TANDBERG television
Part of the Ericsson Group

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USER GUIDE

EQ8096
High Density Edge QAM

Software Version 6.2.0
(and later)

EQ8096 High Density Edge QAM

ENGLISH (UK)

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Contents

List of Figures

List of Tables

1 Who Should Use This User Guide?

1.1 Read This First

This User Guide is written for users of the EQ8096 High Density Edge QAM to assist in installation and operation. It is not intended to be a detailed source of information. This can be found in the *Reference Guide* companion document, which is issued on CD.

WARNING

Do not remove the covers of this equipment. Hazardous voltages are present within this equipment and may be exposed if the covers are removed. Only TANDBERG Television trained and approved service engineers are permitted to service this equipment.

CAUTION

Unauthorised maintenance or the use of non-approved replacements may affect the equipment specification and invalidate any warranties.

1.2 What Equipment is covered by This User Guide?

This User Guide covers the EQ8096 High Density Edge QAM, which is a digital cable product for use as a regional broadcast modulator.

The EQ8096 supports four redundant data input interfaces, eight (4+4) 1000BaseT Gigabit Ethernet port (fitted as standard) or eight (4+4) SFP Mini-GBIC option slots. Full Gigabit line rate is supported.

Table 1.1: Equipment Model Descriptions

Marketing Code	Description	Comments
EQ8096/BAS	Base Unit	Input card, single PSU, chassis, RJ-45 data input
EQ8096/HWO/12QAM	12-channel QAM Modulator	One assembly provides up to 12 channels
EQ6800/SWO/DVBCA	DVB Conditional Access and Scrambling	License key enabled option. Must be included at time of unit order if required.
EQ8096/HWO/DPS	Dual PSUs	
EQ8096/HWO/DTI	DOCSIS Timing Interface	Client daughter card
EQ8096/BAS/SFP	Base unit, SFP	Base unit with SFP data connection interface

Marketing Code	Description	Comments
EQ8096/BAS/48V	Base Unit DC	I/P Card, Simple PSU RJ-45, 48 V dc PSU
EQ8096/BAS/SFP/48V	Base Unit DC, SFP	I/P Card, Single PSU SFP, 48 V dc
EQ8096/HWO/DPS/48V	Dual PSU 48 V dc	(See Description)

1.3 Card Assignment

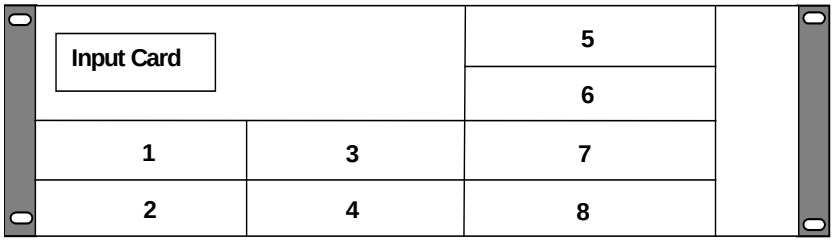

Figure 1.1: Slot Numbering (Rear View)

CD See *Table 1.2* for card position assignments. Detailed information is in the *Reference Guide*.

Table 1.2: Card Assignment

Slot	Card	Comments
Input Card	Data Input and Control	This acts as the data input card and host controller, providing data and support for the Modulator assemblies.
1-8	Multi-QAM assembly	EQ8096/HW0/12QAM – Modulator card assembly

CD The product can be upgraded by filling vacant slots with additional multi-QAM assemblies. Detailed instructions for fitting these can be found in *Chapter 9* of the *Reference Guide.*

2 Installing the Equipment

2.1 Introduction

CD For best performance and reliability follow the instructions for site requirements and installation in the *Reference Guide* and only use installation accessories recommended by the manufacturers.

2.2 Operating Voltage

CAUTION

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your business, consult a qualified electrical engineer or your local power company.

NOTE

Refer to the *Reference Guide* for details of the colour codes used on the mains leads.

CD See *Table 2.2* for fuse information and also the *Reference Guide* for a full power supply specification.

See *Reference Guide, Annex B, Technical Specification* for a full power supply specification. There are no links or switches to be altered for operation from different ac supplies.

2.3 Power Cable and Earthing

Check that the power cable is suitable for the country in which the unit is to be used.

WARNINGS

1. The Technical Earth is not a Protective earth for electric shock protection.
2. This unit must be correctly earthed through the moulded plug supplied. If the local mains supply does not have an earth conductor do not connect the unit. Contact Customer Services for advice.
3. Before connecting the unit to the supply, check the supply requirements in *Annex B* of the *Reference Guide*.

2.4 Connecting Up the EQ8096

Always use the specified cables supplied for signal integrity and compliance with EMC requirements (see *the Reference Guide*).

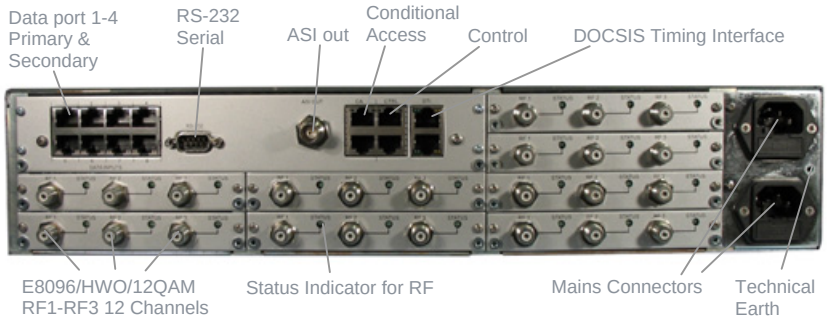

Figure 2.1: EQ8096 Rear Panel Component Parts

Table 2.1: Rear Panel Items

Type of Connector	Description
1000BaseT Data Inputs	The Gigabit Ethernet connections are RJ-45 connectors (EQ8096/BAS) and are auto-speed sensing between 10, 100 and 1000 Mbps. They can also be forced to 100 or 1000 Full Duplex. On units ordered as EQ8096/BAS/SFP, the Gigabit Ethernet connections are Small Form Factor Pluggable (SFP) modules. These can only operate at 1000BaseT Full Duplex.
RF Output Ports	The EQ8096 supports up to 96 RF output ports using F-type connectors. Each output port supports up to 4 adjacent RF channels. The RF output provides a user configurable parameter to control the output.
RS-232	This is an RS-232 control port for Engineering Use and is configured as a DTE device. It can be used for the initial setting up of the unit's IP address.
CA Control Port Options	The EQ8096 supports two redundant Ethernet 10/100BaseT control ports via an RJ-45 connector mounted on the rear panel
Status Indicator	An LED that provides an indication of the alarm status.
AC Input	Connection for the mains input.
Technical Earth	Connect the Modulator's Technical earth to a suitable point.

