

RX8000 Series Receivers

Software Version 4.3.2

REFERENCE GUIDE



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If you do not understand the contents of this manual. DO NOT OPERATE THIS EQUIPMENT. Also, translation into any EC official language of this manual can be made available, at your cost.

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Contents

Chapter 1: Introduction

This chapter identifies the equipment versions covered by this manual, describes the purpose of the equipment and provides a summary of features, controls and indicators.

Chapter 2: Installing the Equipment

This chapter provides a guide to the installation requirements, gives detailed procedures for the installation and configuration of the equipment including **important safety information** and provides details of connectors.

Chapter 3: Front Panel Control

This chapter details the power up/down procedures and describes the Front Panel LCD menus used for setting-up, configuring and operating the equipment.

Chapter 4: Remote Control

This chapter describes the different ways in which the equipment may be configured and operated remotely.

Chapter 5: Web Browser Control

This chapter describes the Web Browser graphical user interface used for detailed configuration and operation of the equipment.

Chapter 6: Options

This chapter describes the available hardware and software options for the equipment.

Chapter 7: Preventive Maintenance and Fault-finding

This chapter provides details of routine maintenance and servicing, including warranty and maintenance information, and details fault-finding information for other types of problem which may be encountered.

Annex A: Glossary

Annex B: Technical Specification

Annex C: Language Abbreviations

Introduction

This Reference Guide provides instructions and information for the installation and operation of the RX8000 Receiver range.

This Reference Guide should be kept in a safe place for reference for the life of the equipment. It is not intended that this Reference Guide will be amended by the issue of individual pages. Any revision will be by a complete re-issue. Further copies of this Reference Guide can be ordered from the address shown on *page vii*. If passing the equipment to a third party, also pass the relevant documentation.

Revision History

Issues of this Reference Guide are listed below:

Issue	Date	Software Version	Comments
1	April 2009	1.3.0	Initial release for RX8000 Receiver Range (Supersedes E10261) Inclusion of RX8200 (Sv 2.0.0) Information
2	Jan 2011	4.3.2	Template restyled to Ericsson corporate style. New features and option cards added, including DVB-S2, IP Input, 8VSB and G703.
A	March 2011	4.3.2	Allocation of Ericsson Document Identity and re-brand completion.

Associated Documents

The following manuals/guides are also associated with this equipment:

Ericsson Document Identity	Original Document Number	Title
2/1424-EN/LZT 790 0008	ST.US.E10262	RX8320 User Guide
1/1424-EN/LZT 790 0008	ST.US.E10274	RX8310/15/30 User Guide
1424-EN/LZT 790 0009	ST.US.E10287	RX8200 User Guide

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Heed Warnings

All warnings on the product and in the operating instructions should be adhered to. The manufacturer can not be held responsible for injuries or damage where warnings and cautions have been ignored or taken lightly.

Read Instructions

All the safety and operating instructions should be read before this product is operated.

Follow Instructions

All operating and use instructions should be followed.

Retain Instructions

The safety and operating instructions should be retained for future reference.



Warning!

Warnings give information which, if strictly observed, will prevent personal injury or death, or damage to property or the environment. They are highlighted for emphasis, as in this example, and are placed immediately preceding the point at which the reader requires them.



Caution!

Cautions give information which, if strictly followed, will prevent damage to equipment or other goods. They are highlighted for emphasis, as in this example, and are placed immediately preceding the point at which the reader requires them.

Note: Notes provide supplementary information. They are highlighted for emphasis, as in this example, and are placed immediately after the relevant text.

EMC Compliance

This equipment is certified to the EMC requirements detailed in *Annex B, Technical Specification*. To maintain this certification, only use the leads supplied or if in doubt contact Customer Services.

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Customer Services

Europe, Middle East and Africa	Tel: +44 (0) 23 8048 4455 Fax: +44 (0) 23 8048 4467 Email: tvsupportemea@ericsson.com	
Americas	Tel: +888 671 1268 Tel: +678 812 6255 Fax: +678 812 6262 Email: tvsupportamericas@ericsson.com Email: tvsupport@ericsson.com	US and Canada International Compression Software Support Centre
China	Tel: +86 10 8476 8676 Fax: +86 10 8476 7741 Tel: +852 2590 2388 Fax: +852 2590 9550 Email: tvsupportapac@ericsson.com	Beijing Beijing Hong Kong Hong Kong
Australia and New Zealand	Tel: +612 (0) 9111 4027 Fax: +612 (0) 9111 4949 Email: tvsupportanz@ericsson.com	
Internet Address	www.ericsson.com	

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International	Tel: +44 (0) 23 8048 4229 Fax: +44 (0) 23 8048 4161 Email: tvglobaltraining@ericsson.com
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Customer Services and Technical Training Postal Address

Ericsson
Unit 2
Strategic Park
Comines Way
Hedge End
Southampton
Hampshire
SO30 4DA
United Kingdom

Return of Equipment

If you need to return equipment for repair please contact your local Ericsson Customer Services Department. Please refer to the *Customer Services* contact information on *page vii*.

You will then be directed to return the faulty equipment to a repair centre with the appropriate facilities for that equipment. A tracking number will be issued that should be used if you need to enquire about the progress of the repair. The equipment should be properly packed and the tracking number should be clearly marked on the outside of the packaging.

Technical Publications

If you need to contact Ericsson Technical Publications regarding this publication, e-mail: tvtechpubs@ericsson.com.

Introduction

Chapter 1

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1.1 Introduction

1.1.1 Who Should Use this Reference Guide

This Reference Guide is written for operators / users of the RX8000 Series Receivers. It describes the units' functions and operation. The Reference Guide is written to assist in the installation and day-to-day care and operation of the unit. Maintenance information requiring the covers to be removed is not included.



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 Ericsson trained and approved service engineers are permitted to service this equipment.



Caution!

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

1.1.2 What Equipment is Covered by this Reference Guide

Table 1.1 Equipment Model Descriptions

Model Number	Marketing Code	Price Object Number	Supply Object Number	Description
RX8200	RX8200/BAS RX8200/BAS/2	FAZ 101 0113/1 FAZ 101 0113/2	KDU 137 639/1 KDU 137 639/2	Advanced Modular Receiver. MPEG-2/MPEG-4 HD/SD, AC Power Supply. MPEG-2/MPEG-4 4:2:2, AC Power Supply.
RX8252	RX8252/BAS	FAZ1010113/62	KDU137769/1	Program Transcoder. DVB-S2, Common Interface, AC Power Supply.
RX8310	RX8310/BAS	FAZ1010108/18	KDU137620/1	Distribution Receiver. DVB-S2, Director CA, AC Power Supply.
RX8315	RX8315/BAS	FAZ 101 0108/19	KDU137599/1	Distribution Receiver. DVB-S2, Common Interface CA, Director CA, AC Power Supply.
RX8320	RX8320/BAS	FAZ 101 0108/20	KDU137619/1	ATSC Broadcast Receiver. 8-VSB, MPEG-2 Decode, AC-3, AC Power Supply.
RX8330	RX8330/BAS	FAZ 101 0108/1	KDU 137 337/1	Distribution Receiver. DVB-S2, Common Interface CA, Director CA, SDI Output, AC Power Supply.

This Reference Guide covers the functions of software **version 4.3.2 and later**.

To verify the installed version either:

- Access the front panel **System Menu** (Menu 1.2.1). The front panel menus are described in *Chapter 3, Front Panel Control*.
- Access the Web Browser screens and select the **About** button. The Web Browser screens are described in *Chapter 5, Web Browser Control*.

The various hardware and software options are listed below:

Table 1.2 RX8200 Hardware Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX8200/HWO/DVBS2	FAZ 101 0113/5	ROA 128 3757	DVB-S2 Input Card
RX8200/HWO/IP/GIGE	FAZ 101 0113/12	ROA 128 3761	Gigabyte 100/1000BaseT Ethernet
RX8200/HWO/G703	FAZ 101 0113/8	ROA 128 3763	G.703 ATM Input Card
RX8200/HWO/MP2/422	FAZ 101 0113/15	ROA 128 3765	MPEG-2 4:2:2 Decode Card with only SD Decode Enabled
RX8200/HWO/IP/OUT	FAZ 101 0113/14	ROA 128 3756	Dual Gigabit IP Transport Stream Output Card
RX8200/HWO/SD	FAZ 101 0113/18	ROA 128 3758	SD Video Input and ASI Output Card with 2x CVBS, 2x Connectors for ASI/SDI
RX8200/HWO/HD/3G	FAZ 101 0113/10	ROA 128 3768	HD and SD Video Input and ASI Output Card
RX8200/HWO/RS232	FAZ 101 0113/17	ROA 128 4207	Remote Data Card
RX8200/HWO/BSKYB	FAZ 101 0113/4	ROA 128 4203	NDS BSKYB CA Card
RX8200/HWO/BAL/AUD	FAZ 101 0113/3	ROA 128 3760	Balanced Analogue and Digital Audio Output Providing 2 Stereo Pairs of Audio
RX8200/HWO/DVBS2/2	FAZ 101 0113/6	ROA 128 3762	2nd Gen DVB-S & DVB-S2 Satellite Input Option
RX8200/HWO/HQDCONV	FAZ 101 0113/60	ROA 128 4419	High-Quality Down-Conversion
RX8XXX/CABLE/XLR	FAZ 101 0108/24	RPM 901 364	XLR Terminal Audio Break-out Cable
RX8XXX/CABLE/SCRTRM	FAZ 101 0108/23	RPM 901 365	Screw Terminal Audio Break-out Cable

Table 1.3 RX8200 Software Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX8200/SWO/DVBS2/QPSK	FAZ 101 0113/32	FAT 102 0151	DVB-S2 QPSK License key
RX8200/SWO/DVBS2/8PSK	FAZ 101 0113/30	FAT 102 0152	DVB-S2 8PSK License key
RX8200/SWO/DVBS2/LSYM	FAZ 101 0113/31	FAT 102 0153	DVB-S2 Low Symbol Rate License Key
RX8200/SWO/MPEG2/SD	FAZ 101 0113/45	FAT 102 0169	MPEG-2 SD Decoding
RX8200/SWO/MPEG2/HD	FAZ 101 0113/44	FAT 102 0170	MPEG-2 HD & SD Decoding
RX8200/SWO/MP2/MP4/SD	FAZ 101 0113/40	FAT 102 0171	MPEG-2 & MPEG-4 SD Decode
RX8200/SWO/MP2/MP4/SD/HD	FAZ 101 0113/41	FAT 102 0156	MPEG-2 & MPEG-4 HD and SD Decode
RX8200/SWO/SING/SERVFILT	FAZ 101 0113/53	FAT 102 0181	Single Service Filtering
RX8200/SWO/MULT/SERVFILT	FAZ 101 0113/47	FAT 102 0182	Multi-Service Filtering
RX8200/SWO/TTV	FAZ 101 0113/58	FAT 102 0168	Signal Protection Scrambling License
RX8200/SWO/IP/DATA	FAZ 101 0113/35	FAT 102 0183	High Speed Data Output
RX8200/SWO/PW	FAZ 101 0113/51	FAT 102 0154	Password Protection for Web Browser
RX8200/SWO/DIR5	FAZ 101 0113/27	FAT 102 0155	Director Single-Service CA
RX8200/SWO/DIR5/MSD	FAZ 101 0113/28	FAT 102 0166	Director Multi-Service Descrambling
RX8200/SWO/MSD	FAZ 101 0113/46	FAT 102 0165	Common Interface Multi Service Descrambling
RX8200/SWO/AC3	FAZ 101 0113/22	FAT 102 0158	Dolby Digital® Decoding / Down-mixing
RX8200/SWO/AAC	FAZ 101 0113/21	FAT 102 0179	AAC Decode
RX8200/SWO/NULL	FAZ 101 0113/48	FAT 102 0161	Null Packet TS License
RX8200/SWO/RAS	FAZ 101 0113/52	FAT 102 0164	RAS CA
RX8200/SWO/CI	FAZ 101 0113/25	FAT 102 0162	Common Interface CA Single-Service Decryption
RX8200/SWO/BISS	FAZ 101 0113/23	FAT 102 0163	BISS Mode 1 & E CA
RX8200/SWO/BISS/MSD	FAZ 101 0113/24	FAT 102 0167	BISS Multi-Service Descrambling
RX8200/SWO/IP/PROMPEG	FAZ 101 0113/37	FAT 102 0159	SMPTE 2022 Pro-MPEG FEC
RX8200/HWO/HD/3G	FAZ 101 0113/10	ROA 128 3769	HD OUTPUT CARD+1xCVBS, 1xRGB, 3x3G Connectors

Marketing Code	Price Object Number	Supply Object Number	Description
RX8200/SWO/HDSDI/3G	FAZ 101 0113/34	FAT 102 0176	MPEG-4 HD 4:2:2 1080p 50/60 Decoding
RX8200/SWO/MP2/422/SD	FAZ 101 0113/59	FAT 102 0387	MPEG-2 SD 4:2:2 Decoding
RX8200/SWO/MP2/HD/422	FAZ 101 0113/39	FAT 102 0172	MPEG-2 HD and SD 4:2:2 Decode
RX8200/SWO/MP4/422/SD	FAZ 101 0113/43	FAT 102 0178	MPEG-4 SD 4:2:2 Decoding
RX8200/SWO/MP4/422/HD	FAZ 101 0113/42	FAT 102 0177	MPEG-4 HD 4:2:2 Decoding
RX8200/SWO/DCONV	FAZ 101 0113/26	FAT 102 0157	Simultaneous Down-conversion of HD to SD
RX8200/SWO/UPCONV	FAZ 101 0113/54	FAT 102 0174	Up-conversion from SD to HD (to 1080i or 720p)
RX8200/SWO/XCONV	FAZ 101 0113/55	FAT 102 0175	Cross-conversion
RX8200/SWO/FSYNC	FAZ 101 0113/33	FAT 102 0160	Frame Sync
RX8200/SWO/4AUD	FAZ 101 0113/20	FAT 102 0180	4 x Audio Capacity
RX8200/SWO/LDELAY	FAZ 101 0113/38	FAT 102 0173	Low Latency Decode

Table 1.4 RX8310 Hardware Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/HWO/IP/OUT	FAZ 101 0108/22	ROA 128 3646	Dual Gigabit IP Transport Stream Output Card
RX8XXX/CABLE/XLR	FAZ 101 0108/24	RPM 901 364	XLR Terminal Audio Break-out Cable
RX8XXX/CABLE/SCRTRM	FAZ 101 0108/23	RPM 901 365	Screw Terminal Audio Break-out Cable

Table 1.5 RX8310 Software Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/DVBS2/QPSK	FAZ 101 0108/6	FAT 102 0098	DVB-S2 QPSK License Key
RX83XX/SWO/DVBS2/8PSK	FAZ 101 0108/4	FAT 102 0102	DVB-S2 8PSK License Key
RX83XX/SWO/DVBS2/LSYM	FAZ 101 0108/5	FAT 102 0103	DVB-S2 Low Symbol Rate License Key
RX83XX/SWO/MPEG2/SD	FAZ 101 0108/10	FAT 102 0105	MPEG-2 SD Decoding
RX83XX/SWO/MPEG2/HD	FAZ 101 0108/9	FAT 102 0106	MPEG-2 HD & SD Decoding
RX83XX/SWO/AC3	FAZ 101 0108/28	FAT 102 0107	Dolby Digital® Decoding / Down-mixing

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/PW	FAZ 101 0108/29	FAT 102 0110	Password Protection for Web Browser
RX83XX/SWO/AAC	FAZ 101 0108/2	FAT 102 0370	AAC Decode
RX83XX/SWO/SING/SERVFILT	FAZ 101 0108/15	FAT 102 0138	Single Service Filtering
RX83XX/SWO/MULT/SERVFILT	FAZ 101 0108/14	FAT 102 0137	Multi-Service Filtering
RX83XX/SWO/IP/DATA	FAZ 101 0108/7	FAT 102 0113	High Speed Data Output
RX83XX/SWO/MP2/MP4/SD	FAZ 101 0108/12	FAT 102 0111	MPEG-2/4 SD 4:2:0 Decoding
RX83XX/SWO/MP2/MP4/SD/HD	FAZ 101 0108/11	FAT 102 0112	MPEG-2/4 HD 4:2:0 Decoding
RX83XX/SWO/NULL	FAZ 101 0108/17	FAT 102 0114	Null Packet TS License
RX83XX/SWO/DIR5/MSD	FAZ 101 0108/3	FAT 102 0104	Director Multi-Service Descrambling

Table 1.6 RX8315 Hardware Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/HWO/IP/OUT	FAZ 101 0108/22	ROA 128 3646	Dual Gigabit IP Transport Stream Output Card
RX8XXX/CABLE/XLR	FAZ 101 0108/24	RPM 901 364	XLR Terminal Audio Break-out Cable
RX8XXX/CABLE/SCRTRM	FAZ 101 0108/23	RPM 901 365	Screw Terminal Audio Break-out Cable

Table 1.7 RX8315 Software Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/DVBS2/QPSK	FAZ 101 0108/6	FAT 102 0098	DVB-S2 QPSK License Key
RX83XX/SWO/DVBS2/8PSK	FAZ 101 0108/4	FAT 102 0102	DVB-S2 8PSK License Key
RX83XX/SWO/DVBS2/LSYM	FAZ 101 0108/5	FAT 102 0103	DVB-S2 Low Symbol Rate License Key
RX83XX/SWO/MPEG2/SD	FAZ 101 0108/10	FAT 102 0105	MPEG-2 SD Decoding
RX83XX/SWO/MPEG2/HD	FAZ 1010108/9	FAT 102 0106	MPEG-2 HD & SD Decoding
RX83XX/SWO/AC3	FAZ 101 0108/28	FAT 102 0107	Dolby Digital® Decoding / Down-mixing
RX83XXSWO/PW	FAZ 101 0108/29	FAT 102 0110	Password Protection for Web Browser
RX83XX/SWO/AAC	FAZ 101 0108/2	FAT 102 0370	AAC Decode

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/SING/SERVFILT	FAZ 101 0108/15	FAT 102 0138	Single Service Filtering
RX83XX/SWO/MULT/SERVFILT	FAZ 101 0108/14	FAT 102 0137	Multi-Service Filtering
RX83XX/SWO/IP/DATA	FAZ 101 0108/7	FAT 102 0113	High Speed Data Output
RX83XX/SWO/MP2/MP4/SD	FAZ 101 0108/12	FAT 102 0111	MPEG-2/4 SD 4:2:0 Decoding
RX83XX/SWO/MP2/MP4/SD/HD	FAZ 101 0108/11	FAT 102 0112	MPEG-2/4 HD 4:2:0 Decoding
RX83XX/SWO/NULL	FAZ 101 0108/17	FAT 102 0114	Null Packet TS License
RX83XX/SWO/MSD	FAZ 101 0108/3	FAT 102 0125	Common Interface Multi-Service Descrambling

Table 1.8 RX8320 Hardware Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX8XXX/CABLE/XLR	FAZ 101 0108/24	RPM 901 364	XLR Terminal Audio Break-out Cable
RX8XXX/CABLE/SCRTRM	FAZ 101 0108/23	RPM 901 365	Screw Terminal Audio Break-out Cable

Table 1.9 RX8320 Software Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/AC3	FAZ 101 0108/28	FAT 102 0107	Dolby Digital [®] Decoding / Down-mixing
RX83XX/SWO/PW	FAZ 101 0108/29	FAT 102 0110	Password Protection for Web Browser
RX83XX/SWO/AAC	FAZ 101 0108/2	FAT 102 0370	AAC Decode
RX83XX/SWO/SING/SERVFILT	FAZ 101 0108/15	FAT 102 0138	Single-Service Filtering
RX83XX/SWO/MULT/SERVFILT	FAZ 101 0108/14	FAT 102 0137	Multi-Service Filtering
RX83XX/SWO/IP/DATA	FAZ 101 0108/7	FAT 102 0113	High Speed Data Output
RX83XX/SWO/MP2/MP4/SD	FAZ 101 0108/12	FAT 102 0111	MPEG-2, MPEG-4 4:2:0 SD Decoding
RX83XX/SWO/MP2/MP4/SD/HD	FAZ 101 0108/11	FAT 102 0112	MPEG-2, MPEG-4, 4:2:0 SD Decoding and HD Down-conversion
RX83XX/SWO/MPEG4/SD	FAZ 101 0108/10	FAT 102 0105	MPEG-4 SD 4:2:0 Decoding
RX83XX/SWO/MPEG4/HD	FAZ 101 0108/9	FAT 102 0106	MPEG-4 HD 4:2:0 Decoding

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/NULL	FAZ 101 0108/17	FAT 102 0114	Null Packet TS License
RX8320/SWO/IP/OUT	FAZ 101 0108/25	FAT 102 0134	IP Transport Stream Out License Key
RX8320/UPG/IP/OUT	FAZ 101 0108/26	FAT 102 0135	IP Transport Stream Output

Table 1.10 RX8330 Hardware Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/HWO/RSECAM	FAZ 101 0108/33	ROA 128 4418	Russian SECAM Output Card
RX83XX/HWO/IP/OUT	FAZ 101 0108/22	ROA 128 3646	Dual Gigabit IP Transport Stream Output Card
RX8XXX/CABLE/XLR	FAZ 101 0108/24	RPM 901 364	XLR Terminal Audio Break-out Cable
RX8XXX/CABLE/SCRTRM	FAZ 101 0108/23	RPM 901 365	Screw Terminal Audio Break-out Cable

Table 1.11 RX8330 Software Options

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/DVBS2/QPSK	FAZ 101 0108/6	FAT 102 0098	DVB-S2 QPSK License Key
RX83XX/SWO/DVBS2/8PSK	FAZ 101 0108/4	FAT 102 0102	DVB-S2 8PSK License Key
RX83XX/SWO/DVBS2/LSYM	FAZ 101 0108/5	FAT 102 0103	DVB-S2 Low Symbol Rate License
RX83XX/SWO/MPEG2/SD	FAZ 101 0108/10	FAT 102 0105	MPEG-2 SD Decoding
RX83XX/SWO/MPEG2/HD	FAZ 101 0108/9	FAT 102 0106	MPEG-2 HD & SD Decoding
RX83XX/SWO/AC3	FAZ 101 0108/28	FAT 102 0107	Dolby Digital® Decoding / Down-mixing
RX83XX/SWO/PW	FAZ 101 0108/29	FAT 102 0110	Password Protection for Web Browser
RX83XX/SWO/AAC	FAZ 101 0108/2	FAT 102 0370	AAC Decode
RX83XX/SWO/BISS	FAZ 101 0108/30	FAT 102 0132	BISS Modes 1 and E
RX83XX/SWO/BISS/MSD	FAZ 101 0108/16	FAT 102 0133	BISS Modes 1 and E Multi-Service Decryption
RX83XX/SWO/SING/SERVFILT	FAZ 101 0108/15	FAT 102 0138	Single Service Filtering
RX83XX/SWO/MULT/SERVFILT	FAZ 101 0108/14	FAT 102 0137	Multi-Service Filtering
RX83XX/SWO/IP/DATA	FAZ 101 0108/7	FAT 102 0113	High Speed Data Output

Marketing Code	Price Object Number	Supply Object Number	Description
RX83XX/SWO/MP2/MP4/SD	FAZ 101 0108/12	FAT 102 0111	MPEG-2/4 SD 4:2:0 Decoding
RX83XX/SWO/MP2/MP4/SD/HD	FAZ 101 0108/11	FAT 102 0112	MPEG-2/4 HD 4:2:0 Decoding
RX83XX/SWO/NULL	FAZ 101 0108/17	FAT 102 0114	Null Packet TS License
RX83XX/SWO/MSD	FAZ 101 0108/13	FAT 102 0125	Common Interface Multi-Service Descrambling
RX83XX/SWO/DIR5/MSD	FAZ 101 0108/3	FAT 102 0104	Director Multi-Service Descrambling

1.2 Summary of Features

The RX8000 Series Receivers are single-service Decoders designed for the distribution of video services throughout a large network. They provide an advanced feature set combining maximum transmission efficiency with uncomplicated remote management. They provide all the essential functionality and connectivity options required to satisfy the requirements of cable, satellite and telco broadcast operations.

The RX8000 Series Receivers achieve up to three times the amount of content through a satellite transponder verses traditional satellite distribution solutions when used in combination with Ericsson's PREKOR™ dynamic pre-correction, Ericsson's MPEG-4 AVC compression encoders, and the additional 30% increase in channel capacity of DVB-S2 modulation.

1.2.1 RX8200 Advanced Modular Receiver

The RX8200's advanced modular design enables many configuration possibilities allowing it to cover a broad range of applications. It can be tailored to the user's precise needs, resulting in a unit with only those features that are necessary without the additional expense of superfluous functionality or connectivity.

The RX8200 can be tailored to standard definition or high definition uses with MPEG-2 or MPEG-4 decode technology in both 4:2:0 and 4:2:2 modes while connectivity into the receiver is achieved with DVB-S2 satellite, IP and ASI options.

The high powered processing capabilities of the RX8200 enable the unit to be simply and easily upgraded in the field with additional software options to increment the functionality at any point after initial installation.

1.2.1.1 RX82XX (and RX83XX) Standard Base Features

- 2-line x 40-character back-lit dot-matrix LCD user interface with pushbuttons for **Up**, **Down**, **Left**, **Right**, **Edit**, and **Save** for front panel control.
- 2 x 10/100 Mbps Ethernet remote control ports for Web browser Interface and SNMP monitoring.

- Status LED indicates input feed lock and general alarm conditions.
- Alarm handling via single configurable alarm relay and a date and time stamped alarm log.
- 1 x ASI input with 75 Ω connector.
- 2 x ASI Transport Stream outputs with 75 Ω connectors.
- Simple local and remote unit software upgrade in the field.
- Service (program) selection by Service Name or Service ID from a list of all the available Services carried in the currently received input feed.
- 40 x preset service and component selections can be stored and recalled.
- Unit configurations can be saved and recalled.
- Unit SNMP MIB can be downloaded from the unit.

1.2.1.2 **RX8200 Factory Fit Optional Hardware Features**

- 4 x L-band DVB-S/S2 satellite inputs.
- MPEG transport stream over IP input using dual 100/1000Base T connectors and Pro-MPEG FEC.
- 2 x Gigabit IP data / feed output on dual redundant RJ-45 output connectors.
- Frame synchronisation input.
- SD video outputs (dual composite or dual ASI/SDI switchable).
- HD/SD video outputs (composite, RGB/YPrPb, or Triple ASI/SDI/HD-SDI switchable).
- Balanced audio output.
- RS232 remote control / data.

1.2.1.3 **RX8200 Optional Software Features**

- DVB-S2 QPSK demodulation.
- DVB-S2 8PSK demodulation.
- DVB-S2 low symbol rate demodulation.
- Web browser password protection for Web Browser.
- MPEG-2 SD decoding.
- MPEG-2 HD decoding and MPEG-2 HD down-conversion.
- MPEG-4 AVC SD decoding.
- MPEG-4 AVC SD decoding and MPEG-4 AVC HD down-conversion.

- Dolby Digital ® decoding / downmixing.
- Director 5 control and de-scrambling.

1.2.2 RX8310 Distribution Receiver

The RX8310 combines a DVB-S2 demodulator with Ericsson's Director secure content delivery and over-air receiver control solution as a standard feature.

The RX8310 provides the option to decrypt multiple services, allowing decryption of a complete multiplex of channels with a single unit. Single-service decoding options for MPEG-2 and MPEG-4 AVC 4:2:0 SD video, and HD service down-conversion means the RX8310 can provide a simple and cost-effective route to hand-off video into an analog network or for service monitoring.

1.2.2.1 RX8310 Standard Base Features

- All the features listed in *RX82XX (and RX83XX) Standard Base Features Section 1.2.1.1*.
- 4 x input DVB-S QPSK satellite demodulator.
- Transport stream input with ASI connection.
- Transport stream output with ASI connection.
- Director single service decryption.
- Front panel and Web browser control, with alarm relay.
- SCTE 35 controlled contact closures for ad-insertion signaling.

1.2.2.2 RX8310 Factory Fit Optional Hardware Features

- 2 x Gigabit IP data / feed output on dual redundant RJ-45 output connectors.

1.2.2.3 RX8310 Optional Software Features

- DVB-S2 QPSK and 8PSK demodulation.
- Transport stream over IP output.
- Director multi-service decryption.
- MPEG-2 SD 4:2:0 video decoding through CVBS output.
- MPEG-2 HD 4:2:0 down-conversion through CVBS output.
- MPEG-4 AVC SD video decoding through CVBS output.
- MPEG-4 AVC HD down-conversion through CVBS output.
- 2 x service Dolby® Digital audio decoding with 5.1 to 2.0 down-mixing.
- AAC audio decoding with 5.1 to 2.0 down-mixing.

- MPE IP data de-encapsulation.
- Single service filtering and PID remapping.
- Multi-service filtering and stream splitting.

1.2.3 **RX8315 Distribution Receiver**

The RX8315 enables video distribution for both analog and digital networks.

The RX8315 provides compatibility with DVB Common Interface CA systems, offering both single service and multi-service decryption capability. Decrypted transport streams can be handed off into digital networks through a choice of ASI or IP output interfaces. The RX8315 can optionally decode any MPEG-2 or MPEG-4 AVC 4:2:0 video standard, down-converting from HD to SD where necessary to provide an SD composite video output for interfacing to analog networks or for low cost monitoring.

1.2.3.1 **RX8315 Standard Base Features**

- All the features listed in *RX82XX (and RX83XX) Standard Base Features Section 1.2.1.1.*
- 4 x input DVB-S QPSK satellite demodulator.
- Transport stream input with ASI connection.
- Transport stream output with ASI connection.
- DVB Common Interface CA support.
- Director single service decryption.
- Front panel and web browser control, with alarm relay.
- SCTE 35 controlled contact closures for ad-insertion signaling.

1.2.3.2 **RX8315 Factory Fit Optional Hardware Features**

- 2 x Gigabit IP data / feed output on dual redundant RJ-45 output connectors.

1.2.3.3 **RX8315 Optional Software Features**

- DVB-S2 QPSK, 8PSK and 16APSK* demodulation.
- Transport stream over IP output.
- Multi-service decryption via Pro CAMs.
- MPEG-2 SD 4:2:0 video decoding through CVBS output.
- MPEG-2 HD 4:2:0 down-conversion through CVBS output.
- MPEG-4 AVC SD video decoding through CVBS output.

- MPEG-4 AVC HD down-conversion through CVBS output.
- 2 x stereo pair Dolby® Digital audio decoding with 5.1 to 2.0 down-mixing.
- AAC audio decoding with 5.1 to 2.0 down-mixing.
- MPE IP data de-encapsulation.
- Single service filtering and PID remapping.
- Multi-service filtering and stream splitting.

1.2.4 RX8320 ATSC Broadcast Receiver

The RX8320 is specifically designed to enable a simple, reliable solution to the ATSC broadcast transition for cable, telco or satellite operators who re-transmit the local broadcast channels.

The RX8320 provides both ASI and 8-VSB inputs for reception of the broadcast services over terrestrial or fiber links. It then provides a pass-through capability so that operators can carry the digital signals all the way to a subscriber's home.

To support analog TV, delivery the RX8320 also provides video decode capability with high quality composite output and audio decode capability, including 5.1 multi-channel to stereo down-mixing, to allow easy interfacing into the existing infrastructure.

Any high definition (HDTV) digital TV service can be down-converted for analog SD delivery. Automatic picture aspect ratio conversion is performed based on any active format description (AFD) and bar data present on the incoming digital TV service.

Legal and regulatory requirements are also fulfilled by the RX8320 for the transition of ATSC broadcast services into analog TV delivery, with the extraction and insertion of closed captions, Nielsen data, TV Guide data, and V-Chip program rating information into the analog video outputs.

1.2.4.1 RX8320 Standard Base Features

- All the features listed in *RX82XX (and RX83XX) Standard Base Features Section 1.2.1.1*.
- 8-VSB demodulator.
- Transport stream input with ASI connection.
- Automatic redundancy switching between ASI and 8-VSB inputs.
- Transport stream output with ASI connection.
- MPEG-2 SD 4:2:0 video decoding with CVBS output.
- MPEG-2 HD 4:2:0 video down-conversion with SD CVBS output.
- Two service Dolby® Digital audio decoding with 5.1 to 2.0 down-mixing.

- 2 x stereo pairs balanced analog audio output.
- Front panel and web browser control, with alarm relay.

1.2.4.2 **RX8320 Factory Fit Optional Hardware Features**

- Dual Gigabit IP data / feed output on dual redundant RJ-45 output connectors.

1.2.4.3 **RX8320 Optional Software Features**

The following optional features are available:

- Transport stream over IP output.
- MPEG-4 AVC video decoding.
- Single-service filtering and PID remapping.
- Multi-service filtering and stream splitting.

1.2.5 **RX8330 Distribution Receiver**

The RX8330 provides feature-rich multi-format standard definition (SD) decoding capability with high quality SDI output for video distribution applications.

The RX8330 gives the user access to the latest compression and transmission technologies to allow for the most cost-effective and bandwidth transmissions possible while ensuring the highest standards of reliability and video quality.

The RX8330 offers both ASI and DVB-S2 satellite input interfaces. As security of content is always of paramount importance, compatibility with popular CA systems including DVB Common Interface is provided. The RX8330 allows multi-format decoding of all SD 4:2:0 video standards for high quality SDI digital video and analog video outputs. This capability is further enhanced by the RX8330's ability to receive, and down-convert HD video to SD providing an SD output for broadcast or monitoring. Additionally, for systems that stay in the compressed domain, decrypted transport streams can be handed off into digital networks through a choice of both ASI or optional IP output interfaces.

1.2.5.1 **RX8330 Standard Base Features**

- All the features listed in *RX82XX (and RX83XX) Standard Base Features Section 1.2.1.1.*
- 4 x input DVB-S QPSK satellite demodulator.
- Transport stream input with ASI connection.
- Dual switchable ASI/SDI output.
- DVB Common Interface CA support.
- Director single service decryption.

- Front panel and Web browser control, with alarm relay.
- SCTE 35 controlled contact closures for ad-insertion signaling.

