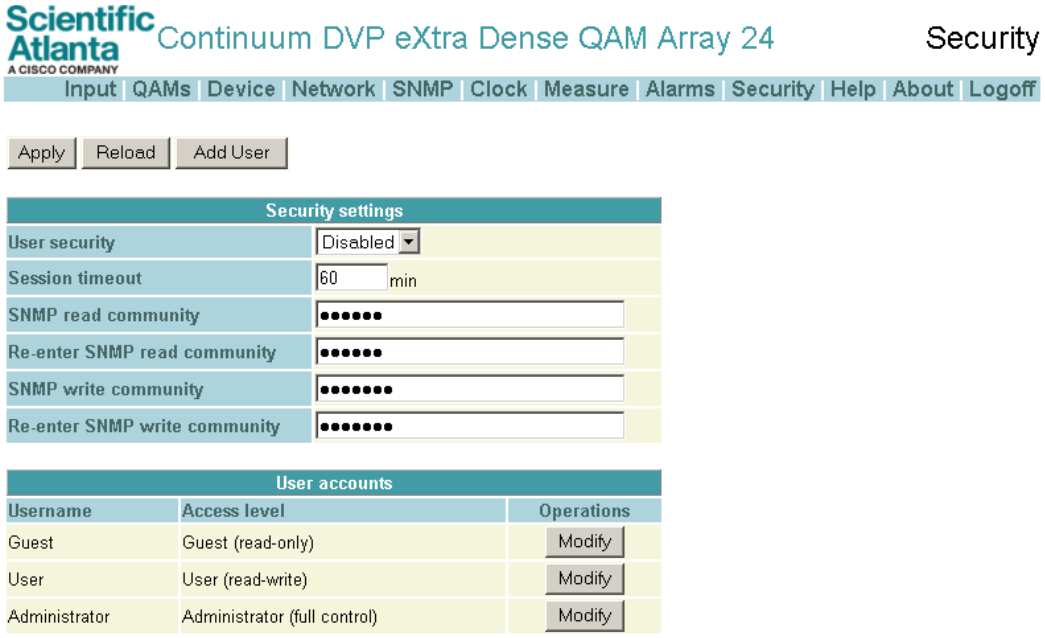
Configuring the Security System

Adding a User Account

The following steps explain how to add a user account.

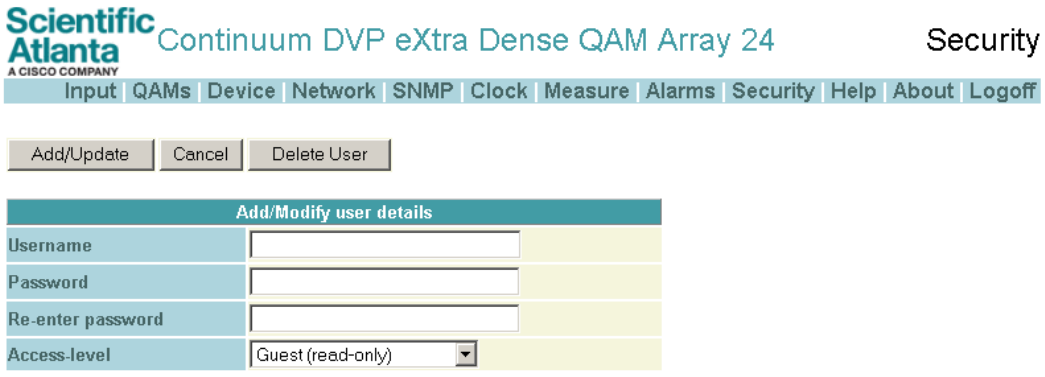
1 On the web browser user interface of the XDQA24 system, click the **Security** link.

Result: The **Security** page is displayed.



2 Point to the **Add User** command button.

Result: The **Add/Modify user details** table is displayed.



3 Enter the username for this account in the **Username** box.

Note: The username can be up to 20 characters in length and is case-sensitive.

4 Enter the password for this account in the **Password** box.

Note: The password can be up to 20 characters in length and is also case-sensitive.

5 Confirm the password in the **Re-enter password** box.

6 In the **Access-level** drop down box select the access level for this account, viz.: *Guest*, *User* or *Administrator*.

7 Press the **Add/Update** command button to confirm or the **Cancel** command button to abort the operation.

Result: The new user account is added to the **User accounts** list on the **Security** page.

Deleting a User Account

Perform the following steps to remove a user account from the **User accounts** list.

1 On the web browser user interface of the XDQA24 system, click the **Security** link.

Result: The **Security** page is displayed.

2 In the **User Accounts** list point to the **Modify** command button in the row of the account that must be removed.

Result: The **Add/Modify user details** table is displayed.

3 Press the **Delete User** command button.

Result: The user account is removed from the **User accounts** list on the **Security** page.

Enabling of disabling the Security System

The following procedure explains how to enable or disable the security system.

1 On the web browser user interface of the XDQA24 system, click the **Security** link.

Result: The **Security** page is displayed.

2 Select *Enable* or *Disabled* in the **User security** drop down box.

3 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Changing the Session Time Out

The following steps explain how to change the session time out.

1. On the web browser user interface of the XDQA24 system, click the **Security** link.

   Result: The **Security** page is displayed.

2. In the **Session timeout** box enter the period of time the web browser user interface can remain unused before the authorization of the web browser user interface expires. A timeout value between 1 and 99 minutes can be given.

   Note: The **Logon** page of the web browser user interface appears when the time the GUI is not used exceeds the **Session timeout** box.

3. Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Modifying the Parameters of a User Account

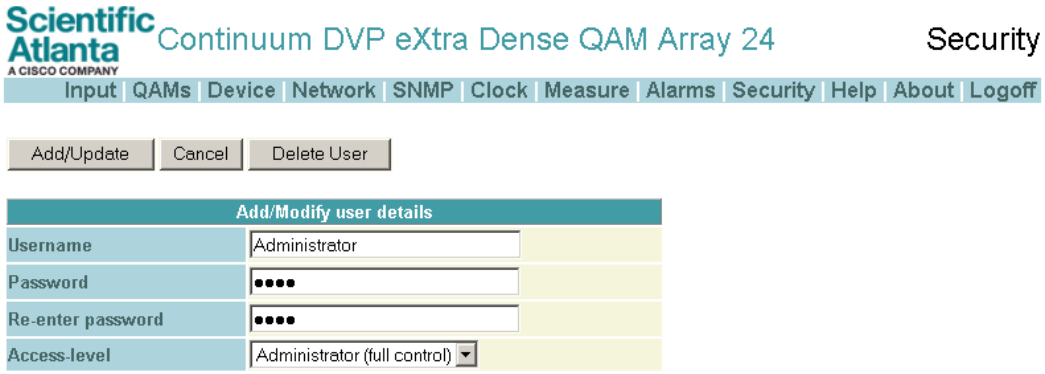
Perform the following steps to modify the parameters of a user account.

1. On the web browser user interface of the XDQA24 system, click the **Security** link.

   Result: The **Security** page is displayed.

2. In the **User Accounts** list point to the **Modify** command button in the row of the account that must be removed.

   Result: The **Add/Modify user details** table is displayed.



3. Modify the parameters of this user account.
4. Press the **Add/Update** command button to confirm or the **Cancel** command button to abort the operation.

Changing the SNMP Community Settings

The community strings used by the SNMP agent to monitor or to manage the device using SNMP can be changed. The following procedure explains how to change the read and write community strings.

1. On the web browser user interface of the XDQA24 system, click the **Security** link.

   Result: The **Security** page is displayed.

2. In the **SNMP read community** box enter the read community string.
3. Confirm the read community string by entering the new string in the **Re-enter SNMP read community** box.
4. In the **SNMP write community** box enter the write community string.
5. Confirm the write community string by entering the new string in the **Re-enter SNMP write community** box.
6. Click on the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Logging On or Off the XDQA24 System

To Logon

The following procedure explains how to log to the XDQA24 system.

1 In the **Address** box of the Web browser, enter the IP address of the XDQA24 system.

Result: The **HTML Security Page** of the web browser user interface appears.

2 Enter the username of your account in the **Username** box.

3 Enter the password in the **Password** box.

Result: When the username and password are correct entered, the web browser user interface becomes accessible.

To Logoff

The following steps explain how to logout the XDQA24 system.

1 On the web browser user interface of the XDQA24 system, click the **Logoff** link.

Result: The *You are successfully logged off. Click here to login again. m*essage appears.

Note: You can logon again to the XDQA24 system by pressing the here link.

3

Configuring the XDQA24 System

Introduction

This chapter describes how to configure the Continuum® DVP™ eXtra Dense QAM Array system using the web browser user interface.

In This Chapter

Changing the Device Settings

General Configuration Settings

Introduction

The general configuration settings of the XDQA24 system are categorized on the **Device** page of the web browser user interface. These settings are:

Device Settings

- **QAM Encoding Type** parameter

  The XDQA24 system can participate in ITU-A (DVB), ITU-B (OpenCable), or ITU-C (Japan) applications. Therefore the XDQA24 has to be set to the correct QAM encoding type.

  Note: After changing the **QAM Encoding Type** parameter all settings located on the **Input**, **QAMs**, and **Device** page will be reset to the default values for the selected QAM encoding type.

- **Device name** and **Device location** parameter

  Both the **Device name** and **Device location** parameter can be used to facilitate the identification of the XDQA24 system in the application. A name and location of maximum 50 characters can be given and can't contain the following characters: $, @, [,], {, }, %, ", =.

  Tip: These parameters appear in the title bar and in the header of the web browser user interface.

Keep Alive Packets Settings on the GbE ports

For unicast IP streaming (1 sender and 1 receiver) the devices connected to the XDQA24 system need the knowledge of the MAC address of the system. Therefore the XDQA24 system broadcasts IP packets containing the MAC address together with the IP address. The devices at the other end of the link can use this information to build their ARL tables. The parameters for this Keep Alive feature are:

- **Enabled** parameter

  This parameter enables or disables this feature.

- **Repetition Rate** parameter

  This parameter determines the time between two successive Keep Alive IP packet broadcasts. A repetition rate between 1 and 999 seconds can be entered.

PSI Settings

- **PAT Rate** and **PMT Rate** parameters

  The playout rate for the PAT and PMT can be set between 0.0 and 30.0 seconds in steps of 0.1 seconds. A playout rate equal to 0 disables the playout of the table. The playout rate for the PAT is default set to 0.1 second and for the PMT to 0.5 seconds.

Stream Configuration Settings

The XDQA24 supports:

- 2 dejitter modes for SPTS streams: VBR (default) and CBR.
- 2 dejitter modes for MPTS streams: Static (default) and Dynamic

- **Stream Mode SPTS**
  - **VBR :** supports VBR SPTS streams. Bitrates are updated each PCR interval. Next to this a long term regulation is running.
  - **CBR**: supports CBR SPTS streams. The bitrate is calculated at startup of the stream. Only a long term regulation is running. A reset stream mechanism is covering a bitrate change. This reset will trigger glitches at the output!

- **Stream Mode MPTS**
  - **Static:** in this mode the bitrate is updated during the startup of the stream. Only a long term regulation is running.
  - **Dynamic:** in this mode the bitrate is updated each PCR interval. Next to this a long term regulation is running.

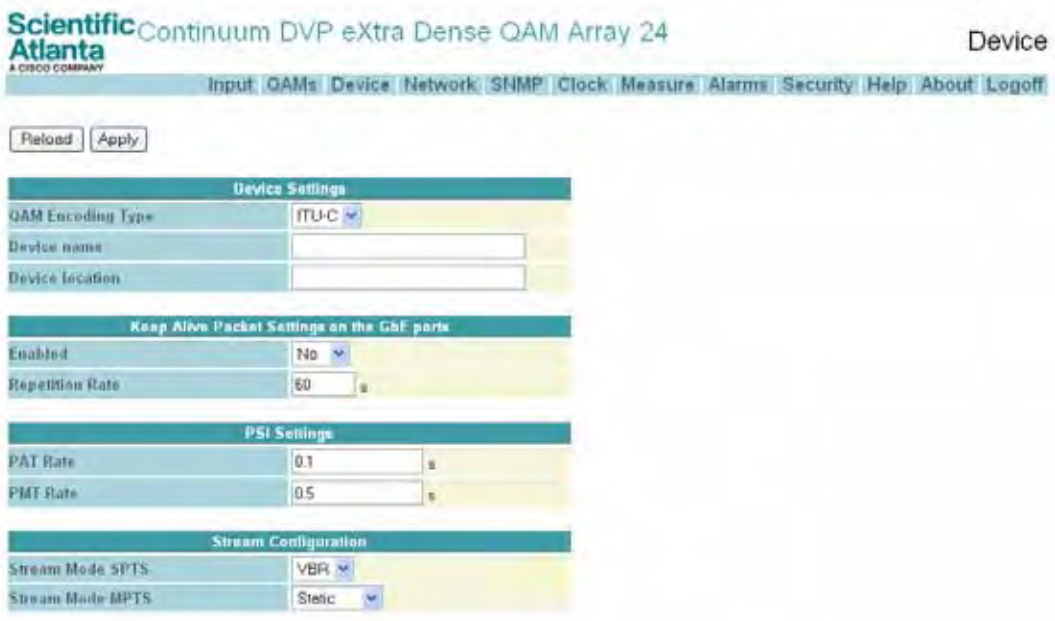
  Note:
  - MPTS that do not have a constant bitrate cannot be de-jittered properly!
  - The buffer FPGA can de-jitter max. 100 ms (incl. network jitter).