NOTES

1. The unit is configured to receive data on either the SFP inputs or the copper RJ-45 input. Automatic switching between different types of input is not supported.
2. SFP modules are not included as standard.
3. Refer to the *Reference Guide* for further information.

2.5 Connecting the EQ8096 to the Power Supply

2.5.1 General Information

WARNINGS

1. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
2. As no mains switch is fitted to this unit, ensure the local power supply is switched OFF before connecting the supply cord.
3. The unit is not fitted with an on/off switch. Ensure that the socket-outlet is installed near the equipment so that it is easily accessible. Failure to isolate the equipment properly may cause a safety hazard.

The EQ8096 can be fitted with dual power supplies each with a separate mains connector. The equipment load is automatically split between the two power supplies (if option fitted). If one power supply fails, the full load will be transferred to the remaining serviceable unit allowing the faulty unit to be replaced without switching off the equipment.

2.5.2 To Connect the Unit to the Local AC Power Supply:

1. Ensure the local ac supply is switched OFF.
2. Ensure the correct fuse type and rating has been fitted to both the equipment and the ac power cables.
3. Connect the ac power leads to the EQ8096 mains input connector and then to the local mains supply.

Table 2.2: AC Fuse Type and Rating

Power Supply	Fuse Type and Rating
100-240 V ac	IEC/EN 60127-2 Sheet 5 Bussmann S505/Littelfuse 215 5 A, 250 V T HBC

NOTE

Refer to the *Reference Guide* for all power supply, fuse replacement, safety, EMC information and operating conditions.

2.5.3 DC Power Supply

NOTE

Only models EQ8096/BAS/48V, EQ8096/BAS/SFP/48V and EQ8096/HWO/DPS/48V use a dc power supply.

CAUTION

This product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your business, consult a qualified electrical engineer.

This product uses a –48 V dc power supply source (see *Reference Guide - Annex B, Technical Specification)* for a full power supply specification.

3 Configuring the EQ8096

3.1 Introduction

The EQ8096 is configured via a web browser with the IP Address set using the front panel controls/display. Once configured and connected, the unit operates without user intervention.

All user control parameters are stored in non-volatile memory to allow automatic restoration from power-up.

CD For information on parameters not mentioned refer to the *Reference Guide*.

3.2 Establishing a Connection

3.2.1 Assigning an IP Address

CD All EQ8096 units are shipped with an invalid Control Port IP address of 0.0.0.0. This must be configured to a local valid IP address before the product can be fully configured using the Front Panel keypad (see *Reference Guide* E10243.2, Chapter 2, Table 2.6) or via the RS-232 serial interface as follows:

- Connect a cable between the Host Status port on the EQ8096 (9-way male D-Type) and a local PC using a straight through RS-232 cable.
- Using a suitable terminal emulator on the PC set up the communication parameters.

> **NOTE**
>
> The EQ8096 serial port communications defaults to 115200 bit/s, 8 bit data, no parity, 1 stop bit.

- Power cycle the EQ8096. The terminal emulator will display a boot sequence that will show the software version and control port IP settings. If the IP address is still at the factory default of 0.0.0.0 for all 4 ports, then the user will be required to assign a valid address to any of these.
- Using the terminal, the user should enter the local IP address allocated to the unit using the command IPn xxx.xxx.xxx.xxx. (e.g. IP3 172.17.124.3) and then press return. ‘n’ is the control port index (1-4) as outlined below:

1. CA Main
2. CA Redundant
3. Control Main
4. Control Redundant

- The IP Settings are effective immediately.

NOTE…

Since the default Gateway IP address is not set in the unit, the user will only be able to establish an Ethernet connection from an IP address on the same Sub-net.
See *Section 3.2.2 Changing the IP Address* for description of how to set Subnet mask + gateway address.

3.2.2 Changing the IP Address

If the user accidentally sets the local address incorrectly, the EQ8096 may not be accessible via the browser. The IP address can be changed using the Front Panel keypad (see Table 2.6 in Reference Guide E10243.2) or using the following procedure:

- Open a terminal emulation application on the PC.

NOTE

The EQ8096 serial port communications defaults to 115200 bit/s, 8 bit data, no parity, 1 stop bit.

- Power cycle the EQ8096. The terminal emulator will display a boot sequence that gives the current control port settings.
- Using the terminal, the user should enter the local IP address allocated to the unit using the command IPn xxx.xxx.xxx.xxx
(e.g. IP 172.17.124.3) and then press return.
- If required, the user may enter the local IP subnet mask allocated to the unit using the command IPMASKn xxx.xxx.xxx.xxx
(e.g. IPMASK 255.255.0.0) and then press return.
- If required, the user may enter the local IP gateway mask allocated to the unit using the command IPGATEWAY xxx.xxx.xxx.xxx
(e.g. IPGATEWAY 192.168.63.254) and then press return.
- The new IP settings will become active immediately. ‘n’ is the control port index (1-4) as outlined below:
  1. CA Main
  2. CA Redundant
  3. Control Main
  4. Control Redundant
- The IP Settings are effective immediately.

3.2.3 Opening the Web Browser

Once the EQ8096 IP address has been activated, the user can open a web browser application and enter the following URL address:
http://assigned IP address
(where *assigned IP address* is the address set by the user).

This gives access to the web pages described in *Section 4.*

NOTE

If connecting through a LAN ensure that the option to use proxy server is switched off.

3.3 Configuration via the Web Pages

Once connected via the web browser interface the next steps in the installation procedure depend on the system in which the unit is being deployed. The following installation procedure assumes a simple laboratory system whereby the A/V source is connected directly to the EQ8096 and the EQ8096 is being controlled via its web interface.