1.2.5.2 RX8330 Factory Fit Optional Hardware Features

- Dual Gigabit IP data / feed output on dual redundant RJ-45 output connectors.
- Russian SECAM composite video output.

1.2.5.3 RX8330 Optional Software Features

The following optional features are available:

- DVB-S2 QPSK, 8PSK and 16APSK demodulation.
- Transport stream over IP output.
- Multi-service decryption via Pro CAMs.
- Single service and multi-service BISS decryption.
- MPEG-2 SD 4:2:0 video decoding.
- MPEG-2 HD 4:2:0 down-conversion.
- MPEG-4 AVC SD video decoding.
- MPEG-4 AVC HD down-conversion.
- 2 x stereo pair Dolby® Digital audio decoding with 5.1 to 2.0 down-mixing.
- AAC audio decoding with 5.1 to 2.0 down-mixing.
- MPE IP data de-encapsulation.
- Single service filtering and PID remapping.
- Multi-service filtering and stream splitting.

1.3 The Satellite Receiver

1.3.1 Typical Satellite System

The RX8000 Series Receiver is a component of the MPEG-4 AVC/ MPEG-2/DVB compliant range of Ericsson equipment. They are designed for use by broadcasters and distributors of video, audio and data Services over satellite.

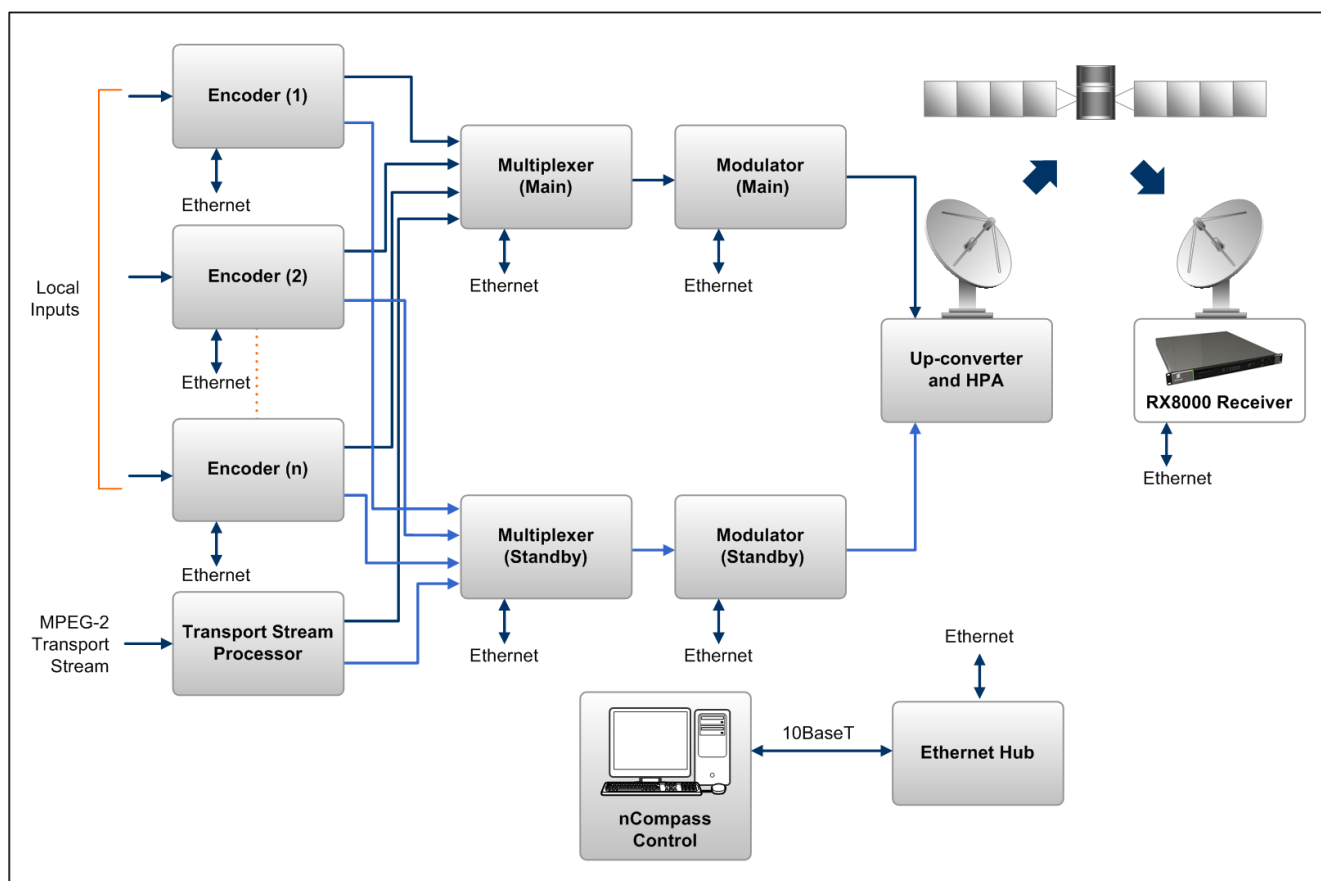


Figure 1.1 Typical Satellite Compression System

1.3.2 Input Connections

The Satellite Receiver interfaces directly to a Low-Noise Block (LNB) and accepts an intermediate frequency (IF) input in the band 950 - 2150 MHz (L-band) for operation in the specified symbol-rate range (see *Annex B, Technical Specification*). The unit can provide DC power and polarization switching to the LNB.

1.3.3 What the Satellite Receiver Does

The Receiver can be tuned to a specified satellite channel frequency and polarization. The input is down-converted via a Low-Noise Block (LNB) to provide an L-band input to the Receiver. The front-end tuning is microprocessor controlled with a frequency synthesized local oscillator. A software tuning and acquisition algorithm resolves translation errors (mainly due to the LNB).

The signal is then passed to a demodulator that recovers the signal using soft-decision decoding. The resulting stream is Reed-Solomon decoded and descrambled to provide inputs to the Decoder circuit. The received channel may contain multiple Services, therefore the Receiver's demultiplexer is configured to select a single video Service and other audio/data components and present them at the output.

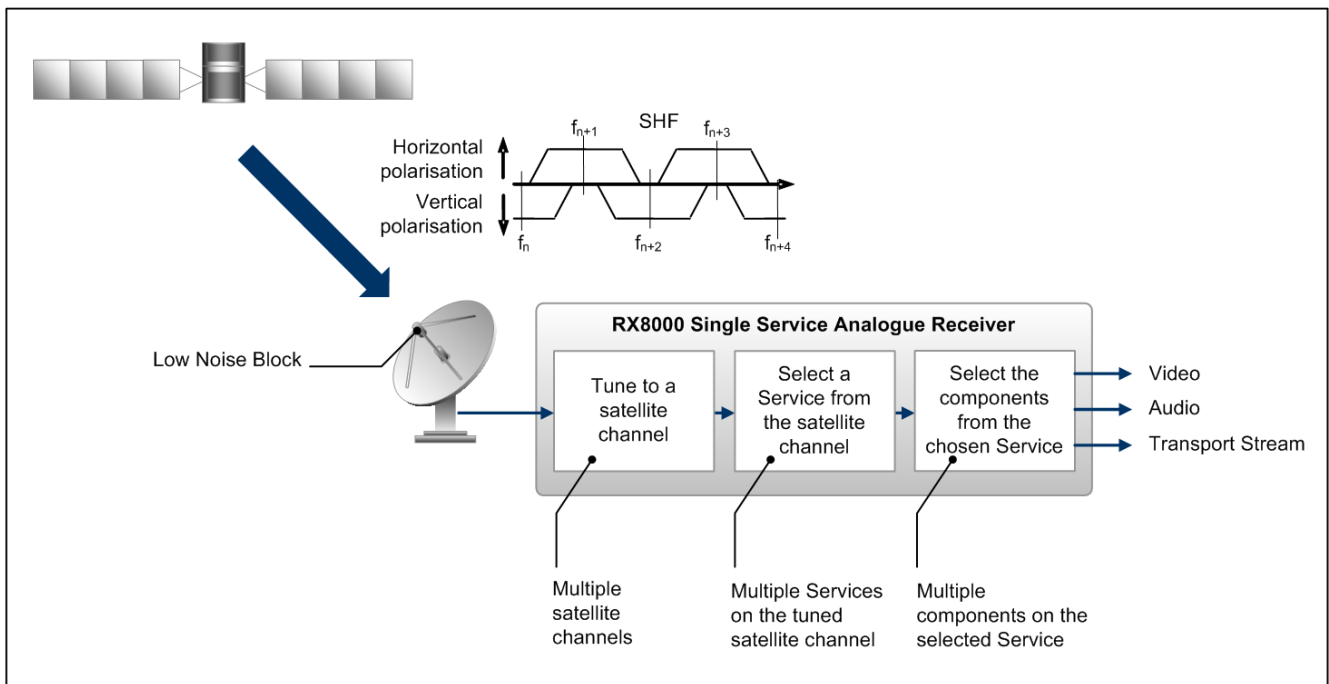


Figure 1.2 What the Satellite Receiver Does

1.4 The Telco Receiver/Decoder

1.4.1 Typical Decoder System

The Decoder is a component of Ericsson range of equipment. It is designed for use by broadcasters and distributors of video and audio Services. It can be used as a Transport Stream monitor or to decode signals received over a telecommunications network.

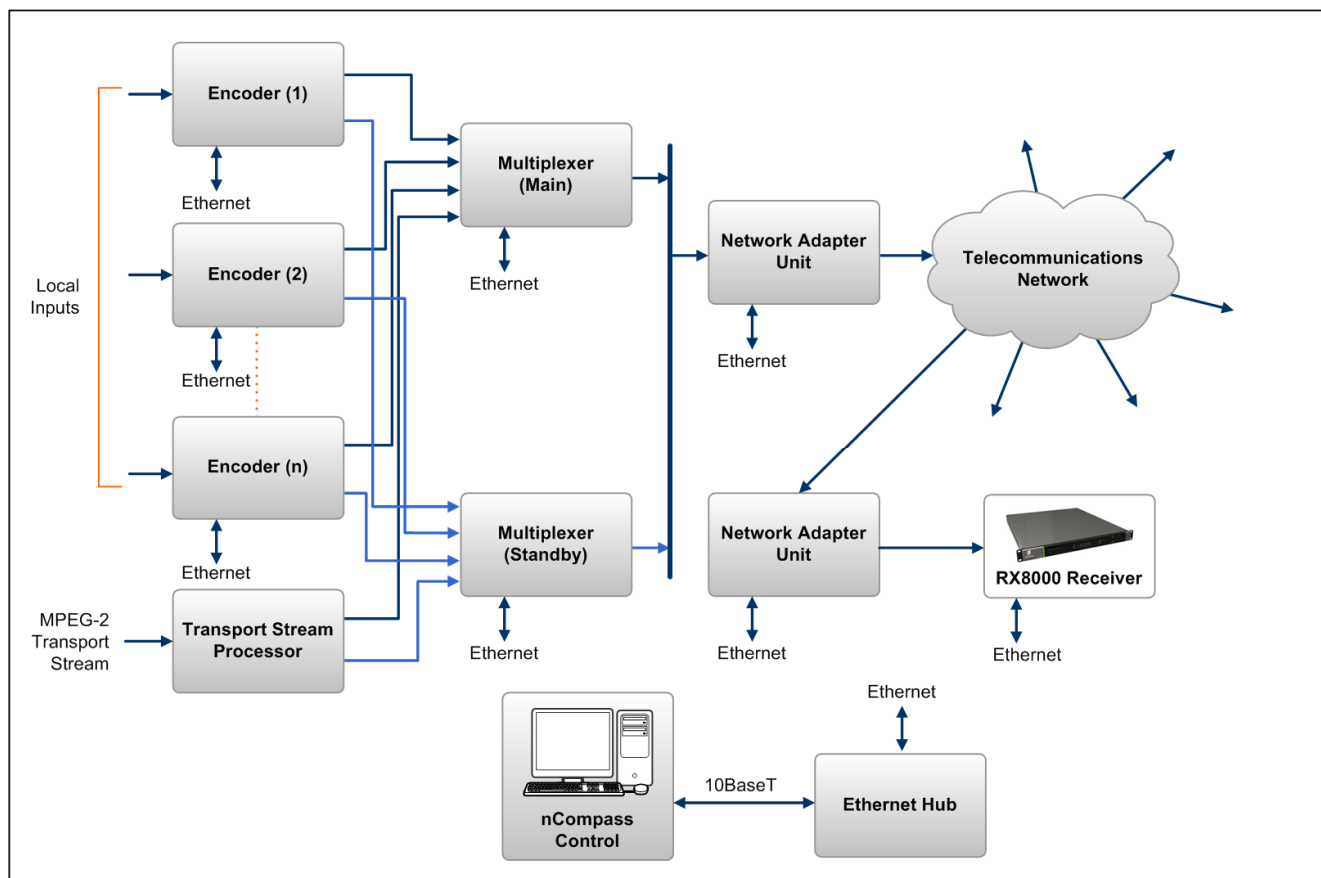


Figure 1.3 Typical Compression System

1.4.2 What the Decoder Does

The G.703, ASI or IP interface is used to present the Transport Stream in the format required by the internal Decoder circuitry. At this point, the operation of the unit is the same as the Satellite Receiver.

The Decoder can be used to receive an input signal from a Public Telecom Network via a Network Adapter Unit (NAU) or directly via G.703. No error correction is supported at the input of the unit so a level of Quality of Service should be negotiated with the Telecom Network Provider.

The Decoder is configured to select a single video Service and other audio/data components from the multiple Services on the incoming Transport Stream and present them at the output.

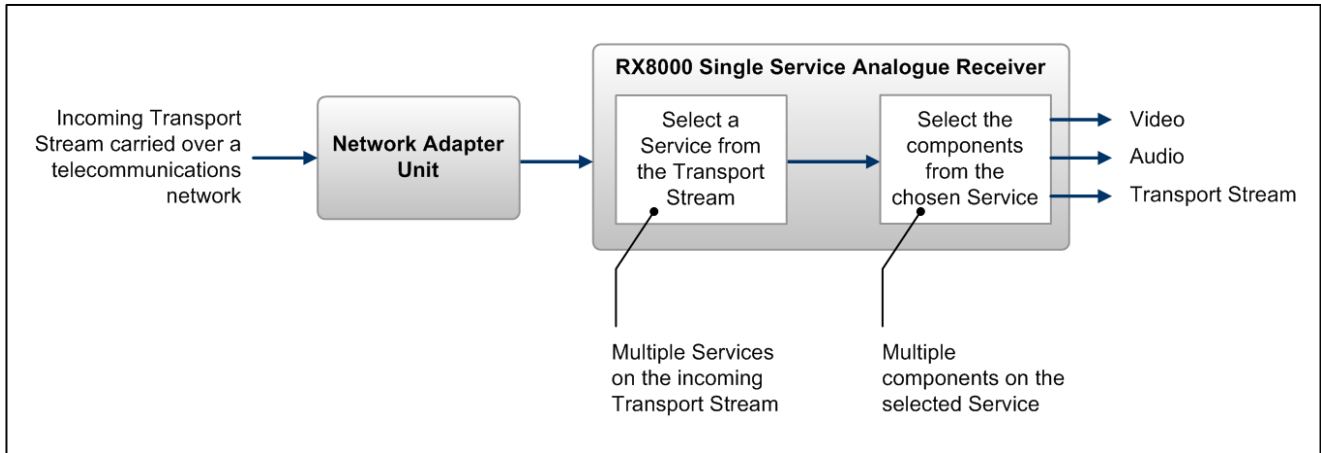


Figure 1.4 Role of the Decoder

Note: G.703 input may also be used to interface to telco infrastructure.

1.5 Construction

The RX8000 Receiver is constructed using a screened self-ventilated modular system. All operational inputs and outputs are via rear-panel connectors. The unit may be operated freestanding or mounted in a 19-inch rack.

1.6 Front Panel

The user interface for the Front Panel consists of an alphanumeric Liquid Crystal Display, pushbuttons, and a status LED that are used to set-up, control and monitor the unit.

Various menu screens can be navigated on the LCD using the pushbuttons, which allow you to select and modify key parameters and features of the unit.

Full details of the front panel menus and information on the use of these controls is given in *Chapter 3, Front Panel Control*.

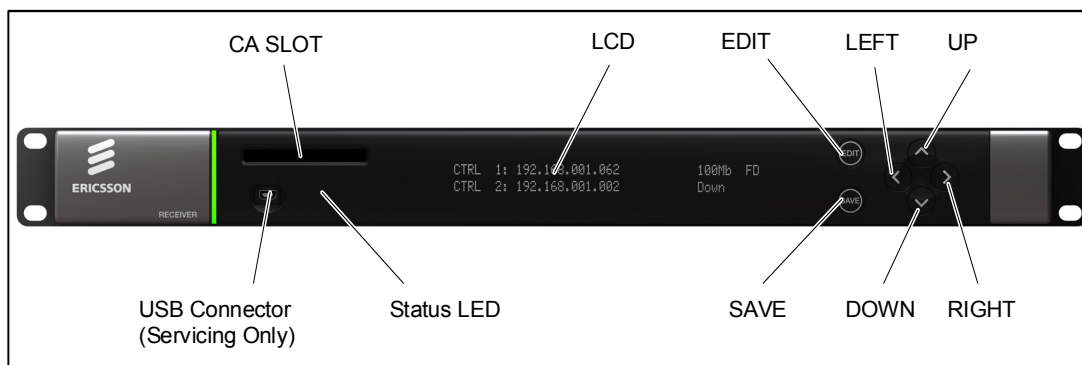


Figure 1.5 Front Panel Controls (RX8200)

Table 1.12 Front Panel Controls

Item	Color	Description
CA Slot	-	Conditional Access Slot. Located on front panel of RX8200 and rear panel of RX8310, RX8315 and RX8330.
USB Connector	-	This connector is for factory / service use only.
Status LED	Red	CRITICAL Error. Indicates that the unit has lost lock with the Transport Stream.
	Amber	MAJOR or MINOR Error. Indicates that the unit is locked to a Transport Stream but an error has been detected signifying incorrect conditions or system functioning.
	Green	NO Errors. Indicates that the unit is locked to a Transport Stream and correct conditions and system functioning are detected.
LCD	-	2-line x 40-character back-lit dot-matrix Liquid Crystal Display (LCD).
Edit	-	This pushbutton enables you to edit the parameters on the selected LCD menu. Press again to exit without saving any changes. Integral LED lit when functional.
Save	-	This pushbutton enables you to save any modified parameters on the selected LCD menu. Integral LED lit when functional.
▲ Up ▼ Down ◀ Left (Back) ▶ Right (Forward)	-	Navigation pushbuttons for selecting relevant LCD menu or for incrementing / decrementing selected parameter values. Integral LED lit when functional.

1.7 Rear Panels

All inputs, outputs and control connections are taken via the rear panel. Due to the modular nature of these units, factory fitted hardware modules with different connections can be fitted to any unit and therefore only a typical (sample) rear panel images are shown below.

Full details of the connectors for ALL base models and options are given in *Chapter 2, Installing the Equipment.*

Full details of all the options are given in *Chapter 6, Options.*

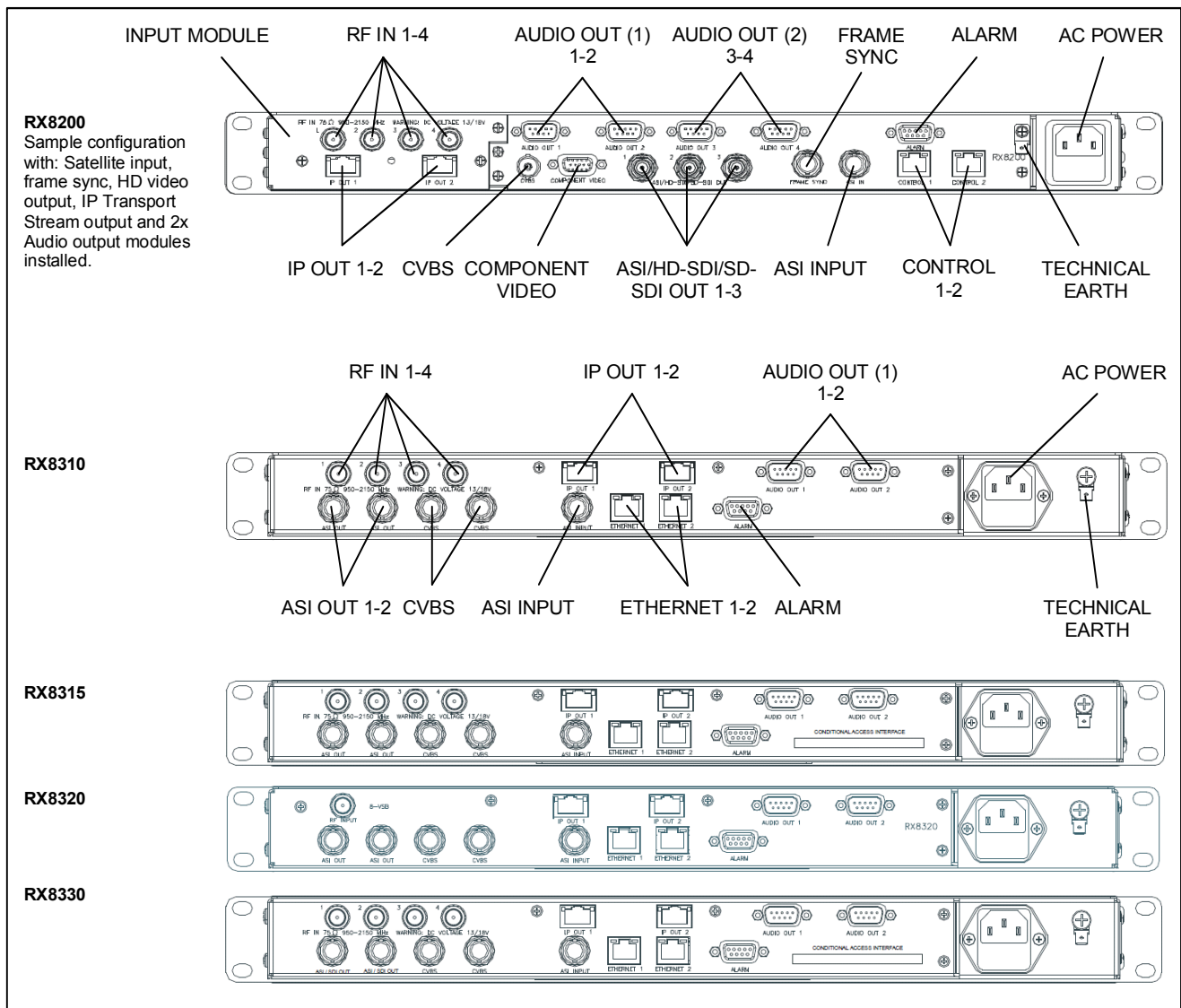


Figure 1.6 Rear Panels (RX8200, RX8310, RX8315, RX8320 and RX8330)

Table 1.13 Rear Panels

Item	Type	Description
RF IN 1-4	F-type 75 Ω	Radio Frequency (L-band) input.
ASI OUT 1-2 ASI/SDI OUT ASI/HD-SDI/SD-SDI OUT	BNC 75 Ω	ASI = Asynchronous Serial Interface. SDI = Synchronous Data Interface. SD-SDI = Standard Definition SDI. HS- SDI = High Definition SDI.
CVBS	BNC 75 Ω	Composite Video output.
ASI INPUT	BNC 75 Ω	Asynchronous Serial Interface input. Streaming data format which carries the MPEG Transport Stream.
SVGA OUTPUT	15-way D-type	Component Video output (RGB/HV (SVGA) or YPrPb).
IP OUT 1-2	RJ-45	IP Output card supports 1000BaseT Ethernet transmission of encapsulated transport stream
ETHERNET 1-2 CONTROL 1-2	RJ-45	Gigabit IP data / feed output on dual redundant connectors.
ALARM ALARM RELAY	9-way D-type	A summary ALARM relay provides contact closure when the unit detects an alarm, or the power is switched off.
AUDIO OUT 1-2	9-way D-type	Each connector carries a single channel of a stereo pair in both analogue and balanced digital form.
CA INTERFACE	Card Slot	A single slot allows the insertion of a Smart Card for the use of Common Interface Support.
AC POWER	IEC	100-240 V AC power input.
TECHNICAL EARTH	Spade terminal	Unit earthing connector.

BLANK

Installing the Equipment

Chapter 2

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2.1 Read This First!

2.1.1 Handling

The equipment must be handled and installed carefully and thoughtfully to prevent safety hazards and damage.

2.1.2 Installing the Equipment

Ensure the personnel designated to fit the unit have the appropriate skills and knowledge. If in any doubt, contact Ericsson Customer Services (see *Preliminary Pages* for contact details).

Installation of the product should follow these instructions, and should only use installation accessories recommended by the manufacturers. When rack mounted, this equipment must have shelf supports as well as being fixed at the front panel.

Do not use this product as a support for any other equipment.

2.1.3 Lifting

In some circumstances the unit might be awkward to lift. In which case, do not attempt to lift or move it without proper assistance or equipment. If in doubt, seek assistance.

2.1.4 Site Requirements

2.1.4.1 Power Supplies

See *Annex B, Technical Specification* for a full specification.

2.1.4.2 Environment

See *Annex B, Technical Specification* for a full specification.

Do not install this product in areas of high humidity or where there is danger of water ingress.

2.1.4.3 Lightning Protection



Warning!

If the receiver has been subject to a lightning strike or power surge which has stopped it working, disconnect the power immediately. Do not re-apply power until it has been checked for safety. If in doubt, contact Ericsson Customer Services.

Where appropriate, ensure this product has an adequate level of lightning protection. Alternatively, during a lightning storm or when it is left unattended and unused for long periods of time, unplug it from the supply outlet and disconnect the output equipment. This prevents damage to the product due to lightning and power line surges.

2.2 Preliminary Checks

2.2.1 Mechanical Inspection

When taking delivery of a RX8000 Series Receiver check the equipment items delivered against the enclosed delivery note. Inspect the equipment for damage in transit. If in doubt, contact Ericsson Customer Services (see *Preliminary Pages*).

Note: Do not remove the covers of this equipment as doing so may invalidate any warranties, cause a safety hazard and/or affect the EMC performance. It may also invalidate any safety tests. Check with Ericsson Customer Services beforehand.

2.2.2 Moving the Equipment Safely



Do not place this product on an unstable cart, stand, bracket, or table. The product may fall, causing serious injury and serious damage to the product. Use only with a cart, stand, bracket or table recommended by Ericsson.

An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn. Do not move or carry the equipment whilst it is still connected to the supply or other leads, is live, or is in operation.

2.3 Installing the Equipment

2.3.1 Fixing

The equipment is designed for fixed use only and has been shipped with fixing brackets suitable for a standard 19-inch rack. When installed in a rack, it should be secured using the fixing brackets. In addition, support shelves must be used to reduce the weight on the brackets. Ensure it is firmly and safely located and it has an adequate flow of free-air.

Slide the receiver onto the chassis supports and affix to the rack by means of an M6 x 18 mm panhead screw in each corner.

A freestanding unit should be installed on a secure horizontal surface where it is unlikely to be knocked or its connectors and leads disturbed.

2.3.2 Ventilation

2.3.2.1 Openings in the Covers

Side openings in the unit, as well as side-mounted cooling fans, are provided for ventilation. They ensure reliable operation of the product and protect it from overheating. The openings of the fans must not be blocked or covered.



Figure 2.1 Air-Flow Through the Equipment

2.3.2.2 Care in Positioning



Cautions!

The fans contained within this unit are not fitted with a dust/insect filter. Pay attention to the environment in which it is to be used.

Do not install units so that the air intake of one aligns with the outlet on another. Provide baffles and adequate spacing.

The equipment should never be placed near or over a radiator or other source of heat. It should not be placed in a built-in installation such as a rack unless proper ventilation is provided and the instructions have been adhered to.

Allow at least 40 mm free air-space at each side of the equipment to ensure adequate cooling. Racks containing stacked equipment may need to be forced air-cooled to reduce the ambient temperature within the rack.

2.3.2.3 Protection from Moisture

Do not install this equipment in areas of high humidity or where there is a danger of water ingress.

2.3.3 Installing Cables - Safety

Power supply cables should be routed so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cables at plugs, convenience receptacles, and the point where they exit from the appliance.

Do not run AC power cables in the same duct as signal leads. Do not move or install equipment whilst it is still attached to the mains supply. Ensure safety and ESD precautions are observed whilst inter-connecting equipment.

2.4 EMC Compliance Statements¹

2.4.1 EN 55022/AS/NZS 3548

This is a Class A product. In a domestic environment this product may cause radio interference in which case the User may be required to take adequate measures.

2.4.2 FCC

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the Reference Guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the User will be required to correct the interference at ones own expense.

2.5 AC Supply Operating Voltage and Fusing – Safety Information

2.5.1 AC Power Supply

The equipment operates from an wide-ranging mains power supply (100-240 V AC 50/60 Hz nominal) and is designed for use in ambient air temperature in the range 0°C to +50°C. There are no links etc. to be altered for operation from different supply voltages. The full Technical Specification is given in *Annex B, Technical Specification*.

¹ The EMC information was correct at the time of manufacture.



Warnings!

The RX8000 series receivers should only be operated from the type of power source indicated on the marking label. If you are not sure of the type to your business, consult your appliance dealer or local power company. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.

The RX8000 series receivers are NOT fitted with an AC power ON/OFF switch. Ensure the supply socket outlet is installed or located near the equipment so that it is accessible.

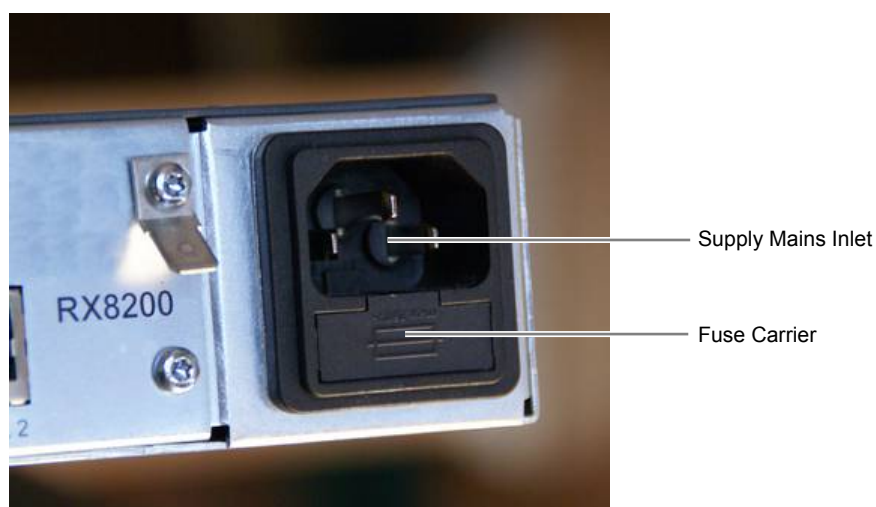


Figure 2.2 AC Power Inlet Assembly

Note: See Annex B, *Technical Specification* for fuse information.

2.5.2 AC Power Supply Cord

2.5.2.1 General

A two-meter mains supply cord is supplied with this product. It is fitted with a molded plug suitable for the USA, UK or mainland Europe as advised at the time of ordering.

Note: The equipment is not fitted with an AC power supply ON/OFF switch. Ensure the socket-outlet supplying the equipment is installed near the equipment so that it is easily accessible.

2.5.2.2 Wire Colors

The wires in the supply cord are colored as shown in *Table 2.1*.

Table 2.1 Supply Cord Wiring Colors

	UK (BS 1363)	EUROPE (CEE 7/7)	USA (NEMA 5-15P)
Earth:	Green-and-yellow	Green-and-yellow	Green
Neutral:	Blue	Blue	White
Live:	Brown	Brown	Black

If the colors do not correspond with the colored markings identifying the terminals in a locally supplied plug, proceed as in *Annex B*. The inclusion of *Table 2.2* is for reference.

Table 2.2 Non Standard Supply Cord Wire Colors

Wire Color (UK)	Action
green-and-yellow	...must be connected to the terminal in the plug which is marked with the letter E or the safety earth symbol \perp or colored green or green-and-yellow.
blue	...must be connected to the terminal in the plug which is marked with the letter N or colored black.
brown	...must be connected to the terminal in the plug which is marked with the letter L or colored red.

2.5.3 Connecting the Equipment to the AC Power Supply

As there is no mains power switch fitted to this unit, ensure the local AC power supply is switched OFF before connecting the supply cord. Connect the mains lead to the equipment and then to the local supply.

2.6 Protective Earth/Technical Earth



Warnings!

This unit must be correctly earthed through the molded plug supplied; if the local mains supply does not have an earth conductor do not connect the unit. Contact Ericsson Customer Services for advice.

Before connecting the unit to the supply, check the supply requirements in *Annex B*.

The terminal marked \perp at the rear panel is a Technical Earth. Its use is recommended. This is NOT a protective earth for electric shock protection. The terminal is provided to:

1. Ensure all equipment chassis fixed within a rack are at the same technical earth potential.

2. Eliminate the migration of stray charges when connecting between equipment. To do this, connect a wire between the Technical Earth terminal and a suitable point on the rack.

The Technical Earth provides a suitable connection between the equipment and the installation to give a low impedance path at normal operating frequencies.