To Change the General Configuration Settings

The following procedure explains how to change the general configuration settings of the XDQA24.

1 On the web browser user interface of the XDQA24 system, click on the **Device** link.

Result: The **Device** page is displayed.



2 In the **QAM Encoding Type** drop down box, select *ITU-A*, *ITU-B*, or *ITU-C* and press the **Apply** command button.

Result: The settings of the XDQA24 system are replaced by the factory settings.

3 In the **Device name** box, enter a name for the XDQA system.

4 In the **Device location** box enter the location for the XDQA system.

5 In the **Enabled** drop down, select *Yes* to enable the Keep Alive feature or *No* do disable this feature.

6 In the **Repetition Rate** box, enter the time between two successive Keep Alive IP packet broadcasts.

7 In the **PSI Settings** table, enter the playout rate for the PAT in the **Pate Rate** box and for the PMT in the **PMT Rate** box.

8 In the **Stream Configuration** table, select *VBR* or *CBR* in the **Stream Mode SPTS** drop down box and *Static* or *Dynamic* in the **Stream Mode MPTS** drop down box.

9 Click on the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Setting the Device Clock

About the Device Clock

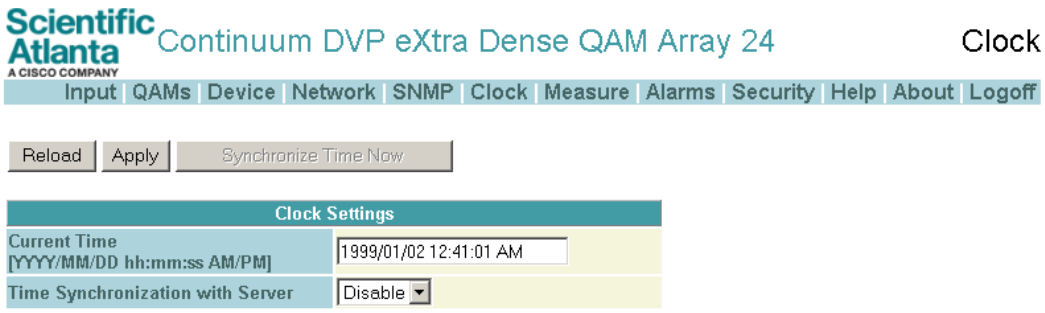
The internal clock of the XDQA24 system can be set manually or can be synchronized with an external device (e.g. Time-server…). The clock settings are grouped under the **Clock** page.

Changing the Current Time

The following procedure explains how to change the current time of the XDQA24 system.

1 On the web browser user interface of the XDQA24 system, click the **Clock** link.

Result: The **Clock** page is displayed.



2 Enter the time and date in the **Current Time** box.

3 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Syncronizing the XDQA24 System with a Time-Sever

The following procedure explains how to synchronize the XDQA24 system with a time-server.

1 On the web browser user interface of the XDQA24 system, click the **Clock** link.

Result: The **Clock** page is displayed.

2 Set the **Time Synchronization with Server** box to *enable*.

3 Enter the following parameters:

- **Synchronization Interval**: this parameter specifies the synchronization interval in minutes.
- **Synchronization Offset**: this parameter specifies the time difference in minutes when the time-server is in another time zone.
- **Synchronization Server IP Address**: this parameter specifies the IP-address of the time-server that should be used for time synchronization.
- **Synchronization Start Time**: this parameter specifies the offset of the synchronization process compared to midnight in hours and minutes.

4 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Note: You can force time synchronization by pressing the **Synchronize Time Now** command button. This function has no influence on the running synchronization cycle. The **Time Synchronization with Server** should be enabled.

Example: The clock of the XDQA24 system should be synchronized every day at 3:00, 12:00, and 21: 00 (9h interval, 540 minutes) with a time-server, which is situated in another time zone (1 hour difference). This time-server has IP address *10.11.12.101*. The following values should be entered:

Clock Settings	
Current Time [YYYY/MM/DD hh:mm:ss AM/PM]	1999/01/01 12:03:40 AM
Time Synchronization with Server	Enable
Synchronization Interval	540 (min.)
Synchronization Offset	60 (min.)
Synchronization Server IP Address	10.11.12.101
Synchronization Start Time	03:00 (hh:mm)

Configuring the GbE Input

Changing the Input Selection

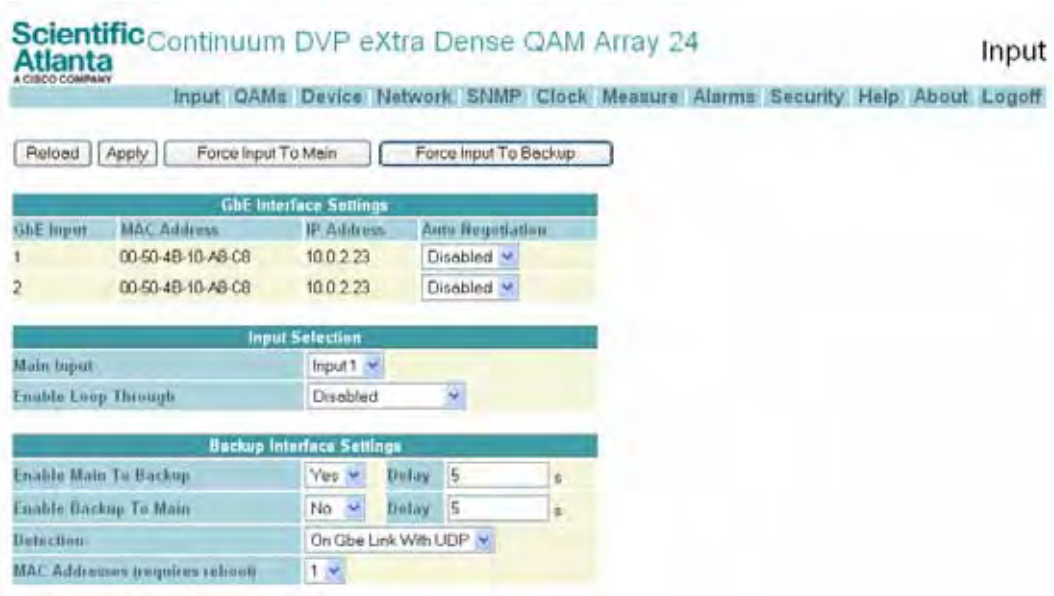
Changing the Main Input

The XDQA24 allows you to select which Gigabit Ethernet port you wish to use as main input.

The following steps explain how to change the **Main Input** configuration.

1 On the web browser user interface of the XDQA24 system, click the **Input** link.

Result: The **Input** configuration page is displayed.



2 In the **Main Input** drop down box, select *input 1* or *input 2*.

3 Click the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Enabling Loop Through

This setting configures the system to act as a bridge between the two inputs. Therefore all data incoming on input 1 gets routed to input 2 and vice versa. Perform the following steps to configure the loop through function.

1 On the web browser user interface of the XDQA24 system, click the **Input** link.

Result: The Input configuration page is displayed.

2 In the **Enable Loop Through** drop down box, select one of the following settings:

- *Disabled*: no data is passed from Main input to Backup input.
- *Promiscuous*: all data arriving at the Main input is passed to the Backup input.

- *Non-Promiscuous*: only data NOT addressed to the Main input is passed to the Backup input.

3 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Changing the GbE Interface Settings

Auto-Negotiation is a function where a device learns the capabilities of the device at the other end of the link and configures itself to the highest common set of capabilities. The following procedure explains how to enable of disable auto-negotiation function for a particular GbE input port.

1 On the web browser user interface of the XDQA24 system, click the **Input** link.

Result: The **Input** configuration page is displayed.

2 In the **Auto Negotiation** drop down box of the GbE input in question, select *Enabled* or *Disabled*.

3 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Changing the Backup Interface Settings

Introduction

For port backup purposes the GbE ports of the XDQA24 system can be configured in such a way that the inactive port takes over the active port if the GbE link on the active port disappears.

Note: A main to backup or backup to main transition can be triggered when a *GbE link* alarm or *GbE Link with UDP* alarm occurs on the active port.

The following backup parameters can be changed

- **Enable Main to Backup** + **Delay**: enables or disables the main to backup transition if a failure arises on the main input. The time (expressed in seconds) the alarm remains active before the backup port becomes active can be entered in the **Delay** box.
- **Enable Backup to Main** + **Delay**: enables or disables the backup to main transition if the failure on the main input disappears. The time (expressed in seconds) the alarm remains active before the mains port becomes active can be entered in the **Delay** box.
- **Detection**: determines the detection mode for main to backup switching.
  - *On GbE Link Only*: the main to backup switching becomes active when the link fails on the active port but is still present on the inactive port.
  - *On GbE Link With UDP*: the main to backup switching becomes active when the link with UDP data fails on the active port.

- **MAC Addresses**: This is an advanced setting and sets the number of MAC addresses in the system.
  The number of MAC Addresses can be set to one of two:
  - *one*: the MAC address of GbE Input1 is used, and the same MAC address will be used for GbE Input2.
  - *two*: the default MAC addresses of GbE Input 1 and GbE Input 2 will be used.

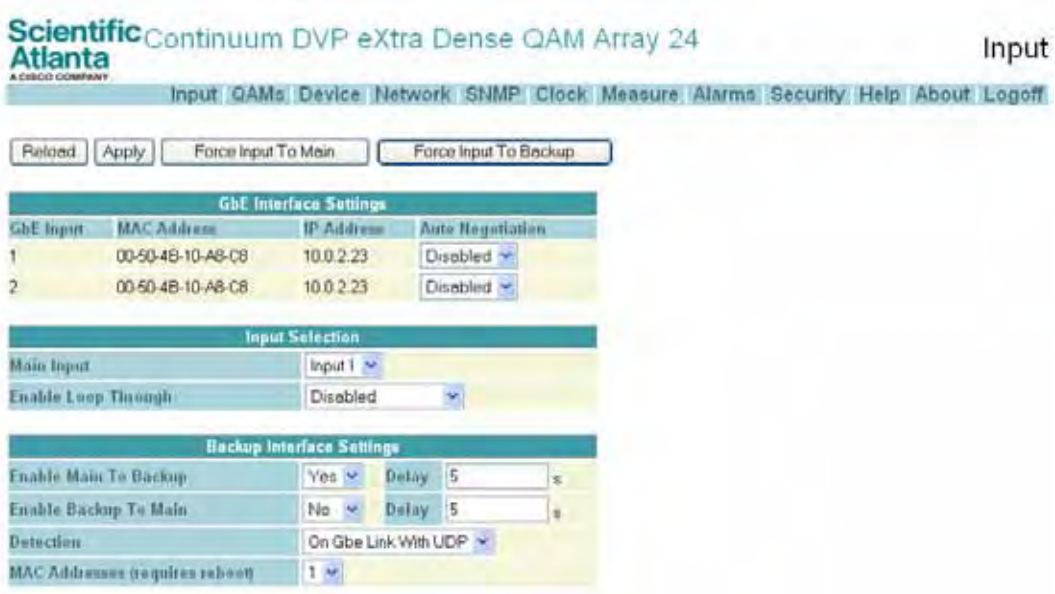
  Note: Using two MAC addresses is recommended.

To Change the Backup Interface Settings

The following procedure describes how to set the backup interface settings of the XDQA24.

1 On the web browser user interface of the XDQA24 system, click the **Input** link.

Result: The **Input** configuration page is displayed.