- If necessary configure the control port using the **Control Port Settings** option on the **Device Info** tabbed page (see *Section 4.3.3*).

NOTE

If the IP address is changed contact will be lost immediately.

- Configure the data port using the **Data Port Setting** tab (see *Section 4.4*).

NOTE

If the control and data ports are configured to be on the same subnet they must be physically connected to the same network.

Problems will occur where they are defined as being on the same subnet but there is a live connection to the data port that is not physically connected to the indicated network. This will cause the control port to “lock up”. In the event of this happening remove all data port connections and power cycle the unit.

The EQ8096 utilizes user defined UDP Ports along with optional multicast addresses (the destination or receiving address that streams are forwarded to) to construct each output Transport Stream. Services in the specified UDP flow are included in the output Transport Stream.

Further options for defining the structure of the output Transport Stream include user defined PID ranges for the PMT, ES and ECM for each output stream. The user can also set a Transport Stream ID for each output Transport Stream.

An optional MPTS mode can be selected, whereby a single MPTS input flow with a maximum bit-rate of 51.25 Mbps is passed through to the selected output either without any filtering or with only unreferenced PIDs filtered.

The following steps indicate the procedure to construct the output Transport Streams **(TS Construction).** See *Section 4* for detailed descriptions of web page parameter configuration.

- Set the output TSID as required.
- The user can define PID ranges for the PMT, ES and ECM (where applicable). If not changed the default values displayed will be used.
- For each output TS set the multicast address and UDP port number for each flow that is required to appear in that output stream.
- A single MPTS per output can be passed through the unit with no filtering or re-mapping by selecting MPTS unfiltered mode. When this option is selected additional SPTS A/V flows cannot be added to the stream.
- Configure the source to begin serving flows to the data port IP address or multicast addresses and UDP port numbers defined above.
- Configure the global modulator settings using the **Modulation Settings** tab (see *Section 4.5*).
- Configure each of the individual RF outputs by selecting the RF port on the picture on the **Device Info** tab or using the directory structure under the **Modulation Settings** tab.

The unit should now be locked to the input and generating valid QAM modulated Transport Streams.

NOTE

The user should ensure that the total bit-rate of the flows for each output Transport Stream does not exceed the available QAM bandwidth (determined by the global modulation settings and displayed on each of the modulation settings pages).

If **Conditional Access** is required and the option is available on the web pages this should now be configured.

- CA control on dedicated ports cannot share with the unit control and monitoring port. If CA control is required on a separate network, enable the separate CA port and configure the IP settings as required. In this case the CA control will be via the 1000BaseT Data connector. The input stream should then be connected to the primary data port SFP GBIC 1.

NOTE

The EQ8096 supports service level scrambling only.

4 Web Page Menus

4.1 Top Level

The menu structure comprises a number of tabbed pages. Each page corresponds to a control or monitoring function of the EQ8096.

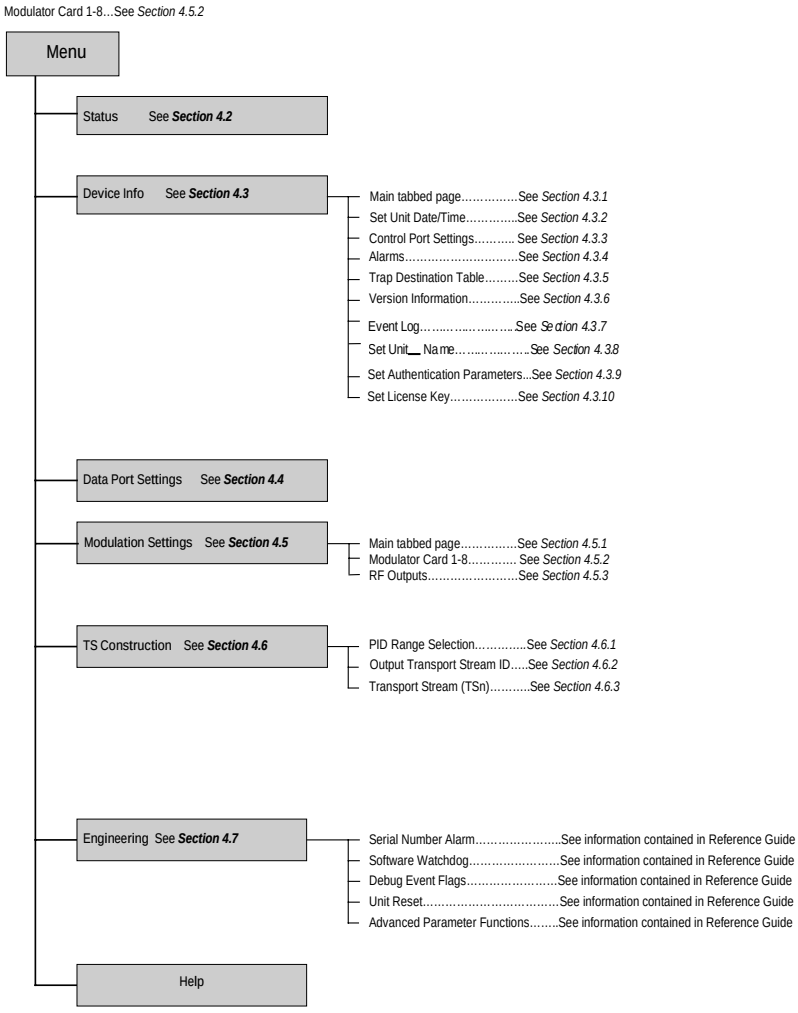

Figure 4.1: Web Tabbed Page

4.2 Status

This is the start-up web page and shows the current status of the unit.

The serial number, user defined unit name (if entered) and system up time are displayed, as well as any unmasked alarm conditions.

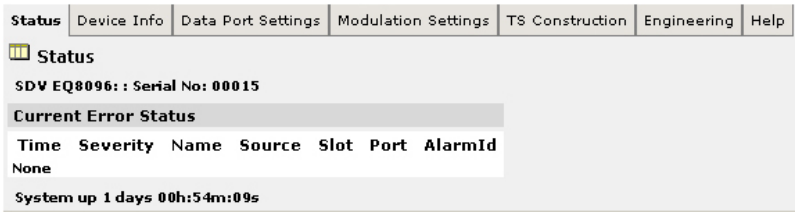

Figure 4.2: Status Web Page

CD For information regarding severity levels and alarm IDs, see the *Reference Guide*.