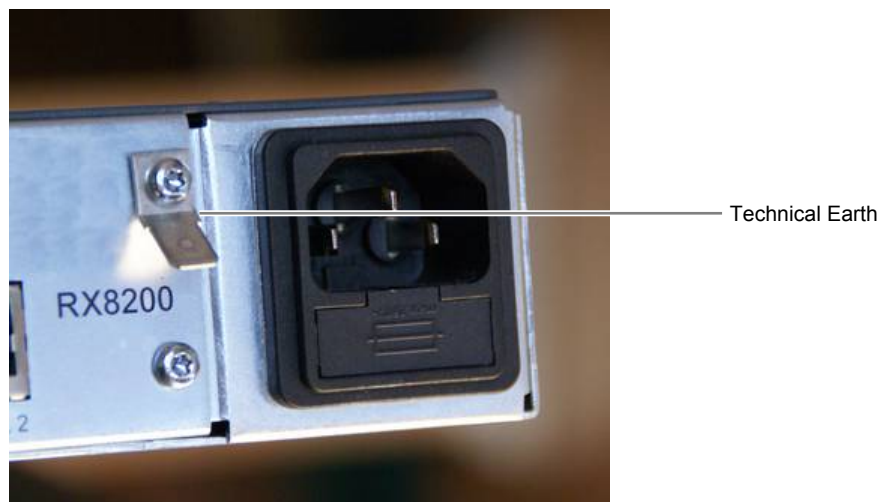


Figure 2.3 Location of the Technical Earth on RX8200

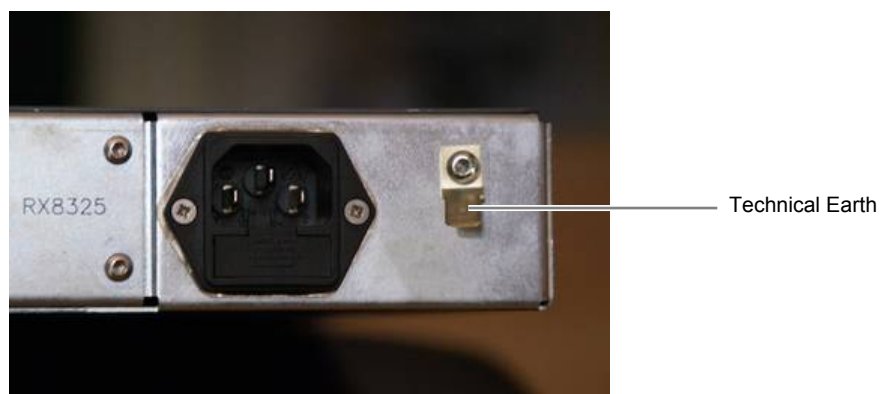


Figure 2.4 Location of the Technical Earth on RX83XX

2.7 Signal Connections

2.7.1 General



Caution!

It is strongly recommended that the terminal marked \perp at the rear panel of the equipment is connected to a site Technical Earth before any external connections are made and the equipment is powered. This limits the migration of stray charges.

All signal connections are made via the rear panel. A typical rear panel is shown in *Figure 2.5*. Full technical specifications for the connections are given in *Annex B*. The Receiver provides a flexible Transport Stream input interface. The status information appropriate to each input type is available to the User via the User Interface, and also via the remote control interfaces.

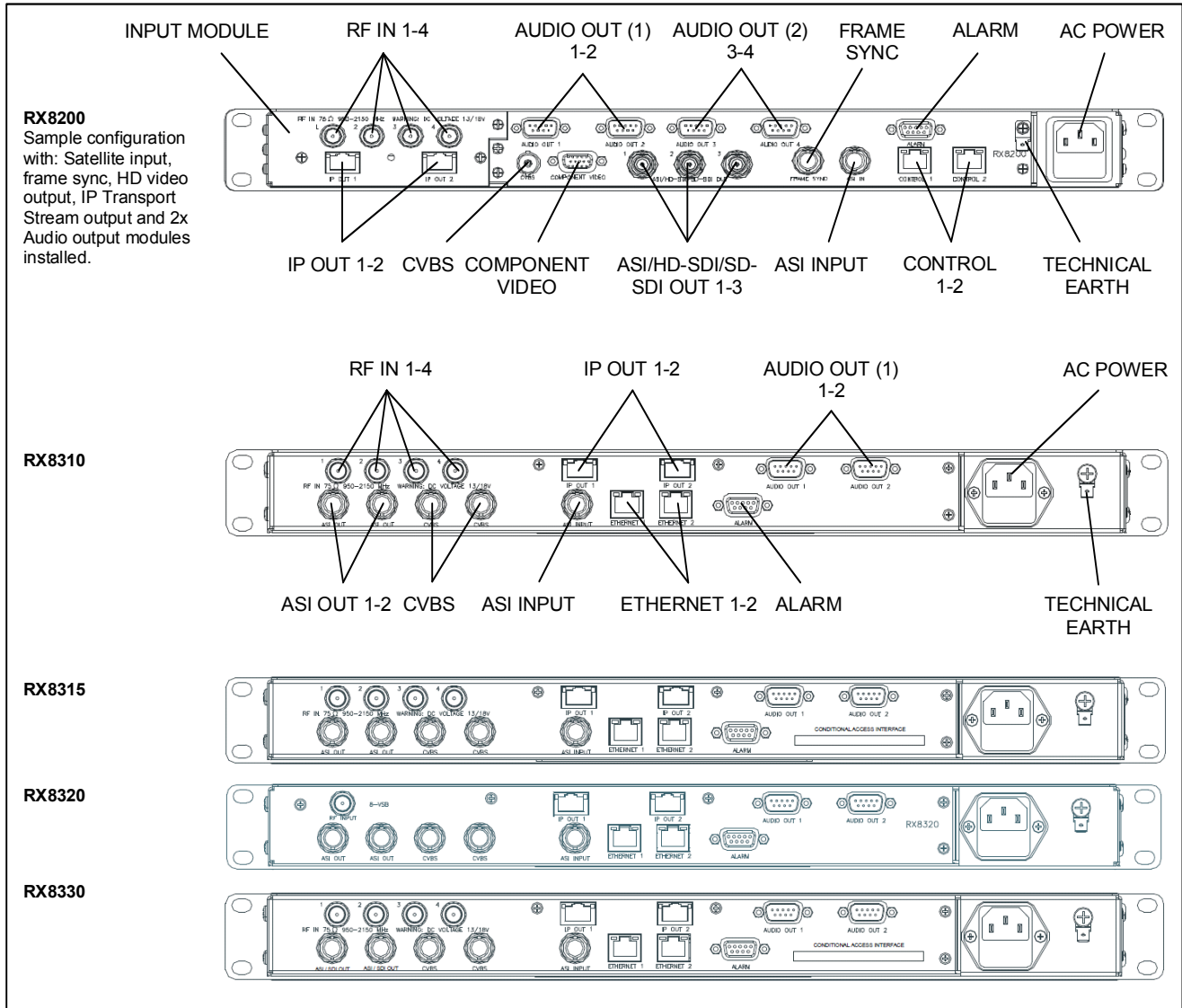


Figure 2.5 Rear Panels (RX8200, RX8310, RX8315, RX8320 and RX8330)

2.7.2 RF IN Connector (RX8200 and RX8320 only)

Up to four RF inputs connect the L-band output of a suitable Low-Noise Block down-converter (LNB) to the unit either directly or via a suitable attenuator.

The RF inputs may also be used to supply DC power to the LNB, if required.



RF IN 1/2/3/4

Cautions!

The receiver provides DC power (see *Chapter 3, Front Panel Control* for details of menu option) via the active L-band input connector to drive an LNB. Do not connect equipment other than an LNB to this connector. Failure to do this may result in damage to the external equipment.

The F-type connector is not suitable for repeated connection and disconnection. When intended for use in this way, fit a sacrificial connector and connect to it.

Table 2.3 RF IN Connector

Item		Specification
Connector type		F-type 75 Ω female socket
Connector designation		RF IN 1 RF IN 2 RF IN 3 RF IN 4
LNB Power Supply		See <i>Cautions!</i> above.
Pin-outs	Centre Shield	Input Ground/Chassis

2.7.3

ASI OUT Connector (RX8310/15/20 only)

The unit provides two coaxial ASI digital outputs depending on the user selectable configuration.

Table 2.4 ASI OUT Connector

Item		Specification
Connector type		BNC 75 Ω female socket
Connector designation		ASI OUT 1 ASI OUT 2
Pin-outs	Centre Shield	Output Ground/Chassis



ASI OUT

2.7.4 ASI/SDI OUT Connector (RX8200 and RX8330 only)

The unit provides two coaxial ASI/SDI outputs depending on the user selectable configuration.

Table 2.5 ASI/SDI OUT Connector

Item		Specification
Connector type		BNC 75 Ω female socket
Connector designation		ASI OUT 1 ASI OUT 2
Pin-outs	Centre Shield	Output Ground/Chassis



ASI/SDI OUT

2.7.5 ASI/HD-SDI/SD-SDI OUT Connector (RX8200 only)

The unit provides three coaxial ASI/HD-SDI/SD-SDI outputs depending on the user selectable configuration.

Table 2.6 ASI/HD-SDI/SD-SDI OUT Connector

Item		Specification
Connector type		BNC 75 Ω female socket
Connector designation		ASI/HD-SDI/SD-SDI OUT 1 ASI/HD-SDI/SD-SDI OUT 2 ASI/HD-SDI/SD-SDI OUT 3
Pin-outs	Centre Shield	Output Ground/Chassis



ASI/HD-SDI/SD-SDI OUT

2.7.6 CVBS Connector

A coaxial socket provides composite video outputs supporting NTSC(M) (with and without pedestal) and PAL(B,D,H,I,M).

Table 2.7 CVBS Connector

Item		Specification
Connector type		BNC 75 Ω female socket
Connector designation		CVBS 1 (RX8200/RX300) CVBS 2 (RX8300 only)
Pin-outs	Centre Shield	Output Ground/Chassis



CVBS

2.7.7 AUDIO/AUDIO OUT Connector

All units provide a pair of connectors supplying two stereo channels. Each carries a single channel stereo pair in both analogue and balanced digital form.



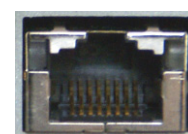
AUDIO/AUDIO OUT

Table 2.8 AUDIO/AUDIO OUT Connectors

Item	Specification
Connector type	9-way, D-type, male
Connector designations	AUDIO OUT 1 AUDIO OUT 2 AUDIO 3 (RX8200 only) AUDIO 4 (RX8200 only)
Pin-outs	Pin 1 – Digital audio + Pin 2 – Ground Pin 3 – Left + Pin 4 – Right + Pin 5 – Ground Pin 6 – Digital audio – Pin 7 – Ground Pin 8 – Left – Pin 9 – Right –
Nominal output impedance	50 Ω
Maximum data rate	3.072 Mbps
Analogue Output level	+20 dBm nominal clipping level. Selectable in range 12 to +24 dBm.
Load impedance	$\geq 600 \Omega$ balanced

2.7.8 ETHERNET/CONTROL Connector

All units provide two Ethernet remote control interfaces for Web Browser Control.



ETHERNET/CONTROL

Table 2.9 ETHERNET/CONTROL Connectors

Item	Specification
Connector type	RJ-45 (100BaseT)
Connector designation	ETHERNET 1 or CONTROL 1 ETHERNET 2 or CONTROL 2
Pin-outs (Unused pins not connected)	Pin 1 – Tx Out (+) Pin 2 – Tx Out (-) Pin 3 – Rx In (+) Pin 6 – Rx In (-)

2.7.9 ASI IN Connector

All units provide an ASI input socket for detection of the transport stream lock on the ASI input.

Table 2.10 ASI IN Connector

Item		Specification
Connector type		BNC 75 Ω female socket
Connector designation		ASI IN
Pin-outs	Centre Shield	Input Ground/Chassis



ASI IN

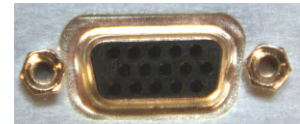
2.7.10 COMPONENT VIDEO Connector (RX8200 only)

The equipment is equipped with a SVGA 15-pin D-type connector for video output monitoring in the standard configuration.

The SVGA connector shall be set to RGB/HV (SVGA) or YPrPb under control of the User interface and remote control interfaces.

Table 2.11 COMPONENT VIDEO Connector

Item	Specification
Connector type	15-way D-type, female
Connector designation	COMPONENT VIDEO
Pin-outs	Pin 1 – Red / Pr, 75 Ω, 0,7Vt-t Pin 2 – Green / Y, 75 Ω, 0,7Vt-t Pin 3 – Blue / Pb, 75 Ω, 0,7Vt-t Pin 4 – NC Pin 5 – Video GND Pin 6 – Red GND Pin 7 – Green GND Pin 8 – Blue GND Pin 9 – NC Pin 10 – Sync GND Pin 11 – NC Pin 12 – NC Pin 13 – H-Sync Pin 14 – V-Sync Pin 15 – NC



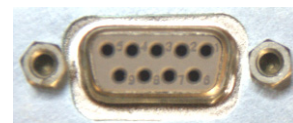
COMPONENT VIDEO

2.7.11 DATA OUT Connector

A data output interface may be used with either RS232 or RS422 connector, as described below.

Table 2.12 DATA OUT Connector

Item	Specification		
Connector type	9-way, D-type, female		
Connector designation	DATA OUT		
	Pin	RS232	RS422
Pin-outs	Pin 1	NC	HSD_CLK_A
	Pin 2	TxD	NC
	Pin 3	RxD	NC
	Pin 4	NC	NC
	Pin 5	NC	NC
	Pin 6	NC	HSD_CLK_B
	Pin 7	CTS	NC
	Pin 8	(RTS)	HSD_DATA_A
	Pin 9	NC	HSD_DATA_B



DATA OUT

2.7.12 ALARM Connector

All units provide an alarm relay connector supplying a summary relay. Under user configuration, it is activated whenever the unit detects an alarm, or the power is switched off.



ALARM RELAY

Table 2.13 ALARM Connector

Item	Specification
Connector type	9-way, D-type, female
Connector designation	ALARM
Pin-outs	Pin 1 – Relay 1, Normally Closed Pin 2 – Relay 2, Common Pin 3 – Relay 1, Common Pin 4 – Relay 3, Common Pin 5 – Relay 1, Normally Open Pin 6 – Relay 2, Normally Closed Pin 7 – Relay 2, Normally Open Pin 8 – Relay 3, Normally Closed Pin 9 – Relay 3, Normally Open

2.7.13 RS232/RS485 REMOTE Connector

A remote control interface may be used with either RS232 or RS485 connector, as detailed below.



RS232/RS485 REMOTE

Table 2.14 RS232/RS485 REMOTE Connector

Item	Specification		
Connector type	9-way, D-type, male		
Connector designation	RS232/RS485 REMOTE		
	Pin	RS232	RS485
Pin-outs	Pin 1	DCD	NC
	Pin 2	RxD	NC
	Pin 3	TxD	NC
	Pin 4	DTR	RxD
	Pin 5	Ground	NC
	Pin 6	DSR	TxD-
	Pin 7	RTS	TxD+
	Pin 8	CTS	RxD-
	Pin 9	RI	NC

Front Panel Control

Chapter 3

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3.1 Introduction

This chapter describes the features and options provided by the Front Panel menus for controlling the RX8000 Series Receivers locally.

3.2 Powering the Equipment

3.2.1 Switching On



Caution!

This equipment should not be operated unless the cooling fans are working and there is free-air flow around the unit.

1. Connect all signal and power cables to the rear panel of the unit. All connectors are described in *Chapter 2, Installing the Equipment*.
2. Switch on the AC power supply to the unit at the wall or rack outlet.

Note: The RX8000 Series Receivers do NOT contain a power on/off switch.

3. After a short period of initialization the following screen is displayed on the Front Panel:

INITIALIZING
4.3.2 (Bank 0)

4. During initialization, confirm that the **Status** LED is on and all **Up**, **Down**, **Left**, **Right**, **Edit** and **Save** pushbuttons are lit.

3.2.2 Power Up Operating Modes

When the equipment is switched on it will assume the control mode that was set when the power was turned off. This could be either:

- Local Front Panel/Web Browser control
- Director NCP control.

See the following figure for an overview of the power up operating modes.

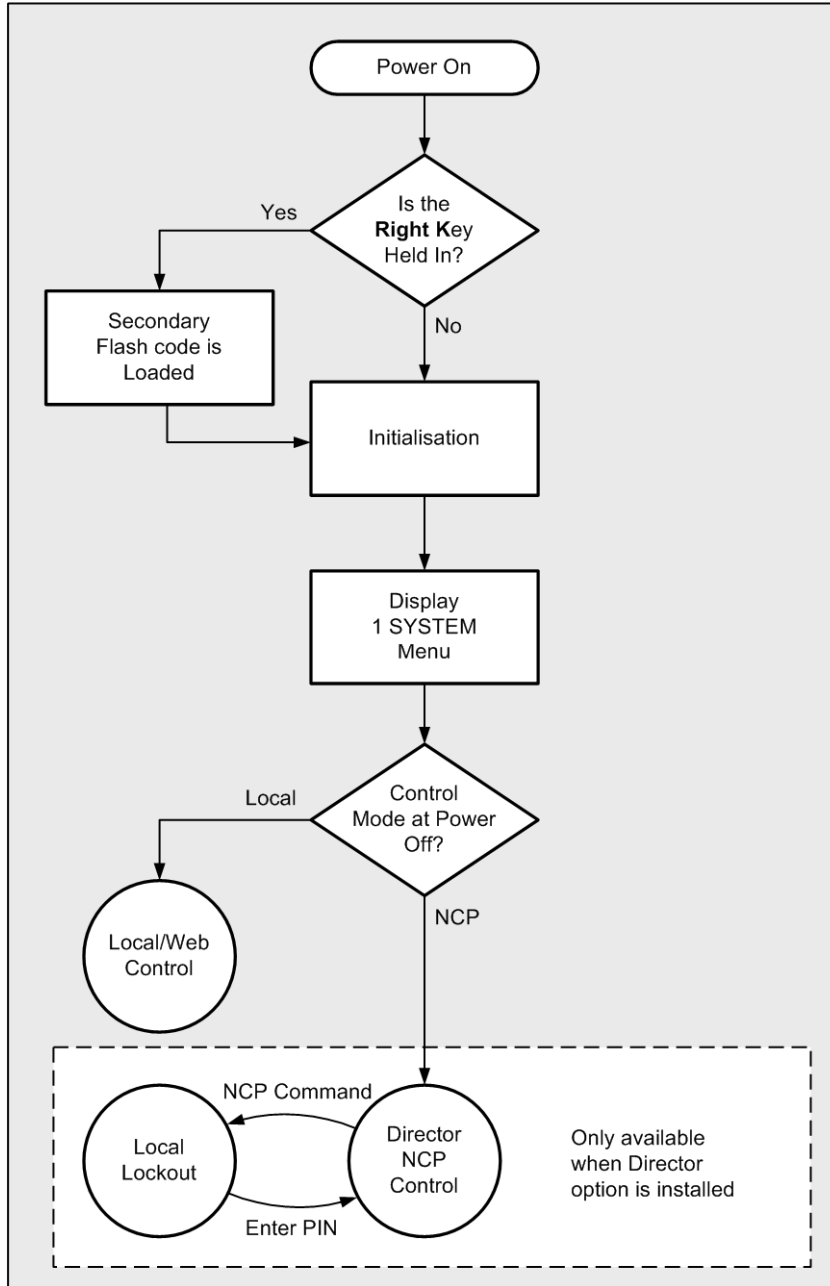


Figure 3.1 Power Up Operating Mode

3.3 Using the Front Panel Controls

The user interface for the Front Panel consists of an alphanumeric Liquid Crystal Display, pushbuttons, and a status LED that are used to set-up, control and monitor the unit.

Various menu screens can be navigated on the LCD using the pushbuttons, which allow you to select and modify key parameters and features of the unit.

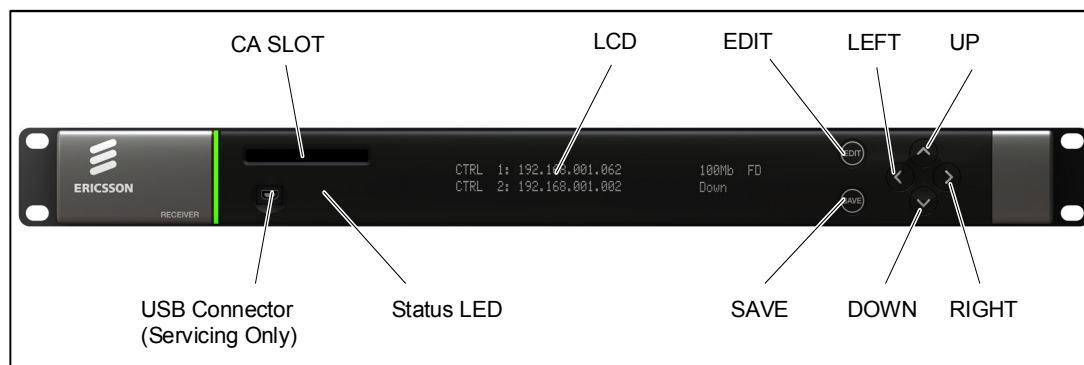


Figure 3.2 Front Panel Controls (RX8200)

3.3.1 USB Connector

This connector is for factory / service use only.

3.3.2 Status LED

This multi-coloured LED provides a visual indication of the summary status of the unit. The LED can be any one of three colours:

- **Red (CRITICAL Error)**. Indicates that the unit has lost lock with the Transport Stream.
- **Amber (MAJOR or MINOR Error)**. Indicates that the unit is locked to a Transport Stream but an error has been detected signifying incorrect conditions or system functioning.
- **Green (NO Errors)**. Indicates that the unit is locked to a Transport Stream and correct conditions and system functioning are detected.

3.3.3 LCD

A 2-line x 40-character back-lit dot-matrix Liquid Crystal Display (LCD) displays various menus and settings. The menus and settings available will vary depending on which receiver model is being used and which options have been enabled through the purchase of a suitable license.

See *Front Panel Menus* on page 3-8 for details of all menus.

All menu is numbered to aid with navigation and are arranged in 6 main categories:

1. **System**: This menu includes user settings for: IP Control ports set-up, IP Control ports link status, Unit Build version details, Unit Electronic Serial Number.
2. **Input**: This menu is dependent on which Hardware Input Card Option is fitted to the unit: Satellite Input Card, I/P Input Card, G.703 Input Card or 8VSB Input Card.

3. **Service:** This menu includes user settings for the currently selected service for decode from the incoming feed.
4. **CA Systems:** This menu includes user settings for: the currently selected services for decryption from the incoming feed, Director parameters and status.
5. **Output:** This menu includes user settings for: Output selection, TS Feed Selection.
6. **Presets:** This menu includes user settings for storing and retrieving of up to 40 sets of input parameters (tuning parameters and service selections).

3.3.4 Arrow Pushbuttons (Up, Down, Left, Right)

Four arrow pushbuttons (or keys) are used to navigate through the front panel LCD menus.

Each arrow pushbutton is backlit by an integral LED when active, indicating that a further choice or action is available by pressing that pushbutton.

- ▲ = Up
- ▼ = Down
- ◀ = Left (Back)
- ▶ = Right (Forward)

3.3.5 Edit and Save Pushbuttons

The **Edit** and **Save** pushbuttons are used to modify and store user settings within the selected menu.

The **Edit** pushbutton is backlit by an integral LED when the current menu contains an editable setting.

To edit a user setting within the selected menu:

1. Press the **Edit** pushbutton and then use the ◀ (Back) and ▶ (Forward) pushbuttons to move the cursor within that menu (if necessary).
2. Change the value of the setting using the ▲ (Up) and ▼ (Down) pushbuttons.

During this edit operation, both the **Edit** and **Save** pushbuttons will be lit.

The **Save** pushbutton is backlit by an integral LED when changes have been made to a setting that require saving.

When a user setting has been modified:

1. Press the **Save** pushbutton to confirm and action this new setting.

2. To ignore any changes that have been made and to return to the original setting, press the **Edit** pushbutton.

3.4 Example Configuration

The following example configuration uses the Front Panel menus to set up the DVB-S2 Satellite Receiver (not available for RX8320) using Menu 2.

Table 3.1 Setting Up the DVB-S2 Satellite Receiver

Step	Action	Result
1	Go to Menu 2.2 and select RF INPUT 1.	The Receiver can take its signals from four sources. Set-up source 1.
2	Scroll to Menu 2.2.2.1.1. Enter the LNB FREQUENCY then press Save .	This sets up the LNB frequency for the selected Source in MHz.
3	Scroll to Menu 2.2.2.1.2. Enter the SATELLITE FREQUENCY then press Save .	This sets up the Satellite frequency for the selected Source in MHz.
4	Scroll to Menu 2.2.2.1.3. Enter the SYMBOL RATE then press Save .	Sets the symbol rate for the selected Source in Msymbol/s.
5	Scroll to Menu 2.2.2.1.4. Enter the DVB Modulation Standard then press Save .	This sets up the DVB modulation Standard (DVB-S or DVB-S2). FEC detection is automatic. In DVB-S2 mode the demodulator automatically detects and locks to both QPSK and 8PSK constellations.
6	Scroll to Menu 2.2.2.1.5. Enter the ROLL-OFF then press Save .	Sets the Roll-Off of the demodulator Root Nyquist Filter. Choose between 35%, 25%, 20%. This value should match that set in the transmitting modulator.
7	Scroll to Menu 2.2.2.1.7. Enter the SEARCH RANGE then press Save .	This sets up the centre frequency Search Range for the selected Source in kHz.
8	Scroll to Menu 2.2.2.1.8. and 2.2.2.1.9. Enter the LNB POWER and VOLTAGE settings then press Save .	Sets the LNB power for the selected Source (ON, OFF). Also sets the LNB voltage settings (18 V – Horiz, 13 V – Vert).
9	Scroll to Menu 2.2.2.1.10. Enter the LNB 22 kHz setting then press Save .	Enables or disables the LNB 22 kHz control tone for the selected Source (On, Off).
10	Repeat steps 2 through 9 for input 2 to 4	

3.5 Front Panel Menus

An overview of the available Front Panel menus is shown in *Figure 3.3*. The menus and settings available will vary depending on which receiver model is being used and which options have been enabled through the purchase of a suitable license.

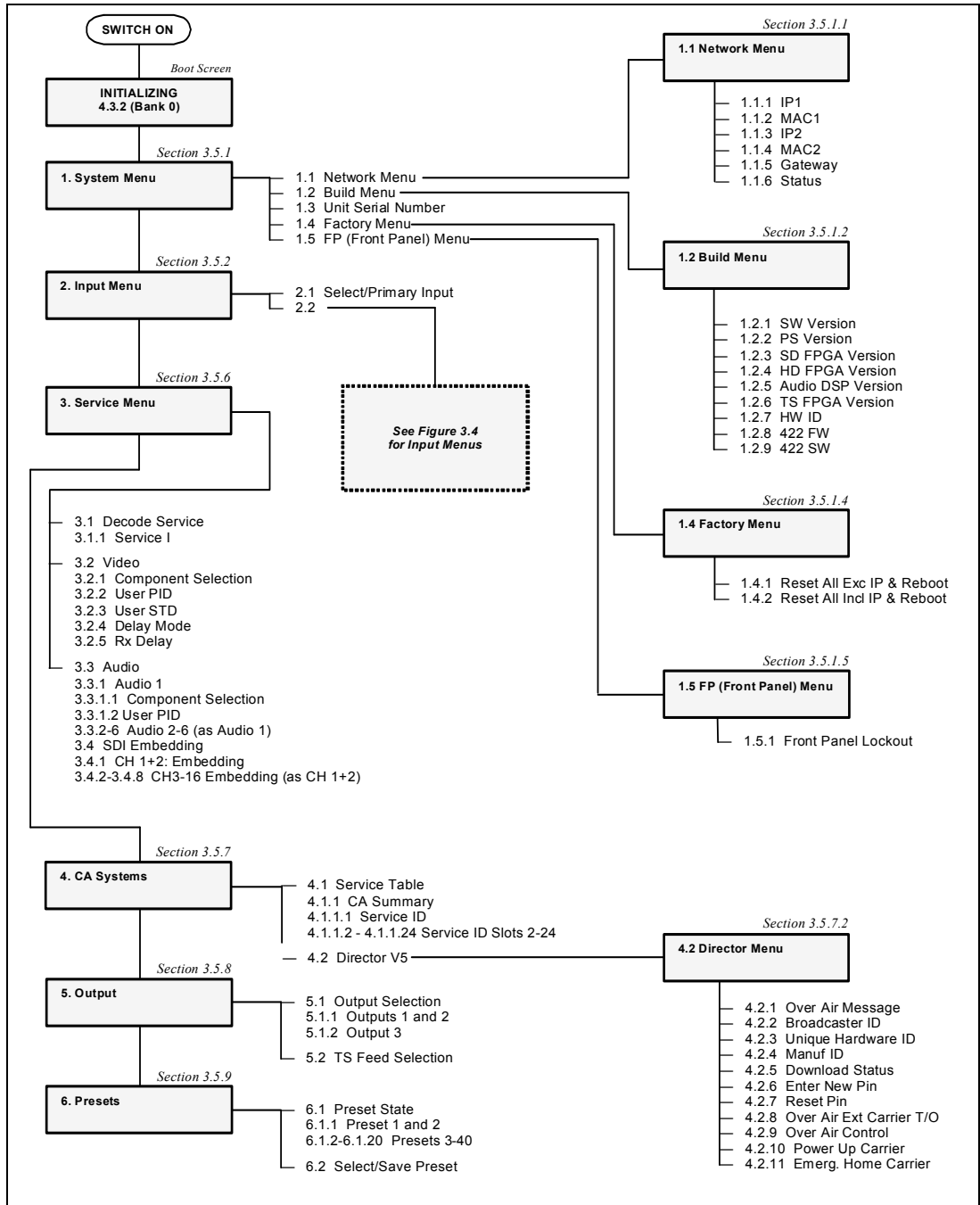


Figure 3.3 Front Panel Menus

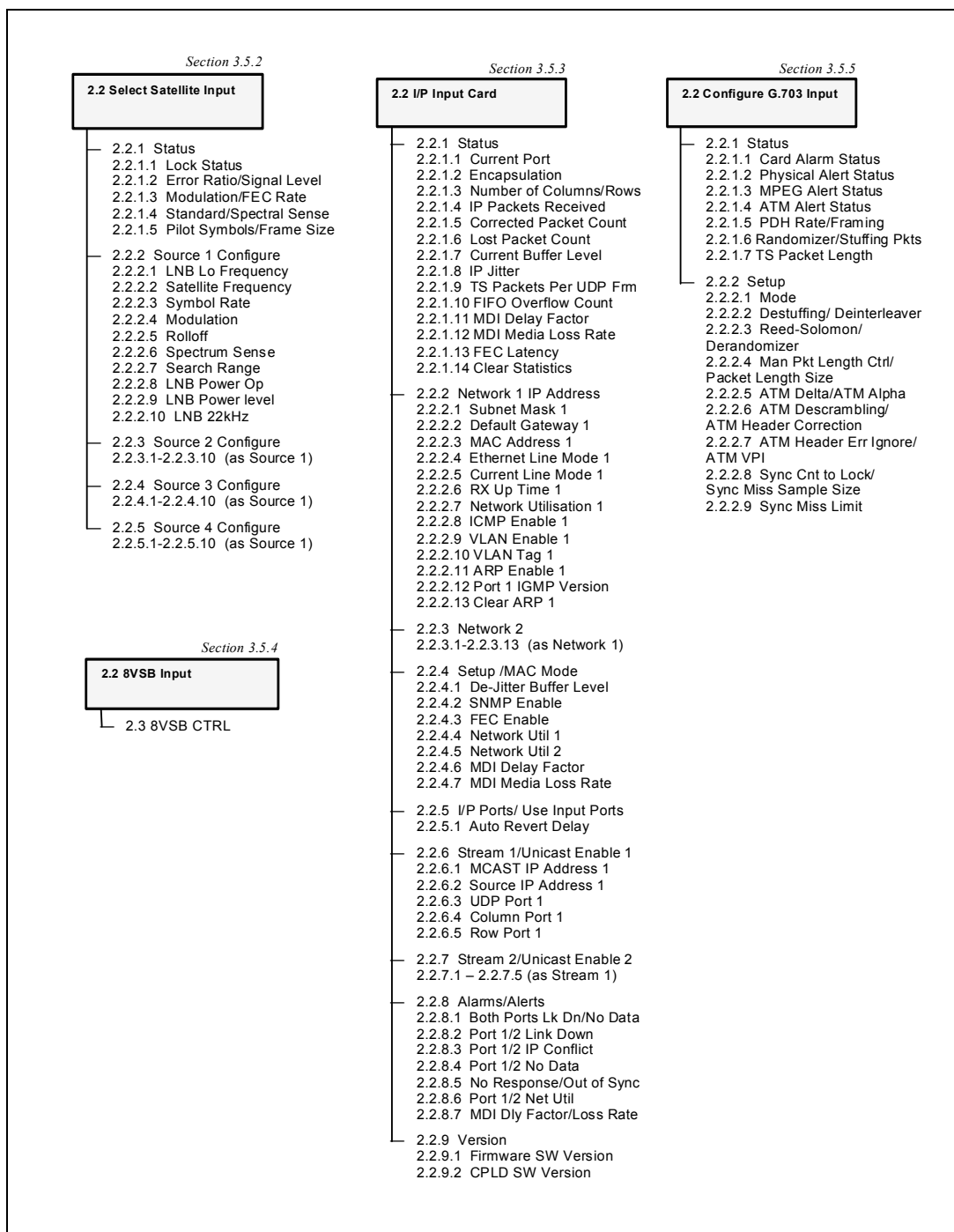
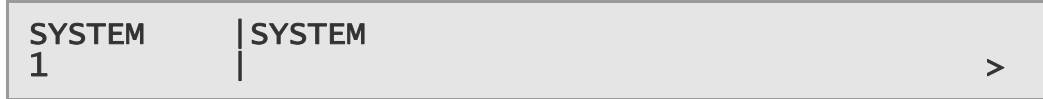


Figure 3.4 Input Card Front Panel Menus

3.5.1 1 System

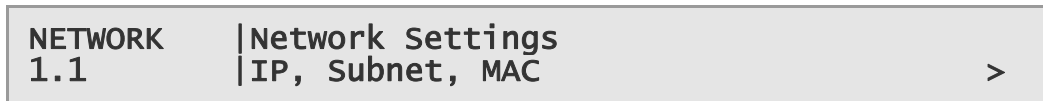
Shortly after switch-on, the **Status** LED will turn green and arrow keys will be lit depending on which further menus are available. The following **System** menu screen is displayed:



The functions within the System menu are used to set various network parameters, IP and MAC addresses and to view Build, Unit Serial Number and Factory parameter information.