2 In the **Enable Main To Backup** drop down box, select *Yes* or *No* to enable or disable the main to backup function.

3 Enter the delay time in the **Delay** box next to the **Enable Main To Backup** drop down box.

4 In the **Enable Backup To Main** drop down box, select *Yes* or *No* to enable or disable the backup to main function.

5 Enter the delay time in the **Delay** box next to the **Enable Backup To Main** drop down box.

6 In the **Detection** drop down box, select the detection mode, *On GbE Link Only* or *On GbE Link With UDP*.

7 In the **MAC Addresses** drop down box, select the number of MAC addresses.

8 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Note: After changing the **MAC Addresses** parameter the device has to be rebooted. Rebooting can be done by pointing to the **Please Reboot Device** link and clicking on the **Reboot** command button. The **Please Reboot Device** link is only displayed if a reboot of the device is required.

Tip: When several settings must be changed this reboot action can be postponed until all settings are configured properly.

Remark: It is possible that the delay time to switch from main to backup or backup to main is bigger then indicated in the delay settings. This is due to the IGMP reports that must be sent after a port is activated. The time needed to send these IGMP reports depends on the number of multicast groups the device is working with.

Force Input Buttons

- **Force Input To Main:** this button is used to switch from the backup GbE port to the main GbE port. The switch over only happens in case link is seen on the main port.
- **Force Input To Backup:** this button is used to switch from the main GbE port to the backup GbE port. The switch over only happens in case link is seen on the backup port.

Changing the Network Settings

Introduction

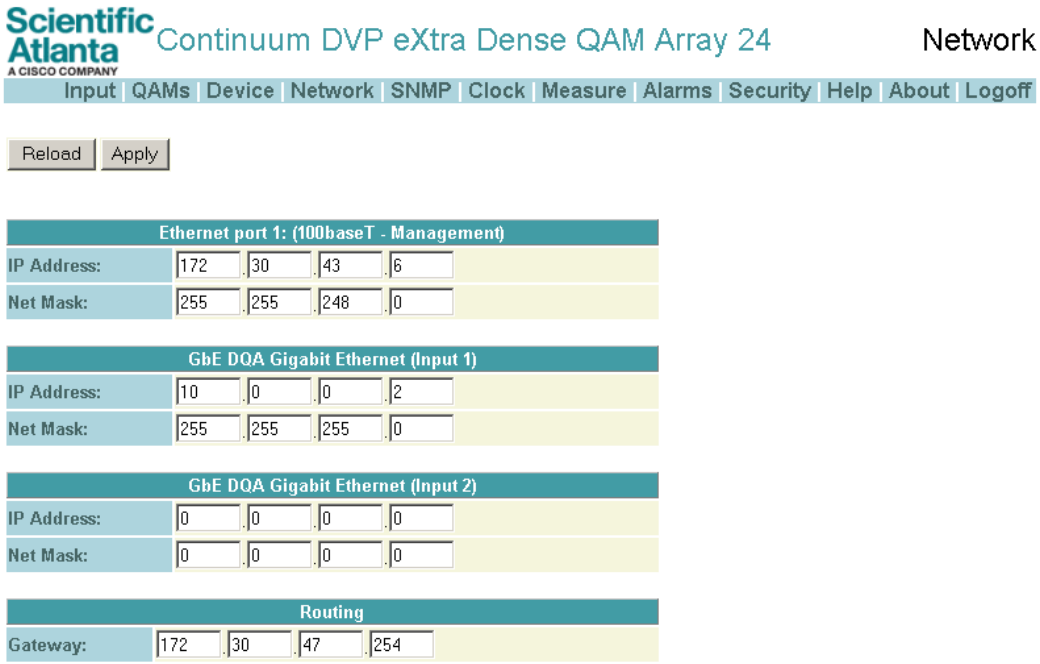
The XDQA24 system is provided with a 10/100Base-T Ethernet port and two Gigabit Ethernet Ports. Both the IP Address and the Net Mask of these ports and the Gateway of the XDQA24 system can be changed.

Changing the Network Settings

The following explains how to change the network settings of the system.

1 On the web browser user interface of the XDQA24, click the **Network** link.

Result: The **Network** page is displayed.



2 Change the **IP Address** and/or **Net Mask** of the **Ethernet port** in question or the **Gateway** of the system.

3 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Notes:

- After changing the **IP Address** the device has to be rebooted.
- Changing the IP Address of the 10/100Base-T Ethernet port involves disconnecting the web browser user interface. You have to use the new IP address to reopen the GUI.
- The Ethernet ports should be connected to a different subnet.

Configuring the Quad Channel QAM Card

Introduction

Before starting the configuration of the Quad Channel QAM cards, the QAM Encoding type (ITU-A, ITU-B or ITU-C) of the XDQA24 system must be set. The procedure to set this parameter can be found in topic *General Configuration Settings* on page 20.

- **Channel Center Frequencies** and **Channel Spacing**

  Only the center frequency of the lower channel needs to be defined.

  As the upper channel is adjacent to the lower channel, its center frequency is defined by the lower channel frequency and the channel spacing.

  The minimum lower channel frequency is 45.000 MHz + 0.5 x Channel spacing.

  The maximum lower channel frequency is 1000.000 MHz - 1.5 x Channel spacing.

  The channel spacing for an ITU-B or ITU-C configured XDQA24 system is predefined on 6 MHz. The channel spacing for an ITU-A configured XDQA24 system can be set to 7 or 8 MHz.

  Notes:

  - The lower channel center frequency of an ITU-B or ITU-C configured XDQA24 system can be set between 48 and 991 MHz because the channel spacing between the lower channel frequency and the upper channel frequency is fixed (6 MHz).
  - If the lower channel center frequency is set to a value outside this range, a message box is displayed .
  - When the **QAM Encoding Type** of the XDQA24 system is set to ITU-B, the lower channel center frequency can be chosen by entering the corresponding EIA digital channel number. The relation between the EIA digital channel numbers and the channel center frequencies can be found in appendix *EIA Channel Numbers* on page 75.

  Both the lower channel center frequency and the spacing frequency can be defined for each RF output.

- **Constellation Grade**

  The constellation grade can be set to QAM64 or to QAM256 for both RF outputs of a Quad Channel QAM card together.

- **Output Level**

  The output level of a RF output depends on the **Channel Mode** parameter. When the **Channel Mode** parameter is set to *Dual Channel*, the output level can be adjusted between 45 and 55 dBmV. When this parameter is set to *Single Lower Channel* or *Single Upper Channel* mode the output level can be adjusted between 50 and 60 dBmV. This parameter is adjustable in steps of 0.5 dBmV and the default value is 50 dBmV.

  Note: If you set the output level to a value outside this range, a message box is displayed.

- **Symbol Rate**

  The symbol rate of an ITU-C version XDQA24 system varies between 5.0 and 5.5 Mbaud and the symbol rate of an ITU-A version between 5.0 and 7.0 Mbaud. The XDQA24 system allows setting the symbol rate in steps of 0.001 Mbaud.
  For an ITU-B version the symbol rate is fixed to 5.056941 and for 64 QAM and 5.360537 for 256 QAM.

  Note: If the symbol rate is set to a value outside this range, a message box is displayed.

- **Spectrum Inversion**

  The spectral inversion can be enabled to invert the asymmetric QAM spectrum if the set-top box cannot invert the spectrum itself. The spectral inversion is default disabled.

- **RF Output**

  The XDQA24 system allows switching off each RF output channel of a Quad Channel QAM card. If the RF output is switched off, then an alarm is generated. The RF output is default enabled.

- **Lower** and **Upper Channel Signal Format**

  The RF output can be set to different modes: viz.:

  - *Normal:* the channel is on.
  - *Diag. Mute* (diagnostic Mute): the channel is muted without affecting the adjacent channel. This mode is useful for test purposes.
  - *Continuous Wave:* the modulation of the channel is switched off.

- **Channel Mode:**
  The channel mode can be set to the following values:

  - *Single Lower Channel*: the upper channel will be disabled at the output
  - *Single Upper Channel*: the lower channel will be disabled at the output
  - *Dual Channel*: both the lower and upper channel will be enabled at the output

  Note: After changing the **Channel Mode** parameter, a small interrupt will occur on any active channel of the corresponding output.

- **PRBS Stuffing**:

  256 QAM signals with many MPEG2 stuffing packets might cause signal lock problems on some set-top boxes. This can be solved by using pseudo random binary sequence (PRBS) stuffing packets.

  Note: PRBS stuffing packets are stuffing packets filled with random data.

- **Interleaving**

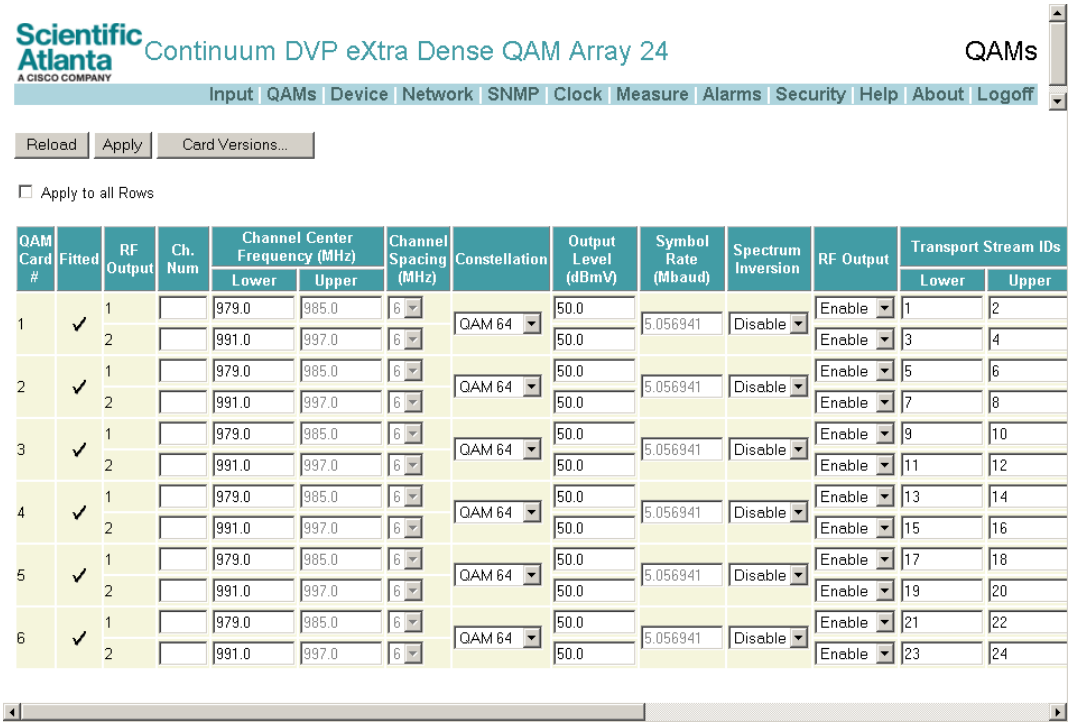
  The ITU-B version XDQA24 system allows modifying the interleaving type.

To Configure the Quad Channel QAM Card

Perform the following steps to configure the Quad Channel QAM card settings.

1 On the web browser user interface of the XDQA24 system, click the **QAMs** link.

Result: The **QAMs** configuration page is displayed.



QAM Card #	Fitted	RF Output	Ch. Num	Channel Center Frequency (MHz) Lower	Channel Center Frequency (MHz) Upper	Channel Spacing (MHz)	Constellation	Output Level (dBmV)	Symbol Rate (Mbaud)	Spectrum Inversion	RF Output	Transport Stream IDs Lower	Transport Stream IDs Upper
1	✓	1		979.0	985.0	6	QAM 64	50.0	5.056941	Disable	Enable	1	2
		2		991.0	997.0	6		50.0			Enable	3	4
2	✓	1		979.0	985.0	6	QAM 64	50.0	5.056941	Disable	Enable	5	6
		2		991.0	997.0	6		50.0			Enable	7	8
3	✓	1		979.0	985.0	6	QAM 64	50.0	5.056941	Disable	Enable	9	10
		2		991.0	997.0	6		50.0			Enable	11	12
4	✓	1		979.0	985.0	6	QAM 64	50.0	5.056941	Disable	Enable	13	14
		2		991.0	997.0	6		50.0			Enable	15	16
5	✓	1		979.0	985.0	6	QAM 64	50.0	5.056941	Disable	Enable	17	18
		2		991.0	997.0	6		50.0			Enable	19	20
6	✓	1		979.0	985.0	6	QAM 64	50.0	5.056941	Disable	Enable	21	22
		2		991.0	997.0	6		50.0			Enable	23	24

2 In the **Lower Channel Center Frequency** box enter the center frequency of the lower channel. Perform this step for both RF outputs.