4.3 Device Info

4.3.1 Main Tabbed Page

Figure 4.4 shows the main tabbed web page for the Device Information. This gives access to further tabbed pages.

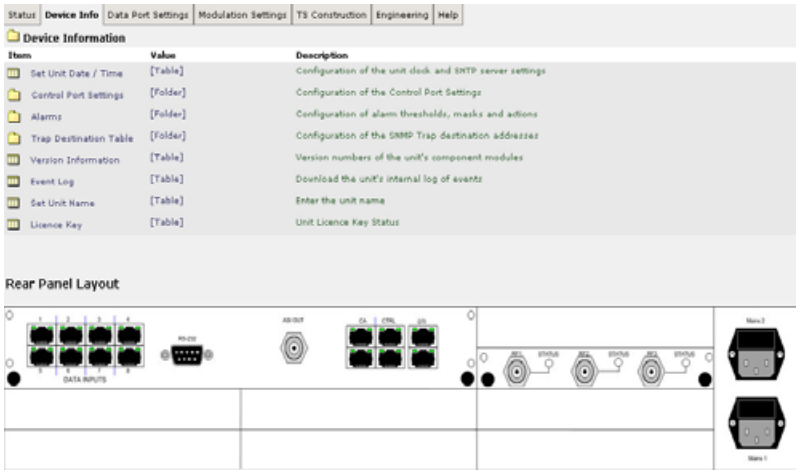

Figure 4.3: Device Info Tabbed Page

NOTE

This page does not automatically refresh itself. If left displayed the initial values in the time form remain unchanged as time passes, and will correspond to the page update timestamp in the top right hand corner until the operator enters new values, or uses the web page refresh button to get the current values from the unit.

4.3.2 Set Unit Date / Time

CD

For information regarding setting the date and time, see the *Reference Guide*.

NOTE

This page does not automatically refresh itself. If left displayed the initial values in the time form remain unchanged as time passes, and will correspond to the page update timestamp in the top right hand corner until the operator enters new values, or uses the web page refresh button to get the current values from the unit.

4.3.3 Control Port Settings

To review the Control Port settings, on the **Device Info** tabbed page, click Control Port Settings to display the web page shown in *Figure 4.4*. The Top Level menu offers control for the Default Gateway (for control/management) and for specifying ARP request interval.

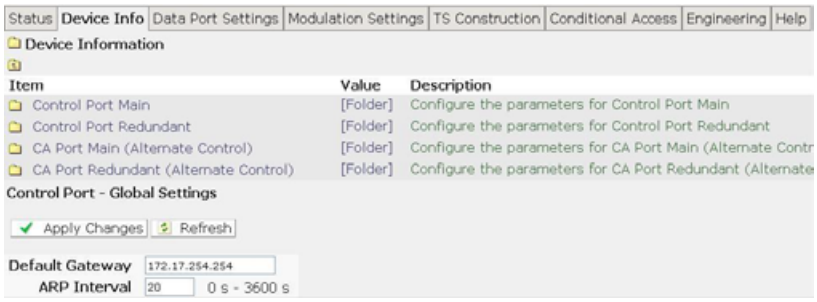

Figure 4.4: Global Control Port Settings

Each of the 4 ports can have their IP address and Mask changed. The link status of the port is also shown in *Figure 4.5*

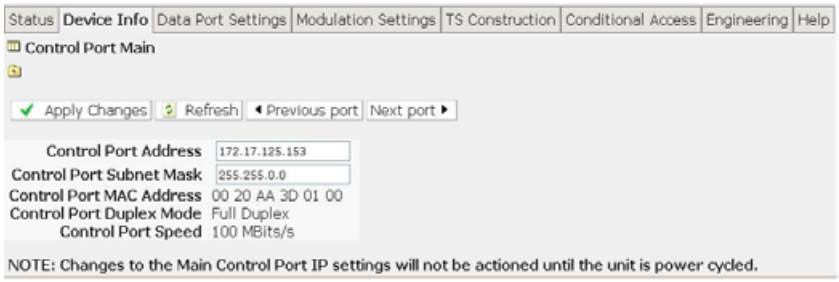

Figure 4.5: Individual Control Port Settings

CAUTION

If the Main Control Port IP address is changed, the new address will not take effect until the unit is power cycled. The Control Port will remain on the original IP address until this action is performed.

4.3.4 Alarms

The EQ8096 software provides functionality for handling, logging and displaying application alarms. All active alarms are displayed on the start-up Status page (see *Section 4.2*). The Event Log is a separate option on the **Device Info** tabbed page (see *Section 4.3.7*).

CD For information on the Alarms web pages, see *Section 5 and Reference Guide.*

4.3.5 Trap Destination Table

CD For information on the Trap Destination Table, see the *Reference Guide.*

4.3.6 Version Information

CD Provides version details and build configuration of the unit. For further information, see the *Reference Guide.*

4.3.7 Event Log

System events are sent to an event log and are prioritised to permit filtering. Logged entries are time and date stamped, and stored in a volatile file system.

4.3.8 Set Unit Name

A 32-bit alphanumeric name for the unit can be set. This is displayed on the status page.

4.3.9 Set Authentication parameters

When enabled (License Key required), the operator can specify the Username and Password to enable HTTP access and control of the EQ8096.

4.3.10 License Key

Can be used to input a License Key generated by TANDBERG Television, based on the unit's Unique Serial Number.

4.4 Data Port Settings

The Data Port settings can be reviewed. Click **Data Port Settings** tabbed page to display the web page illustrated in *Figure 4.6.*

Set the required Data Port parameters: Port IP Address and Subnet mask. MAC checksum checking can be disabled if required.

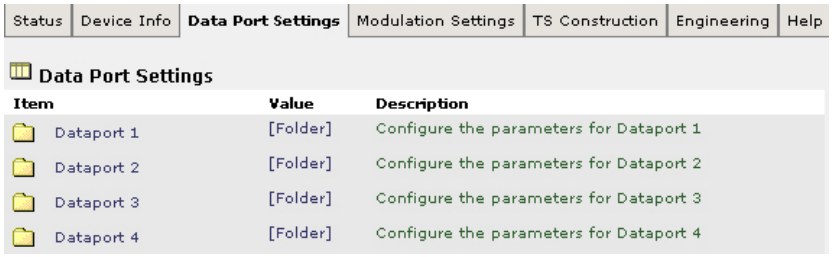

Figure 4.6: Data Port Settings

NOTES

1. The user configurable parameter that selects the required input is stored so that the correct configuration is restored on power up.
2. SFP modules are not included as standard.