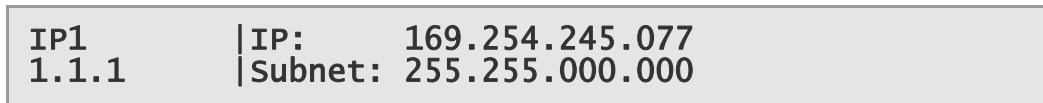
3.5.1.1 1.1 Network

To access the Network menu from the System menu, press the ► (Forward) key. The following screen is displayed:



3.5.1.1.1 1.1.1 IP1

To access and edit the IP1 menu, press the ► (Forward) key. The following screen is displayed and the **Edit** key is lit:



To edit the IP address:

1. Press the **Edit** key. The cursor appears below the first character of the IP address.
2. Edit the address as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To edit the Subnet address:

1. Press the **Edit** key if not already in Edit mode. The cursor appears below the first character of the IP address.
2. Press the ▶ (Forward) key repeatedly to move the cursor to the end of the IP address and down on to the Subnet address.
3. Edit the address as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.

4. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.1.1.2

1.1.2 MAC1

To access the MAC1 menu, press the ▼ (Down) key. The following screen is displayed:

MAC1	MAC#1
1.1.2	00:20:AA:55:05:9C

To edit the MAC1 address:

1. Press the **Edit** key. The cursor appears below the first character of the MAC address.
2. Edit the address as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.1.1.3

1.1.3 IP2

To access and edit the IP2 menu, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

IP2	IP: 172.017.125.001
1.1.3	Subnet: 255.255.000.000

To edit the IP2 IP and Subnet addresses, proceed as for IP1 above.

3.5.1.1.4

1.1.4 MAC2

To access the MAC2 menu, press the ▼ (Down) key. The following screen is displayed:

MAC2	MAC#1
1.1.4	00:20:AA:55:05:9C

To edit the MAC2 address, proceed as for MAC1 above.

3.5.1.1.5

1.1.5 Gateway

To access the Gateway menu, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

GATEWAY	GATEWAY
1.1.5	192.168.002.001

To edit the Gateway address:

1. Press the **Edit** key. The cursor appears below the first character of the Gateway address.
2. Edit the address as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.1.1.6

1.1.6 Status

This menu displays the status of the IP control interfaces. To access the Status menu, press the ▼ (Down) key. The following screen is displayed:

STATUS		CTRL 1	LINK	STATUS	Down
1.1.6		CTRL 2	LINK	STATUS	Down

When Status menu details have been viewed, press the ◀ (Back) key to return to the Network sub-menu.

3.5.1.2

1.2 Build

The Build menu allows the viewing of all equipment SW, FW and HW Version numbers. To access the Build menu, press the ▼ (Down) key. The following screen is displayed:

BUILD		Version
1.2		SW, FW, HW

3.5.1.2.1

1.2.1 SW Version

To view the software (SW) version, press the ▶ (Forward) key. The following screen is displayed:

VERSIONS		SW VERSION
1.2.1		4.3.2 (Bank 0)

3.5.1.2.2

1.2.2 PS Version

To view the PS version, press the ▼ (Down) key. The following screen is displayed:

VERSIONS		PS VERSION
1.2.2		0.14

3.5.1.2.3 1.2.3 SD FPGA Version

To view the Standard Definition (SD) Field Programmable Gate Array (FPGA) version, press the ▼ (Down) key. The following screen (or a similar screen) is displayed:

VERSIONS	SD FPGA VERSION
1.2.3	0.2.5 [Built: Thu Apr 8 16:25:22 2010]

The bottom line scrolls to display the version details.

3.5.1.2.4 1.2.4 HD FPGA Version (RX8200 only)

To view the High Definition (HD) Field Programmable Gate Array (FPGA) version, press the ▼ (Down) key. The following screen (or a similar screen) is displayed:

VERSIONS	HD FPGA VERSION
1.2.4	0.1.19 [Built: wed Jun 16 08:32:13 2010]

The bottom line scrolls to display the version details.

3.5.1.2.5 1.2.5 Audio DSP Version (RX8200 only)

To view the Audio Digital Signal Processor (DSP) version, press the ▼ (Down) key. The following screen is displayed:

VERSIONS	AUDIO DSP VERSION
1.2.5	0.2.8

3.5.1.2.6 1.2.6 TS FPGA Version (on RX8200 – Menu 1.2.4 on RX83XX)

To view the Transport Stream (TS) Field Programmable Gate Array (FPGA) version, press the ▼ (Down) key. The following screen is displayed:

VERSIONS	TS FPGA VERSION
1.2.6	0.16.5 [Built: Mon Dec 14 09:20:26 2010]

The bottom line scrolls to display the version details.

3.5.1.2.7 1.2.7 HW ID

To view the Hardware (HW) Identifier (ID), press the ▼ (Down) key. The following screen is displayed:

VERSIONS	HW ID
1.2.7	1.6.0

3.5.1.2.8 1.2.8 422 FW (Option Card)

To view the 4:2:2 Firmware (FW) version (dependent on model and option licences obtained), press the ▼ (Down) key. The following screen is displayed:



3.5.1.2.9 1.2.9 422 SW (Option Card)

To view the 4:2:2 Software (SW) version (dependent on model and option licenses obtained), press the ▼ (Down) key. The following screen is displayed:



This is the last of the Version screens. To return to the Build menu, press the ◀ (Back) key.

3.5.1.3 1.3 USN

To view the Unit Serial Number (USN) of the equipment, press the ▼ (Down) key. The following screen is displayed:



3.5.1.4 1.4 Factory

The Factory menu allows the setting of equipment parameters to default values and various equipment rebooting options. To access the Factory menu, press the ▼ (Down) key. The following screen is displayed:



3.5.1.4.1 1.4.1 Reset All Excl IP & Reboot

To access this function, press the ▶ (Forward) key. The following screen is displayed and the **Edit** key is lit:



To enable/disable the reset excluding IP network parameters:

1. Press the **Edit** key. The cursor appears below the NO.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between YES and NO.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. If YES is saved, inputs will be reset and the unit rebooted immediately.

3.5.1.4.2

1.4.2 Reset All Incl IP & Reboot

To access this function, press the ▼ (Down) key. The following screen is displayed and the Edit key is lit:



To enable/disable the reset including IP network parameters:

1. Press the Edit key. The cursor appears below the NO.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between YES and NO.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. If YES is saved, inputs will be reset and the unit rebooted immediately.

When all necessary operations have been performed, press the ◀ (Back) key to return to the Factory sub-menu.

3.5.1.5

1.5 Front Panel (FP)

To view the Lockout Front Panel (FP) Access menu, press the ▼ (Down) key. The following screen is displayed:



3.5.1.5.1

1.5.1 Front Panel Lockout

To access the front panel lockout function, press the ► (Forward) key.

Note: When enabled (set to ON) this function will disable the front panel controls preventing further operation of any of the keys. The LCD will still continue to display summary information screens. This feature may be disabled again using the front panel controls.

The following screen is displayed:



To enable/disable front panel lockout:

1. Press the **Edit** key. The cursor appears below the OFF.

2. Use the ▲ (Up) and ▼ (Down) keys to toggle between OFF and ON.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To return to the System menu, press the ◀ (Back) key twice.

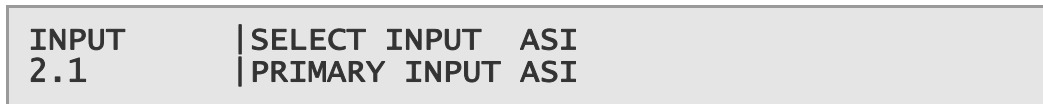
3.5.2 2 Input (Satellite Input Card RX8200/HWO/DVBS2)

The Input menu is used to select the various inputs to the equipment and set input parameters. To access the Input menu from the System menu, press the ▼ (Down) key. The following screen is displayed:



3.5.2.1 2.1 Select/Primary Input

To access this function, press the ► (Forward) key. The following screen is displayed:



The ► (Forward) and ◀ (Back) keys are used to choose the Select and Primary input types.

To choose the Select input type:

1. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: ASI, SAT and AUTO (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To choose the Primary input:

1. Move to the Primary Input function using the ► (Forward) key
2. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).
3. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: ASI and SAT (dependent on model and option licences obtained).
4. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2 2.2 Select Satellite Input

This menu allows the choice of up to four RF Inputs. To access this menu, press the ▼ (Down) key. The following screen is displayed:

S2 2.2	SELECT SATELLITE INPUT RF Input 01	>
-----------	---	---

To select the relevant RF Input:

1. Press the **Edit** key. The cursor appears below the input number.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between input options 01-04 (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.1 2.2.1 Status

To access the S2 Status menu, press the ► (Forward) key. The following screen is displayed:

S2 2.2.1	STATUS	>
-------------	--------	---

3.5.2.2.1.1 2.2.1.1 Lock Status

To view the Status of the various equipment inputs, press the ► (Forward) key. The following screen is displayed:

STATUS 2.2.1.1	LOCK STATUS C/N --- dB	UNLOCKED MARGIN --- dB
-------------------	-----------------------------	---------------------------

3.5.2.2.1.2 2.2.1.2 Status - Error Ratio/Signal Level

To view the status of these parameters, press the ▼ (Down) key. The following screen is displayed:

STATUS 2.2.1.2	ERROR RATIO SIGNAL LEVEL	--- --- dBm
-------------------	-------------------------------	----------------

3.5.2.2.1.3 2.2.1.3 Status - Modulation/FEC Rate

To view the status of these parameters, press the ▼ (Down) key. The following screen is displayed:

STATUS 2.2.1.3	MODULATION FEC RATE	--- -/--
-------------------	--------------------------	-------------

3.5.2.2.1.4 2.2.1.4 Standard/Spectral Sense

To view the status of these parameters, press the ▼ (Down) key. The following screen is displayed:

STATUS	STANDARD	---
2.2.1.4	SPECTRAL SENSE	---

3.5.2.2.1.5 2.2.1.5 Pilot Symbols/Frame Size

To view the status of these parameters, press the ▼ (Down) key. The following screen is displayed:

STATUS	PILOT SYMBOLS	---
2.2.1.5	FRAME SIZE	---

Press the ◀ (Back) key to return to the S2 Status menu.

3.5.2.2.2 2.2.2 Source 1 Configure

This menu allows access to and configuration of various Source 1 Input 1 parameters. To access this function, press the ▼ (Down) key. The following screen is displayed:

SOURCE 1	CONFIGURE Input 1 (L-band)	
2.2.2	(UNLOCKED)	>

3.5.2.2.2.1 2.2.2.1 LNB LO Frequency

To view and edit the current settings of the Source 1 Low Noise Block (LNB) Local Oscillator (LO) Frequency, press the ▶ (Forward) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	LNB LO FREQUENCY	
2.2.2.1	00000.000 MHz	(UNLOCKED)

To edit the LNB LO frequency setting:

1. Press the **Edit** key. The cursor appears below the first number.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.2 2.2.2.2 Satellite Frequency

To view and edit the current settings of the Source 1 Satellite Frequency, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	SATELLITE FREQUENCY	(UNLOCKED)
2.2.2.2	01550.000 MHz	

To edit the frequency setting:

1. Press the **Edit** key. The cursor appears below the first number.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.3

2.2.2.3 Symbol Rate

To view and edit the current settings of the Source 1 Symbol Rate, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	SYMBOL RATE	(UNLOCKED)
2.2.2.3	22.000000 MSym/s	

To edit the Symbol Rate setting:

1. Press the **Edit** key. The cursor appears below the first number.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.4

2.2.2.4 Modulation

To view and edit the current Source 1 Modulation settings, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	MODULATION	(UNLOCKED)
2.2.2.4	DVB-S QPSK AUTO FEC	

To edit the Modulation setting:

1. Press the **Edit** key. The cursor appears below the first character.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available modulation types (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.5

2.2.2.5 Rolloff

To view and edit the current Source 1 Rolloff settings, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	ROLLOFF	(UNLOCKED)
2.2.2.5	20%	

To edit the Rolloff setting:

1. Press the **Edit** key. The cursor appears below the first character of the current setting.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available percentage settings.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.6

2.2.2.6 Spectrum Sense

To view and edit the current Source 1 Spectrum Sense settings, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	SPECTRUM SENSE	(UNLOCKED)
2.2.2.6	AUTO	

To edit the Spectrum Sense setting:

1. Press the **Edit** key. The cursor appears below the first character of the current setting.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available settings.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.7

2.2.2.7 Search Range

To view and edit the current Source 1 Search Range settings, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	SEARCH RANGE	(UNLOCKED)
2.2.2.7	05000 KHZ	

To edit the Search Range setting:

1. Press the **Edit** key. The cursor appears below the first character of the current setting.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.8 2.2.2.8 LNB Power OP

To view and edit the current Source 1 LNB power output settings, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	LNB POWER OP	(UNLOCKED)
2.2.2.8	DISABLE	

To enable/disable the LNB Power Op:

1. Press the **Edit** key. The cursor appears below the first character of the current setting.
2. Use the ▲ (Up) and ▼ (Down) keys to select ENABLE or DISABLE.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.9 2.2.2.9 LNB Power Level

To view and edit the current Source 1 LNB Power Level, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	LNB POWER LEVEL	(UNLOCKED)
2.2.2.9	13V (VERT)	

To edit the LNB power level:

1. Press the **Edit** key. The cursor appears below the first character of the current setting.
2. Use the ▲ (Up) ▼ (Down) keys to set the required value.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.2.2.2.10 2.2.2.10 LNB 22KHz

To enable or disable the Source 1 LNB 22KHz facility, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

SOURCE 1	LNB 22KHz	(UNLOCKED)
2.2.2.10	ENABLE	

To enable/disable the LNB 22KHz facility:

1. Press the **Edit** key. The cursor appears below the first character of the current setting.
2. Use the ▲ (Up) ▼ (Down) keys to select ENABLE or DISABLE.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the end of the Source 1 configure menu options. To return to the Source 1 menu press the ◀ (Back) key.

3.5.2.2.3 2.2.3 – 2.2.5 Source 2/3/4 Configure

To access further Source menus from the Source 1 menu (dependent on model and option licences obtained), press the ▼ (Down) key.

The options for Source 2, 3 and 4 menus are as described for Source 1, see above.

To return to the input menu press the ◀ (Back) key twice.

3.5.3 2 Input (I/P Input Card RX8XXX/HWO/IP/GIGE)

The Input menu is used to select the various inputs to the equipment and set input parameters. To access the Input menu from the System menu, press the ▼ (Down) key. The following screen is displayed:



3.5.3.1 2.1 Select/Primary Input

To access this function, press the ▶ (Forward) key. The following screen is displayed:



The ▶ (Forward) and ◀ (Back) keys are used to choose the Select and Primary input types.

To select the input type:

1. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: ASI, IP Input and AUTO (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To choose the Primary input:

1. Move to the Primary Input function using the ▶ (Forward) key
2. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).

3. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: ASI and IP Input (dependent on model and option licences obtained).
4. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2 2.2 IP Input Card

This menu allows the viewing and editing of the IP Input Card parameters. To access this menu, press the ▼ (Down) key. The following screen is displayed:

IP I/P 2.2	IP Input Card	>
---------------	---------------	---

3.5.3.2.1 2.2.1 Status

To access the Status menu for the I/P Card, press the ► (Forward) key. The following screen is displayed:

STATUS 2.2.1	LAST IP RECEIVED 000.000.000.000	>
-----------------	---------------------------------------	---

3.5.3.2.1.1 2.2.1.1 Current Port

To view the port, which is currently selected, press the ► (Forward) key. The following screen is displayed:

STATUS 2.2.1.1	CURRENT PORT (STATUS) Port 1
-------------------	-----------------------------------

3.5.3.2.1.2 2.2.1.2 Encapsulation

To view the encapsulation status, press the ▼ (Down) key. The following screen is displayed:

STATUS 2.2.1.2	ENCAPSULATION UDP ONLY
-------------------	-----------------------------

3.5.3.2.1.3 2.2.1.3 Number of Columns/Rows

To view the number of columns and rows, press the ▼ (Down) key. The following screen is displayed:

STATUS 2.2.1.3	NUMBER OF COLUMNS NUMBER OF ROWS	N/A N/A
-------------------	---------------------------------------	------------

3.5.3.2.1.4 2.2.1.4 IP Packets Received

To view the number of IP Packets received, press the ▼ (Down) key. The following screen is displayed:

STATUS	IP PACKETS RECEIVED
2.2.1.4	0000000000

3.5.3.2.1.5 2.2.1.5 Corrected Packet Count

To view the corrected packet count, press the ▼ (Down) key. The following screen is displayed:

STATUS	CORRECTED PACKET COUNT
2.2.1.5	0000000000

3.5.3.2.1.6 2.2.1.6 Lost Packet Count

To view the lost packet count, press the ▼ (Down) key. The following screen is displayed:

STATUS	LOST PACKET COUNT
2.2.1.6	0000000000

3.5.3.2.1.7 2.2.1.7 Current Buffer Level

To view the current buffer level, press the ▼ (Down) key. The following screen is displayed:

STATUS	CURRENT BUFFER LEVEL
2.2.1.7	0 ms

3.5.3.2.1.8 2.2.1.8 IP Jitter

To view the IP jitter level, press the ▼ (Down) key. The following screen is displayed:

STATUS	IP JITTER
2.2.1.8	0000000010

3.5.3.2.1.9 2.2.1.9 TS Packets per UDP Frame

To view the number of TS packets per UDP frame, press the ▼ (Down) key. The following screen is displayed:

STATUS	TS PACKETS PER UDP FRAME
2.2.1.9	0000000007

3.5.3.2.1.10 2.2.1.10 FIFO Overflow Count

To view the FIFO overflow count, press the ▼ (Down) key. The following screen is displayed:

STATUS	FIFO OVERFLOW COUNT
2.2.1.10	0000000010

3.5.3.2.1.11 2.2.1.11 MDI Delay Factor

To view the MDI Delay Factor, press the ▼ (Down) key. The following screen is displayed:

STATUS	MDI DELAY FACTOR
2.2.1.11	00.000

3.5.3.2.1.12 2.2.1.12 MDI Media Loss Rate

To view the MDI media loss rate, press the ▼ (Down) key. The following screen is displayed:

STATUS	MDI MEDIA LOSS RATE
2.2.1.12	0 .000

3.5.3.2.1.13 2.2.1.13 FEC Latency

To view the FEC latency, press the ▼ (Down) key. The following screen is displayed:

STATUS	FEC LATENCY
2.2.1.13	0 ms

3.5.3.2.1.14 2.2.1.14 Clear Statistics

To edit the clear statistics function, press the ▼ (Down) key. The following screen is displayed:

STATUS	CLEAR STATISTICS
2.2.1.14	ACTIVATE

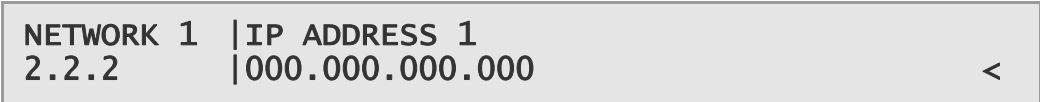
To activate/deactivate the Clear Statistics function:

1. Press the **Edit** key. The cursor appears below the function name.
2. Use the ▼ (Down) key to show the ACTIVATE option
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To return to the Status menu press the ◀ (Back) key.

3.5.3.2.2 2.2.2 Network 1 IP Address

To view and edit the Network 1 IP address, press the ▼ (Down) key. The following screen is displayed:



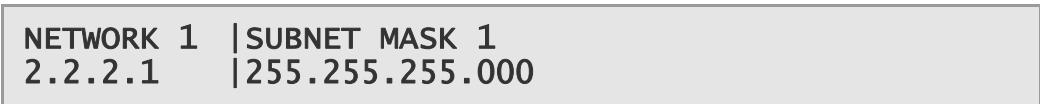
To edit the Network 1 IP address:

1. Press the **Edit** key. The cursor appears below the first character of the address.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.1

2.2.2.1 Subnet Mask 1

To view and edit the Subnet Mask 1 address, press the ▶ (Forward) key. The following screen is displayed:



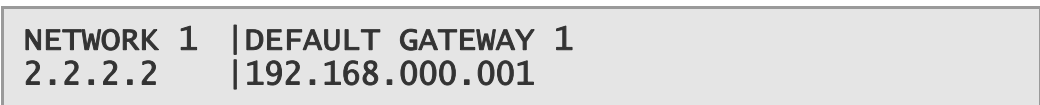
To edit the Subnet Mask 1 address:

1. Press the **Edit** key. The cursor appears below the first character of the address.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.2

2.2.2.2 Default Gateway 1

To view and edit the Default Gateway 1 address, press the ▼ (Down) key. The following screen is displayed:



To edit the Default Gateway 1 address:

1. Press the **Edit** key. The cursor appears below the first character of the address.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.3 2.2.2.3 MAC Address 1

To view the MAC Address 1, press the ▼ (Down) key. The following screen is displayed:

NETWORK 1	MAC ADDRESS 1
2.2.2.3	00:20:AA:4f:06:1b

3.5.3.2.2.4 2.2.2.4 Ethernet Line Mode 1

To view and edit the Ethernet Line Mode 1, press the ▼ (Down) key. The following screen is displayed:

NETWORK 1	ETHERNET LINE MODE 1
2.2.2.4	AUTO

To edit the Ethernet Line Mode 1:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: AUTO, 10 MBPS, 100MBPS or 1GBPS.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.5 2.2.2.5 Current Line Mode 1

To view the Current Line Mode 1, press the ▼ (Down) key. The following screen is displayed:

NETWORK 1	CURRENT LINE MODE 1	Link Down
2.2.2.5	DUPLEX 1	Link Down

3.5.3.2.2.6 2.2.2.6 RX Up Time 1

To view the RX Up Time 1, press the ▼ (Down) key. The following screen is displayed:

NETWORK 1	RX UP TIME 1
2.2.2.6	12668.54 sec

3.5.3.2.2.7 2.2.2.7 Network Utilisation 1

To view the Network Utilisation 1, press the ▼ (Down) key. The following screen is displayed:

NETWORK 1	NETWORK UTILISATION 1
2.2.2.7	000

3.5.3.2.2.8 2.2.2.8 ICMP Enable 1

To view and edit the ICMP 1, press the ▼ (Down) key. The following screen is displayed:

```
NETWORK 1 | ICMP ENABLE 1
2.2.2.8   | Enable
```

To enable/disable the ICMP:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Enable/Disable options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.9 2.2.2.9 VLAN Enable 1

To view and edit the VLAN 1, press the ▼ (Down) key. The following screen is displayed:

```
NETWORK 1 | VLAN ENABLE 1
2.2.2.9   | Disable
```

To enable/disable the VLAN:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Enable/Disable options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.10 2.2.2.10 VLAN Tag 1

To view and edit the VLAN Tag 1, press the ▼ (Down) key. The following screen is displayed:

```
NETWORK 1 | VLAN TAG 1
2.2.2.10 | 05500
```

To edit the VLAN Tag 1:

1. Press the **Edit** key. The cursor appears below the first character of the current value.

2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.11 2.2.2.11 ARP Enable 1

To view and edit the ARP 1, press the ▼ (Down) key. The following screen is displayed:

```
NETWORK 1 | ARP ENABLE 1
2.2.2.11 | Enable
```

To enable/disable the ARP:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Enable/Disable options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.2.12 2.2.2.12 Port 1 IGMP Version

To view the Port 1 IGMP Version, press the ▼ (Down) key. The following screen is displayed:

```
NETWORK 1 | PORT 1 IGMP VERSION
2.2.2.12 | 3
```

3.5.3.2.2.13 2.2.2.13 Clear ARP 1

To view and edit the ARP 1, press the ▼ (Down) key. The following screen is displayed:

```
NETWORK 1 | CLEAR ARP 1
2.2.2.13 | ACTIVATE
```

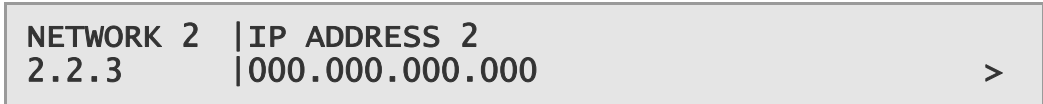
To activate/deactivate the ARP:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▼ (Down) key to show the ACTIVATE option.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the Network 1 screens. To return to the top level Network 1 screen press the ◀ (Back) Key.

3.5.3.2.3 2.2.3 Network 2

From the Network 1 screen 2.2.2, press the ▼ (Down) key. The following screen is displayed.



The Network address 2 may be edited and all of the Network 2 parameters viewed and edited (where possible) as described in Section 3.5.3.2.2. When complete, press the ◀ (Back) Key to return to the top level Network 2 screen.

3.5.3.2.4 2.2.4 Setup/MAC Mode

To view and edit the MAC Mode, press the ▼ (Down) key. The following screen is displayed:

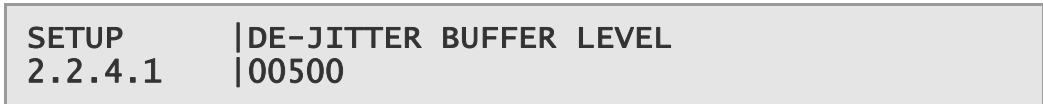


To change the MAC Mode:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Same and Different options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.4.1 2.2.4.1 De-Jitter Buffer Level

To view and edit the De-Jitter Buffer Level, press the ▶ (Forward) key. The following screen is displayed:



To edit the De-Jitter Buffer Level:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.4.2 2.2.4.2 SNMP Enable

To view and edit the SNMP, press the ▼ (Down) key. The following screen is displayed:

```

SETUP      |SNMP ENABLE
2.2.4.2    |Disable
  
```

To enable/disable the SNMP:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Enable/Disable options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.4.3 2.2.4.3 FEC Enable

To view and edit the FEC, press the ▼ (Down) key. The following screen is displayed:

```

SETUP      |FEC ENABLE
2.2.4.3    |Disable
  
```

To enable/disable the FEC:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Enable/Disable options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.4.4 2.2.4.4 Network Util 1 (Max Value)

To view and edit the Network Util 1, press the ▼ (Down) key. The following screen is displayed:

```

SETUP      |NETWORK UTIL 1 (MAX VALUE)
2.2.4.4    |100
  
```

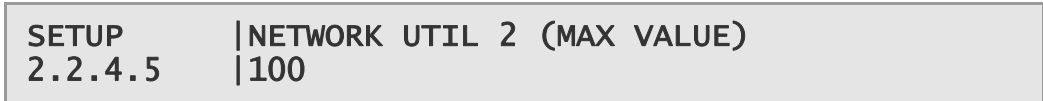
To edit the Network Util 1:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.

2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.4.5 2.2.4.5 Network Util 2 (Max Value)

To view and edit the Network Util 2, press the ▼ (Down) key. The following screen is displayed:

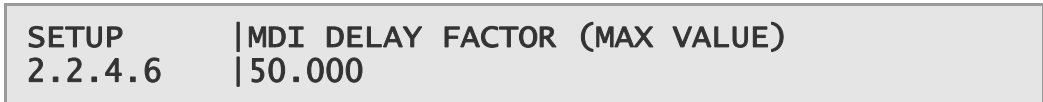


To edit the Network Util 2:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.4.6 2.2.4.6 MDI Delay Factor (Max Value)

To view and edit the MDI Delay Factor, press the ▼ (Down) key. The following screen is displayed:



To edit the MDI Delay Factor:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.4.7 2.2.4.7 MDI Media Loss Rate (Max Value)

To view and edit the MDI Media Loss Rate, press the ▼ (Down) key. The following screen is displayed:



2.2.4.7	0 .004
---------	--------

To edit the MDI Media Loss Rate:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the Setup screens. To return to the top level Setup screen, press the ◀ (Back) key.

3.5.3.2.5

2.2.5 I/P Port/ Use Input Ports

To view and edit the I/P Input Port in use, press the ▼ (Down) key. The following screen is displayed:

I/P PORT	USE INPUT PORTS	
2.2.5	Port 1	>

To change the input port:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Port 1, Port 2 and Auto options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.5.1

2.2.5.1 Auto Revert Delay

To view and edit the Auto Revert Delay, press the ▶ (Forward) key. The following screen is displayed:

I/P PORT	AUTO REVERT DELAY
2.2.5.1	00000

To edit the Auto Revert Delay:

1. Press the **Edit** key. The cursor appears below the first character of the displayed value.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the I/P Port screens. To return to the top level I/P Port screen, press the ◀ (Back) key.

3.5.3.2.6 2.2.6 Stream 1/ Unicast Enable 1

To view and edit the Unicast Enable 1, press the ▼ (Down) key. The following screen is displayed:

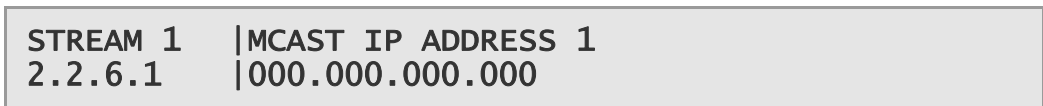


To enable/disable the Unicast 1:

1. Press the **Edit** key. The cursor appears below the first character of the displayed option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the True and False options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.6.1 2.2.6.1 MCAST IP Address 1

To view and edit the MCAST IP Address 1, press the ▶ (Forward) key. The following screen is displayed:



To edit the MCAST IP Address 1:

1. Press the **Edit** key. The cursor appears below the first character of the displayed value.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.6.2 2.2.6.2 Source IP Address 1

To view and edit the Source IP Address 1, press the ▼ (Down) key. The following screen is displayed:



To edit the Source IP Address 1:

1. Press the **Edit** key. The cursor appears below the first character of the displayed value.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.6.3**2.2.6.3 UDP Port 1**

To view and edit the UDP Port 1, press the ▼ (Down) key. The following screen is displayed:

STREAM 1		UDP PORT 1
2.2.6.3		04000

To edit the UDP Port 1 value:

1. Press the **Edit** key. The cursor appears below the first character of the displayed value.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.6.4**2.2.6.4 Column Port 1**

To view and edit the Column Port 1, press the ▼ (Down) key. The following screen is displayed:

STREAM 1		COLUMN PORT 1
2.2.6.4		00000

To edit the Column Port 1 value:

1. Press the **Edit** key. The cursor appears below the first character of the displayed value.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.3.2.6.5 2.2.6.5 Row Port 1

To view and edit the Row Port 1, press the ▼ (Down) key. The following screen is displayed:

STREAM 1		ROW PORT 1
2.2.6.4		00000

To edit the Row Port 1 value:

1. Press the **Edit** key. The cursor appears below the first character of the displayed value.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the Stream 1 screens. To return to the top level Stream 1 screen, press the ◀ (Back) key.

3.5.3.2.7 2.2.7 Stream 2/ Unicast Enable 2

To view and edit the Unicast Enable 2, press the ▼ (Down) key. The following screen is displayed:

STREAM 1		UNICAST ENABLE 2	
2.2.7		TRUE	>

The Unicast 2 may be enabled/disabled and all of the Stream 2 parameters viewed and edited (where possible) as described in *Section 3.5.3.2.6*. When complete, press the ◀ (Back) Key to return to the top level Stream 2 screen.

3.5.3.2.8 2.2.8 Alarms/ Alerts

To view the unit alerts, press the ▼ (Down) key. The following screen is displayed:

ALARMS		ALERTS
2.2.8		Both ports link down, Both ports no data

3.5.3.2.8.1 2.2.8.1 Both Ports Link Down/ No Data

To view the port alerts, press the ▶ (Forward) key. The following screen is displayed:

ALARMS		BOTH PORTS LINK DOWN	Alarm
2.2.8.1		BOTH PORTS NO DATA	Alarm

3.5.3.2.8.2 2.2.8.2 Port 1/ 2 Link Down

To view the alarms for ports 1 and 2, press the ▼ (Down) key. The following screen is displayed:

ALARMS	PORT 1 LINK DOWN	Alarm
2.2.8.2	PORT 2 LINK DOWN	Alarm

3.5.3.2.8.3 2.2.8.3 Port 1/ 2 IP Conflict

To view the IP alarms for ports 1 and 2, press the ▼ (Down) key. The following screen is displayed:

ALARMS	PORT 1 IP CONFLICT
2.2.8.3	PORT 2 IP CONFLICT

3.5.3.2.8.4 2.2.8.4 Port 1/ 2 No Data

To view the Data alarms for ports 1 and 2, press the ▼ (Down) key. The following screen is displayed:

ALARMS	PORT 1 NO DATA	Alarm
2.2.8.4	PORT 2 NO DATA	Alarm

3.5.3.2.8.5 2.2.8.5 No Response/ Out of Sync

To view the No Response/ Out of Sync alarms, press the ▼ (Down) key. The following screen is displayed:

ALARMS	NO RESPONSE	Alarm
2.2.8.5	OUT OF SYNC	

3.5.3.2.8.6 2.2.8.6 Port 1/ 2 Net Util

To view the Port 1/ 2 Net Util alarms, press the ▼ (Down) key. The following screen is displayed:

ALARMS	PORT 1 NET UTIL
2.2.8.6	PORT 1 NET UTIL

3.5.3.2.8.7 2.2.8.7 MDI Delay Factor/ MDI Loss Rate

To view the MDI Delay Factor/ MDI Loss Rate alarms, press the ▼ (Down) key. The following screen is displayed:

ALARMS	MDI DELAY FACTOR
2.2.8.7	MDI LOSS RATE

This is the last of the Alarm screens. To return to the top level Alarm screen, press the ◀ (Back) key.