Note: When the QAM encoding type of the XDQA24 system is set to ITU-B, the channel center frequencies can also be determined by entering the EIA digital channel number in the **Ch. Number** box. The relation between the EIA digital channel numbers and the channel center frequencies can be found in appendix *EIA Channel Numbers* on page 75.

3 In the **Channel Spacing** drop down box, select the spacing frequency (7 or 8). Perform this step for both RF outputs.

Note: The **Channel Spacing** drop down box is not applicable when the QAM encoding type of the XDQA24 system is set to ITU-B or ITU-C.

4 In the **Constellation** check box of the Dual QAM Card in question, select the constellation grade for your application.

5 In the **Output Level** box, enter the output level. Perform this step for both RF outputs.

6 In the **Symbol Rate** box, enter the Baudrate.

7 In the **Spectrum Inversion** drop down box, select *Enable* or *Disable*.

8 In the **RF Output** drop down box, select *Enable* or *Disable* to switch on or off the RF output.

9 In the **Lower Channel Signal Format** or **Upper Channel Signal Format** drop down box, select the signal format for the channel in question. Perform this step for both RF outputs.

10 In the **PRBS Stuffing** drop down box of the QAM card in question, select *Enable* or *Disable*. Perform this step for both RF outputs.

11 In the **Interleaving** drop down box of the QAM card in question, select the interleaving type.

12 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Perform this procedure for all Quad Channel QAM Cards.

Service Routing

General

Service routing allows routing input services from the GbE input to a QAM channel.

Mapping Rule

The IP-encapsulated MPEG2 Single Program Transport Streams (SPTS) on one of the two Gigabit Ethernet interfaces will be de-encapsulated and routed to one of the Multiple Program Transport Streams (MPTS) on one of the 24 QAM outputs. A mapping table defines the mapping rules between UDP ports, program numbers and PID ranges.

The following table reflects the relation between the Quad Channel QAM Card number, slot number, RF output number, frequency, QAM channel number, and Transport Stream of the XDQA24 system.

Card Number	Slot Number	RF Output Number	Frequency	Channel Number	Default Transport stream IDs
1	1	1	Lower	1	1
			Upper	2	2
		2	Lower	3	3
			Upper	4	4
2	2	1	Lower	5	5
			Upper	6	6
		2	Lower	7	7
			Upper	8	8
3	3	1	Lower	9	9
			Upper	10	10
		2	Lower	11	11
			Upper	12	12
4	4	1	Lower	13	13
			Upper	14	14
		2	Lower	15	15

5	5	1	Lower	17	17
			Upper	18	18
		2	Lower	19	19
			Upper	20	20
6	6	1	Lower	21	21
			Upper	22	22
		2	Lower	23	23
			Upper	24	24

The mapping rules can be defined using the following formulas:

- UDP port = 49152 + 256 x (QAM Channel No - 1) + 2 x Program Number
  with
  - QAM Channel No = a number between 1 and 24 (see table)
  - Program Number: a number between 2 and 33
- PMT PID = (PID Map value + 1) x 16
  with
  - PID Map value = Program Number (in case of default mapping table)
- ES PID Range:
  - Start: PMT PID + 1
  - End: PMT PID + 15

Notes:

- The UDP port is always even.
- An UDP port with program number 0 or 1 is not allowed.

Example: We have to define a mapping rule for Quad Channel QAM Card number 4, RF output 2, the upper frequency, and program number 10. The QAM channel number for the upper frequency of the second RF output of QAM Card 4 is 16 (refer to the table earlier in this topic).

- UDP port = 49152 + 256 x (16 - 1) +2 x 10 = 53012
- PMT PID = (10 + 1) x 16 = 176
- ES PID Start = 176 + 1 = 177
- ES PID End = 176 + 15 = 191

Note: The XDQA24 system allows changing the default settings of the mapping rule. For more information concerning the mapping rules, please refer to the *Continuum DVP (X)DQA(24), DQA Mapping Assistant Tool for User-Defined UDP Port Mapping Application Note.*

Changing the Transport Stream Identifier

The Transport Stream identifier serves as a label to identify the transport stream of the channel in question from any other transport stream in the network. The Program Association Table (PAT) includes the Transport Stream identifier.

1 On the XDQA24 configuration site, click the **QAMs** link.

Result: The **QAMs** page is displayed.

ool e ud)	Spectrum Inversion	RF Output	Transport Stream IDs		Channel Signal Format		Channel Mode	PRBS Stuffing	Interleaving
			Lower	Upper	Lower	Upper			
	Disable	Enable	1	2	Normal	Normal	Dual Channel	Disable	I=12; J=17
		Enable	3	4	Normal	Normal	Dual Channel	Disable	
	Disable	Enable	5	6	Normal	Normal	Dual Channel	Disable	I=12; J=17
		Enable	7	8	Normal	Normal	Dual Channel	Disable	
	Disable	Enable	9	10	Normal	Normal	Dual Channel	Disable	I=12; J=17
		Enable	11	12	Normal	Normal	Dual Channel	Disable	
	Disable	Enable	13	14	Normal	Normal	Dual Channel	Disable	I=12; J=17
		Enable	15	16	Normal	Normal	Dual Channel	Disable	
	Disable	Enable	17	18	Normal	Normal	Dual Channel	Disable	I=12; J=17
		Enable	19	20	Normal	Normal	Dual Channel	Disable	
	Disable	Enable	21	22	Normal	Normal	Dual Channel	Disable	I=12; J=17
		Enable	23	24	Normal	Normal	Dual Channel	Disable	

2 In the **Lower** and **Upper - Transport Stream IDs** of the QAM Card in question, enter the Transport Stream identifier. A value can be entered in the range between 1 and 65535.

3 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Note: The original Transport Stream ID in a MPTS will not be changed, but is passed transparantly, unless the XDQA24 is instructed to regenerate the PAT (must be set in mapping table).

Changing SNMP Settings

Introduction

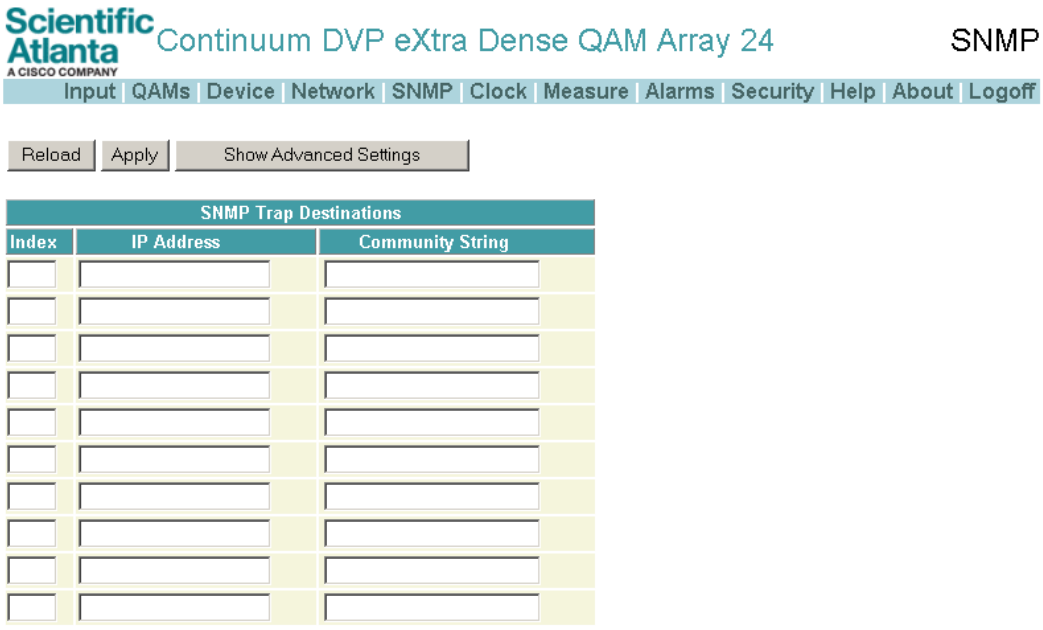
The **SNMP Trap Destinations** table on the **SNMP** page represents to which destinations IP address the traps are sent. Traps can be logged into the ROSA system as messages. More information concerning ROSA can be found in the ROSA User's Guide.

To Change SNMP Settings

The following explains how to complete a destination entry.

1 On the XDQA24 configuration site, click the **SNMP** link.

Result: The **SNMP** page is displayed.



2 Enter the following parameters in the trap destination entry:

- **Index**: an object that uniquely identifies a trap destination entry
- **IP Address**: the IP address of the trap destination
- **Community String**: this parameter can be used to provide authentication, privacy and authorization services.

Note: When the trap destination is a Copernicus™ element manager (EM) with the ROSA Network Management System (NMS), the IP address of the Copernicus has to be entered.

3 Press the **Apply** command button to confirm or the **Reload** command button to abort the operation.

Notes:

- When a destination entry is not complete or you have to disable an entry, press the **Show Advanced Settings** command button and select *NotInService* in the **Row Status** drop down box.
- To delete a destination entry, press the **Show Advanced Settings** command button and select *Destroy* in the **Row Status** drop down box.

4

Viewing the Measurements

Introduction

This chapter outlines the measurement feature of the Continuum® DVP™ eXtra Dense QAM Array system.

In This Chapter

Introduction

The XDQA24 system is provided with a powerful measurement system. The measurement results are categorized on the measure page of the web browser user interface.

The XDQA24 measurements are divided in 5 groups, viz.:

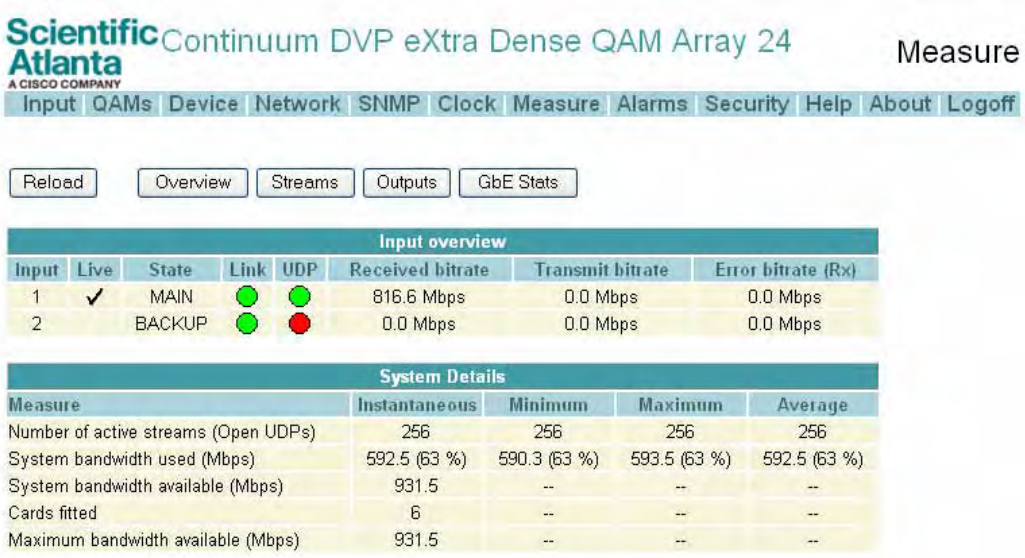
- The system measurements
- The GbE input measurements
- The GbE statistics
- The measurements per stream
- The measurements per output

Viewing the System and GbE Input Measurements

The following explains how to view the system and GbE input measurements.

1 On the web browser user interface of the XDQA24 system, click on the **Measure** link.

Result: The **Measure** page with the system and GbE input measurements is displayed.