Refer to the *Reference Guide* for further information.

4.5 Modulation Settings

4.5.1 Main Tabbed Page

This tabbed page gives access to the settings affecting the modulator.

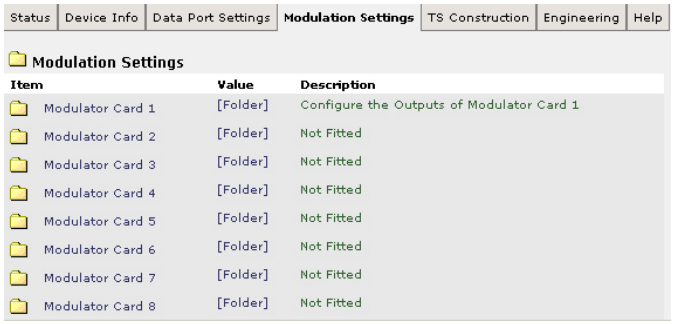

Figure 4.7: Modulator Tabbed Page

4.5.2 Modulator Card 1-8

The status of each RF output can be reviewed on these web pages. Click on the appropriate Modulator Card to display the web page illustrated in *Figure 4.8.*

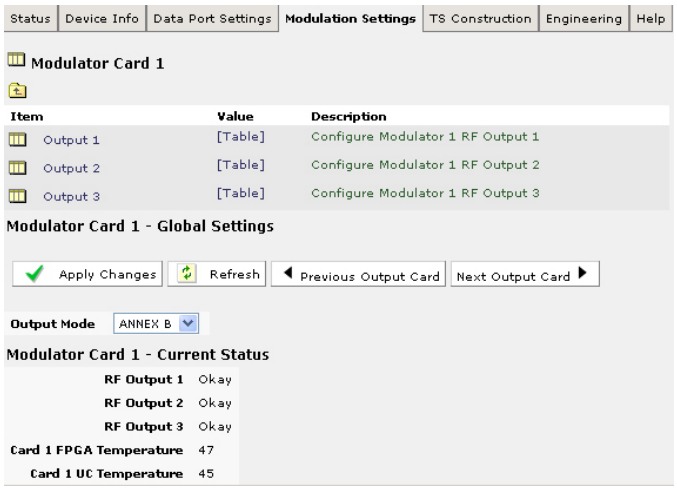

Figure 4.8: Modulator Card Web Page

4.5.3 RF Outputs

The RF Output settings can be reviewed for each physical connector. Click **Output 1, 2 or 3** to display the web page illustrated in *Figure 4.9.*

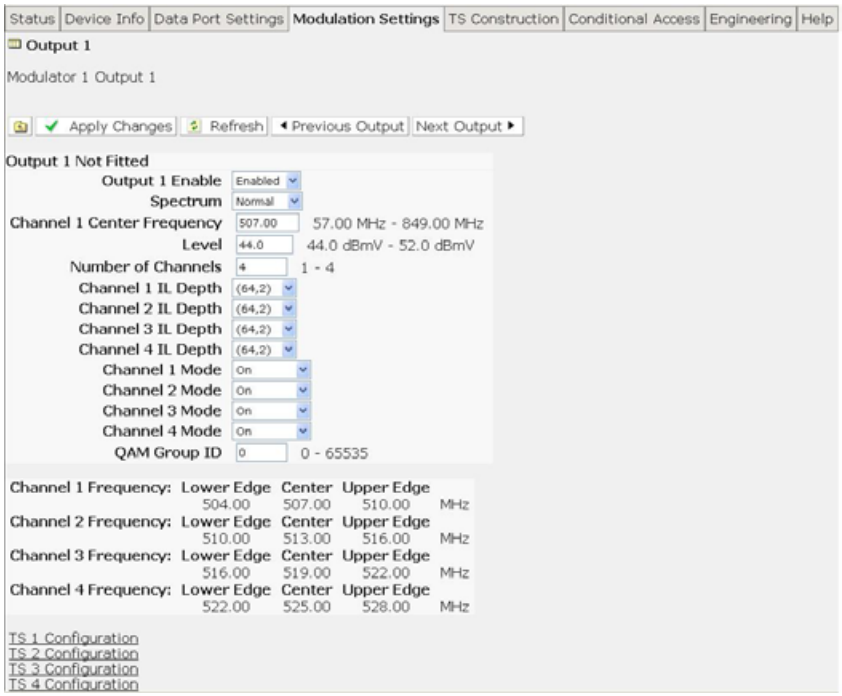

Figure 4.9: RF Output Web Page

The Output Mode, Centre Frequency and Output Level for each RF Output can be set individually.

The Output Mode allows ON, OFF, TEST, DUAL TONE to be selected.

The contents of the enabled Transport Streams can be displayed by clicking on the appropriate link at the foot of the page.

When the output (i.e. Output Mode) is disabled, there is no output from that connector.

When the output is enabled, Transport Streams are mapped to a specific channel on a particular RF output. These are defined in *Table 6.1: Mapping for 'Standard' Mode.*

NOTES

1. There is no support for individually setting the output power of each individual channel in a group.
2. The centre frequency is the frequency at the centre of the lower channel.
3. Transport Streams are built up using information under TS Construction.
4. The output port can be configured to source a sine-wave test signal at the frequency and output level configured for that output.

4.6 TS Construction Page Options

Figure 4.12 shows the **TS Construction** tabbed page. Options on this page allow the output Transport Streams to be configured.