3.5.3.2.9 2.2.9 Version

To view the Unit Software Version, press the ▼ (Down) key. The following screen is displayed:

VERSION	SOFTWARE VERSION	
2.2.9	0.13	>

3.5.3.2.9.1 2.2.9.1 Firmware SW Version

To view the Firmware SW Version, press the ▶ (Forward) key. The following screen is displayed:

VERSION	FIRMWARE SW VERSION
2.2.9.1	0.77

3.5.3.2.9.2 2.2.9.2 CPLD SW Version

To view the CPLD SW Version, press the ▼ (Down) key. The following screen is displayed:

VERSION	CPLD SW VERSION
2.2.9.2	1.2

3.5.4 2 Input (8VSB Input Card RX8320/HWO/8VSB)

The Input menu is used to select the various inputs to the equipment and set input parameters. To access the Input menu from the System menu, press the ▼ (Down) key. The following screen is displayed:

INPUT	UNLOCKED	INPUT: ASI
2	--- Mbits/s	--- >

3.5.4.1 2.1 Select/Primary Input

To access this function, press the ▶ (Forward) key. The following screen is displayed:

INPUT	SELECT INPUT ASI
2.1	PRIMARY INPUT ASI

The ▶ (Forward) and ◀ (Back) keys are used to choose the Select and Primary input types.

To choose the Select input type:

1. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: ASI, 8VSB and AUTO (dependent on model type).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To choose the Primary input:

1. Move to the Primary Input function using the ► (Forward) key
2. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).
3. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: ASI and 8VSB (dependent on model type).
4. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.4.2**2.2 8VSB**

To access this function, press the ▼ (Down) key. The following screen is displayed:

8VSB	CHANNEL 61	SNR 0.00dB
2.2	FREQUENCY	755.000 MHZ

To choose the Channel to be monitored:

1. Press the **Edit** key. The cursor appears below the the first character of the current channel number.
2. Use the ▲ (Up) and ▼ (Down) keys to select the required number.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.4.3**2.3 8VSB CTRL**

To access this function, press the ▼ (Down) key. The following screen is displayed:

8VSB CTRL	DIRECT FREQUENCY	DISABLED
2.3	AUTO TUNE	DISABLED

To enable/disable the Direct Frequency function:

1. Press the **Edit** key. The cursor appears below the current option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Enabled/Disabled options until the required option is displayed.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To enable/disable the Auto Tune function:

1. Press the **Edit** key. The cursor appears below the current option.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the Enabled/Disabled options until the required option is displayed.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5 2 Input (G703 ATM Input Card RX8XXX/HWO/G703)

The Input menu is used to select the various inputs to the equipment and set input parameters. To access the Input menu from the System menu, press the ▼ (Down) key. The following screen is displayed:



Note: The G.703 front panel menus may change depending upon the model of G.703 card fitted, please refer to Ericsson for more information.

3.5.5.1 2.1 Select/Primary Input

To access this function, press the ► (Forward) key. The following screen is displayed:



The ► (Forward) and ◀ (Back) keys are used to choose the Select and Primary input types.

To choose the Select input type:

1. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: G.703 and AUTO (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To choose the Primary input:

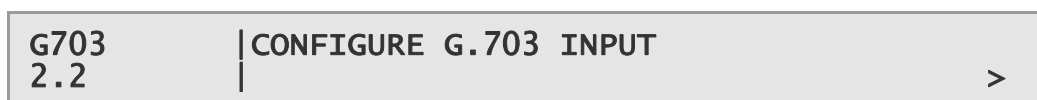
1. Move to the Primary Input function using the ► (Forward) key

2. Press the **Edit** key. The cursor appears below the displayed type (ASI shown above).
3. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: ASI and G.703 (dependent on model and option licences obtained).
4. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5.2

2.2 G703

To access this function, press the ▼ (Down) key. The following screen is displayed:



3.5.5.2.1

2.2.1 G703 Status

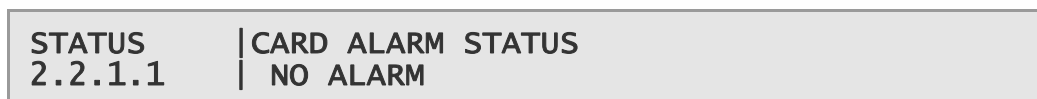
To access this function, press the ► (Forward) key. The following screen is displayed:



3.5.5.2.1.1

2.2.1.1 Card Alarm Status

To view the Card alarm Status, press the ► (Forward) key. The following screen is displayed:



3.5.5.2.1.2

2.2.1.2 Physical Alert Status

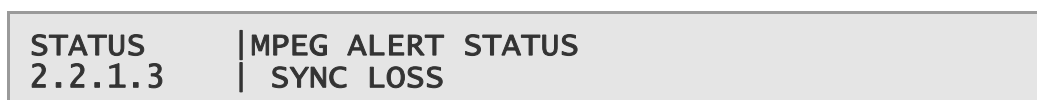
To view the Physical Alert Status, press the ▼ (Down) key. The following screen is displayed:



3.5.5.2.1.3

2.2.1.3 MPEG Alert Status

To view the MPEG Alert Status, press the ▼ (Down) key. The following screen is displayed:



3.5.5.2.1.4 2.2.1.4 ATM Alert Status

To view the ATM Alert Status, press the ▼ (Down) key. The following screen is displayed:

STATUS		ATM ALERT STATUS
2.2.1.4		SYNC LOSS

3.5.5.2.1.5 2.2.1.5 PDH Rate/Framing

To view the PDH Rate/Framing Status, press the ▼ (Down) key. The following screen is displayed:

STATUS		PDH RATE	NONE
2.2.1.5		FRAMING	NONE

3.5.5.2.1.6 2.2.1.6 Randomizer/Stuffing Pkts

To view the Randomizer/Stuffing Pkts Status, press the ▼ (Down) key. The following screen is displayed:

STATUS		RANDOMIZER	FALSE
2.2.1.6		STUFFING PKTS	___

3.5.5.2.1.7 2.2.1.7 TS Packet Length

To view the TS Packet Length, press the ▼ (Down) key. The following screen is displayed:

STATUS		TS PACKET LENGTH	___
2.2.1.7			

This is the last of the G703 status pages. To return to the G703 Status main page press the ◀ (Back) key.

3.5.5.2.2 2.2.2 G703 Setup

To access the Setup function, press the ▼ (Down) key. The following screen is displayed:

G703		SETUP	>
2.2.2			

3.5.5.2.2.1 2.2.2.1 Mode

To access the Mode Setup function, press the ▶ (Forward) key. The following screen is displayed:

SETUP 2.2.2.1	MODE	MPEG
------------------	------	------

To choose the Mode:

1. Press the **Edit** key. The cursor appears below the displayed type (MPEG shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available types: MPEG and ATM (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5.2.2.2**2.2.2.2 Destuffing/Deinterleaver**

To access the Destuffing/Deinterleaver Setup function, press the ▼ (Down) key. The following screen is displayed:

SETUP 2.2.2.2	DESTUFFING DEINTERLEAVER	TRUE TRUE
------------------	-------------------------------	--------------

To select the Destuffing/ Deinterleaver values:

1. Press the **Edit** key. The cursor appears below the displayed type (TRUE shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: TRUE and FALSE (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. Use the ► (Forward) and ◀ (Back) keys to toggle between the Destuffing and Deinterleaver inputs.

3.5.5.2.2.3**2.2.2.3 Reed-Solomon/Derandomizer**

To access the Reed-Solomon/Derandomizer Setup function, press the ▼ (Down) key. The following screen is displayed:

SETUP 2.2.2.3	REED-SOLOMON DEDERANDOMIZER	TRUE TRUE
------------------	----------------------------------	--------------

To select the Reed-Solomon/Derandomizer values:

1. Press the **Edit** key. The cursor appears below the displayed type (TRUE shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: TRUE and FALSE (dependent on model and option licences obtained).

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. Use the ► (Forward) and ◀ (Back) keys to toggle between the Reed-Solomon and Derandomizer inputs.

3.5.5.2.2.4

2.2.2.4 Man Packet Length Ctrl/Package Length Size

To access the Man Packet Length Ctrl/Package Length Size Setup function, press the ▼ (Down) key. The following screen is displayed:

SETUP	MAN PKT LENGTH CTRL	FALSE
2.2.2.4	PACKET LENGTH	188

To select the Man Packet Length Ctrl value:

1. Press the **Edit** key. The cursor appears below the displayed type (FALSE shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: TRUE and FALSE (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. Use the ► (Forward) and ◀ (Back) keys to toggle between the Man Packet Length Ctrl and Packet Length Size inputs.

To select the Packet Length Size:

1. Press the **Edit** key. The cursor appears below the displayed type (188 shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: 188 and 204 (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5.2.2.5

2.2.2.5 ATM Delta/ATM Alpha

To access the ATM Delta/ATM Alpha Setup function, press the ▼ (Down) key. The following screen is displayed:

SETUP	ATM DELTA	006
2.2.2.5	ATM ALPHA	007

To select the ATM Delta value:

1. Press the **Edit** key. The cursor appears below the displayed value.
2. Use the ▲ (Up), ▼ (Down) and ► (Forward) keys to obtain the required value.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. Use the ► (Forward) and ◀ (Back) keys to toggle between the ATM Delta and ATM Alpha inputs.

To select the ATM Alpha value:

1. Press the **Edit** key. Press the ► (Forward) key until cursor appears below the current value.
2. Use the ▲ (Up), ▼ (Down) and ► (Forward) keys to obtain the required value.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5.2.2.6

2.2.2.6 ATM Descrambling/ATM Header Correction

To access the ATM Descrambling/ATM Header Correction Setup function, press the ▼ (Down) key. The following screen is displayed:

SETUP	ATM_DESCRAMBLING	FALSE
2.2.2.6	ATM_HEADER_CORRECTION	TRUE

To select the ATM Descrambling value:

1. Press the **Edit** key. The cursor appears below the displayed type (FALSE shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: TRUE and FALSE (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. Use the ► (Forward) and ◀ (Back) keys to toggle between the ATM Descrambling and ATM Header Correction inputs.

To select the ATM Header Correction value:

1. Press the **Edit** key. The cursor appears below the displayed type (TRUE shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: TRUE and FALSE (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5.2.2.7

2.2.2.7 ATM Header Err Ignore/ ATM VPI

To access the ATM Header Err Ignore/ ATM VPI Setup function, press the ▼ (Down) key. The following screen is displayed:

SETUP 2.2.2.7	ATM HEADER ERR IGNORE ATM VPI	FALSE 017
------------------	------------------------------------	--------------

To select the ATM Header Err Ignore value:

1. Press the **Edit** key. The cursor appears below the displayed type (FALSE shown above).
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the available options: TRUE and FALSE (dependent on model and option licences obtained).
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.
4. Use the ► (Forward) and ◀ (Back) keys to toggle between the ATM Header Err Ignore and ATM VPI inputs.

To select the ATM VPI value:

1. Press the **Edit** key. Press the ► (Forward) key until cursor appears below the current value.
2. Use the ▲ (Up) and ▼ (Down) keys until the required value is obtained.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5.2.2.8

2.2.2.8 Sync CNT To Lock/Sync Miss Sample Size

To access the Sync CNT To Lock/Sync Miss Sample Size Setup function, press the ▼ (Down) key. The following screen is displayed:

SETUP 2.2.2.8	SYNC CNT TO LOCK SYNC MISS SAMPLE SIZE	008 030
------------------	---	------------

To select the Sync CNT To Lock value:

1. Press the **Edit** key.
2. Use the ▲ (Up) and ▼ (Down) keys until the required value is obtained.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting..

To select the Sync Miss Sample Size value:

1. Press the **Edit** key. Press the ► (Forward) key until cursor appears below the current value.
2. Use the ▲ (Up) and ▼ (Down) keys until the required value is obtained.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.5.2.2.9 2.2.2.8 Sync Miss Limit

To access the Sync Miss Limit Setup function, press the ▼ (Down) key. The following screen is displayed:



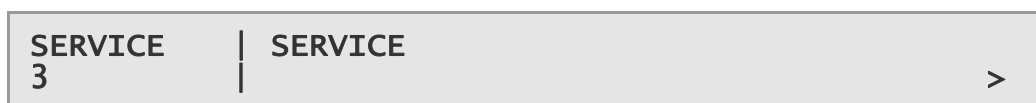
To set the Sync Miss Limit value:

1. Press the **Edit** key.
2. Use the ▲ (Up) and ▼ (Down) keys until the required value is obtained.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the G703 screens. To return to the Main menu, press the ◀ (Back) key three times.

3.5.6 3 Service

The Service menu is used to access and edit the various services to the equipment. To access the Service menu from the Input menu, press the ▼ (Down) key. The following screen is displayed:



3.5.6.1 3.1 Decode Service

To access the details of this service, press the ► (Forward) key. The following screen is displayed:



To select the user Decode Service:

1. Press the **Edit** key. The cursor appears.
2. Select the service using the ▲ (Up) and ▼ (Down) keys to move between all the services on the service list as required.
3. Press **Save** to select the currently displayed service or **Edit** to abandon the operation and return to the current setting.

3.5.6.1.1 3.1.1 Service Status

To show the Service ID and the service status, press the ► (Forward) key. The following screen is displayed:

STATUS 3.1.1	SERVICE ID: 00002 SERVICE NO PMT
-----------------	---------------------------------------

The second line of the display shows information about the decryption status of the service.

To return to the previous menu, press the ◀ (Back) key.

3.5.6.2

3.2 Video

To access the Video menu, press the ▼ (Down) key. The following screen is displayed:

SERVICE 3.2	VIDEO	>
----------------	-------	---

3.5.6.2.1

3.2.1 Component Selection

To view and edit this service, press the ▶ (Forward) key. The following screen is displayed and the **Edit** key is lit:

VIDEO 3.2.1	COMPONENT SELECTION 202 – MPEG-4 AVC (NOT PRESENT)
----------------	---

To edit the video component:

1. Press the **Edit** key. The cursor appears at the start of the current component.
2. Using the ▲ (Up) and ▼ (Down) keys toggle between the available options: 202 - MPEG-4 AVC, 0 – MPEG-2 USER and NO SELECTION.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.6.2.2

3.2.2 Video User PID

To view and edit the User PID, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

VIDEO 3.2.2	USER PID: 00202 USER STD: MPEG-2
----------------	---------------------------------------

To edit the user PID:

4. Press the **Edit** key. The cursor appears below the first character of the current PID selection.
5. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.

6. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To edit the user STD:

1. Press the **Edit** key. The cursor appears below the first character of the current STD selection.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the MPEG-4 AVC and MPEG-2 options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.6.2.3

3.2.3 Delay Mode

To view and edit the Delay Mode, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

VIDEO 3.2.3	DELAY MODE: STANDARD
----------------	----------------------

To edit the Delay Mode:

1. Press the **Edit** key. The cursor appears below the first character of the current selection.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the STANDARD and LOW (this option is only available if RX8XXX/SWO/LDELAY is enabled) options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.6.2.4

3.2.4 RX Delay

To view and edit the RX Delay, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

VIDEO 3.2.4	RX DELAY 4:2:0: 000
----------------	---------------------

This screen shows the extra delay added (in milliseconds) on top of the standard or low delay selected in screen 3.2.3 *Delay Mode*, above.

To edit the RX delay:

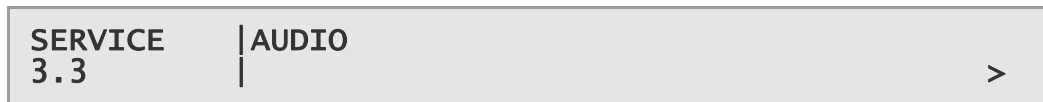
1. Press the **Edit** key. The cursor appears below the first character of the current value.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the Video service options, to return to the Video service menu, press the ◀ (Back) key.

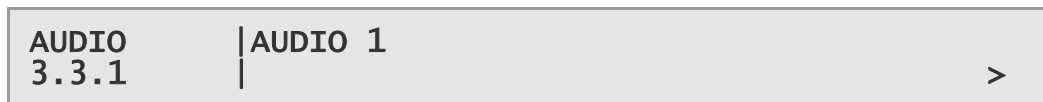
3.5.6.3 3.3 Audio

To access the Audio Service menu, press the ▼ (Down) key. The following screen is displayed:



3.5.6.3.1 3.3.1 Audio 1 Menu

To access the Audio 1 menu, press the ▶ (Forward) key. The following screen is displayed:



3.5.6.3.1.1 3.3.1.1. Audio Selection

To view and edit this option, press the ▶ (Forward) key. The following screen is displayed and the **Edit** key is lit:

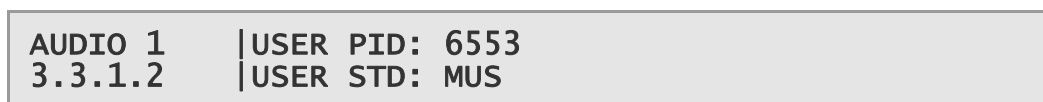


To edit the audio selection:

1. Press the **Edit** key. The cursor appears at the start of the current selection.
2. Using the Up and ▼ (Down) keys to toggle between the NO SELECTION and 0 – MUS USER options:
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.6.3.1.2 3.3.1.2 Audio User PID

To view and edit the Audio User PID, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:



To edit the user PID:

1. Press the **Edit** key. The cursor appears below the first character of the current PID selection.

2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To edit the user STD:

1. Press the **Edit** key. The cursor appears below the first character of the current STD selection.
2. Use the ▲ (Up) and ▼ (Down) keys to toggle between the MUS, AC3 (requires RX8XXX/SWO/AC3), LINEAR (requires RX8200/SWO/4AUD), AAC (requires RX8XXX/SWO/AAC) and HE-AAC (requires RX8XXX/SWO/AAC) options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the Audio 1 options. To return to the Audio 1 menu, press the ◀ (Back) key.

3.5.6.3.2

3.3.2 – 3.3.6 Audio 2-6

The options for the Audio 2-6 menus are as detailed for the Audio 1 menu, see above. Unless RX8200/SWO/4AUD is enabled, only Audio 1 and 2 will be available.

To return to the Audio menu and access the SDI Embedding menu, press the ◀ (Back) button.

3.5.6.4

3.4 SDI Embedding

To access the SDI Embedding options, press the ▼ (Down) key, from the Audio screen. The following screen is displayed:



3.5.6.4.1

3.4.1 CH1+2 Embedding

To view and edit the Channel Embedding options, press the ▶ (Forward) key. The following screen is displayed and the **Edit** key is lit:



To edit channel embedding:

1. Press the **Edit** key. The cursor appears at the start of the current option.
2. Using the ▲ (Up) ▼ (Down) keys toggle between the available options. The available options depend on the RX82XX/SWO/4AUD licence. If enabled,

options Decoder 1, STEREO to Decoder 6, STEREO are available. If disabled, available options are Decoder 1, STEREO and Decoder 2, STEREO.

- 3. Select the required option and press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.6.4.2 3.4.2 – 3.4.8 CH 3+4, 5+6, 7+8, 9+10, 11+12, 13+14 and 15+16 Embedding

To edit the embedding options for these channels, proceed as detailed for CH 1+2 above.

To this is the last of the Service menu options, to return to the Service menu and access further menus, press the ◀ (Back) key three times.

3.5.7 4 CA Systems

The CA Menu is used to access and edit the conditional access systems used in the equipment. To access the CA Menu from the Service Menu, press the ▼ (Down) key. The following screen is displayed:



3.5.7.1 4.1 Service Table

To access the CA Service Table, press the ▶ (Forward) key. The following screen is displayed:



3.5.7.1.1 4.1.1 CA Summary

To access the CA summary, press the ▶ (Forward) key. The following screen is displayed:



The second line of the display shows the status of the CA system. Possible messages are: NO SERVICE, SERVICE CLEAR, SERVICE AUTHORIZED, CAM PRESENT DECRYPTING or CONDITIONAL ACCESS ERROR.

3.5.7.1.1.1 4.1.1.1 Service ID

To view the Slot 1 Service ID, press the ▶ (Forward) key. The following screen is displayed:



To return to the Service Table Menu and access further menus, press the ◀ (Back) key twice.

3.5.7.1.1.2 4.1.1.2 - 4.1.1.24 Service ID Slots 2-24

If the unit is a multi-service descrambler (depending on the model and licenses enabled) there can be up to 24 menus similar to that shown in *Para 3.5.7.3*. Each menu displays the Service ID and Status for each slot of descramble service selection.

3.5.7.2 4.2 Director

This menu allows access and editing of the Ericsson's Director options (dependent on model and option licences obtained). To access the Director menu, press the ▼ (Down) key. The following screen is displayed:



3.5.7.2.1 4.2.1 Over Air Message

To access this option, press the ► (Forward) key. The following screen is displayed:



3.5.7.2.2 4.2.2 Broadcaster ID

To access and Edit this option, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:



To edit the Broadcaster ID:

1. Press the **Edit** key. The cursor appears below the first character of the current ID selection.
2. Edit the parameter value as required using the ◀ (Back) and ► (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.7.2.3 4.2.3 Unique Hardware ID

To view this ID, press the ▼ (Down) key. The following screen is displayed:

```
DIR          | UNIQUE HARDWARE ID
4.2.3       | 34390968634
```

3.5.7.2.4 4.2.4 Manuf ID

To view the manufacturer, model and hardware identifier values, press the ▼ (Down) key. The following screen is displayed:

```
DIR          | MANUF ID DE          HW TYPE 82
4.2.4       | MODEL ID 1D
```

3.5.7.2.5 4.2.5 Download Status

To view the Download Status, press the ▼ (Down) key. The following screen is displayed:

```
DIR          | DOWNLOAD STATUS
4.2.5       | IDLE
```

3.5.7.2.6 4.2.6 Enter New PIN

To enter a new local lockout PIN, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

```
DIR          | ENTER NEW PIN
4.2.6       | *****
```

This allows the user to either change the PIN required to access the front panel when not in local mode or access the front panel via the previously set PIN. This depends on receiver mode.

To enter a new PIN:

1. Press the **Edit** key. The cursor appears below the first character of the current selection.
2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.7.2.7 4.2.7 Reset PIN

To reset an existing local lockout PIN, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

```
DIR          | RESET PIN
4.2.7       | *****
```

When the reset PIN is input, the local lockout PIN will be reset.

To reset PIN:

1. Press the **Edit** key. The cursor appears below the first character of the current selection.
2. Use the **Up**, **▼** (Down), **►** (Forward) and **◀** (Back) keys to enter the required number.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.7.2.8

4.2.8 Over Air Extd Carrier Timeout

To edit the setting for this option, press the **▼** (Down) key. The following screen is displayed and the **Edit** key is lit:

DIR	OVER AIR EXTD CARRIER TIMEOUT
4.2.8	FALSE

To edit the current setting:

1. Press the **Edit** key. The cursor appears below the first character of the current selection.
2. Use the **▲** (Up) and **▼** (Down) keys to toggle between TRUE and FALSE.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.7.2.9

4.2.9 Over Air Control

To edit this option, press the **▼** (Down) key. The following screen is displayed and the **Edit** key is lit:

DIR	OVER AIR CONTROL
4.2.9	FALSE

To edit the current setting:

1. Press the **Edit** key. The cursor appears below the first character of the current selection.
2. Use the **▲** (Up) and **▼** (Down) keys to toggle between TRUE and FALSE.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.7.2.10

4.2.10 Power-up Carrier

To view the current condition of this power-up carrier, press the **▼** (Down) key. The following screen is displayed:

```

DIR      | POWER-UP CARRIER
4.2.10  | NO STORED SERVICE

```

The second line displays the service name of the stored service.

3.5.7.2.11 4.2.11 Emergency Home Carrier

To view the current condition of this option, press the ▼ (Down) key. The following screen is displayed:

```

DIR      | EMERGENCY HOME CARRIER
4.2.11  | NO STORED SERVICE

```

The second line displays the service name of the stored service.

This is the last option of the Director Menu. To return to the CA Menu and access further screens, press the ◀ (Back) key twice.

3.5.8 5 Output

The Output menu allows access to and selection of the various equipment outputs. To view the Output menu, press the ▼ (Down) key. The following screen is displayed:

```

OUTPUT   | OUTPUT
5        |                                     >

```

3.5.8.1 5.1 Output Selection

To view the Output Selection menu, press the ▶ (Forward) key. The following screen is displayed:

```

OUTPUT   | OUTPUT SELECTION
5.1     |                                     >

```

3.5.8.1.1 5.1.1 Outputs 1 and 2

To edit the output types for outputs 1 and 2, press the ▶ (Forward) key. The following screen is displayed and the **Edit** key is lit:

```

OUTPUT   | OUTPUT ONE  : SD-SDI
5.1.1   | OUTPUT TWO  : HD-HDI

```

To edit the output 1 and 2 types:

1. Press the Edit key. The cursor appears at the start of the current option.
2. Using the ▲ (Up) and ▼ (Down) keys toggle between the available options: ASI, SD-SDI, AUTO and HD-SDI (dependent on model and option licences obtained).

Note: Selecting AUTO will output SD-SDI for SD material and HD-SDI for HD material.

3. Use the ◀ (Back) and ▶ (Forward) keys to toggle between OUTPUT ONE and TWO.
4. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

3.5.8.1.2

5.1.2 Output 3

To edit the output types for output 3 (dependent on model and option licences obtained), press the ▶ (Forward) key. The following screen is displayed and the **Edit** key is lit:

OUTPUT 5.1.2	OUTPUT THREE : SD-SDI
-----------------	-----------------------

To edit the output 3 type:

1. Press the Edit key. The cursor appears at the start of the current option.
2. Using the ▲ (Up) and ▼ (Down) keys toggle between the available options: ASI, SD-SDI, AUTO and HD-SDI (depending on model and option licences obtained).

Note: Selecting AUTO will output SD-SDI for SD material and HD-SDI for HD material.

3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

Press the ◀ (Back) key to return to the Output Selection menu.

3.5.8.2

5.2 TS Feed Selection

To edit the Transport Stream (TS) Feed Selection, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:

OUTPUT 5.2	TS FEED SELECTION Descrambled
---------------	----------------------------------

Selecting the Descrambled option will provide a Transport Stream that is post descramble block. Selecting the Input option will provide a Transport Stream that is before the descramble block.

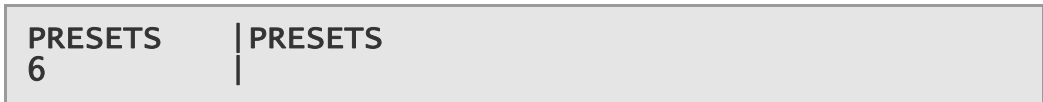
To edit the TS feed selection:

1. Press the **Edit** key. The cursor appears at the start of the current option.
2. Using the ▲ (Up) and ▼ (Down) keys to toggle between the Descrambled and Input options.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

This is the last of the Output menu options. To return to the Output menu and access further menus, press the ◀ (Back) key.

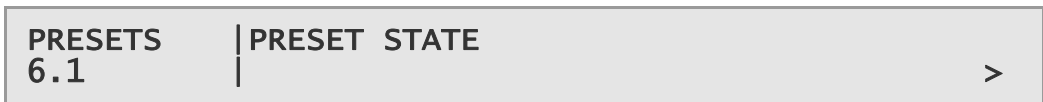
3.5.9 6 Presets

The Preset menu allows the access and editing of 40 sets of equipment pre-configured settings. This enables you to quickly store and retrieve your front panel settings (input tuning parameters) so that you don't have to re-enter them manually. To access this menu, press the ▼ (Down) key. The following screen is displayed:



3.5.9.1 6.1 Preset State

To access the Preset State menu, press the ▶ (Forward) key. The following screen is displayed:



3.5.9.1.1 6.1.1 Presets 1 and 2

To view the condition of the various equipment presets, press the ▶ (Forward) key. The following screen is displayed:



A stored preset will show the service name of the service stored.

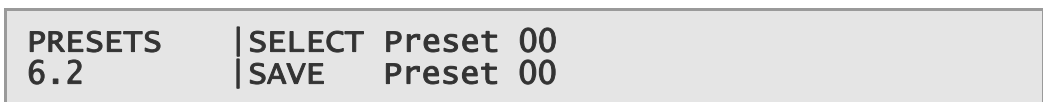
3.5.9.1.2 6.1.2 – 6.1.20 Presets 3 and 40

To view the condition of the presets 3-40, proceed as for Presets 1 and 2, described above.

To return to the Preset State menu, press the ◀ (Back) key.

3.5.9.2 6.2 Select/Save Presets

To select or save presets, press the ▼ (Down) key. The following screen is displayed and the **Edit** key is lit:



To select a preset:

1. Press the **Edit** key. The cursor appears below the first character of the current selection.

2. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
3. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

To save a preset:

1. Press the **Edit** key. The cursor appears below the first character of SELECT Preset line.
2. Use the ▶ (Forward) key to move to the SAVE Preset line.
3. Edit the parameter value as required using the ◀ (Back) and ▶ (Forward) keys to select each digit in turn, and then using the ▲ (Up) and ▼ (Down) keys to increment or decrement the digit.
4. Press **Save** to save the new settings or **Edit** to abandon the operation and return to the current setting.

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Remote Control

Chapter 4

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4.1 Introduction

The RX8000 Series Receivers can be remotely controlled / monitored in a variety of ways:

- RS232/485 Remote Control Protocol (RCP)
- Director Over-Air Control (Not RX8320)
- Web Browser
- SNMP

4.1.1 Local Control Lockout

Common for all control methods is that the equipment can still be controlled locally from the front panel interface unless the front panel is disabled. This can be achieved either:

- locally using the front panel menu 1.5.1 FRONT PANEL LOCKOUT to prevent local control from being re-established
- or remotely using the appropriate remote command, depending on the remote control method being used.

When front panel lockout is set to ON, the user can still browse and navigate the front panel menus. However, none of the menu items can be edited (except for Menu 1.5.1 to enable/disable front panel lockout). The LCD will continue to display summary information screens.

4.2 RS232/485 RCP

RS232/485 Remote Control Protocol (RCP) is only available as an option card on all of the RX8000 Series Receivers.

This enables control of the unit through the RS232/485 serial connector on the rear panel of the unit, using Ericsson's proprietary remote control protocol. This feature allows customers, who may be upgrading their current systems to the RX8000 series, to use their current scripts for receiver control.

For more detailed information about RS232/485 RCP remote control protocols, contact Ericsson.

4.3 Director

Ericsson's Director Over-Air Control (OAC) system is available either as a standard feature or as an option on all of the RX8000 Series Receivers, except for the RX8320. OAC is a subset of the Director facility and is a remote control protocol which is used to access the units using Ericsson's nCompass Control System. An Over-Air Download facility is also provided and a network connection is required for this.

For more detailed information on Ericsson Director remote control, contact Ericsson.

4.3.1 Setting up Director Remote Control

For the unit to be controlled via OAC, the control mode of the RX8000 Receiver needs to be set to Director OAC control mode. This can be achieved either via:

- the front panel, using menu 4.2 DIRECTOR and sub-menus, see *Chapter 3, Front Panel Control*
- or the Web Browser Control interface, using the CA tab page, see *Chapter 5, Web Browser Control*.

4.3.2 Over-Air Control (OAC) Lockout

When the unit is in OAC control mode, it is possible for the remote control operator to issue a local lockout command to the Receiver. This will effectively deny the local user access to configuring the unit.

However, if a situation occurs whereby the local user needs to regain control over the unit, without a local lockout relinquish command being sent from the OAC control PC, a four-digit Personal Identification Number (PIN) may be entered through the keypad.



Caution!

Ericsson Customer Services Help Desk will not be able to provide you with the local lockout PIN, as it is uniquely created at the time of the lockout.

The user creates the PIN at lockout time. To obtain the PIN, please consult the person responsible for the administration of the unit.

4.4 Web Browser

The Web Browser interface is available as a standard feature on all of the RX8000 Series Receivers.

For more detailed information on Web Browser remote control, see *Chapter 5, Web Browser Control*.

4.4.1 Setting Up Web Browser Remote Control

A personal computer (PC) running a Web Browser can be used to configure, control and monitor the Receiver remotely. The following web browsers have been tested:

- Microsoft Internet Explorer (This is the only browser supported by Ericsson)
- Mozilla Firefox (Functional but unsupported)
- Google Chrome (Functional but unsupported)

To set up Web Browser control:

1. Connect the PC to either of the two IP control interfaces on the rear of the Receiver (labelled ETHERNET 1 / 2 or CONTROL 1 / 2).
2. Enter the settings for the relevant control port (IP Address, Subnet and Gateway) via the front panel 1.1 Network Settings menu, see *Chapter 3, Front Panel Control*.

Note: If the Receiver is connected to an existing network, or is not on the same subnet as the control PC, assistance from the network administrator may be required in modifying the network settings.

3. Open a Web Browser window on the PC.
4. Enter the IP address of the Receiver into the address field of the Web Browser. The Status page of the Receiver interface will appear in the Web Browser window, see *Figure 4.1*.

Note: To assist with troubleshooting, the IP control ports will respond to ICMP PING request messages.

4.4.2 Web Browser Interface Status Page

With the network settings correctly entered at the Receiver front panel control interface, a Status page is automatically loaded and displayed in the Web Browser when the relevant URL is entered.

The Status page displayed may differ slightly depending on the Receiver model and the options enabled. A typical Status page is displayed in *Figure 4.1*.



Figure 4.1 Typical Web Browser Status Page

For more information on the Web Browser interface and a description of the available web pages, see *Chapter 5, Web Browser Control*.

4.5 SNMP

Simple Network Management Protocol (SNMP) is available as a standard feature on all of the RX8000 Series Receivers.

SNMP is a network protocol used to monitor network-attached devices for conditions that warrant administrative attention. SNMP consists of a set of standards for network management, including an application layer protocol, a database schema, and a set of data objects.

The RX8000 Series Receivers support SNMP Versions 1, 2C and 3.

For more detailed information on SNMP remote control, contact Ericsson.

4.5.1 Setting Up SNMP Remote Control

SNMP remote control is enabled by default.

To set up SNMP remote control:

1. Ensure the Web Browser Interface is connected and working.
2. From the browser SNMP tab, select the version of SNMP required (V2C or V3).

3. Ensure the trap community, read-write community and read-only community are configured as public or private in the same way as the MIB browse or SNMP application being used.

4.5.2 Downloading the MIB

SNMP exposes management data in the form of variables on the managed systems, which describe the system configuration.

The SNMP Management Information Base (MIB) stored on each unit defines which information (variables) should be monitored.

The MIB may be downloaded from the unit as a zip file using the Web Browser interface, see *Chapter 5, Web Browser Control*.

These variables can then be queried (and set) by managing applications.