The following system measurements can be checked:

- **Number of active streams (Open UDPs)**: Number of active video streams at the GbE Input
- **System bandwidth used (Mbps)**: Actual bitrate of all fitted Quad Channel QAM cards
- **System bandwidth available (Mbps)**: Maximum bitrate achievable with the fitted Quad Channel QAM Cards
- **Cards fitted**: Number of Quad Channel QAM Cards fitted in the chassis
- **Maximum bandwidth available (Mbps)**: The maximum value if all Quad Channel QAM Cards were fitted

The following GbE input measurements can be checked:

- **State**: Main or Backup port (configuration of port)
- **Selected**: Indicates the active port.
- **Link**: Reflects the presence of GbE link
- **UDP**: Reflects the presence of UDP data for this port
- **Received bitrate**: Total incoming bitrate on the port

- **Transmit bitrate**: Total outgoing bitrate on the port
- **Error bitrate**: Total bitrate of errored data on the input

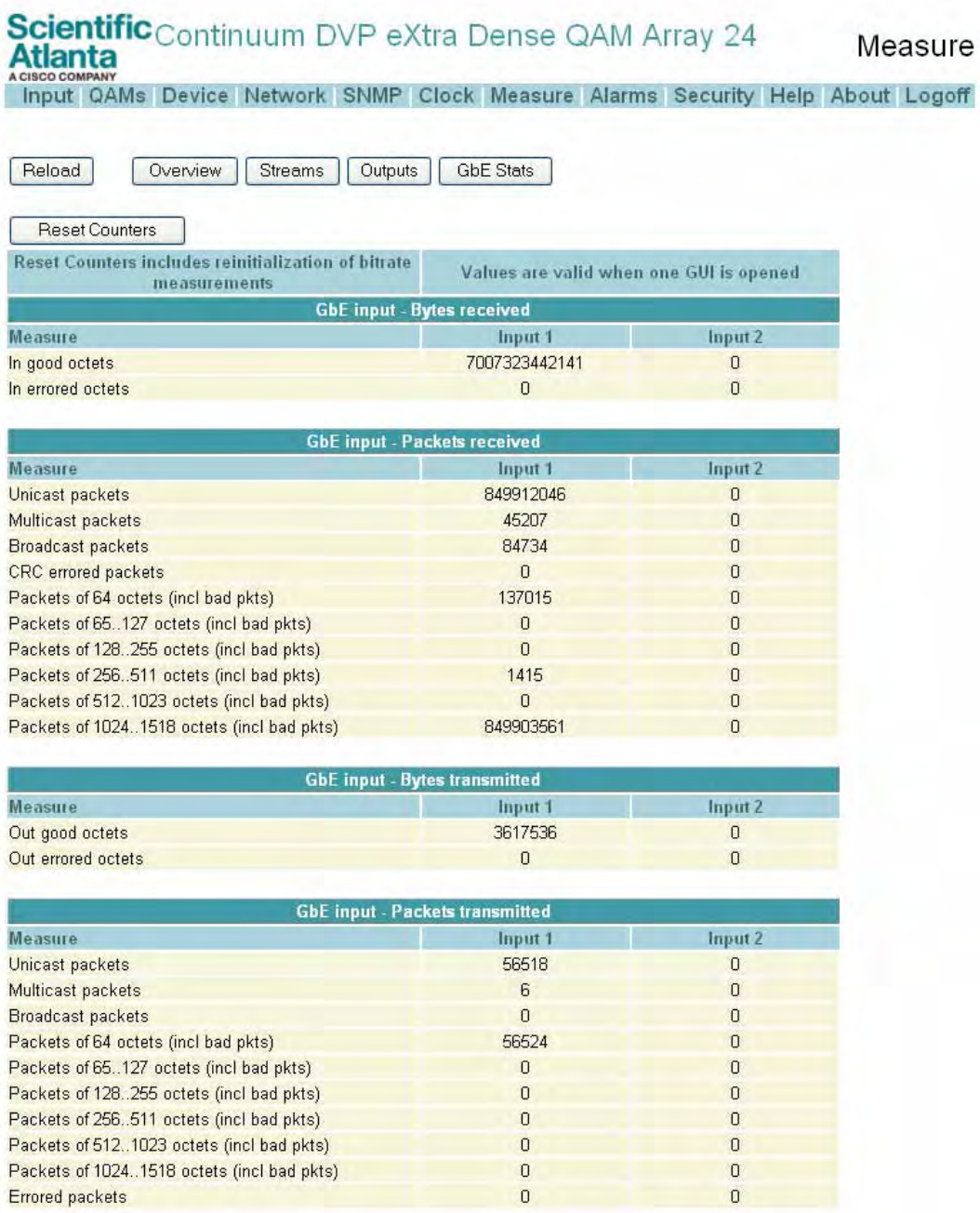
Note: When another measurement sub page is selected, press the **Overview** command button to select the system measurements.

Viewing GbE Statistics

The followng explains how to view the GbE Statistics.

1 On the web browser user interface of the XDQA24 system, click on the **Measure** link and point to the **GbE Stats** command button.

Result: The **Measure** page with GbE Statistics is displayed.



Reset Counters includes reinitialization of bitrate measurements	Values are valid when one GUI is opened	
GbE input - Bytes received		
Measure	**Input 1**	**Input 2**
In good octets	7007323442141	0
In errored octets	0	0

GbE input - Packets received		
Measure	**Input 1**	**Input 2**
Unicast packets	849912046	0
Multicast packets	45207	0
Broadcast packets	84734	0
CRC errored packets	0	0
Packets of 64 octets (incl bad pkts)	137015	0
Packets of 65..127 octets (incl bad pkts)	0	0
Packets of 128..255 octets (incl bad pkts)	0	0
Packets of 256..511 octets (incl bad pkts)	1415	0
Packets of 512..1023 octets (incl bad pkts)	0	0
Packets of 1024..1518 octets (incl bad pkts)	849903561	0

GbE input - Bytes transmitted		
Measure	**Input 1**	**Input 2**
Out good octets	3617536	0
Out errored octets	0	0

GbE input - Packets transmitted		
Measure	**Input 1**	**Input 2**
Unicast packets	56518	0
Multicast packets	6	0
Broadcast packets	0	0
Packets of 64 octets (incl bad pkts)	56524	0
Packets of 65..127 octets (incl bad pkts)	0	0
Packets of 128..255 octets (incl bad pkts)	0	0
Packets of 256..511 octets (incl bad pkts)	0	0
Packets of 512..1023 octets (incl bad pkts)	0	0
Packets of 1024..1518 octets (incl bad pkts)	0	0
Errored packets	0	0

The following statistics can be checked:

- **GbE input - Bytes received**
  - **In good octets**: represents the amount of error-free octets received by the corresponding port.
  - **In errored octets**: represents the amount of errored octets received by the corresponding port.
- **GbE input - Packets received**
  - **Unicast packets**: represents the number of packets successfully received by the corresponding port and which were directed to the unicast address.
  - **Multicast packets**: represents the number of packets successfully received by the corresponding port and which were directed to the multicast address.
  - **Broadcast packets**: represents the number of packets successfully received by the corresponding port and which were directed to the broadcast address.
  - **CRC errored packets**: the total number of packets received by the corresponding port, which had a length between 64 and 1518 bytes, but had either a bad Frame Check Sequence (FCS) with an integral number of octets (FCS Error) or a bad FCS with a non-integral number of octets (Alignment Error)
  - **Packets of 64 octets (incl bad pkts)**: represents the number of error-free packets received by the corresponding port, which had a length of 64 bytes.
  - **Packets of 65..127 octets (incl bad pkts)**: represents the number of packets received by the corresponding port, which had a length between 65 and 127 bytes.
  - **Packets of 128..255 octets (incl bad pkts)**: represents the number of packets received by the corresponding port, which had a length between 128 and 255 bytes.
  - **Packets of 256..511 octets (incl bad pkts)**: represents the number of packets received by the corresponding port, which had a length between 256 and 511 bytes.
  - **Packets of 512..1023 octets (incl bad pkts)**: represents the number of packets received by the corresponding port, which had a length between 512 and 1023 bytes.
  - **Packets of 1024..1518 octets (incl bad pkts)**: represents the number of packets received by the corresponding port, which had a length between 1024 and 1518 bytes.

- **GbE input - Bytes transmitted**
  - **Out good octets**: represents the total amount of error-free packets transmitted by the corresponding port.
  - **Out errored octets**: represents the total amount of errored packets transmitted by the corresponding port.
- **GbE input - Packets transmitted**
  - **Unicast packets**: represents the number of error-free packets transmitted by the corresponding port to a unicast address.
  - **Multicast packets**: represents the number of error-free packets transmitted by the corresponding port to a multicast address.
  - **Broadcast packets**: represents the number of error-free packets transmitted by the corresponding port to a broadcast address.
  - **Packets of 64 octets (incl bad pkts)**: represents the number of frames transmitted by the corresponding port, which had a length of 64 octets.
  - **Packets of 65..127 octets (incl bad pkts)**: represents the number of frames transmitted by the corresponding port, which had a length between 65 and 127 octets.
  - **Packets of 128..255 octets (incl bad pkts)**: represents the number of frames transmitted by the corresponding port, which had a length between 128 and 255 octets.
  - **Packets of 256..511 octets (incl bad pkts)**: represents the number of frames transmitted by the corresponding port, which had a length between 256 and 511 octets.
  - **Packets of 512..1023 octets (incl bad pkts)**: represents the number of frames transmitted by the corresponding port, which had a length between 512 and 1023 octets.
  - **Packets of 1024..1518 octets (incl bad pkts)**: represents the number of frames transmitted by the corresponding port, which had a length between 1024 and 1518 octets.
  - **Errored packets**: represents the number or errored packets transmitted by the corresponding port

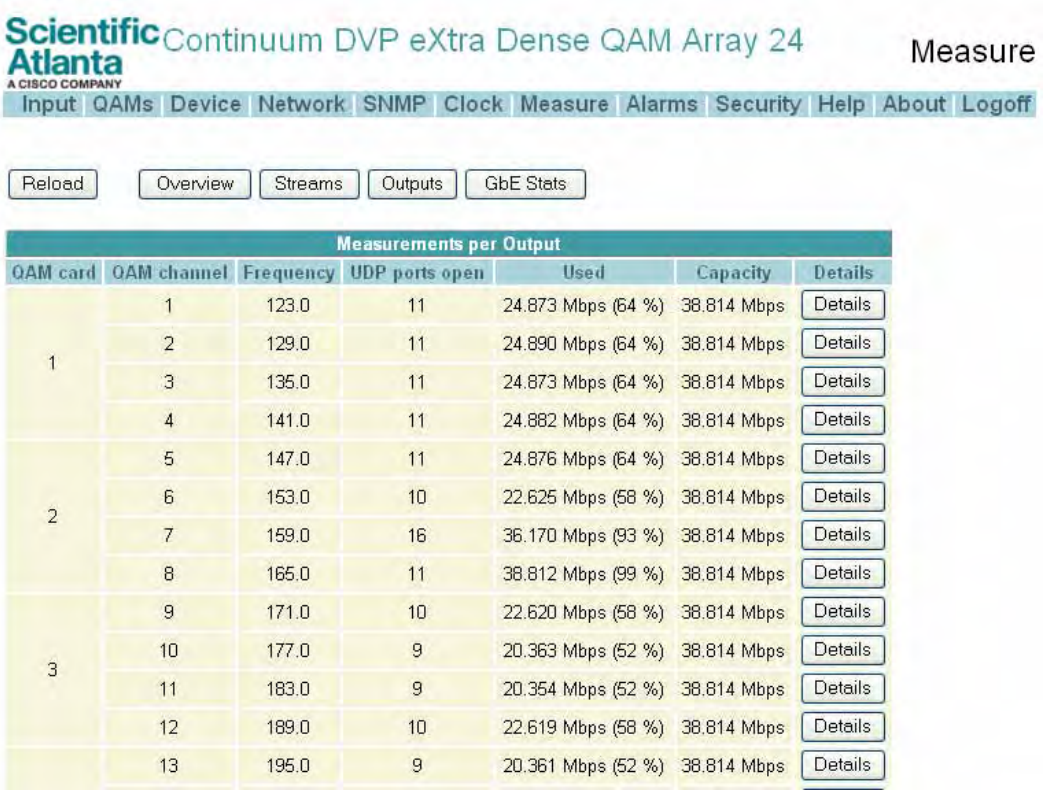
Note: The GbE statistics together with the bitrate measurements can be reset by pressing the **Reset Counters** command button.

Viewing the Measurements per Output

The following explains how to view the measurements per output.

1 On the web browser user interface of the XDQA24 system, click on the **Measure** link and point to the **Outputs** command button.

Result: The **Measure** page with the measurements per output is displayed.