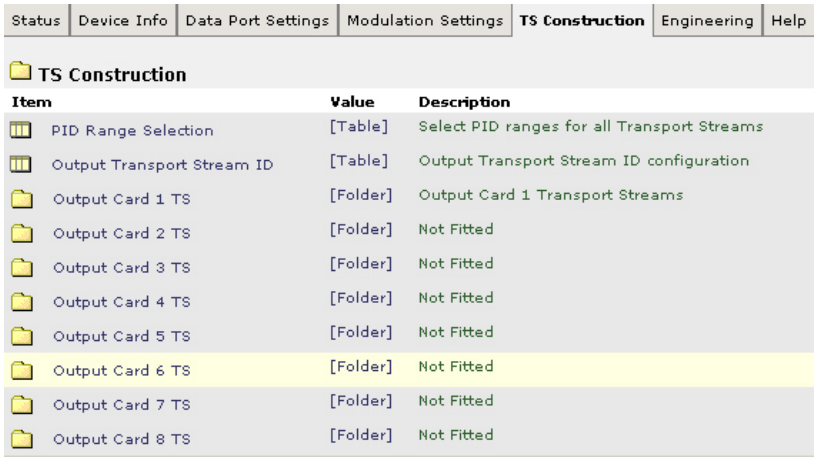

Figure 4.10: TS Construction Tabbed Web Page

4.6.1 PID Range Selection

This provides the user with the option to specify the PID remapping mode to be used for the PMT, ES and ECM (where applicable) for each output Transport Stream. Two modes are available:

- Range remapping
- Cyclic remapping

If no value is entered the default value that appears on the GUI will be used.

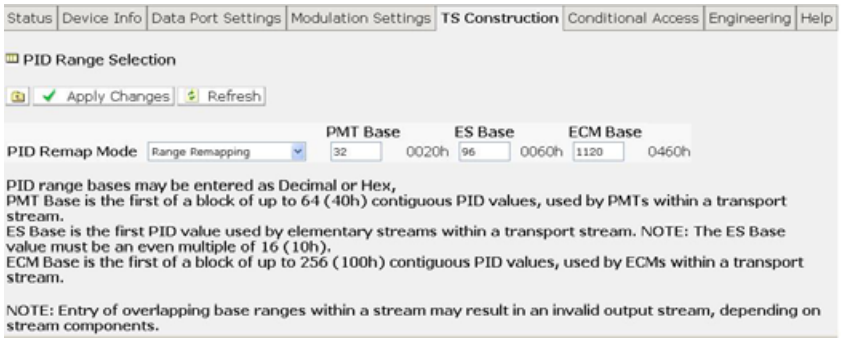

Figure 4.11: PID Range Selection

4.6.2 Output Transport Stream ID

Each generated output Transport Stream can be given an identifier. This value is set using the Transport Stream ID as required. Values can be set in the range 0 – 65535. This value appears in the generated output PAT.

If no user value is entered the default value that appears on the GUI will be used.

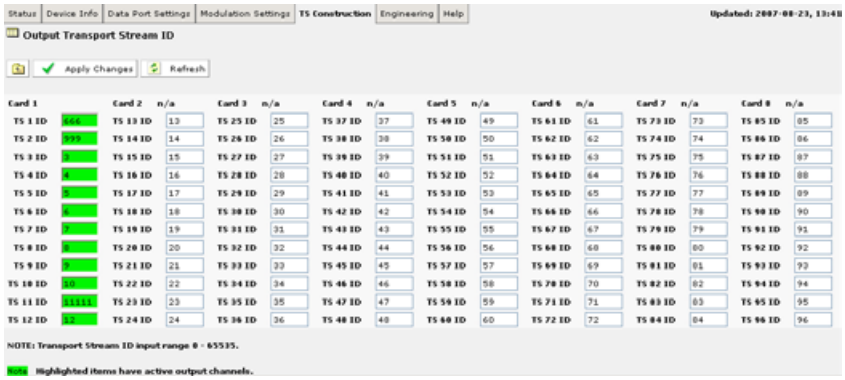

Figure 4.12: Output Transport Stream ID

4.6.3 Transport Streams (TSn)

Configure the content of each Transport Stream by entering a multicast (or unicast) address and UDP port number for each of the input flows to be included in the output TS.

The status of each of the UDP input ports is shown for each flow.

A summary of the output rate available (defined by the modulation settings), actual component rate and the amount of free space available (null packets) is also displayed for information.

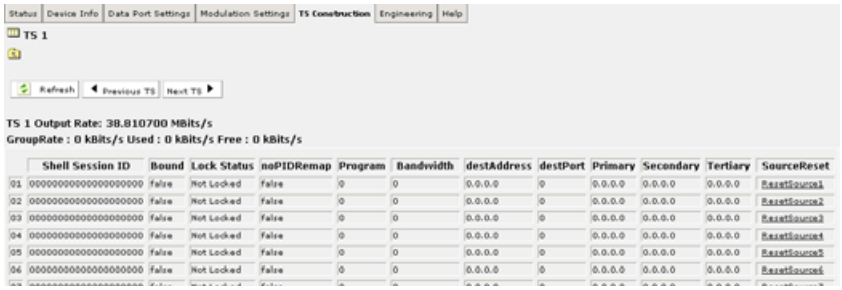

Figure 4.13: Transport Stream Component Set-up (RPC mode)

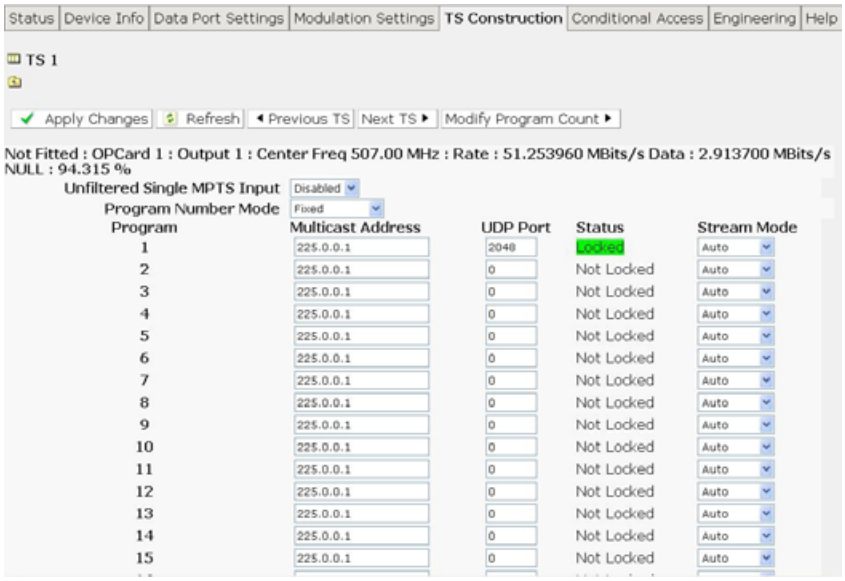

Figure 4.14: Transport Stream (Non-RPC) Component Set-up

Stream Mode

Each SPTS input can be individually set for processing in any of 3 possible modes:

Auto – the EQ8096 will employ the automatic PID remap mode chosen in *Section 4.6.1*.