Please refer to the managing application documentation for compiling third-party MIBs.

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Web Browser Control

Chapter 5

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5.1 Introduction

This chapter describes the features and options provided by the Web Browser interface menus and web pages for controlling the RX8000 Series Receivers remotely.

The Web Browser interface is available as a standard feature on all of the RX8000 Series Receivers.

5.1.1 Setting up Web Browser Control

For information on how to set up Web Browser remote control, see *Chapter 4, Remote Control*.

5.1.2 Using the Web Browser Interface

The Web Browser Interface displays various web pages, corresponding to the different functions of the receiver, in the format shown in *Figure 5.1*.

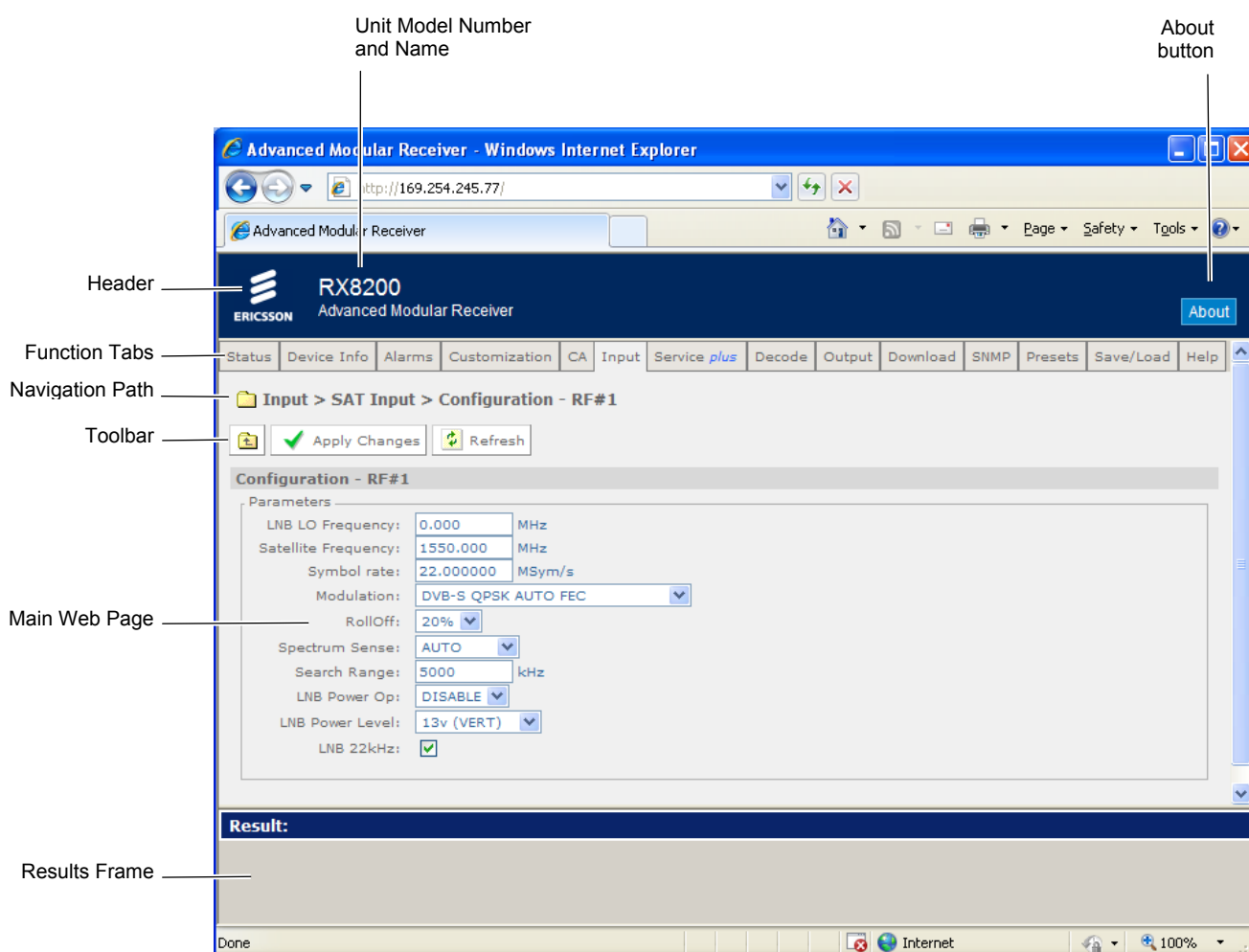


Figure 5.1 Web Page Overview

- **Header** – The header of the web page displays the Ericsson logo and the unit model number name. At the right-hand side of the header an **About** button which, when clicked, displays an information dialog about the unit, including the software version number. Click the **OK** button to close the dialog.

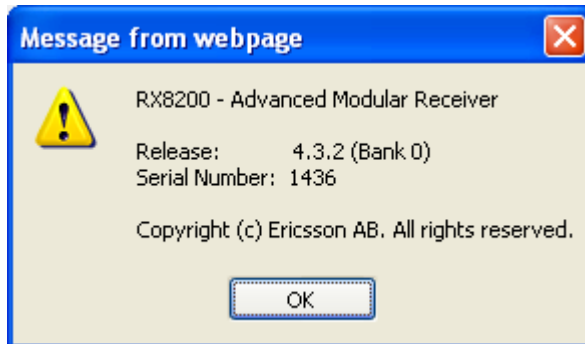


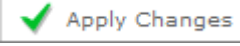









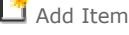



Figure 5.2 About dialog

- **Function Tabs** – The web pages for control and monitoring of specific functions are accessed by selecting the appropriate function tab along the top of each web page. When you switch between tabs, the browser remembers the path for each tab.
- **Navigation Path** – The web pages are organized into a tree-like structure, like the directory on a computer. The current complete navigation path is always displayed at the top of the web page, which shows the route taken to the currently displayed web page. To return to a higher level (parent) web page (folder), simply click on the relevant name link in the Navigation Path or click on the Top Level Folder in the toolbar.
- **Toolbar** – The toolbar provides various tools/buttons, depending on the web page selected. Various icons, buttons and symbols can appear in the Toolbar, depending on the web page displayed. See *Table 5.1* for details.
- **Main Web Page** – The main content of the web page (or folder) displays the parameters and their current values. Some parameters will be modifiable by overtyping, by selecting an option from a drop-down menu or by placing a tick in a checkbox, as required. Any changes made will not be applied to the unit until the **Apply Changes** button is clicked in the Toolbar.
- **Results Frame** – The result frame at the bottom of the screen shows the results of command actions. **SUCCESS**, **SUCCESS with warnings** or **ERROR** may be displayed, with further details as appropriate for more complex actions.

The following table lists the various icons, buttons and other symbols used in these web pages.

Table 5.1 Web Page Icons, Buttons and Symbols

Item	Description
Navigation	
	Click on this icon to navigate one step up (to the parent folder) in the folder structure.
	Click on this icon to navigate back to the previous view. This icon typically appears when you are editing a single record in a table or a sub-table.
	Click on this button to apply the changes you have made to parameters in this web page. The result of your actions will be shown in the result window below.
	Click on this button to refresh the current screen. This may be useful if the screen contains read-only status parameters such as measured bitrates.
Parameter Presentation	
	The folder icon is used to represent a web page in the system. A folder is similar to a directory in a file system. The button shown left indicates that a further sub-folder or lower-level web page is available by clicking on the button.
	This icon is used to represent a table. A table normally consists of multiple items, where each item consists of several fields.
	Click on this button to reboot the unit.
Table Operations	
	These buttons are used to navigate a table of data when it is too large to fit into one screen. The symbols are:  go to start  previous screen  next screen  go to end.
	In case you are allowed to add items to a table, press this button to add a new item into the table. You will be taken to the "New item" screen in the table.
	In case you are allowed to delete items from a table, press this button to delete selected items. You select items by clicking the checkboxes in front of each row.
Delete All	Press this button to delete all items in a table. Note that this will delete the entire table, not only the items you may see on the screen at any time.

5.2 Web Pages

5.2.1 Status

To use the receiver Web Browser Interface, the IP address assigned to the receiver control port in the front panel system menu should be entered into the address field of the Web browser.

Provided that the network is correctly configured, the following status page should be automatically loaded and displayed.



Figure 5.3 Status Web Page

This page provides a number of top-level status items:

- **Name** – Shows the configured device name for this product.
- **IP (Internet Protocol) Address #1** – The configured IP address #1 for the product.
- **IP Address #2** – The configured IP address #2 for the product.
- **Current Status** – The current top level alarm status for the Receiver.
- **Current Time** – The time taken from the input Transport Stream.
- **Uptime** – The elapsed time since power-up.
- **Input Status** – The input TS lock status on the decoder.
- **Video Status** – The decode status of the current video stream.

- **Audio Status** – The decode status of the current audio stream.
- **CA (Conditional Access) Status** - The status of the encryption authorizations.
- **Output Feed** – The status of the output.
- **Mode** – Indicates whether unit configuration is active or redundant.

A small window located at the bottom left of the Status Page will show events raised and all the necessary details of those events.

The **About** button, located on the top right-hand side of the Status page shows, when selected, details of the receiver such as software release and serial number.

5.2.2 Device Info

The Device Info page provides access to system level settings of the receiver.

To view this web page, select the **Device Info** tab from the top of the current web page.

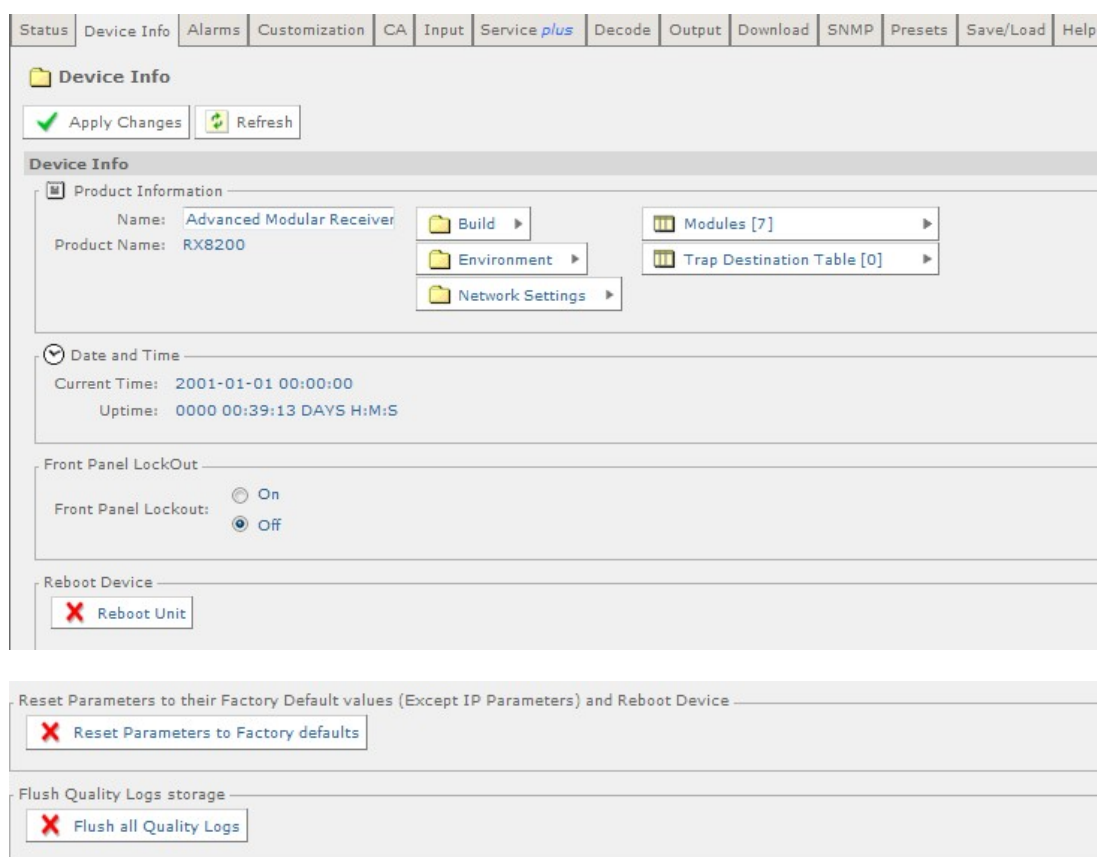


Figure 5.4 Device Info Web Page

The following fields are displayed on this web page:

- **Name** – This field contains a name string that can be assigned by the user. The last saved name is displayed on power-up but may be replaced by the user. The default name is the receiver model name.
- **Product Name** – The name and/or model of the product.
- **Current Time** – The time taken from the input Transport Stream.
- **Uptime** – The elapsed time since power-up.
- **Front Panel Lockout** - Indicates whether the front panel controls are active or inactive.

Three buttons are provided on this page to allow for Rebooting and resetting of the equipment:

- **Reboot Unit** – Selecting this button will perform a hardware reset of the receiver.
- **Reset Parameters to Factory Defaults** – Selecting this button will set all parameters to their factory default values (except for the network IP parameters e.g. IP address and subnet mask) and perform a hardware reset of the receiver.
- **Flush all Quality Logs** – Selecting this button will flush all the quality logs.

A number of further web pages are accessible from the Device Info page and these are described in the following paragraphs.

5.2.2.1 Device Info > Build

This page gives details of the build and version information for the equipment.

To view this page, select the **Build** button from the Device Info Page.



Figure 5.5 Device Info > Build Web Page

There are no fields on this page, which may be edited by the user.

5.2.2.2 Device Info > Environment

This page gives details of the physical environment of the Equipment i.e. temperature and fan speeds.

To view this page, select the **Environment** button from the Device Info Page.

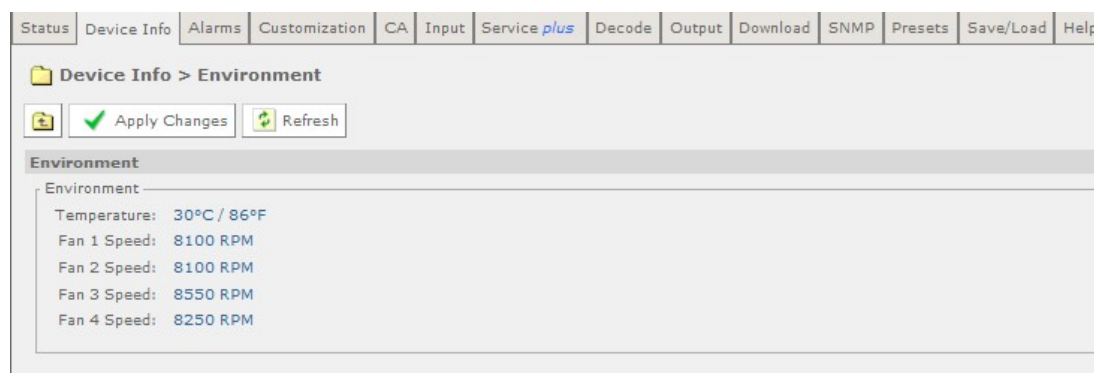


Figure 5.6 Device Info > Environment Web Page

There are no fields on this page, which may be edited by the user. Selecting the **Refresh** button will ensure that the latest information is displayed from the current values of the equipment.

5.2.2.3 Device Info > Network Settings

This page gives details of settings for control 1 and 2 networks.

To view this page, select the **Network Settings** button from the Device Info Page.

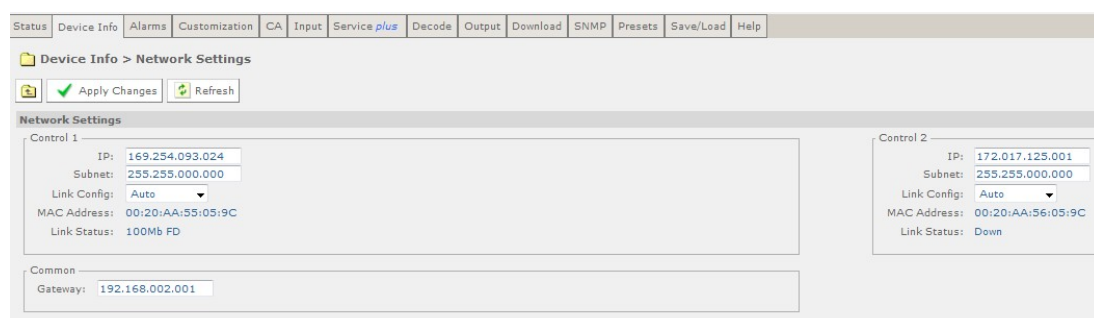


Figure 5.7 Device Info > Network Settings Web Page

Fields on this page allow the user to enter values for IP address and Subnet and to select an appropriate value for Link Configuration from a drop down menu. These values may be entered or updated for Control 1 and 2 networks. The Gateway address, which is common for both networks, may be entered or updated in the appropriate field.

Any changes made to the current values may be incorporated into this page by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.2.4 Device Info > Modules

This page gives a list of all modules contained in the equipment chassis.

To view this page, select the Modules button from the Device Info Page.

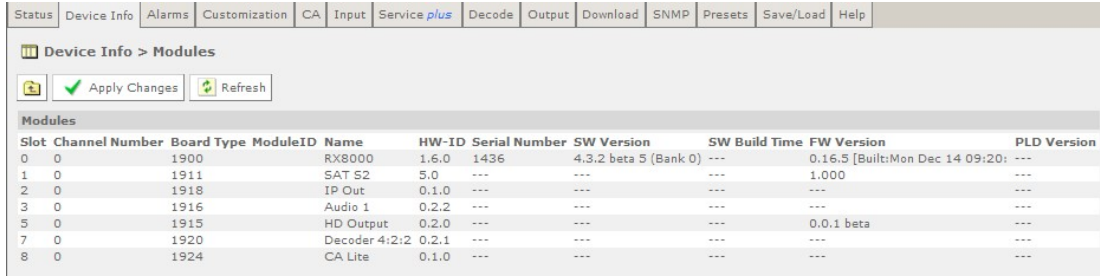


Figure 5.8 Device Info > Modules Web Page

There are no fields on this page which may be edited by the user. Selecting the **Refresh** button will ensure that the latest information is displayed from the current values of the equipment.

5.2.2.5 Device Info > Trap Destination Table

When an alarm occurs within the equipment, an SNMP Trap message is sent to all destinations and a list of these destinations is given in this web page.

To view this page, select the **Trap Destination** button from the Device Info page.



Figure 5.9 Device Info > Trap Destination Table Web Page

To add a new item to this page:

1. Select the **Add Item** button. The following page is displayed:



Figure 5.10 Trap Destination Table > Add Item Web Page

2. Enter the required values in the appropriate fields or select values from the drop-down menus.
3. Select the **Add** button to add the item to the Trap Destination table.

4. Select the **Back** button to return to the Device Info > Trap Destination Table web page.
5. Select the **Apply Changes** button to confirm additions.

Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.3 Alarms

The alarms Page provides access to the alarms settings for the receiver.

To view this page, select the **Alarms** tab from the top of the current web page.

Status	Device Info	Alarms	Customization	CA	Input	Service <i>plus</i>	Decode	Output	Download	SNMP	Presets	Save/Load	Help
<div style="border: 1px solid #ccc; padding: 5px;"> <div style="display: flex; justify-content: space-between; align-items: center;"> Alarms </div> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> Apply Changes Refresh </div> <div style="border-top: 1px solid #ccc; padding-top: 5px;"> <p>Alarms</p> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <p>Input</p> <p>No TS Lock: No Alarm ▼</p> <p>No TS Lock (relay mapping): <input type="checkbox"/></p> <p>No Primary Input Lock: Set Alarm ▼</p> <p>No Primary Input Lock (relay mapping): <input type="checkbox"/></p> <p>Monitor Inactive Input: <input checked="" type="checkbox"/></p> <p>No Secondary Input Lock: Set Alarm ▼</p> <p>No Secondary Input Lock (relay mapping): <input type="checkbox"/></p> <p>C/N Margin: No Alarm ▼</p> <p>C/N Margin (min value): <input type="text" value="1"/> dB</p> <p>C/N Margin (relay mapping): <input type="checkbox"/></p> </div> <div style="border-bottom: 1px solid #ccc; padding-bottom: 5px;"> <p>Output</p> <p>IPO Ethernet If 1 Down : No Alarm ▼</p> <p>IPO Ethernet If 1 Down (relay mapping): <input type="checkbox"/></p> <p>IPO Ethernet If 2 Down : No Alarm ▼</p> <p>IPO Ethernet If 2 Down (relay mapping): <input type="checkbox"/></p> </div> <div style="padding-bottom: 5px;"> <p>Service</p> <p>Video Not Running: No Alarm ▼</p> <p>Video Not Running (relay mapping): <input type="checkbox"/></p> <p>Decoder 1 Not Running: No Alarm ▼</p> <p>Decoder 1 Not Running (relay mapping): <input type="checkbox"/></p> <p>Decoder 2 Not Running: No Alarm ▼</p> <p>Decoder 2 Not Running (relay mapping): <input type="checkbox"/></p> <p>Decoder 3 Not Running: No Alarm ▼</p> <p>Decoder 3 Not Running (relay mapping): <input type="checkbox"/></p> <p>Decoder 4 Not Running: No Alarm ▼</p> <p>Decoder 4 Not Running (relay mapping): <input type="checkbox"/></p> <p>Decoder 5 Not Running: No Alarm ▼</p> <p>Decoder 5 Not Running (relay mapping): <input type="checkbox"/></p> <p>Decoder 6 Not Running: No Alarm ▼</p> <p>Decoder 6 Not Running (relay mapping): <input type="checkbox"/></p> <p>Closed Caption Fail: No Alarm ▼</p> <p>Closed Caption Fail (relay mapping): <input type="checkbox"/></p> <p>CA Error: No Alarm ▼</p> <p>CA Error (relay mapping): <input type="checkbox"/></p> </div> </div> </div>													

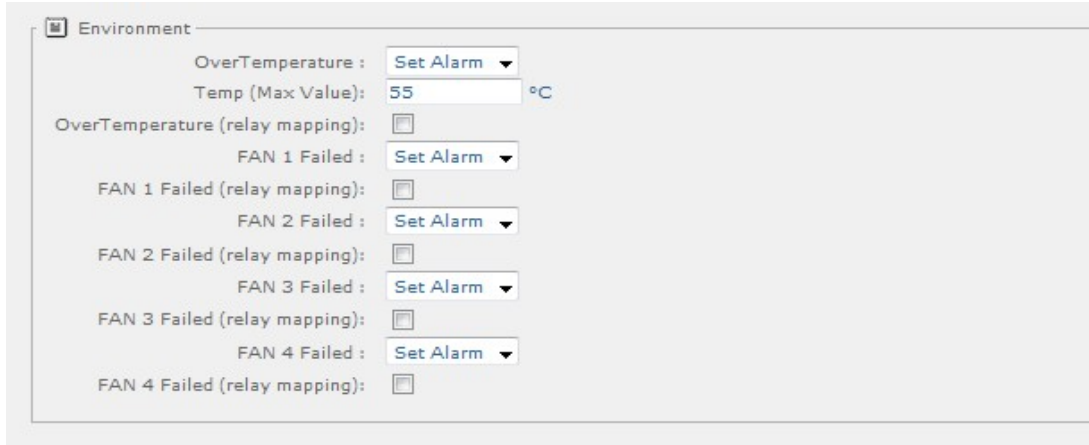


Figure 5.11 Alarms Web Page

The contents of this page are composed mainly of fields with drop-down menus which allow the setting or masking of various alarms and check boxes which can be used to activate relay mapping. Two of the alarm fields, namely C/N (Carrier-to-Noise) Margin and Over Temperature also have associated entry fields which allow the user to enter a value which, if exceeded, will activate the alarm.

Setting an alarm enables the alarm to be shown on the alarm LED, the alarm status displays and is recorded in the alarm log.

Any changes which are made to the alarm settings shown may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.4 Customization

The Customization web page allows the user to view which licenses are enabled on the equipment and to enable further licenses as purchased by entering the custom key provided.

To view this page, select the **Customization** tab from the top of the current web page.

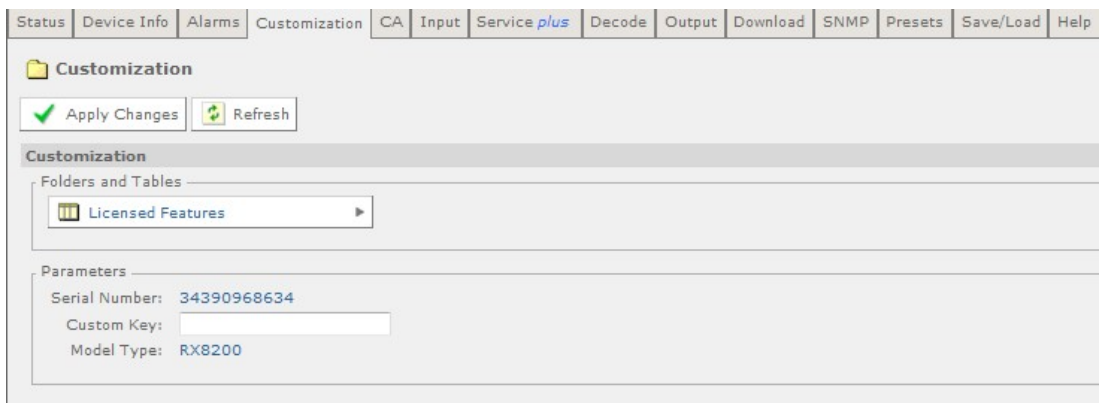


Figure 5.12 Customization Web Page

The **Parameters** section of this web page allows the user to enable further licenses by entering the custom key provided (when a license is purchased) in the **Custom Key** field. Once the custom key has been entered, the unit will need to be rebooted for the key to become effective.

The custom key is a 22 decimal digit number. License keys are supplied by Ericsson Customer Support upon requirement for a new licensed feature.

Any changes, which are made to the Licensed Features shown, may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

The **Licensed Features** button allows the user to view which licenses are currently enabled.

5.2.4.1 Licensed Features

To view this web page, select the **Licensed Features** button.

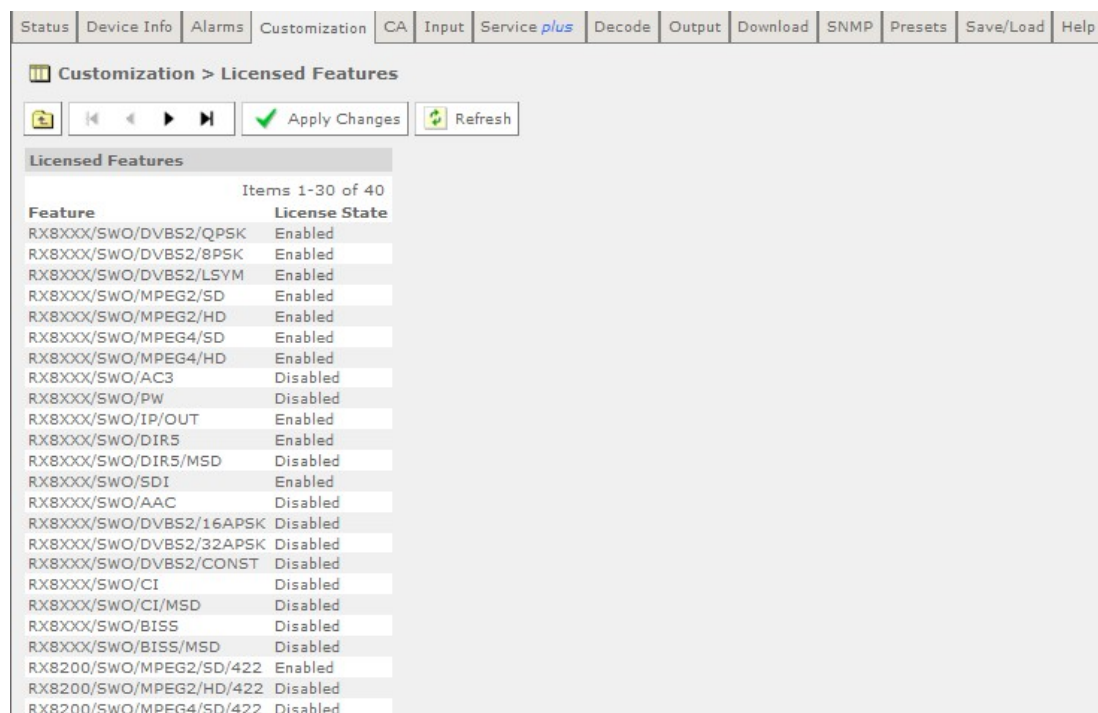


Figure 5.13 Licensed Features Web Page

In this page the back and forward buttons allow access to the complete list of available licenses:



Any changes which are made to the Licensed Features shown may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.5 CA

This page allows viewing of the Conditional Access (CA) Service Status and activation of various Director controls.

To view this page, select the **CA** tab from the top of the current web page.

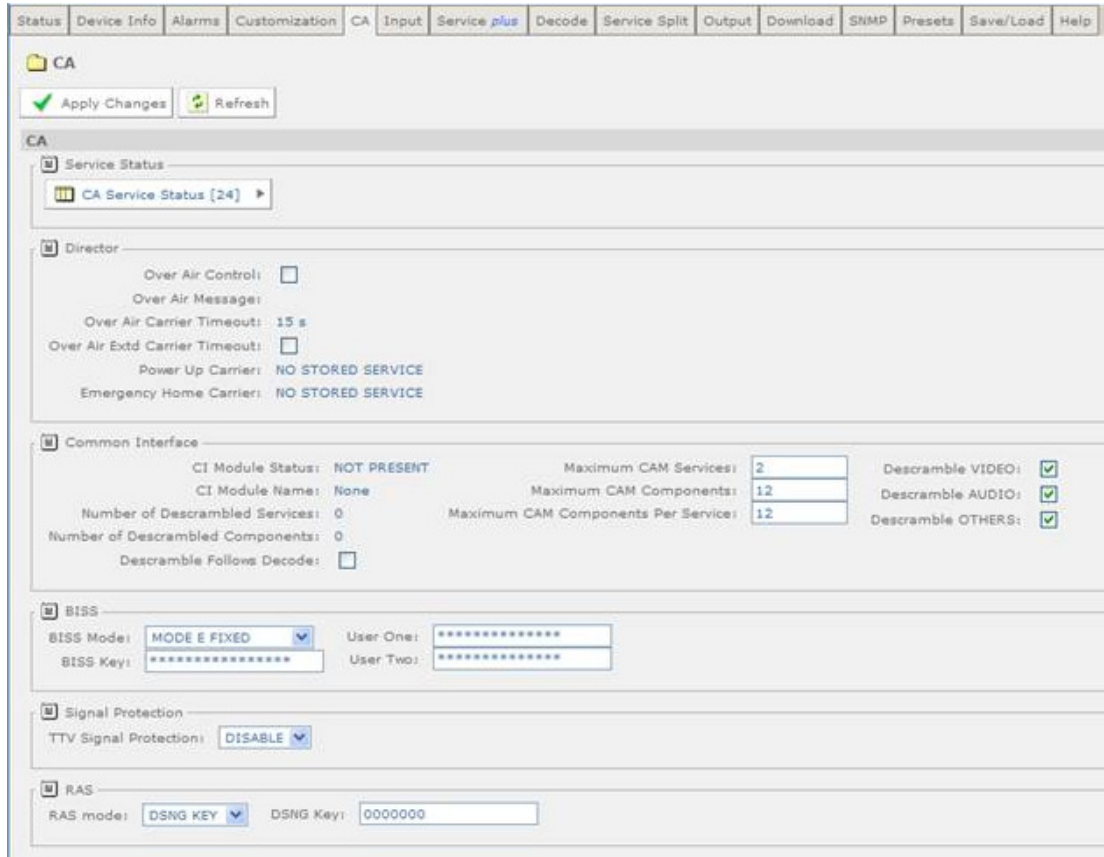


Figure 5.14 CA Web Page

The **Director** section of this web page allows the user to view the current settings for the Director and to activate or deactivate various functions as required.

The **BISS** section of this web page allows the user to view and modify the settings for Basic Interoperable Scrambling System (BISS). These are Mode 1, Mode E Fixed, Mode E Ericsson, Mode E User One, Mode E User Two. Mode 1 uses an unencrypted key for the BISS key. Mode E uses an encrypted key, which uses either an internal code word or User One or User Two to decrypt, depending on the mode.

The **Signal Protection** section of this web page allows the user to enable or disable signal protection.

The **RAS** section of this web page allows the user to select Digital Satellite News Gathering (DSNG) or Fixed Key mode and input a 7-digit DSNG key.

Any changes which are made to the CA page functions may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

The **CA Service Status** button allows the user to view the Conditional Access Status Table.

5.2.5.1 CA Service Status

To view this page, select the **CA Service Status** button on the CA page.

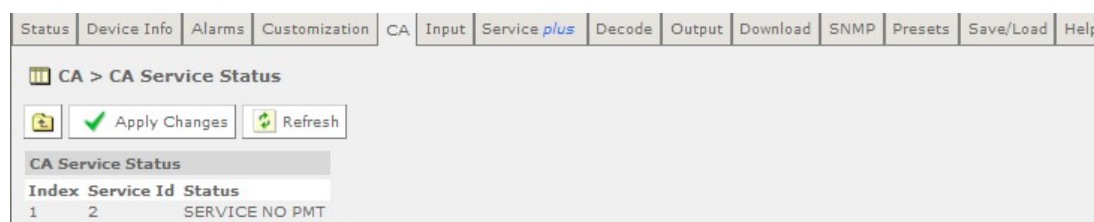


Figure 5.15 CA Service Status Web Page

There are no fields which may be edited by the user on this page. Selecting the **Refresh** button will ensure that the latest information is displayed from the current values of the equipment.

5.2.6 Input Main Page (Satellite Input Card RX8200/HWO/DVBS2 fitted)

This page allows the user to view and edit the various inputs to the receiver. To view this page, select the Input tab from the top of the current web page.