Measurements per Output

QAM card	QAM channel	Frequency	UDP ports open	Used	Capacity	Details
1	1	123.0	11	24.873 Mbps (64 %)	38.814 Mbps	Details
	2	129.0	11	24.890 Mbps (64 %)	38.814 Mbps	Details
	3	135.0	11	24.873 Mbps (64 %)	38.814 Mbps	Details
	4	141.0	11	24.882 Mbps (64 %)	38.814 Mbps	Details
2	5	147.0	11	24.876 Mbps (64 %)	38.814 Mbps	Details
	6	153.0	10	22.625 Mbps (58 %)	38.814 Mbps	Details
	7	159.0	16	36.170 Mbps (93 %)	38.814 Mbps	Details
	8	165.0	11	38.812 Mbps (99 %)	38.814 Mbps	Details
3	9	171.0	10	22.620 Mbps (58 %)	38.814 Mbps	Details
	10	177.0	9	20.363 Mbps (52 %)	38.814 Mbps	Details
	11	183.0	9	20.354 Mbps (52 %)	38.814 Mbps	Details
	12	189.0	10	22.619 Mbps (58 %)	38.814 Mbps	Details
	13	195.0	9	20.361 Mbps (52 %)	38.814 Mbps	Details

The following measurements can be checked:

- **QAM card**: The number of card
- **QAM channel**: The QAM channel number
- **Frequency**: The RF output center frequency for that channel
- **UDP ports open**: The number of ports on that channel
- **Used**: Measured data bitrate on the output channel
- **Capacity**: The total capacity of that channel

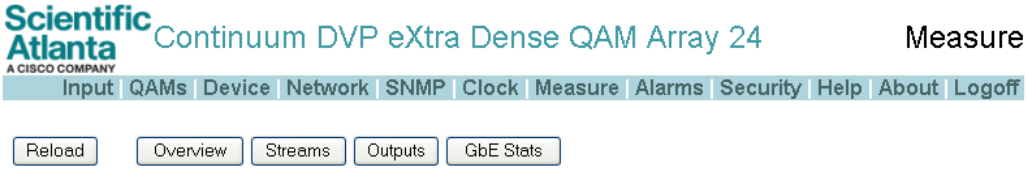
Note: Press the **Details** command button to select the sub page with only the streams for that QAM channel.

Viewing the Measurements per Stream

The following explains how to view the measurements per stream.

1 On the web browser user interface of the XDQA24 system, click on the **Measure** link and point the **Streams** command button.

Result: The **Measure** page with the measurements per stream is displayed.



Measurements per Stream

Type	IP address	UDP port	Output	Status	Prog No	PMT PID	ES PIDs	Bitrate
SPTS	unicast	49156	1	Complete	2	48 (0x30)	2	10.000 Mbps
SPTS	unicast	49158	1	Complete	3	64 (0x40)	2	10.000 Mbps
SPTS	unicast	49160	1	Complete	4	80 (0x50)	2	10.000 Mbps
SPTS	unicast	49162	1	Complete	5	96 (0x60)	2	10.000 Mbps
SPTS	unicast	49164	1	Complete	6	112 (0x70)	2	10.000 Mbps
SPTS	unicast	49166	1	Complete	7	128 (0x80)	2	10.000 Mbps
SPTS	unicast	49168	1	Complete	8	144 (0x90)	2	10.000 Mbps
SPTS	unicast	49170	1	Complete	9	160 (0xa0)	2	10.000 Mbps
SPTS	unicast	49412	2	Complete	2	48 (0x30)	2	10.000 Mbps
SPTS	unicast	49414	2	Complete	3	64 (0x40)	2	10.000 Mbps
SPTS	unicast	49416	2	Complete	4	80 (0x50)	2	10.000 Mbps
SPTS	unicast	49418	2	Complete	5	96 (0x60)	2	10.000 Mbps
SPTS	unicast	49420	2	Complete	6	112 (0x70)	2	10.000 Mbps

The following measurements can be checked:

- **Type**: The incoming stream type
- **IP address**: The address of the incoming stream
- **UDP port**: The port number
- **Output**: Which QAM channel the program is routed to.
- **Status**: Status of the port, *Looking for PMT* or *Complete*
- **Prog no**: The program number of the output program
- **PMT PID**: The PID which the PMT has been remapped to.
- **ES PIDs**: Number of Elementary streams in the program (Video, Audio, Data, ECMs, etc)
- **Bitrate**: The measured bitrate of the incoming stream

5

Viewing Alarm Messages

Introduction

This chapter describes the procedure to check the alarms using the web browser user interface and contains a list with explanation of all of Continuum® DVP™ eXtra Dense QAM Array system alarms.

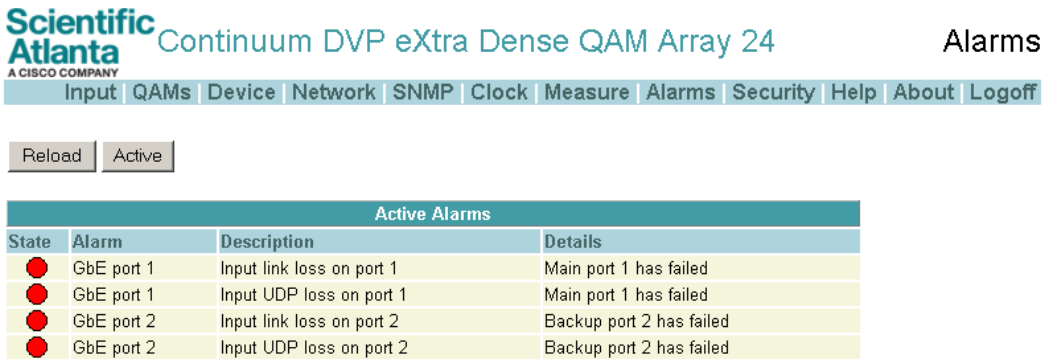
In This Chapter

Viewing Alarms

Perform the following steps to check the alarms.

1 On the web browser user interface of the XDQA24 system, click on the **Alarms** link.

Result: The **Alarms** page is displayed.



Alarm Messages

Checking Alarm Messages

TheXDQA24 system is able to generate alarm messages and to forward them as SNMP traps to a number of SNMP managers.

On the web browser user interface you can also view an alarm log on the **Alarms** page.

Note: Several alarm subjects are made up of the Quad Channel QAM card number to which the alarm applies followed by the alarm. For example the RF Output alarm for card 2 is presented as **CARD 2 RF OUTPUT**.

Alarm messages are classified into seven categories:

- General Errors
- Hardware Errors
- Boot Errors
- Configuration Errors
- SI Processor Errors
- System Errors
- Warnings

General Errors

The following table contains the general errors.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Removed **Ref:** Removed **Detail:** Card no longer installed	This alarm is generated when one of the QAM cards is removed from the system. <X> represents the QAM card position.
Alarm: Qam Card <X>: RF Output **Ref:** RF Output <Y> Off **Detail:** RF Output disabled	This alarm is generated when a RF output of a QAM card is switched off. The RF output can be switched off either by the system (because there is an error condition) or by the user using the GUI. When the RF output is switch on again (either by the system or the user) then this alarm is cleared. <X> represents the QAM card position and <Y> the RF Output number.
Alarm: Qam Card <X>: Temp minor **Ref:** Over Temperature **Detail:** Temperature <Y> too high	This alarm is generated when the temperature of the QAM card in question is out of specification. Check that the cooling of the unit is working correctly. The alarm clears when the temperature is back in specification. <X> represents the QAM card position and <Y> the card temperature.
Alarm: Qam Card <X>: Temp major **Ref:** Temperature Critical **Detail:** Temperature <Y> critical	This alarm is generated when the temperature of the QAM card in question is too high. Both RF outputs of this board are switched off. Check that the cooling of the unit is working correctly. The alarm clears when the temperature is back in specification. <X> represents the QAM card position and <Y> the card temperature.
Alarm: GbE port <X> **Ref:** Input link loss on port <X> or Input UDP loss on port <X> **Detail:** <Y> port <X> has failed	This alarm is generated when no valid signal is present on GbE input 1 or 2. The term *valid signal* is determined by the setting of the **Detection** mode parameter. More information concerning this parameter, see **Setting the Detection Mode**. <X> represents the GbE port number and <Y> main or backup.
Alarm: Streams **Ref:** 1 or more streams gets a Input buffertime overflow **Detail:**	This alarm is generated when the dejitter buffertime goes in overflow. This message comes together with a stream reset of the affected stream.

Hardware Errors

The following table contains the hardware errors.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: I2c eeprom **Ref:** Eeprom comms failure **Detail:** (see description)	The System Controller / Input Board failed to communicate with the EEPROM device on the QAM card in question. The board should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. This alarm clears when the communication is established with the device. <X> represents the card number. The detail will indicate the I2c error that has been detected.
Alarm: Qam Card <X>: I2c qamlm80 **Ref:** Qam QamLm80 comms failure **Detail:** (see description)	The System Controller / Input Board failed to communicate with the LM80 device on the QAM card in question. The board should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. This alarm clears when the communication is established with the device. <X> represents the card number. The detail will indicate the I2c error that has been detected.
Alarm: Qam Card <X>: Qamlm80 status **Ref:** Qam Lm80 not monitoring **Detail:** (see description)	There was a communication failure and the LM80 is not returning monitoring information. The QAM card should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. This alarm clears when the communication is established with the device. <X> represents the card number. The detail will indicate the I2c error that has been detected.
Alarm: Qam Card <X>: Misc **Ref:** Qam 7K64 comms failure **Detail:** (see description)	The System Controller / Input Board has failed to communicate with the FPGA device on the Quad Channel QAM Card in question. The board should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. This alarm clears when the communication is established with the device. <X> represents the card number. The detail will indicate the I2c error that has been detected.
Alarm: Qam Card <X>: I2c dac **Ref:** Qam Dac comms failure **Detail:** (see description)	The System Controller / Input Board has failed to communicate with the DAC device on the QAM card in question. The board should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. This alarm clears when the communication is established with the device. <X> represents the card number. The detail will indicate the I2c error that has been detected.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Calibration **Ref:** Calibration file error **Detail:** (see description)	The calibration data on the QAM card in question became corrupt. A Scientific Atlanta representative should be contacted. <X> represents the card number. The detail will indicate the I2c error that has been detected.
Alarm: Qam Card <X>: Oven <Y> **Ref:** Oven Temperature **Detail:** - - - -	The temperature of the modulator stabilization circuit is out of specification. The board should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. This alarm clears when the communication is established with the device. <X> represents the QAM card position and <Y> the RF Output number.
Alarm: Rear Panel Fan <X> **Ref:** Fan malfunction **Detail:** Rear panel fan <X> failed	The indicated fan has stopped working. Check the fans. When the fans are working again the alarm clears. <X> represents the fan number.

PSU Errors

The following table lists the errors concerning the Power Supply Unit.

Alarm/Reference/Detail	Description
Alarm: Alarm Main Psu **Ref:** PSU malfunction **Detail:** Main PSU failed	The MAIN power supply unit (PSU) fails and the BACKUP PSU became active. Remove the MAIN PSU and reinsert the module after a while. If this action does not clear the alarm then the PSU module should be replaced.
Alarm: Alarm Backup Psu **Ref:** PSU malfunction **Detail:** Backup PSU failed	The BACKUP power supply unit (PSU) is installed but fails. Remove the BACKUP PSU and reinsert the module after a while. If this action does not clear the alarm then the PSU module should be replaced.

Configuration Errors

The Continuum DVP eXtra Dense QAM Array 24 device uses a configuration file to store the settings for the QAM cards and the system. If there is problem with this file, either with the value of a parameter or because a parameter is missing, a configuration alarm is raised.