Unfiltered – the EQ8096 will pass through ALL PIDs on the flow (including PSI), unmodified. This mode should be used when multiplexing OOB data or SI traffic.

No Remap – the EQ8096 will process the stream as normal but no remapping will be performed.

Program Number Mode

The program number allocation can be programmed into any of 3 possible modes:

Fixed – the EQ8096 will change the output Program number to be the same as the Program Index as shown on the GUI (1-32 or 1-n when in extended mode).

Pass Thru – the EQ8096 will simply pass the input Program number through to the Output Transport Stream.

User Defined – the operator can specify the Program number for each service in the Output Transport Stream.

Modify Program Count

By default, each of the 96 Output Transport Streams supports the inclusion of up to 32 services. For denser Transport Streams, it is possible to allocate up to 64 services by entering the Modify Program Count page.

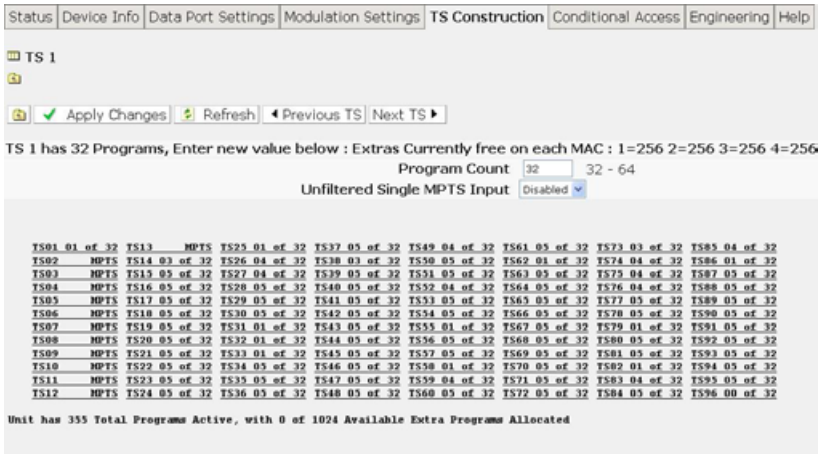

Figure 4.15: Modify Program Count Set-up

Selecting Between VOD/SDV and Broadcast Mode

For each transport stream output it is possible to select a single MPTS input flow to appear at the output. The maximum bit-rate of the input MPTS is 51.25 Mbps.

When the QAM Channel is to be used for processing a single MPTS then 'Unfiltered Single MPTS Input' should be Enabled. The appropriate mode should then be chosen (Unfiltered, NoRemap, SI Drop).

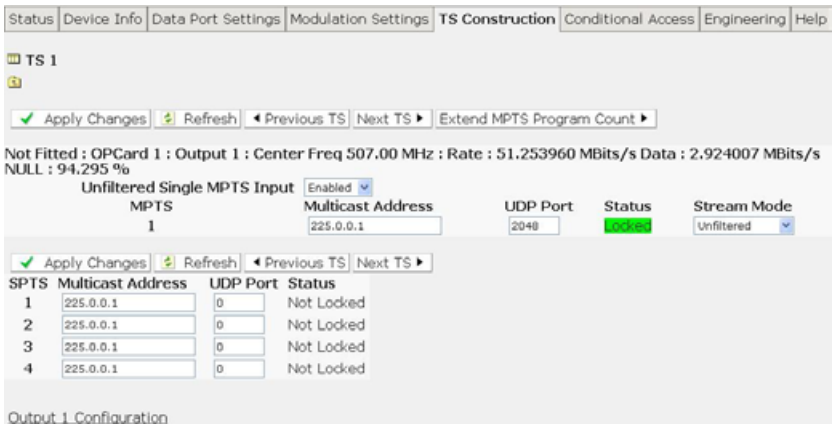

Figure 4.16: Transport Stream (Broadcast) Component Set-up

Selecting Between SDV and Standard Mode

CD

The EQ8096 can be used in 2 environments; standard (manual/SNMP) control or using an SDV Server/ERM with the RPC protocol. This can be selected under the Engineering Tabbed Page, See *Reference Guide* (Chapter 3, Section 3.3.8). The unit must be rebooted after this selection is made. The TS Construction Tabbed Page will appear more informative and does not permit user entry of parameters.

	NOTE The software supports up to 64 programs/SPTSs per Transport Stream.

4.7 Engineering Tabbed Pages

CD

See the *Reference Guide* for information on the **Engineering** tabbed page.

5 Alarms

5.1 View Active Alarm Table

The EQ8096 software provides functionality for handling, logging and displaying application alarms.

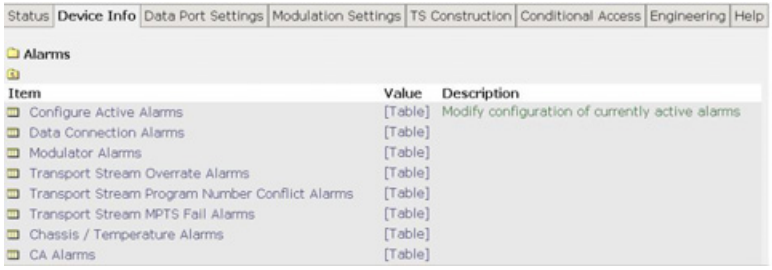

Figure 5.1: Alarms Web Page

5.2 Configure Active Alarms

The EQ8096 software provides the facility to mask any internal alarm and allocate the alarm severity.