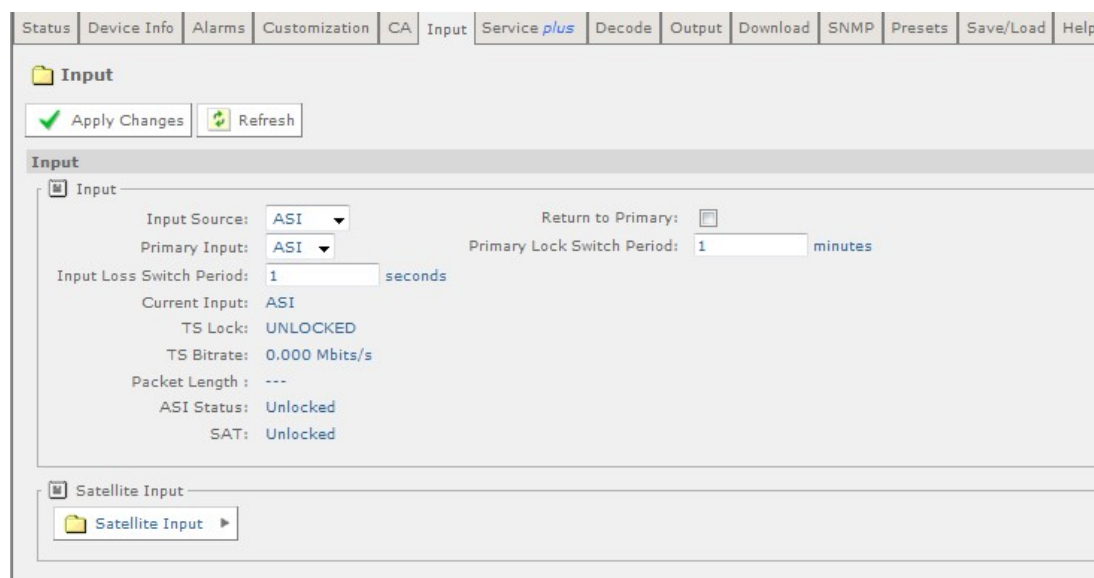


Figure 5.16 Input Main Page (Satellite Input Card fitted)

The following user-editable fields are displayed on this web page:

- **Input Source** – allows a choice of Source Selection Mode from the drop-down menu.
- **Primary Input** – allows selection of the primary input to the receiver.
- **Input Loss Switch Period** – allows the user to define a period, in seconds, before the unit switches to the alternate input (either Input Source or Primary).
- **Return to Primary** – checking this box specifies that when the Primary is locked the unit will always return to the Primary after a timeout period.
- **Primary Lock Switch Period** - allows the user to define a period, in minutes, before switching back to Primary, if Primary is not currently selected.

Any changes which are made to the Input page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

The **Satellite Input** button gives access to the Satellite Input folder web page.

5.2.6.1 Input > SAT Input

To view this web page, select the **Satellite Input** button from the Input page.

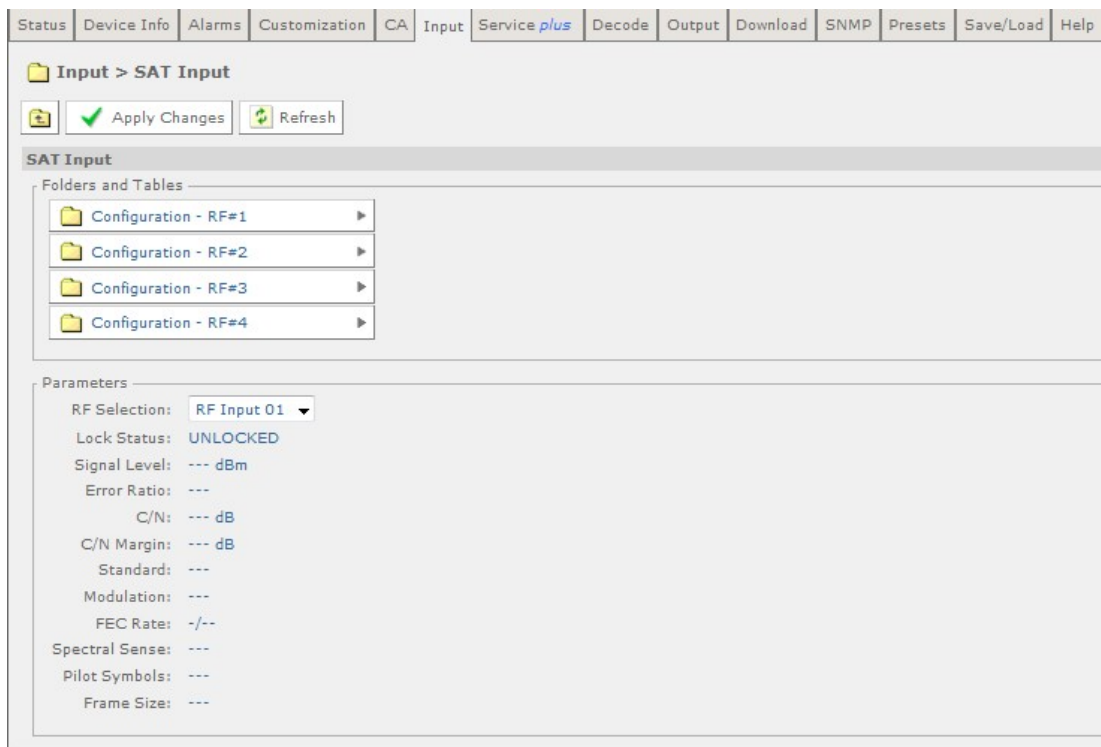


Figure 5.17 Satellite Input Web Page

The only field which may be edited by the user is the **RF Selection** field which allows selection of the appropriate RF Input.

There are also four **Configuration** buttons which allow the viewing and setting of the tuning parameters for the four possible RF inputs.

Any changes which are made to the Satellite Input page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.6.2 Input > SAT Input > Configuration RF # 1-4

To view the Configuration settings for the chosen input, select the appropriate **Configuration** button.

The screenshot shows a web interface for configuring RF input #1. At the top, there is a navigation bar with tabs: Status, Device Info, Alarms, Customization, CA, Input, Service plus, Decode, Output, Download, SNMP, Presets, Save/Load, and Help. Below the navigation bar, the page title is "Input > SAT Input > Configuration - RF#1". There are two buttons: "Apply Changes" (with a green checkmark) and "Refresh" (with a green circular arrow). The main content area is titled "Configuration - RF#1" and contains a "Parameters" section with the following settings:

- LNB LO Frequency: 0.000 MHz
- Satellite Frequency: 1550.000 MHz
- Symbol rate: 22.000000 MSym/s
- Modulation: DVB-S QPSK AUTO FEC (dropdown menu)
- RollOff: 20% (dropdown menu)
- Spectrum Sense: AUTO (dropdown menu)
- Search Range: 5000 kHz
- LNB Power Op: DISABLE (dropdown menu)
- LNB Power Level: 13v (VERT) (dropdown menu)
- LNB 22kHz:

Figure 5.18 Configuration RF#1 Web Page

The following user-editable fields are displayed on this page:

- **LNB (Low-Noise Block Converter) LO (Local Oscillator) Frequency** – allows the input of a frequency in MHz, in steps of 1 kHz.
- **Satellite Frequency** – allows the input of a frequency in MHz, in steps of 1 kHz.
- **Symbol Rate** – allows the input of a value in MSym/s.
- **Modulation** – allows the selection of a modulation type from a drop-down menu. Available modulation types are license-dependant.
- **RollOff** – allows the selection of a rolloff rate from a drop-down menu.
- **Spectrum Sense** – allows the selection of the spectrum sense from a drop-down menu.
- **Search Range** – allows the input of a range in kHz.
- **LNB Power Op** – allows the user to enable/disable the LNB Power Op.
- **LNB Power Level** – allows the selection of the LNB Power Level from a drop-down menu. This setting is applied only when the LNB Power Op field is set to ENABLE.

- **LNB 22 kHz** – this check box allows the LNB 22 kHz signal to be activated.

Any changes which are made to the Configuration page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.7 Input Main Page (I/P Input Card RX8XX/HWO/GIGE fitted)

This page allows the user to view and edit the various inputs to the receiver. To view this page, select the Input tab from the top of the current web page.

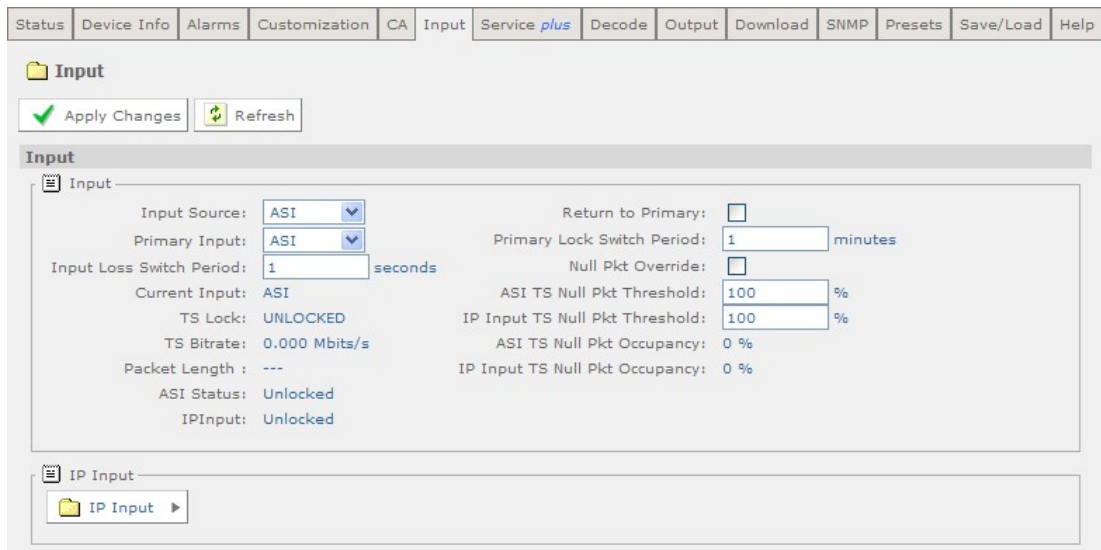


Figure 5.19 Input Main Page (IP Card fitted)

The following user-editable fields are displayed on this web page:

- **Input Source** – allows a choice of Source Selection Mode from the drop-down menu.
- **Primary Input** – allows selection of the primary input to the receiver.
- **Input Loss Switch Period** – allows the user to define a period, in seconds, before the unit switches to the alternate input (either Input Source or Primary).
- **Return to Primary** – checking this box specifies that when the Primary is locked the unit will always return to the Primary after a timeout period.
- **Primary Lock Switch Period** - allows the user to define a period, in minutes, before switching back to Primary, if Primary is not currently selected.
- **Null Pkt Override** – checking this box causes the input to switch when the unit detects a Transport Stream with more null packets than are defined in the percentage threshold item.
- **ASI TS Null Pkt Threshold** – allows the user to determine the ASI null packet occupancy percentage before switch.

- **IP Input TS Null Pkt Threshold** – allows the user to determine the IP Input null packet occupancy percentage before switch. This option is available for all inputs (G.703, S2, etc.)

An **IP Input button** is provided on this page which gives access to a further web page. This is described in the following section.

Any changes which are made to the Input page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.7.1

Input > IP Input

This page allows the user to view and edit the various IP inputs to the receiver. To view this page, select the IP Input button from the Input web page.

Status	Device Info	Alarms	Customization	CA	Input	Service <i>plus</i>	Decode	Output	Download	SNMP	Presets	Save/Load	Help
--------	-------------	--------	---------------	----	-------	---------------------	--------	--------	----------	------	---------	-----------	------

Input > IP Input

IP Input

Alerts: Both ports link down, Both ports no data, Port 1 link down, ...

IP status

Last IP Received: 000.000.000.000	MDI Delay Factor: 0.000 ms	Network Utilisation 1: 0 %
Number of Columns: N/A	FIFO overflow count: 10	Network Utilisation 2: 0 %
Number of Rows: N/A	MDI Media Loss Rate: 0.000 pkts/sec	Rx Up Time 1: 960.11 sec
TS packets per UDP frame: 7	FEC Latency: 0 ms	Rx Up Time 2: 960.22 sec
Encapsulation: UDP ONLY	Current Port (status): Port 1	Current Buffer Level: 0 ms
IP Packets Received: 0	Software version: 0.13	
Corrected Packet Count: 0	Firmware sw version: 0.77	
Lost Packet Count: 0	CPLD sw version: 1.2	
IP Jitter: 10		

IP interface

IP Address 1: 169.254.093.024	IP Address 2: 000.000.000.000
Subnet Mask 1: 255.255.000.000	Subnet Mask 2: 255.255.255.000
Default Gateway 1: 192.168.000.001	Default Gateway 2: 192.168.000.001
VLAN Tag 1: 5500	VLAN Tag 2: 5500
VLAN Enable 1: Disable	VLAN Enable 2: Disable
ICMP Enable 1: Enable	ICMP Enable 2: Enable
Port 1 IGMP Version: 3	Port 2 IGMP Version: 3
SNMP Enable: Disable	IP params to XML output: Disable

Card config settings

ARP Enable 1: Enable	ARP Enable 2: Enable
Ethernet Line Mode 1: AUTO	Ethernet Line Mode 2: AUTO
Current Line Mode 1: Link down	Current Line Mode 2: Link down
Duplex 1: Link down	Duplex 2: Link down
MAC Address 1: 00:20:AA:4f:06:1b	MAC Address 2: 00:20:AA:4f:06:1b
MAC Mode: Same	

Figure 5.20 Input > IP Input Web Page

The following user-editable fields are displayed on this web page:

User-editable fields in the IP Interface Section:

- **IP Address 1/2** – allows the user to input the relevant IP address.
- **Subnet Mask 1/2** – allows the user to input the relevant Subnet Mask address.
- **Default Gateway 1/2** – allows the user to input the relevant Default Gateway address.
- **VLAN (Virtual Local Area Network) Tag 1/2** - allows the user to input the relevant VLAN Tag Value.
- **VLAN Enable 1/2** - allows the user to enable/disable the VLAN.
- **ICMP (Internet Control Message Protocol) Enable 1/2** – allows the user to enable/disable network 1/2 to ping the input (and Port 1/2).
- **SNMP Enable** – allows the user to enable/disable the SNMP facility via the input port.
- **IP params to XML output** – allows the user to enable/disable the sending of the IP parameters out as XML from the input port.

User-editable fields in the Card Config Settings section:

- **ARP Enable 1/2** – allows the user to enable/disable the ARP on Network 1/2.
- **Ethernet Line Mode 1/2** – allows the user to set the Ethernet line mode for Network Interface 1/2.
- **MAC Mode** – allows the user to change the current MAC Mode.

User-editable fields in the Listening Stream Section:

- **FEC Enable** – allows the user to enable/disable FEC. This facility is only available when FEC is licensed.

- **Mcast IP Address 1/2** – allows the user to set the Multicast IP Address for the primary stream on Port 1/2.
- **Source IP Address 1/2** – allows the user to set the Source IP Address for the primary stream on Port 1/2.
- **UDP Port 1/2** – allows the user to set the UDP Port Address for the primary stream on Port 1/2.
- **Column Port 1/2** – allows the user to set the Column Port Address for the primary stream on Port 1/2.
- **Row Port 1/2** – allows the user to set the Row Port Address for the primary stream on Port 1/2.
- **De-Jitter Buffer Level** – allows the user to enter a value in milliseconds.
- **Unicast Enable 1/2** – allows the user to enable Unicast for Port 1/2.

User-editable fields in the Redundancy Config Setting:

- **Use Input Ports** – allows the user to select the appropriate input port.
- **Auto Revert Delay** – allows the user to enter a value in seconds.

Two buttons, **Clear ARP 1** and **Clear ARP 2**, are provided to allow the user to clear the ARP cache for port 1 or 2. If these are selected the following window is displayed:



Figure 5.21 Clear Arp Confirmation Window

If **OK** is selected, the Input>I/P Input page is displayed showing that the operation has been successful.

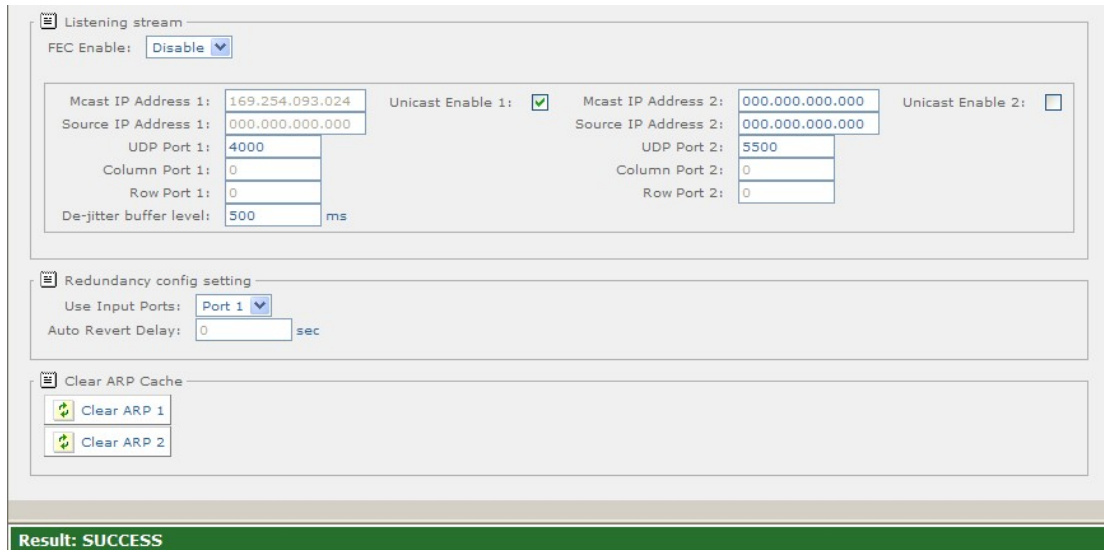


Figure 5.22 Clear ARP Success Window

Any changes which are made to the Input>IP Input page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.8 Input (8VSB Input Card RX8320/HWO/8VSB fitted)

This page allows the user to view and edit the various inputs to the receiver. To view this page, select the Input tab from the top of the current web page.

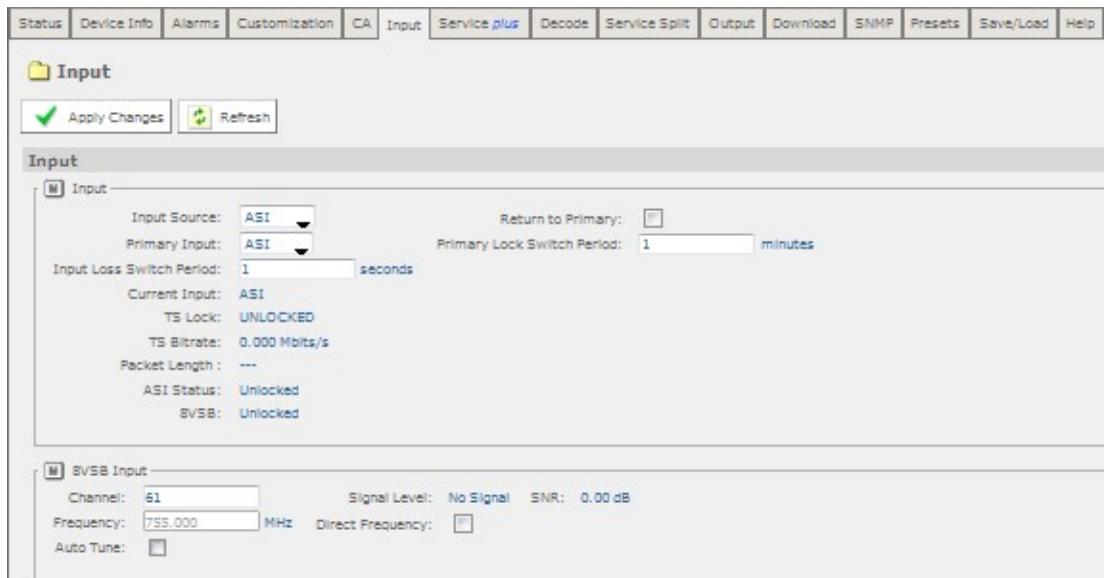


Figure 5.23 Input Main Page (8VSB Input Card fitted)

User-editable fields in the Input Section:

- **Input Source** – allows a choice of Source Selection Mode from the drop-down menu.

- **Primary Input** – allows selection of the primary input to the receiver.
- **Input Loss Switch Period** – allows the user to define a period, in seconds, before the unit switches to the alternate input (either Input Source or Primary).
- **Return to Primary** – checking this box specifies that when the Primary is locked the unit will always return to the Primary after a timeout period.
- **Primary Lock Switch Period** - allows the user to define a period, in minutes, before switching back to Primary, if Primary is not currently selected.

User-editable fields in the 8VSB Section:

- **Channel** – allows the user to define a channel to monitor.
- **Frequency** – Displays the frequency of the displayed channel.
- **Direct Frequency** – checking this box enables the Direct Frequency option.
- **Auto Tune** – checking this box enables the Auto Tune option.

Any changes which are made to the Input page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.9 Input (G.703 ATM Input Card RX8XXX/HWO/G.703 fitted)

This page allows the user to view and edit the various inputs to the receiver. To view this page, select the Input tab from the top of the current web page.

Figure 5.24 Input Main Page (G.703 ATM Input Card fitted)

The following user-editable fields are displayed on this web page:

User-editable fields in the Input Section:

- **Input source** – allows a choice of Source Selection from the drop-down menu.
- **Primary Input** – allows selection of the primary input to the receiver.
- **Input Loss Switch Period** – allows the user to define a period, in seconds, before the unit switches to the alternate input (either Input Source or Primary).
- **Return to Primary** – checking this box specifies that when the Primary is locked the unit will always return to the Primary after a timeout period.
- **Primary Lock Switch Period** - allows the user to define a period, in minutes, before switching back to Primary, if Primary is not currently selected.

Any changes which are made to the Input page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

There is a G.703 button on this page which gives access to a further web page. This is described in the following section.

5.2.9.1 Input > G.703 Input

To view this web page, select the G.703 button from the previous web page.

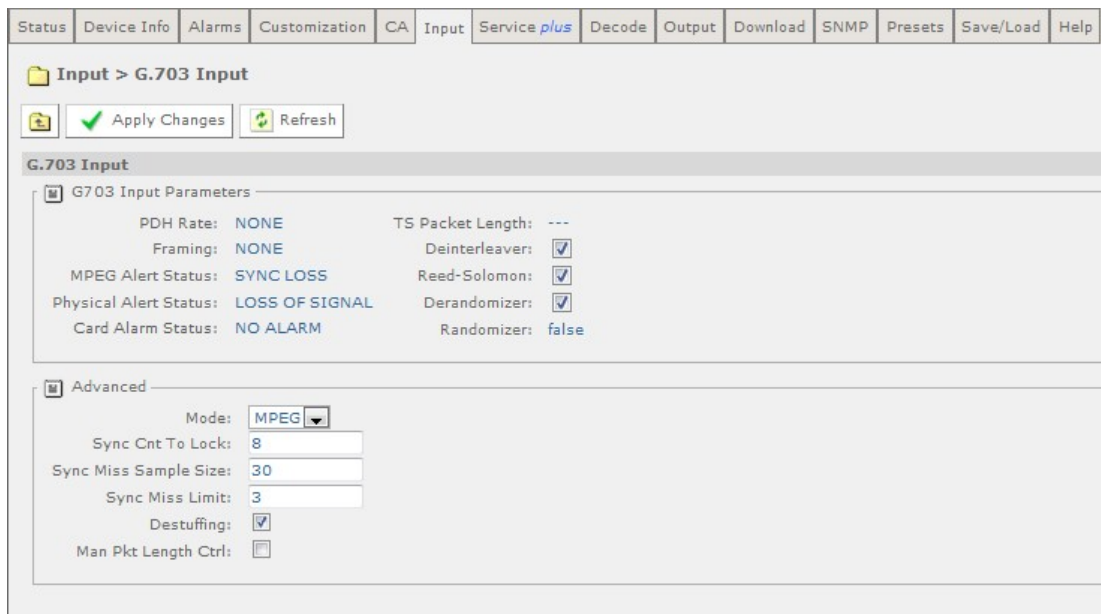


Figure 5.25 Input > G.703 Input Web Page

The following user-editable fields are displayed on this web page:

User-editable fields in the G.703 Input Section:

- **Deinterleaver** – checking this box enables the Deinterleaver function.
- **Reed-Solomon** – checking this box enables the Reed-Solomon function.

- **Derandomizer** – checking this box enables the Derandomizer function.

User-editable fields in the Advanced Section:

- **MPEG** – allows the selection of the input mode from a drop-down menu.
- **Sync Cnt to Lock** – allows the user to input an appropriate value.
- **Sync Miss Limit** – allows the user to input an appropriate value.
- **Destuffing** – checking this box enables the destuffing function.
- **Man Pkt Length Ctrl** - checking this box enables this function.

Any changes which are made to the Input page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.10

Service Plus

This page allows access and editing of the various encryption and encoding services available to the receiver.

To view this page, select the **Service Plus** tab from the top of the current web page.

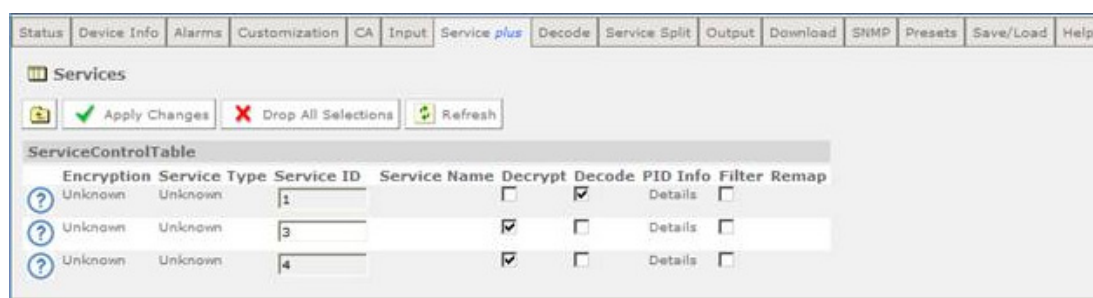


Figure 5.26 Service Plus Web Page

In the Service Control Table the only fields which may be edited by the user are the **Decrypt** and **Decode** checkboxes. Further details of the **PID Info** can be viewed by placing the cursor over the word **Details**.

To edit the service selection:

1. Go to the **Output** tab page to select a filter mode, a bit rate type and desired bit rate, if in CBR mode.
2. Choose a service to decode by placing a tick in the relevant **Decode** checkbox.

Note: This equipment is a single-service Decoder. Only 1 box may be selected by placing a tick in the **Decode** checkbox.

3. If decryption is required place a tick in the relevant **Decrypt** checkbox. If MSD license is selected, more than one MSD checkbox can be selected.

4. If the MSD license is selected, and service filter mode is set to 'Multiservice' in the **Output** tab, the services to be fitted can be added by ticking the filter checkbox.
5. If service filter mode is set to 'Remap' in the **Output** tab, service PIDs may be remapped by selecting 'remap config' under PID info. New PIDs for each available components may be entered on the 'Remap to PID' box.

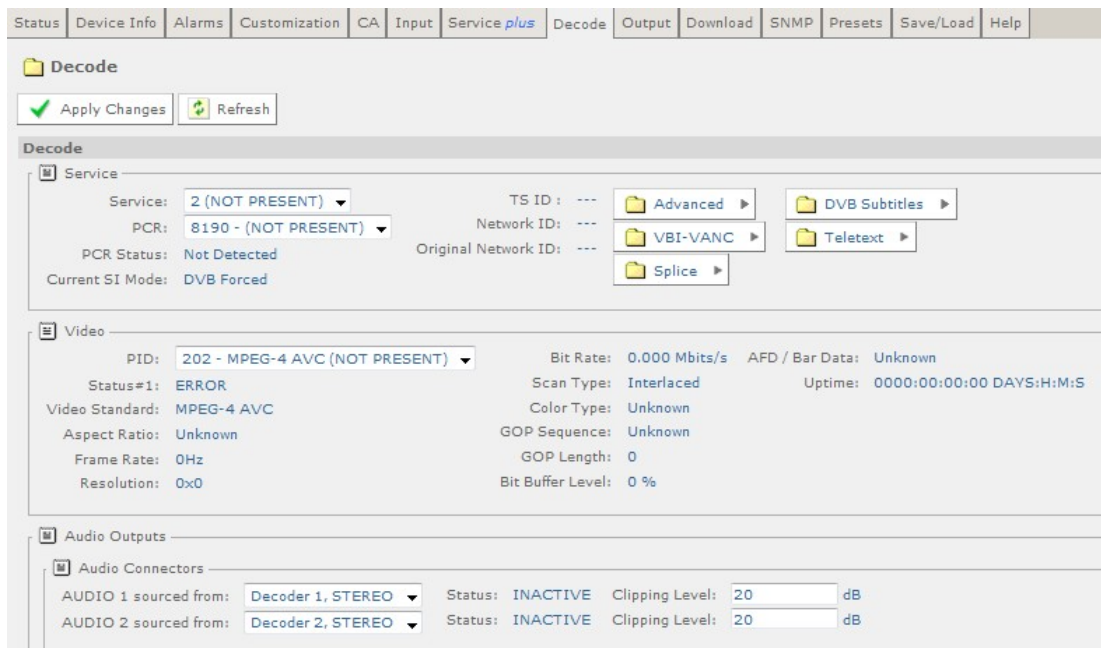
Other details about the service are available by hovering over the relevant table column. Information is presented as a tooltip.

Any changes which are made to the Service *Plus* page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.11 Decode

This page allows access to the video, audio and decoding functions of the receiver.

To view this page, select the **Decode** tab from the top of the current page.



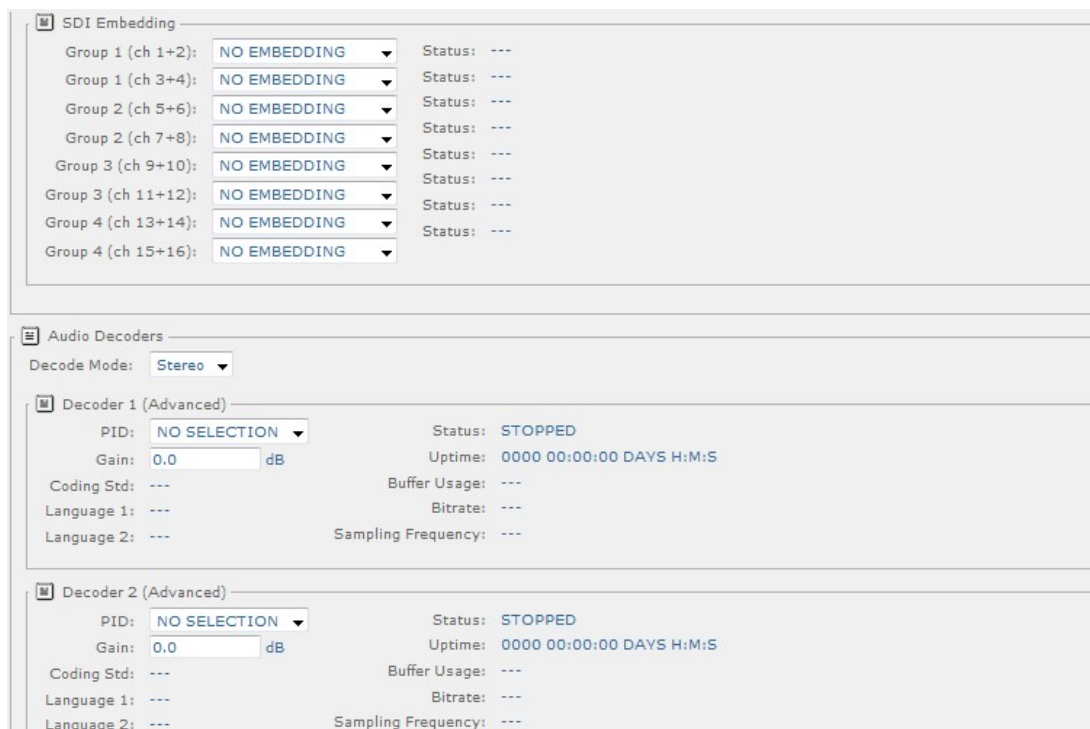


Figure 5.27 Decode Web Page

The following user-editable fields are displayed on this page.

User-editable fields in the Service section:

- **Service** – allows the selection of the decode service is to be used from a drop-down menu
- **PCR** - allows the selection of the PCR to be used from a drop-down menu. By default, this is the PCR of the selected decode Service.

User-editable fields in the Video Section:

- **PID (Program ID)** - allows the selection of the PID to be used from a drop-down menu.

User-editable fields in the Audio Output section (only available when an Audio Card is fitted):

- **Audio 1/2 sourced from** – allows the selection of the source of Audio 1 from a drop-down menu. Up to Audio 3/4 sources may be selected if 2 Audio Cards are fitted.
- **Clipping Level** – allows the input of the clipping level of the audio source in dB.

User-editable fields in the SDI Embedding section (licensed feature):

- **Group 1-4** – allows the selection of the group from a drop-down menu.

User-editable fields in the Audio Decoders section:

- **Decode Mode** – allows the selection of the decode mode from a drop-down menu.

User-editable fields in the Decoders 1-6 sections (number of audio decoders is license and model dependent):

- **PID** – allows the selection of an PID audio for decode from a drop-down menu.
- **Gain** – allows the input of a value in dB.

Any changes which are made to the Decode page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

There are a number of buttons on this page which give access to further web pages. These are described in the following sections.

5.2.11.1 Decode > Advanced

This page gives access to more advanced video and audio parameters. To view this page, select the **Advanced** button from the Decode Page.