Configuration Errors

The following table contains the configuration errors.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Configuration **Ref:** Invalid Constellation value **Detail:** -	QAM 64 and QAM 256 are the only support QAM modes for Continuum DVP Dense QAM Array 24. This error is raised when a value other than these is found in the configuration file. In this case a Scientific Atlanta representative should be contacted. <X> represents the QAM card number.
Alarm: Qam Card <X>: Configuration **Ref:** Output <Y> <Z> Signal invalid value **Detail:** -	If a Signal Format parameter in the configuration file contains an illegal value then this alarm is raised. <X> represents the QAM card number, <Y> the RF Output, and <Z> the channel (Up of Low).
Alarm: Qam Card <X>: Configuration **Ref:** Problem with Interleaving value **Detail:** -	If the Interleaving parameter in the configuration file contains an illegal value then this alarm is raised. <X> represents the QAM card number.
Alarm: Qam Card <X>: Configuration **Ref:** Output <Y> Channel Spacing missing **Detail:** Channel Spacing default to <Z>	If a Channel Spacing parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number and <Y> the RF output number. <Z>: spacing depending on configuration
Alarm: Qam Card <X>: Configuration **Ref:** Output <Y> Frequency missing **Detail:** Frequency default to <Z>	If a Frequency parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number and <Y> the RF output number. <Z>: frequency depending on configuration
Alarm: Qam Card <X>: Configuration **Ref:** Constellation missing **Detail:** Constellation default to Qam 64	If the Constellation parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number.
Alarm: Qam Card <X>: Configuration **Ref:** Interleaving missing **Detail:** Interleaving default to <Y>	If the Interleaving parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number. <Y>: Value depending on configuration

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Configuration **Ref:** Output <Y> Level missing **Detail:** Output Level default to 50	If an Output Level parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Configuration **Ref:** Symbol Rate missing **Detail:** Symbol Rate default to <Y>	If the Symbol Rate parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number. <Y>: rate depending on configuration
Alarm: Qam Card <X>: Configuration **Ref:** Inversion On missing **Detail:** Spectrum Inv default to NotInv	If the Inversion parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number.
Alarm: Qam Card <X>: Configuration **Ref:** RF Output <Y> missing **Detail:** RFOutput default to On	If a RF Output parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Configuration **Ref:** Output <Y> <Z> Signal missing **Detail:** SignalFormat0 default to 0	If a Signal Format parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number, <Y> the RF Output, and <Z> the channel (Up of Low).
Alarm: Qam Card <X>: Configuration **Ref:** Output <Y> PRBS Stuffing missing **Detail:** PRBSStuffing default to Off	If a PRBS stuffing parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Configuration **Ref:** Output <Y> ChannelMode missing **Detail:**	If a Channel Mode parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Configuration **Ref:** Channel Mode Output <Y> invalid value **Detail:**	If a Channel Mode parameter in the configuration file contains an illegal value then this alarm is raised. <X> represents the QAM card number and <Y> the RF Output.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Configuration **Ref:** ITU and FPGA mode do not match **Detail:** -	Contact your Scientific Atlanta.
Alarm: Configuration file **Ref:** QAM Encoding Type missing from configuration file **Detail:**	If the QAM Encoding Type parameter is missing from the configuration file then this alarm is raised. A Scientific Atlanta representative should be contacted.

Range Errors

The following table contains the range errors.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Configuration **Ref:** Frequency Output <Y> out of range **Detail:** FR <Min> <Max> <actual>	There is a frequency range in which the Continuum DVP Dense QAM Array 24 device works. This alarm is raised and the RF Output of the QAM card in question is switched off if the frequency is outside of that range. The frequency should be set to be inside the support range. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Configuration **Ref:** Output level out of range **Detail:** OP Lev <Min> <Max> <actual>	The output level has been set out of range. The output level is set to the minimum or maximum value. Set the output level between 45.0 and 55.0 to clear this alarm. <X> represents the QAM card number.
Alarm: Qam Card <X>: Symbol rate **Ref:** Symbol Rate out of range **Detail:** SR <Min> <Max> <actual>	The symbol rate has been set out of range. During this alarm the RF output of the QAM card in question is switched off. Set the symbol rate between 5.0 and 5.5 (ITU-B and ITU-C) or 5.0 and 7.0 (ITU-A) to clear this alarm. <X> represents the QAM card number.
Alarm: Qam Card <X>: Configuration **Ref:** Channel Spacing Output <Y> out of range **Detail:** CS <actual> <Min> <Max>	The channel spacing has been set out of range. Set the channel spacing to 6 (ITU-B and ITU-C) or 7 or 8 (ITU-A) to clear this alarm. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Bandwidth **Ref:** Insufficient channel bandwidth **Detail:** Required BW <actual> <Max>	This is a warning to show that the bandwidth exceeds the channel spacing. Decrease the symbol rate to clear this alarm. <X> represents the QAM card number.

SI Processor Errors

One of the modules of the Continuum DVP Dense QAM Array 24 is an SI processor. This module is responsible for the processing of the incoming SI and the routing of the video / audio to the QAM channels.

The following table contains the SI processor errors.

Alarm/Reference/Detail	Description
Alarm: Si processor **Ref:** Too many progs in routing list **Detail:** QAM <Channel>, <Input Stream>	There are too many programs listed in the service routing for a given QAM channel.
Alarm: Si processor **Ref:** Program number out of range **Detail:** QAM <Channel>, <Input Stream>	There is a program number greater than 65535 or less than 1 in one of the service routing lists.
Alarm: Si processor **Ref:** Too many programs in QAM output **Detail:** QAM <Qam Channel>	There are too many programs routed to the given QAM channel.
Alarm: Si processor **Ref:** Multiple routes for program **Detail:** IP <Input Stream> <Qam Channel> and <Qam Channel>	A program has been routed to more than one output channel.
Alarm: Si processor **Ref:** Program already routed **Detail:** QAM <Channel>, <Input Stream>	A program has been used more than once in one of the service routing lists.
Alarm: Si processor **Ref:** Illegal char in routing list **Detail:** QAM <Channel>, <Input Stream>	There is an unrecognized character (for example # or .) in one of the service routing lists.
Alarm: Qam Card <X>: Misc **Ref:** Upper Channel Output <Y> bit rate too high **Detail:** - - - -	If there is too much video and data being routed to the QAM channel and the QAM card is dropping packets of data, then this alarm is raised. The amount of data that can be routed to a QAM channel is dependant on the QAM mode (64 or 256) and the ITU configuration of you system (ITU-A, ITU-B or ITU-C). To clear the alarm, route less audio and video to the QAM channel. <X> represents the QAM card number and <Y> the RF output number.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Misc **Ref:** Lower Channel Output <Y> bit rate too high **Detail:** - - - -	If there is too much video and data being routed to the QAM channel and the QAM card is dropping packets of data, then this alarm will be raised. The amount of data that can be routed to a QAM channel is dependant on the QAM mode (64 or 256) and the ITU configuration of you system (ITU-A, ITU-B or ITU-C). To clear the alarm, route less audio and video to the QAM channel. <X> represents the QAM card number and <Y> the RF output number.

System Errors

The following table contains the System errors.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Vcobaud **Ref:** Baud VCO not locked **Detail:** - - - -	The Baud VCO of the QAM card in question is not locked. The board should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. The alarm clears when the VCO locks. <X> represents the QAM card number.
Alarm: Qam Card <X>: VCO2 **Ref:** VCO2 Output <Y> Unlock **Detail:** - - - -	The VCO 2 of the QAM card in question is unlocked. The board should be left for at least 1 minute to see if the error clears. If after 1 minute the alarm still persists then the card should be removed and re-inserted again. If this action does not clear the alarm then a Scientific Atlanta representative should be contacted. The alarm clears when the VCO locks. <X> represents the QAM card number and <Y> the RF output number.

Warnings

The following table contains the warnings.

Alarm/Reference/Detail	Description
Alarm: Qam Card <X>: Misc **Ref:** Upper channel Output <Y> modulation off **Detail:** - - - -	This warning shows that the upper channel has been set to output a continuous wave. When the signal format is set to normal this warning is cleared. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Misc **Ref:** Lower channel Output <Y> modulation off **Detail:** - - - -	This warning shows that the lower channel has been set to output a carrier wave. When the signal format is set to normal this warning is cleared. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Misc **Ref:** Upper channel Output <Y> mute **Detail:** - - - -	This warning shows that the upper channel has been muted. When the signal format is set to normal this warning is cleared. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Qam Card <X>: Misc **Ref:** Lower channel Output <Y> mute **Detail:** - - - -	This warning shows that the lower channel has been muted. When the signal format is set to normal this warning is cleared. <X> represents the QAM card number and <Y> the RF output number.
Alarm: Alarm Main Psu **Ref:** PSU malfunction **Detail:** Device on backup PSU	The MAIN power supply unit failed and the backup PSU became active.

6

Maintenance and Troubleshooting

This part provides information to assist you in maintaining and troubleshooting your Continuum® DVP™ eXtra Dense QAM Array system.

In This Chapter

Maintaining the Equipment

To ensure optimal performance, the following maintenance is recommended.

Frequency	Maintenance Required
Weekly	■ Check all parameters.
Quarterly	■ Make sure all cables are mated properly. ■ Inspect cables for stress and chafing. ■ Make sure all retaining screws are tight.
When needed	■ Carefully clean the module with a soft cloth that is dampened with mild detergent.

Troubleshooting

About

This troubleshooting information describes the most common alarms and gives typical symptoms, causes and items to check before consulting the customer services department.

Additional Assistance

If you need additional assistance, call one of our customer services centers or your local sales representative.

Checking LED Indicators

The XDQA24 Housing contains three multi-color LED indicators on the front panel.

- MAIN PS LED indicator
- BACKUP PS LED indicator
- ALARM LED indicator

Symptom	Possible Causes	Solutions
MAIN PS LED indicator is off	No MAIN PSU installed	Install a MAIN PSU.
MAIN PS LED indicator illuminates red	MAIN PSU connection is loose.	Check that the main power connection is secure.
	Loss of source power (main PSU)	Check that AC or DC power is present at the power source outlet.
	PSU failure	Replace the MAIN PSU.
MAIN PS LED indicator illuminates green	MAIN PSU is active.	OK
BACKUP PS LED indicator is off	No BACKUP PSU installed	Install a BACKUP PSU.
BACKUP PS LED indicator illuminates red	BACKUP PSU connection is loose.	Check that the backup power connection is secure.
	Loss of source power (BACKUP PSU)	Check that AC or DC power is present at the power source outlet.
	PSU failure	Replace the BACKUP PSU.

Symptom	Possible Causes	Solutions
BACKUP PS LED illuminates green	BACKUP PSU is active.	OK
ALARM LED is on	Pending alarm or error detected by the CPU module.	Troubleshoot the alarm or error message.
All LED indicators illuminates yellow	The device is in startup state.	Please wait.
All LED indicators are extinguished	The device is not powered up.	Power up the device.
	The device is in startup state.	Please wait.

A

Customer Information

Introduction

This chapter contains information on obtaining product support.

In This Appendix

Product Support

Obtaining Support

IF...	Then...
you have general questions about this product	contact your distributor or sales agent for product information or refer to product data sheets on www.scientificatlanta.com.
you have technical questions about this product	call the nearest *Technical Support* center or Scientific Atlanta office.
you have customer service questions or need a return material authorization (RMA) number	call the nearest *Customer Service* center or Scientific Atlanta office.

Support Telephone Numbers

This table lists the Technical Support and Customer Service numbers for your area.

Region	Centers	Telephone and Fax Numbers
North America	SciCare™ Broadband Services Atlanta, Georgia United States	For *Technical Support*, call: ■ Toll-free: 1-800-722-2009 ■ Local: 770-236-6900 (Press **2** at the prompt) For *Customer Service* or to request an RMA number, call: ■ Toll-free: 1-800-722-2009 ■ Local: 770-236-6900 (Press **3** at the prompt) ■ Fax: 770-236-5477 ■ E-mail: customer.service@sciatl.com
Europe, Middle East, Africa	Belgium	For *Technical Support*, call: ■ Telephone: 32-56-445-197 or 32-56-445-155 ■ Fax: 32-56-445-053 For *Customer Service* or to request an RMA number, call: ■ Telephone: 32-56-445-133 or 32-56-445-118 ■ Fax: 32-56-445-051 ■ E-mail: elc.service@sciatl.com
Japan	Japan	■ Telephone: 81-3-5908-2153 or +81-3-5908-2154 ■ Fax: 81-3-5908-2155 ■ E-mail: yuri.oguchi@sciatl.com
Korea	Korea	■ Telephone: 82-2-3429-8800 ■ Fax: 82-2-3452-9748 ■ E-mail: kelly.song@sciatl.com
China (mainland)	China	■ Telephone: 86-21-6485-3205 ■ Fax: 86-21-6485-3205 ■ E-mail: xiangyang.shan@sciatl.com

Region	Centers	Telephone and Fax Numbers
All other Asia-Pacific countries & Australia	Hong Kong	■ Telephone: 852-2588-4746 ■ Fax: 852-2588-3139 ■ E-mail: support.apr@sciatl.com
Brazil	Brazil	For *Technical Support*, call: ■ Telephone: 55-11-3845-9154 ext 230 ■ Fax: 55-11-3845-2514 For *Customer Service* or to request an RMA number, call: ■ Telephone: 55-11-3845-9154, ext 109 ■ Fax: 55-11-3845-2514 ■ E-mail: luiz.fattinger@sciatl.com
Mexico, Central America, Caribbean	Mexico	For *Technical Support*, call: ■ Telephone: 52-3515152599 ■ Fax: 52-3515152599 For *Customer Service* or to request an RMA number, call: ■ Telephone: 52-55-50-81-8425 ■ Fax: 52-55-52-61-0893 ■ E-mail: karla.lugo@sciatl.com
All other Latin America countries	Argentina	For *Technical Support*, call: ■ Telephone: 54-23-20-403340 ext 109 ■ Fax: 54-23-20-403340 ext 103 For *Customer Service* or to request an RMA number, call: ■ Telephone: 770-236-5662 ■ Fax: 770-236-5888 ■ E-mail: veda.keillor@sciatl.com

Return Products for Repair

Introduction

You must have a return material authorization (RMA) number to return a product. Contact the nearest customer service center and follow their instructions.