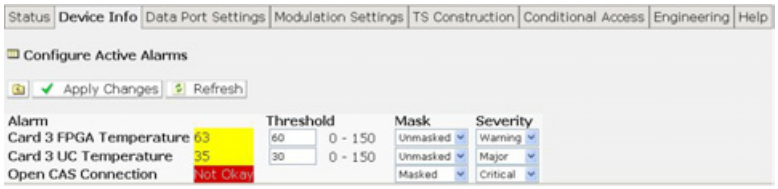

Figure 5.2: Active Alarm List

5.3 Alarm

CD See the *Reference Guide* for descriptions of the alarms components.

6 RF Output Channel Mappings / Allocations

6.1 Overview

The EQ8096 supports 96 total QAM channels, spread across a maximum of 8 Output Cards. Each Output Card supports a maximum of 12 channels.

The EQ8096 can operate in 3 distinct mapping modes, depending on the installation requirements:

- Standard (Direct) Mapping
- Distributed (Striped) Mapping
- '6 Card' Mapping

The Mapping Mode can be configured from the 'Debug Event Flags' menu under the 'Engineering' tab on the Web GUI. The default is Distributed and Six card mode DISABLED (Standard Mapping).

6.2 Standard Mapping

When configured in standard mapping mode (default), there is a direct relationship between input data ports and Output Cards and this can be seen in *Table 6.1*.

Table 6.1: Mapping for 'Standard' Mode.

Data port	Output Card Slot	Transport Streams
P1/S1	1, 2	1-24
P2/S2	3, 4	25-48
P3/S3	5, 6	49-72
P4/S4	7, 8	73-96

The Transport Streams are mapped logically as defined in *Table 6.2*. Channel designations defined in the tables are as seen from the rear of the unit.

Table 6.2: Channel Allocations for 'Standard' Mode (Example Slot 1).

	Output											
	1 Left most connector				2				3 Right most connector			
Channel	1	2	3	4	1	2	3	4	1	2	3	4
Transport Stream	TS 1	TS 2	TS 3	TS 4	TS 5	TS 6	TS 7	TS 8	TS 9	TS 10	TS 11	TS 12

6.3 Distributed Mapping

Distributed mapping mode can be configured when installed within an RF redundant network. This is often referred to as 'QAM Striping'.

The Data port (1-4) is directly mapped to the channel (1-4) on each spigot. Each data port covers all 8 Output cards therefore and the Transport Stream increments across RF connectors/spigots (1 -24).

Table 6.3: Mapping for 'Distributed Input' Mode (Example Slot 1).

Data port	Spigot Channel	Transport Streams
P1/S1	1	1-24
P2/S2	2	25-48
P3/S3	3	49-72
P4/S4	4	73-96

Table 6.4: Channel Allocations for 'Distributed Input' Mode (Example Slot 1).

	Output											
	1				2				3			
	Left most connector								Right most connector			
Channel	1	2	3	4	1	2	3	4	1	2	3	4
Transport Stream	TS 1	TS 25	TS 49	TS 73	TS 2	TS 26	TS 50	TS 74	TS 3	TS 27	TS 51	TS 75

6.4 '6 Card' Mapping

Operating in '6 Card mode' configures the EQ8096 into a data efficient Input/Output mapping for use when 4 Annex A (8 MHz) channels are being used per spigot. When in this configuration, maximum bandwidth can be achieved using only 6 Output cards installed (72 QAMs).

Table 6.5: Channel Allocations for '6 card' Mode (Example Slot 1).

Data Port	Output Card Slot	Transport Streams
P1/S1	1, 2	1-18
P2/S2	2, 3	19-36
P3/S3	4, 5	37-54
P4/S4	5, 6	55-72

7 Materials Declarations

7.1 Overview

TANDBERG Television products are designed and manufactured in keeping with good environmental practise. Our component and materials selection policy prohibits the use of a range of potentially hazardous materials. In addition, we comply with relevant environmental legislation.

7.2 For the European Union

For product sold into the EU after 1st July 2006, we comply with the EU RoHS Directive. We also comply with the WEEE Directive.

7.3 For China

For product sold into China after 1st March 2007, we comply with the "Administrative Measure on the Control of Pollution by Electronic Information Products". In the first stage of this legislation, content of six hazardous materials has to be declared together with a statement of the "Environmentally Friendly Use Period (EFUP)": the time the product can be used in normal service life without leaking the hazardous materials. TANDBERG Television expects the normal use environment to be in an equipment room at controlled temperatures (around 22°C) with moderate humidity (around 60%) and clean air, near sea level, not subject to vibration or shock.

Where TANDBERG Television product contains potentially hazardous materials, this is indicated on the product by the appropriate symbol containing the EFUP. For TANDBERG Television products, the hazardous material content is limited to lead (Pb) in some solders. This is extremely stable in normal use and the EFUP is taken as 50 years, by comparison with the EFUP given for Digital Exchange/Switching Platform in equipment in Appendix A of "General Rule of Environment-Friendly Use Period of Electronic Information Products". This is indicated by the product marking:

It is assumed that while the product is in normal use, any batteries associated with real-time clocks or battery-backed RAM will be replaced at the regular intervals.

The EFUP relates only to the environmental impact of the product in normal use, it does not imply that the product will continue to be supported for 50 years.

8 Disposal of this Equipment

8.1 General

Dispose of this equipment safely at the end of its life. Local codes and/or environmental restrictions may affect its disposal. Regulations, policies and/or environmental restrictions differ throughout the world. Contact your local jurisdiction or local authority for specific advice on disposal.

8.2 For the European Union

"This product is subject to the EU Directive 2002/96/EC on Waste Electrical and Electronic Equipment (WEEE) and should not be disposed of as unsorted municipal waste."

9 Recycling

TANDBERG Television provides assistance to customers and recyclers through our web site http://www.tandbergtv.com/ProductRecycling.ink Please contact TANDBERG Television's customer services for assistance with recycling if this site does not show the information you require.

Where it is not possible to return the product to TANDBERG Television or its agents for recycling, the following general information may be of assistance:

- Before attempting disassembly, ensure the product is completely disconnected from power and signal connections.
- All major parts are marked or labelled to show their material content.
- Depending on the date of manufacture, this product may contain lead in solder.
- Some circuit boards may contain battery-backed memory devices.

10 Lithium Batteries

This equipment uses a single Lithium battery to allow an internal real-time clock to continue operating during periods when the unit is powered down. This cell is not a USA Environmental Protection Agency listed hazardous waste. It is fully encapsulated and should not be tampered with.