Returning a product to Scientific Atlanta for repair includes the following steps:

- Obtaining a RMA number
- Obtaining a customer service center shipping address
- Packing and shipping the product

Obtaining an RMA Number and Shipping Address

You must have an RMA number to return products.

RMA numbers are valid for 60 days. If you already have a number, but it is older than 60 days, you must contact a customer service representative to revalidate the number. You can return the product after the RMA number is revalidated.

Follow these steps to obtain an RMA number and shipping address.

1 Contact a customer service representative to request a new RMA number or revalidate an existing one.

Refer to the earlier section titled **Support Telephone Numbers** to find a customer service telephone number in your area.

2 Provide the following information to the customer service representative:

- Product name, model number, part number, serial number (if applicable)
- Quantity of products to return
- A reason for returning the product
- Your company name, contact, telephone number, email address, and fax number
- Any service contract details
- Purchase order number of repair disposition authority, if available

Result: The customer service representative issues the RMA number and provides the shipping address.

Notes: If you cannot provide a purchase order number:

- A proforma invoice listing all costs incurred will be sent to you at the completion of product repair.
- Customer service must receive a purchase order number within 15 days after you receive the proforma invoice.

- Products can accrue costs through damage or misuse, or if no problem is found. Products incurring costs will not be returned to you without a valid purchase order number.
- Proceed to **Packing and Shipping the Product**.

Packing and Shipping the Product

Follow these instructions to pack the product and ship it to Scientific Atlanta.

1 Are the product's original container and packing material available?

- If **yes**, pack the product in the container using the packing material.
- If **no**, pack the product in a sturdy, corrugated box, and cushion it with packing material.

Important:

- You are responsible for delivering the returned product to Scientific Atlanta safely and undamaged. Shipments damaged due to improper packaging may be refused and returned to you at your expense.
- Do not return any power cords or accessories.

2 Write the following information on the outside of the container:

- Your name
- Your complete address
- Your telephone number
- RMA number
- Problem description

Note: Absence of the RMA number may delay processing of product repair and / or result in the equipment being returned unrepaired. Include the RMA number in all correspondence.

3 Ship the product to the address provided by the customer service representative.

Note: Scientific Atlanta does not accept freight collect. Be sure to prepay and insure all shipments.

B

EIA Channel Numbers

Introduction

This appendix provides a table showing the relations between EIA channels numbers and channel center frequency.

In This Appendix

EIA Digital Channel Numbers

The following table reflects the relation between the EIA digital channel number and the channel center frequency.

EIA Channel No.	Center Frequency (No Offset)	EIA Channel No.	Center Frequency (No Offset)
1	-	70	501.0
2	57.0	71	507.0
3	63.0	72	513.0
4	69.0	73	519.0
5	79.0	74	525.0
6	85.0	75	531.0
7	177.0	76	537.0
8	183.0	77	543.0
9	189.0	78	549.0
10	195.0	79	555.0
11	201.0	80	561.0
12	207.0	81	567.0
13	213.0	82	573.0
14	123.0	83	579.0
15	129.0	84	585.0
16	135.0	85	591.0
17	141.0	86	597.0
18	147.0	87	603.0
19	153.0	88	609.0
20	159.0	89	615.0
21	165.0	90	621.0
22	171.0	91	627.0
23	219.0	92	633.0
24	225.0	93	639.0
25	231.0	94	645.0
26	237.0	95	93.0
27	243.0	96	99.0
28	249.0	97	105.0
29	255.0	98	111.0
30	261.0	99	117.0

EIA Channel No.	Center Frequency (No Offset)	EIA Channel No.	Center Frequency (No Offset)
31	267.0	100	651.0
32	273.0	101	657.0
33	279.0	102	663.0
34	285.0	103	669.0
35	291.0	104	675.0
36	297.0	105	681.0
37	303.0	106	687.0
38	309.0	107	693.0
39	315.0	108	699.0
40	321.0	109	705.0
41	327.0	110	711.0
42	333.0	111	717.0
43	339.0	112	723.0
44	345.0	113	729.0
45	351.0	114	735.0
46	357.0	115	741.0
47	363.0	116	747.0
48	369.0	117	753.0
49	375.0	118	759.0
50	381.0	119	765.0
51	387.0	120	771.0
52	393.0	121	777.0
53	399.0	122	783.0
54	405.0	123	789.0
55	411.0	124	795.0
56	417.0	125	801.0
57	423.0	126	807.0
58	429.0	127	813.0
59	435.0	128	819.0
60	441.0	129	825.0
61	447.0	130	831.0
62	453.0	131	837.0
63	459.0	132	843.0
64	465.0	133	849.0
65	471.0	134	855.0

EIA Channel No.	Center Frequency (No Offset)	EIA Channel No.	Center Frequency (No Offset)
66	477.0	135	861.0
67	483.0	136	867.0
68	489.0	137	873.0
69	495.0	-	-

C

Cisco Wideband Applications

Introduction

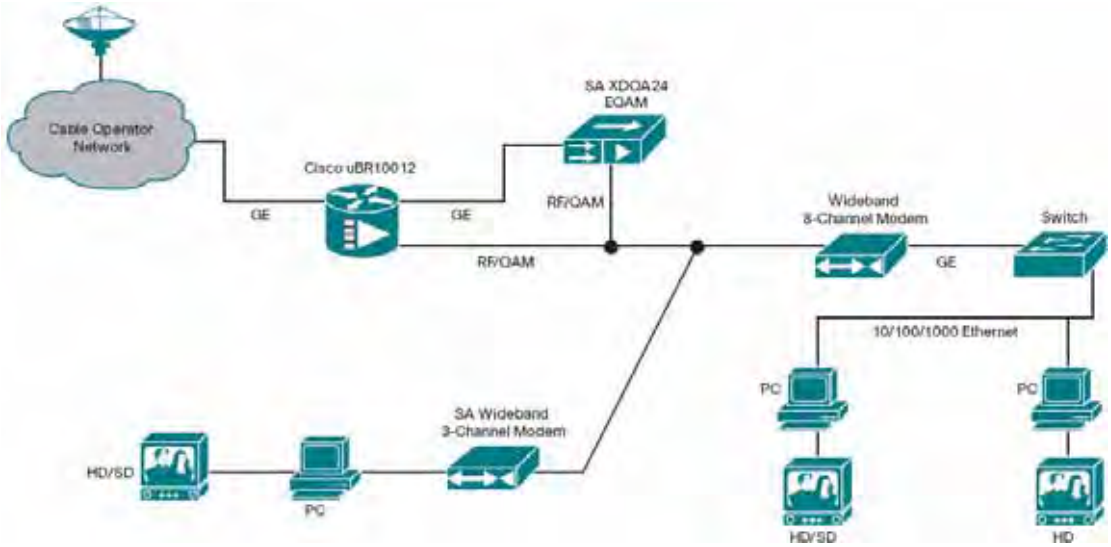
This appendix outlines the set-up of the Continuum® DVP™ eXtra Dense QAM Array 24 system for use into Cisco Wideband applications.

In This Appendix

Cisco Wideband Applications

Introduction

In a Cisco Wideband application a Wideband cable modem receives data from multiple RF channels. These channels are logically bonded by the Cable Modem Termination System (CMTS) and transmitted onto the HFC network through the XDQA24 system to form a *Wideband* channel. The illustration below represents a typical Cisco Wideband application.



Defining Streams

When the XDQA24 system participates into a Cisco Wideband application, the following setup should be made:

- Define streams as data streams with a Data rate that is equal to or lower than the QAM channel capacity.

  Note: It is strongly recommended to keep the maximum incoming bitrate a few percent lower then the specified Data rate (5 to 10% depending on the network jitter).

  E.g. ITU-A, 6.952 Mbaud

  - 64 QAM = SR x 6 x 188 / 204 = 38440 kbps
  - 256 QAM = SR x 8 x 188 / 204 = 51253 kbps

  E.g. ITU-B

  - 64 QAM = 26970 kbps
  - 256 QAM = 38810 kbps

For more information, please refer to the *Continuum DVP (X)DQA(24), DQA Mapping Assistant Tool for User-Defined UDP Port Mapping Application Note.*

- Enable PRBS stuffing. The procedure to enable and disable PRBS stuffing can be found in topic *Configuring the Quad Channel QAM Card* on page 31.
- For ITU-B QAM encoding set the Interleaving parameter to *I=32, J=4*. The procedure to change the **Interleaving** parameter can be found in topic *Configuring the Quad Channel QAM Card* on page 31.
- Disable the PAT and PMT playout by setting the PAT playout rate and PMT playout rate to 0 seconds. The procedure to change the playout rate of the PAT and PMT can be found in topic *General Configuration Settings* on page 20.

Glossary

ASI

asynchronous serial interface. Allows the intermittent transfer of data one bit at a time rather than in a steady stream.

DVB

A standard developed by the Digital Video Broadcasting (DVB) Group, which is a European organization that has authored many specifications for satellite and cable broadcasting of digital signals. Part of the DVB work has been focused specifically on conditional access.

DVP

digital video platform.

EEPROM

electrically erasable programmable read-only memory.

ES

elementary stream.

FPGA

field programmable gate-array.

GbE or GigE

gigabit Ethernet. A LAN transmission standard that provides a data rate of 1 billion bits per second. Gigabit Ethernet is defined in the IEEE 802.3z standard. Gigabit Ethernet is carried primarily on optical fiber.

GUI

graphical user interface. A program interface that takes advantage of a computer graphics capabilities to make the program visually easier to use.

IP

Internet protocol. A standard that was originally developed by the United States Department of Defense to support the internetworking of dissimilar computers across a network. IP is perhaps the most important of the protocols on which the Internet is based. It is the standard that describes software that keeps track of the internetwork addresses for different nodes, routes, and outgoing/incoming messages on a network. Some examples of IP applications include email, chat, and Web browsers.

ITU

International Telecommunications Union.

LED

light-emitting diode. An electronic device that lights up when electricity passes through it.

MAC

media access control. The layer in the OSI model above the physical layer. It defines media access control methods and parameters for access to the physical media.

MPEG

Motion Picture Experts Group. A joint committee of the International Standards Organization (ISO) and the International Electrotechnical Commission (EG). This committee develops and maintains the MPEG specification for a series of hardware and software standards designed to reduce the storage requirements of digital video and audio. The common goal of MPEG compression is to convert the equivalent of about 7.7 MB down to under 150 K, which represents a compression ratio of approximately 52 to 1. Current standards are MPEG-1, MPEG-2, and MPEG-4.

MPTS

multi-program transport stream.

PAT

program association table.

PCB

printed circuit board.

PID

packet identifier or program identifier.

PMT

program map table. Identifies and indicates the locations of the streams that make up each service, and the location of the Program Clock Reference fields for a service.

PRBS

psuedo random bit sequence. A sequence of bits that is satisfactorily statistically random for a given purpose.

RF

radio frequency. The frequency in the portion of the electromagnetic spectrum that is above the audio frequencies and below the infrared frequencies, used in radio transmission systems.

RMA

return material authorization. A form used to return products.

ROSA®

RCDS open system architecture.

RU

rack unit. RU is the measuring unit of vertical space in a standard equipment rack. One RU equals 1.75" (44.5 mm).

SFP

small form-factor pluggable.

SNMP

simple network management protocol. A protocol that governs network management and the monitoring of network devices and their functions.

SPTS

single program transport stream.

UDP

user datagram protocol. A connectionless protocol, like TCP, that runs on top of IP networks. Unlike TCP/IP, UDP/IP provides very few error recovery services, offering instead a direct way to send and receive datagrams over an IP network without acknowledgements for guaranteed delivery.

VOD

video-on-demand. A service that allows a subscriber to use the remote control to select, purchase, and view an event. Once purchased, the viewer can then forward, reverse, pause, and play the event just as he or she would with a VCR.

XDQA24

extra dense QAM array 24.

Index

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April 2008 Printed in Belgium Part Number 4018055 Rev B