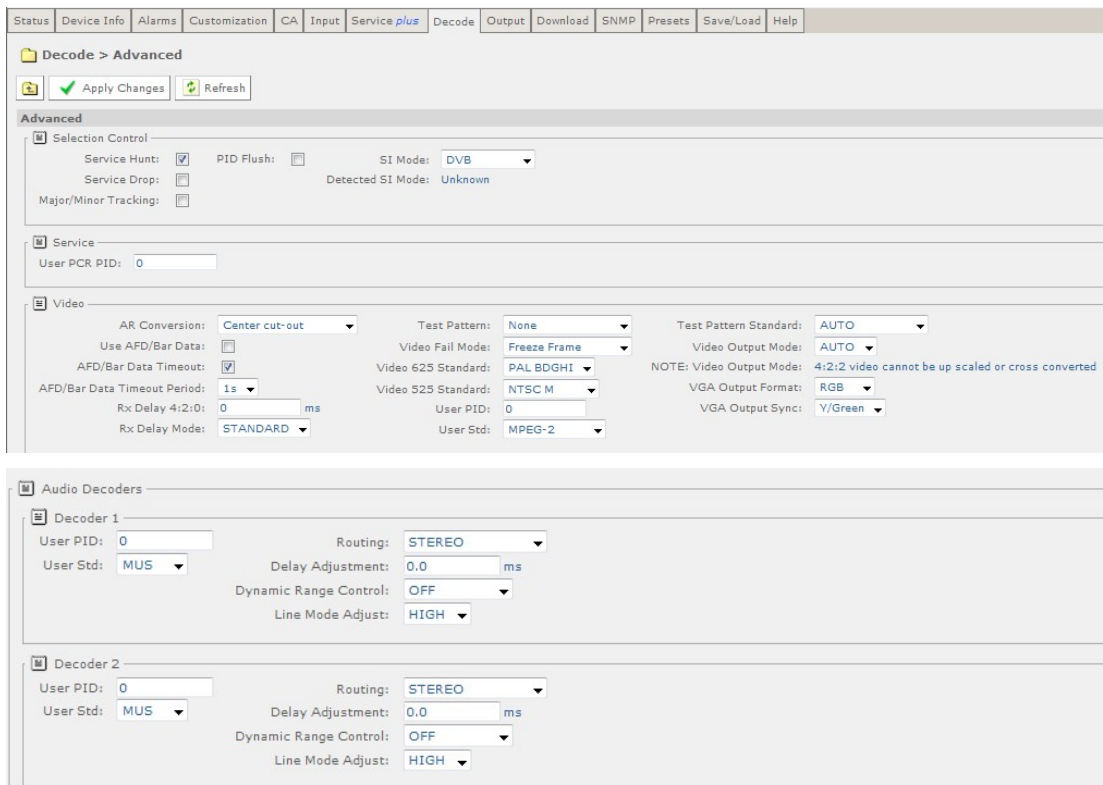


Figure 5.28 Decode > Advanced Web Page

The following user-editable fields are displayed on this page.

User-editable fields in the Selection Control section:

- **Service Hunt** – In this mode, upon the loss of a service the unit will select the first available service from the service list.
- **Service Drop** – In this mode, if a service is lost its selection data will be dropped such that the service will not be selected again upon reacquisition.
- **Major/Minor Tracking** – In this mode, the service will be selected/maintained using the major and minor channels referenced from the VCT.
- **PID Flush** – Checking this box will allow removing the component selections from the drop-down list if NOT present.
- **SI Mode** – allows selection of auto detect or force DVB or ATSC SI table filtering.
- **Detected SI Mode** – displays the SI mode detected from currently extracted SI tables.

User-editable fields in the Service section:

- **User PCR PID** – allows the input of the current User PCR PID.

User-editable fields in the Video section:

- **AR (Aspect Ratio) Conversion** – allows the selection of the type of aspect ratio conversion required from a drop-down menu.
- **Use AFD/Bar (Active format Description) Data** – checking this box allows the use of AFD/BAR data to automatically perform aspect ratio conversion.
- **AFD/Bar Data Timeout Period** – checking this box will cause the AR conversion to drop to the default setting if AFD/BAR data is not available.
- **RX Delay 4:2:0** – allows the input of a Receiver delay value in the offset range of 0-250 ms.
- **RX Delay Mode** – allows the selection of the Receiver delay mode from a drop-down menu.
- **Test Pattern** - allows the selection of the test pattern displayed from a drop-down menu.
- **Video Fail Mode** - allows the selection of the display shown in the event of video signal failure from a drop-down menu.
- **Video 625 Standard** - allows the selection of the 625 composite video standard from a drop-down menu.
- **Video 525 Standard** - allows the selection of the 525 composite video standard from a drop-down menu.
- **User PID** – allows the input of the user PID for video decoding.
- **User Std** - allows the selection of the user video standard from a drop-down menu.

- **Test Pattern Standard** - allows the selection of the test pattern standard from a drop-down menu.
- **Video Output Mode** - allows the selection of the video output mode from a drop-down menu.

Note: 4:2:2 video cannot be up-scaled or cross-converted on RX8200.

- **VGA Output Format** - allows the selection of the VGA output format from a drop-down menu.
- **VGA Output Sync** - allows the selection of the VGA output sync from a drop-down menu.

User-editable fields in the Audio Section – Decoders 1-6

- **User PID** – allows the input of the user PID for audio decoding.
- **User Std** - allows the selection of the audio standard from a drop-down menu.
- **Routing** – allows the selection of stereo routing mode from a drop-down menu.
- **Delay Adjustment** – allows the input of a delay value in ms.
- **Dynamic Range Control** – allows selection of dynamic range control mode from a drop-down menu.
- **Line Mode Adjust** – allows selection of the level of line mode adjustment from a drop-down menu.

Any changes which are made to the Decode > Advance page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.11.2

Decode > VBI-VANC

This page gives access to Vertical Blanking Interval-Vertical Ancillary Data Space (VBI-VANC) parameters. To view this page, select the **VBI-VANC** button from the Decode page.

Status	Device Info	Alarms	Customization	CA	Input	Service <i>plus</i>	Decode	Output	Download	SNMP	Presets	Save/Load	Help
--------	-------------	--------	---------------	----	-------	---------------------	--------	--------	----------	------	---------	-----------	------

Decode > VBI-VANC

VBI-VANC

VBI

VBI PID:

User PID:

VANC

PID: Enable VANC:

Stream Status: NOT PRESENT

Output Status: STOP

Closed Captions

CC Insertion:

VBI

CC Stream Status: PRESENT Rating Stream Status: NOT PRESENT Rating Value: None

CC Output Status: FAIL Rating Output Status: STOP Rating Insertion:

VANC

VANC CC Stream Status: PRESENT VANC CC Insertion Line:

VANC CC Output Status: INSERTED

AMOL-48 and AMOL-96

AMOL Stream Status: NOT PRESENT AMOL Insertion:

AMOL Output Status: FAIL

TVG

TVG Stream Status: NOT PRESENT TVG Insertion:

TVG Output Status: FAIL

WSS

WSS Stream Status: NOT PRESENT WSS Insertion:

WSS Output Status: FAIL

VITC

VITC Insertion:

VBI

VITC Output Status: STOP

Insertion Line 525: and:

Insertion Line 625: and:

VANC

VANC VITC Output Status: STOP

NTSC Pedestal

NTSC Insertion:

Station ID

VANC Station ID Output Status: STOP Enable Station ID:

VANC Station ID User Name:

AFD/Bar

VANC AFD/Bar Output Status: STOP Enable AFD/Bar:

Figure 5.29 Decode > VBI-VANC Web Page

The following user-editable fields are displayed on this page.

User-editable fields in the VBI section:

- **VBI PID** - allows selection of the VBI PID from the service list via a drop-down menu.
- **User PID** – allows user to input VBI PID.

User-editable fields in the VANC section:

- **PID** - allows input of PID.
- **Enable VANC** – allows enable/disable of VANC data from a drop-down menu.

User-editable fields in the Closed Captions section:

- **CC Insertion** - allows enable/disable of CC insertion from a drop-down menu.
- **VBI Rating Insertion** - allows enable/disable of rating information from a drop-down menu.
- **VANC CC Insertion Line** – allows selection of insertion line from within the vertical blanking interval from a drop-down menu.

User-editable fields from AMOL-48 and AMOL-96 section:

- **AMOL (Automated Measurement of Lineups) Insertion** - allows enable/disable of AMOL insertion from a drop-down menu.

User-editable fields from Television Guide (TVG) section:

- **TVG Insertion** - allows enable/disable of TVG insertion from a drop-down menu.

Fields from WSS section:

- **WSS (Widescreen Signalling) Insertion** - allows enable/disable of WSS insertion from a drop-down menu.

User-editable fields from VITC section:

- **VITC (Vertical Interval Timecode) Insertion** - allows enable/disable of VITC insertion from a drop-down menu.
- **VBI Insertion lines 525 and 625** - allows selection of insertion lines for VITC from drop-down menus.

User-editable fields from NTSC Pedestal section:

- **NTSC (National Television System Committee) Pedestal Insertion** - allows enable/disable of NTSC pedestal within the Vertical Blanking Interval from a drop-down menu.

User-editable fields from Station ID section:

- **Enable Station ID** - allows enable/disable of Station ID from a drop-down menu.

- **VANC Station ID User Name** - allows input of Station ID user name.

User-editable fields from AFD/Bar section:

- **Enable AFD/Bar** - allows enable/disable of AFD/Bar from a drop-down menu.

Any changes which are made to the Decode > VBI VANC page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.11.3 Decode > Splice

This page gives access to the splice operation parameters. To view this page, select the **Splice** button from the Decode Web Page.

Figure 5.30 Decode > Splice Web Page

The following user-editable fields are displayed on this page.

- **Splice PID** - allows selection of the type of splice PID from a drop-down menu.
- **User PID** – allows input of user PID.
- **Event ID Filter** – checking this box enables splice event ID filtering.
- **Event ID Mask** – allows input of mask bits for event ID filter.
- **Event ID Value** – allows input of value bits for event ID filter.

Any changes which are made to the Decode > Splice page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.11.4 Decode > DVB-Subtitles

This page gives access to the Digital Video Broadcasting (DVB) subtitles parameters. To view this page, select the **DVB-Subtitles** button from the Decode page.

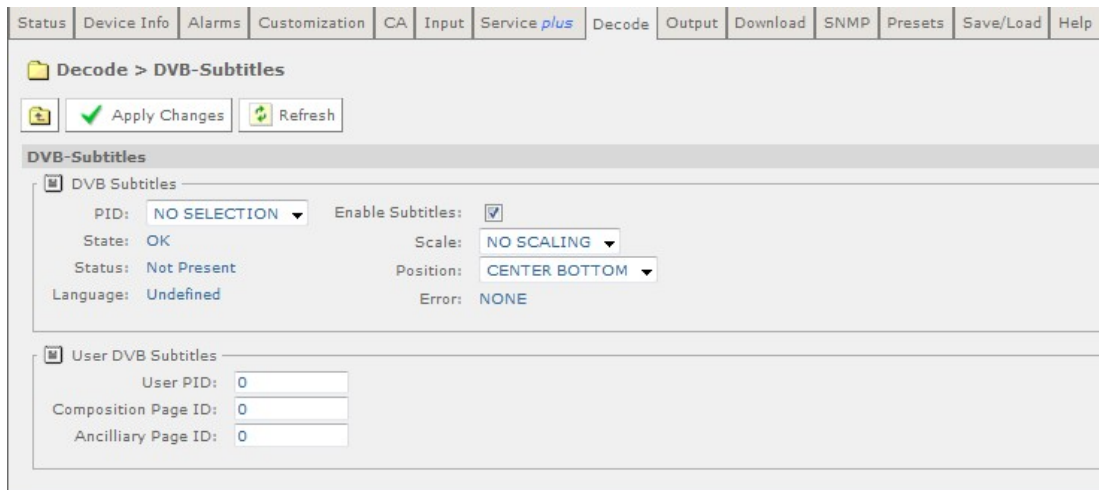


Figure 5.31 Decode > DVB-Subtitles Web Page

The following fields, which may be edited by the user, are displayed on this page.

User-editable fields in the DVB Subtitles section:

- **PID** - allows selection of the type of PID from a drop-down menu.
- **Enable Subtitles** – checking this box allows the enabling of subtitles.
- **Scale** - allows selection of the level of scaling from a drop-down menu.
- **Position** - allows selection of the position of subtitles from a drop-down menu.

User-editable fields in the User DVB Subtitles section:

- **User PID** - allows input of user PID.
- **Composition Page ID** - allows input of composition Page ID.
- **Ancillary Page ID** - allows input of Ancillary Page ID.

Any changes which are made to the Decode > DVB Subtitles page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.11.5 Decode > Teletext

This page gives access to the Teletext parameters. To view this page, select the **Teletext** button from the Decode page.

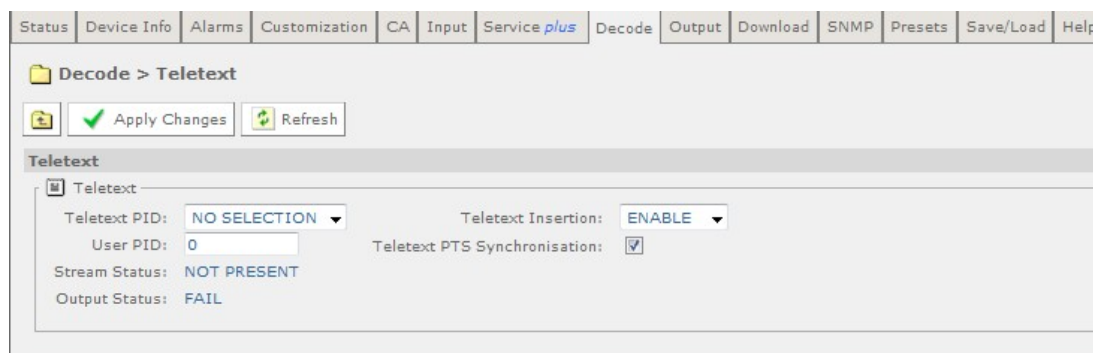


Figure 5.32 Decode > Teletext Web Page

The following user-editable fields are displayed on this page.

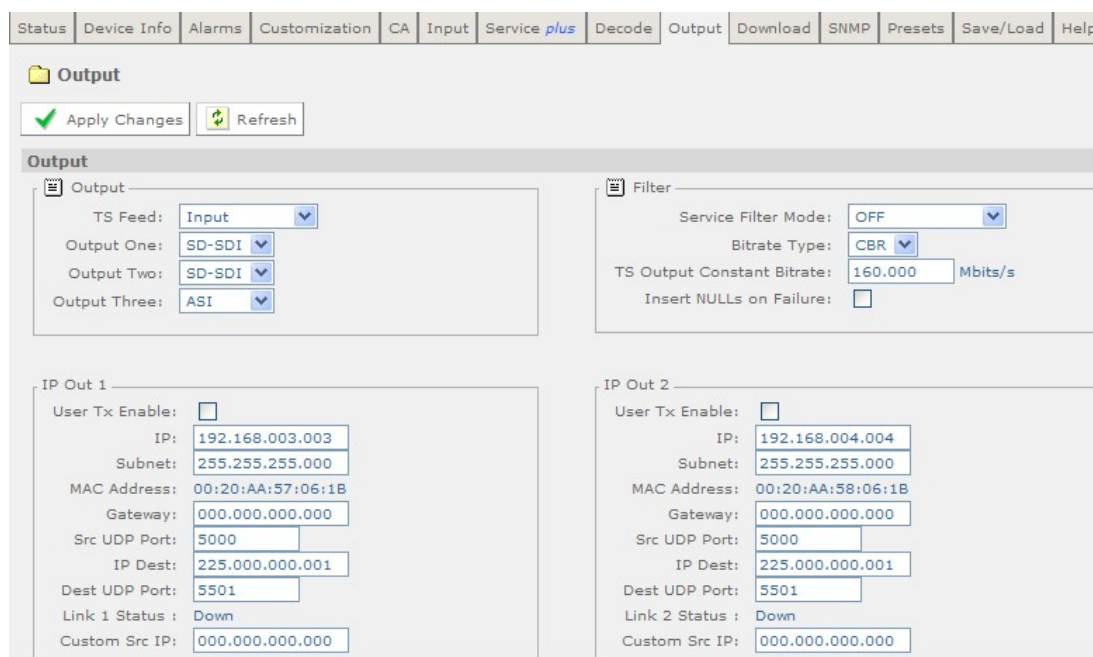
- **Teletext PID** – allows selection of the type of Teletext PID from a drop-down menu.
- **Teletext Insertion** – allows enable/disable of Teletext Insertion from a drop-down menu.
- **PTS Synchronisation** – checking this box enables PTS Synchronisation.

Any changes which are made to the Decode > Teletext page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.12

Output

This page gives access to the output parameters for the receiver. To view this page, select the **Output** tab from the top of the current web Page.





Common

Link Speed: Auto

Spanning Tree:

IP Output Status

TS Tx Status: User Tx Settings

Redundancy Mode: None

RIP Active Path: RIP Disabled

Swap RIP metrics:

MGP Parameters

MSM IP: 239.1.2.3

Tx Interval: 0 s

Current MGP State: Not Initialised

nCC Status: No Contact

MSM Status: Normal

RIPv2

RIP Metric1: 5

RIP Metric2: 10

Timeout: 0 s

Resume on Reboot:

Figure 5.33 Output Web Page

The following user-editable fields are displayed on this page.

User-editable fields in the Output section:

- **TS (Transport Stream) Feed** – allows selection of the type of transport stream output from a drop-down menu.
- **Output One/Two/Three** – allows selection of the type of output from a drop-down menu.

User-editable fields in the Filter Section:

- **Service Filter Mode** - allows selection of the Service Filter Mode from a drop-down menu.
- **Bitrate Type** - allows selection of the Bitrate type from a drop-down menu.
- **TS Output Constant Bitrate** – allows the user to enter a value in Mbits/s.

Insert Nulls on Failure – checking this box will ensure that CBR is maintained even if the Transport stream is unlocked.

User-editable fields in the IP Out 1/IP Out 2 section:

- **User TX Enable** – checking this box enables the User Transmitter.
- **IP** – allows input of the IP address.
- **Subnet** – allows input of the Subnet mask address.
- **Gateway** - allows input of the gateway address.
- **Src UDP (User Datagram Protocol) Port** - allows input of the source UDP Port.
- **IP Dest** - allows input of the IP destination address.
- **Dest UDP Port** - allows input of the destination UDP port.

- **Custom Src IP** - allows input of the Custom source IP.

User-editable fields in the Common section:

- **Link Speed** – allows the selection of the IP output card link configuration.
- **Spanning Tree** – checking this box enables the spanning tree protocol.

User-editable fields in the IP Output Status section:

- **Swap RIP (Routing Information Protocol) Metrics** - checking this box enables this function.

User-editable fields in the MGP Parameters section:

- **MSM IP** - allows input of the MSM IP address.
- **TX Interval** - allows input of the Tx interval in seconds. A value of 0 means MGP is disabled.

User-editable fields in the RIPv2 section:

- **Timeout** - allows input of the timeout in seconds. A value of 0 means RIP updates are disabled.
- **Resume on Reboot** - checking this box enables RIP + TS resume on reboot.

Any changes which are made to the Output page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.13

Download

This page gives access to the over-air-download status of the receiver, if a download is in progress. A percentage (%) complete of download is displayed. To view this screen, select the **Download** tab from the current web page.



Figure 5.34 Download Web Page

There are no fields on this page which can be edited by the user. To ensure that the most recent information is displayed, select the **Refresh** button.

Note: The unit should not be power cycled (turned off and on) during download.

5.2.14 SNMP

This page gives access to the Simple Network Management Protocol (SNMP) parameters for the receiver. To view this page, select the **SNMP** Tab from the current web page.

The screenshot shows a web interface for configuring SNMP parameters. At the top, there is a navigation menu with tabs: Status, Device Info, Alarms, Customization, CA, Input, Service *plus*, Decode, Output, Download, **SNMP**, Presets, Save/Load, and Help. Below the menu, there is a folder icon labeled 'SNMP' and two buttons: 'Apply Changes' (with a green checkmark) and 'Refresh' (with a green refresh icon). The main content area is titled 'SNMP' and contains a 'Parameters' section with the following fields:

- Version: (dropdown menu)
- Sys services:
- System Name:
- Trap Community:
- Read Write Community:
- Read Only Community:
- Location:
- Description:
- Contact:
- Boot Count:

Figure 5.35 SNMP Web Page

The following user-editable fields are displayed on this page:

- **Version** - allows selection of the SNMP version from a drop-down menu.
- **Sys Services** – allows input of a value for MIB-2 services that this device primarily offers (MIB-II RFC1213). See MIB-2 for definition.
- **System Name** – allows input of a MIB-2 sys name, which should be an administratively-assigned name.
- **Trap Community** – allows input of type of trap community.
- **Read Write Community** - allows input of type of read write community.
- **Read Only Community** – allows input of type of read only community.
- **Location** – allows input of a MIB sys location which is the physical location of this node.
- **Description** – allows input of a MIB sys description which should be a textual description of the entity.
- **Contact** – allows input of a MIB sys contact which should be a textual identification of the person to be contacted.

Any changes which are made to the SNMP page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.15 Presets

This page gives access to a list of 40 preset configurations. This feature may be used to store input (tuning) parameters in order that settings do not have to be re-entered when changes are made. To view this page, select the **Presets** tab from the top of the current web page.

The screenshot shows the 'Presets' web page. At the top is a navigation menu with tabs: Status, Device Info, Alarms, Customization, CA, Input, Service plus, Decode, Output, Download, SNMP, Presets, Save/Load, and Help. Below the menu is a 'Presets' section with a folder icon and two buttons: 'Apply Changes' (with a green checkmark) and 'Refresh' (with a green refresh icon). Underneath is a 'Presets' sub-section with a 'Preset Save/Recall' header. This section contains two input fields: 'Select Preset Number:' and 'Save Preset Number:'. Below these fields is a list of 40 presets, numbered 1 through 40, each followed by the text 'NO STORED SERVICE'.

Figure 5.36 Preset Web Page

The following user-editable fields are displayed on this page:

- **Select Preset Number** – allows the input of the number of the preset which is to be selected. When a number is entered into this box, the tuning information and service ID stored in that numbered preset will be loaded into the unit's configuration.
- **Save Preset Number** – allows the input of the number of the preset which is to be saved. When a number is entered into this box, the tuning information and service ID stored currently selected will be stored as that number preset. The name will change from 'NO STORED SERVICE' to the name of the service.

Any changes which are made to the Presets page may be confirmed by selecting the **Apply Changes** button. Selecting the **Refresh** button will ensure that the latest information is being displayed from the current values of the equipment.

5.2.16 Save/Load

This page gives access to a range of Configuration download and Upload facilities which are supported by the receiver. To view this page, select the Save/Load tab from the top of the current web page.

Status | Device Info | Alarms | Customization | CA | Input | Service *plus* | Decode | Output | Download | SNMP | Presets | Save/Load | Help

Configuration download and upload

This product supports download and upload of configuration files. These files act as "snapshots" of the running configurations and can be stored for later use. A configuration file can be uploaded to the product at any time.

Save Configuration to File

To save the current (running) configuration, move the mouse pointer over the link below, right-click and select "Save target as.." or "Save link target as..", dependent on the browser you are using. You will then be prompted for a filename and a place to store the file.

[Right Click to Save](#)
[Right Click to Save \(with parameter names\)](#)

Restore Configuration from File

Use the form below to upload configurations to the product. The configuration will be activated as soon as it is completely uploaded. Watch the result window at the bottom of the screen for results of the operation. If the configuration file is invalid, messages will be given in this window.

Note that if anything fails during a configuration upload, NO parameter changes will be performed.

File:

Save MIBs File

To save the current (running) MIBs file click on the link below. You will then be prompted for a filename and a place to store the file.

[Click to Save](#)

Save Alarm Logs File

To save the current alarm Logs file click on the link below. You will then be prompted for a filename and a place to store the file.

[Right Click to Save](#)

Save Splice Logs File

To save the current splice Logs file click on the link below. You will then be prompted for a filename and a place to store the file.

[Right Click to Save](#)

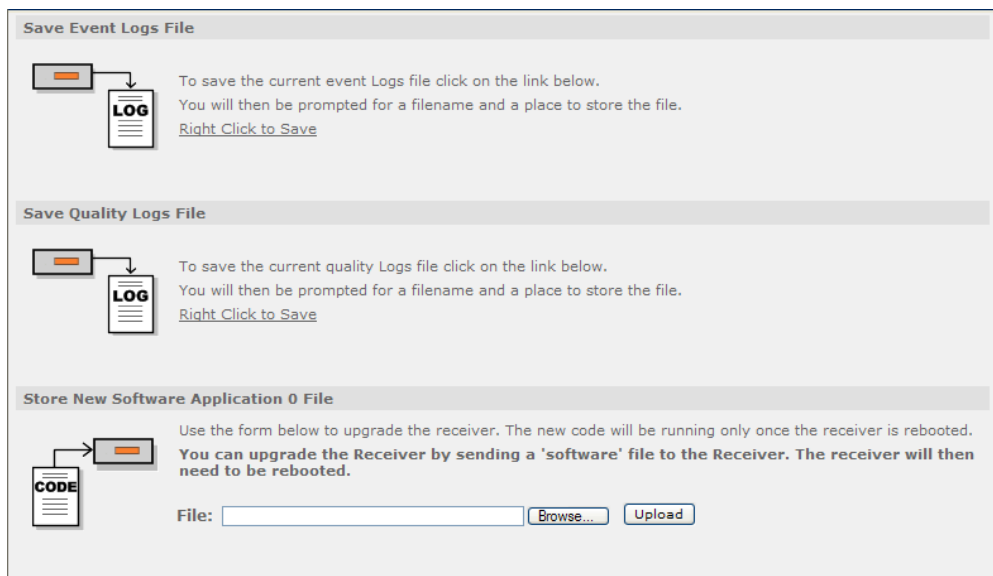


Figure 5.37 Save/Load Web Page

Only a portion of the web page is shown in *Figure 5.37*. The facilities available from this page are as follows:

- **Save Configuration to File** – allows the user to save the current receiver configuration as an XML file. This may then be used as a back-up to preserve all the settings entered on all the web pages so that you can upload them again (using the Restore Configuration from File feature, described below), in the event that the settings have been changed or lost. This feature also allows you to quickly set up multiple equipments with the same settings, if required. The option **Right Click to Save** should always be used. The option **Right Click to Save (with parameter names)** is for development purposes only.
- **Restore Configuration from File** – allows the user to upload an XML file defining the configuration of a receiver. This will normally be a configuration file that has previously been saved (using the Save Configuration to File, described above) from this or another similar equipment. This provides a quick and simple method of restoring a unit to operation, provided that up-to-date back-ups are maintained. The uploaded configuration will be actioned immediately, when completed, provided that the file is valid. In the event of an invalid file being uploaded, none of the equipment settings will be changed.
- **Save MIBs File** – allows the user to save the current running Management Information Base (MIBs) file. A zip file is downloadable from the unit which defines which variables should be monitored for SNMP purposes. Details of the variables are not described in this document. For more detailed information on SNMP remote control, contact Ericsson AB.
- **Save Alarm Logs File** - allows the user to save the current alarm logs file. It is recommended that this is saved periodically, as it may be required in the event of a fault occurring on the unit. Left-click on the link to display the log in the web page (click the browser refresh button to return to the Web Browser Interface). Right-click on the link and select the **Save** button in the displayed dialog to save as a file.

- **Save Splice Logs File** - allows the user to save the current splice logs file. It is recommended that these are saved periodically, as they may be required in the event of a fault occurring on the unit. Left-click on the link to display the log in the web page (click the browser refresh button to return to the Web Browser Interface). Right-click on the link and select the **Save** button in the displayed dialog to save as a file.
- **Save Event Logs File** - allows the user to save the current event logs file. It is recommended that these are saved periodically, as they may be required in the event of a fault occurring on the unit. Left-click on the link to display the log in the web page (click the browser refresh button to return to the Web Browser Interface). Right-click on the link and select the **Save** button in the displayed dialog to save as a file.
- **Save Quality Logs File** - allows the user to save the current quality logs file. It is recommended that these are saved periodically, as they may be required in the event of a fault occurring on the unit. Left-click on the link to display the log in the web page (click the browser refresh button to return to the Web Browser Interface). Right-click on the link and select the **Save** button in the displayed dialog to save as a file.
- **Store New Software Application 0/1 File** - allows the user to upgrade the receiver. Click the **Browse** button to locate the application file and then click the **Upload** button to upload the file to the receiver. The receiver must be rebooted to run the new software; this can be done using the **Reboot** button on the Device Info tab page.

5.2.17 Help

This page gives access to a Web Interface User guide which provides a brief description of the interface functionality. To view this page, select the Help tab from the top of the current web page.

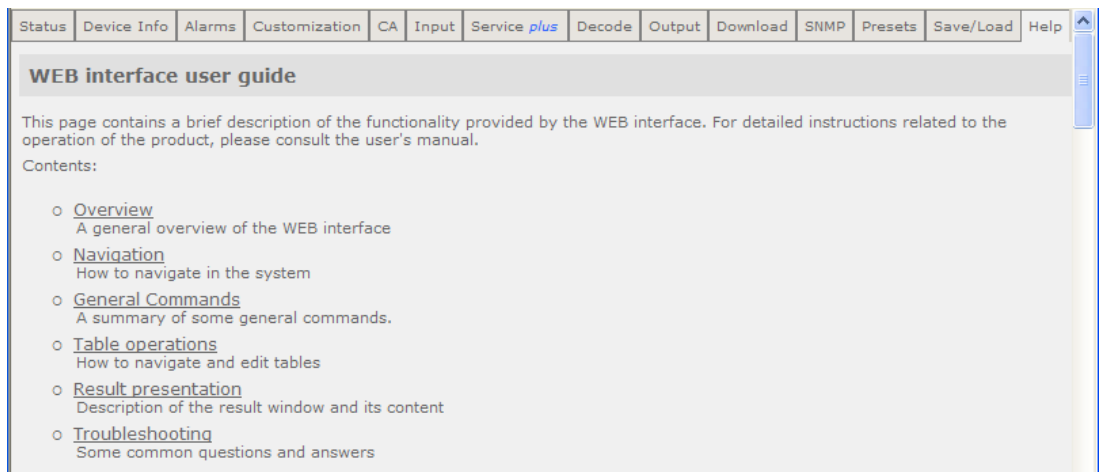


Figure 5.38 Help Web Page

Select the appropriate heading listed on the web page for help with the associated functions and features.

Options

Chapter 6

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6.1 Hardware and Software Options

These options require extra hardware to be fitted to the unit, or, in the case of software, extra licenses to be purchased. See *Table 6.1* for a list of available options. Contact the Customer Services Helpdesk for details (see *Preliminary Pages*).

● = Option **B** = Supplied with Base Model

Table 6.1 Hardware and Software Options for the RX8000 Series Receivers

RX8200	RX8310	RX8315	RX8320	RX8330	Option Number	Description
Hardware Options						
●	B	B		B	RX8200/HWO/DVBS2	DVB-S2 Input Card
			B		RX8320/HWO/8VSB	8-VSB Input Card
●					RX8XXX/HWO/IP/GIGE	Gigabyte 100/1000BaseT Ethernet
●					RX8XXX/HWO/G703	G.703 ATM Input Card
●					RX8XXX/HWO/MP2/422	MPEG-2 4:2:2 Decode Card
B					RX8200/BAS/2	MPEG-4 4:2:2 Decode Capable RX8200
●	●	●		●	RX8XXX/HWO/IP/OUT	IP Transport Stream Output Card
●					RX8200/HWO/SD	SD Video Input and ASI Output Card
●					RX8200/HWO/HD/3G	HD and SD Input and ASI Output Card
●					RX8200/HWO/BAL/AUD	Balance Audio Output
●					RX8200/HWO/RS232	RS232 Low Speed Asynchronous Data and Remote Control
●					RX8200/HWO/HQDCONV	High Quality Down-conversion
●	●	●	●	●	RX8XXX/CABLE/XLR	XLR Terminal Audio Break-out Cable
●	●	●	●	●	RX8XXX/CABLE/SCRTRM	Screw Terminal Audio Break-out Cable
Software Options						
●	●	●		●	RX8XXX/SWO/DVBS2/QPSK	DVB-S2 QPSK
●	●	●		●	RX8XXX/SWO/DVBS2/8PSK	DVB-S2 8PSK
●	●	●		●	RX8XXX/SWO/DVBS2/LSYM	DVB-S2 Low Symbol Rate
●	●	●	B	●	RX8XXX/SWO/MPEG2/SD	MPEG-2 SD 4:2:0 Decoding
●	●	●	B	●	RX8XXX/SWO/MPEG2/HD	MPEG-2 HD 4:2:0 Decoding
			●		RX8XXX/SWO/MPEG4/SD	MPEG-4 SD 4:2:0 Decoding
			●		RX8XXX/SWO/MPEG4/HD	MPEG-4 HD 4:2:0 Decoding

RX8200	RX8310	RX8315	RX8320	RX8330	Option Number	Description
●	●	●		●	RX8XXX/SWO/MP2/MP4/SD	MPEG-2/4 AVC SD 4:2:0 Decoding
●	●	●		●	RX8XXX/SWO/MP2/MP4/SD/HD	MPEG-2/4 AVC HD 4:2:0 Decoding
●	●	●	●	●	RX8XXX/SWO/SING/SERVFILT	Single Service Filtering
●	●	●	●	●	RX8XXX/SWO/MULT/SERVFILT	Multi-Service Filtering
●	●	●		●	RX8XXX/SWO/IP/DATA	High Speed Data Output
●	●	●	●	●	RX8XXX/SWO/PW	Password Protection Web Browser
			●		RX8XXX/SWO/IP/OUT	IP Transport Stream Out
●	B	B		B	RX8XXX/SWO/DIR5	Director
●	●			●	RX8XXX/SWO/DIR5/MSD	Director Multi-Service Decryption
●		●		●	RX8XXX/SWO/MSD	Multi-Service CAM Decryption
B				B	RX8XXX/SWO/SDI	SDI Digital Video Out Disable
●	●	●	B	●	RX8XXX/SWO/AC3	Dolby Digital Decode
●	●	●		●	RX8XXX/SWO/AAC	AAC Decode
●	●	●		●	RX8XXX/SWO/DVBS2/16APSK	DVB-S2 16 APSK
●	●	●	●	●	RX8XXX/SWO/DVBS2/NULL	Null Packet Detection Redundancy Switch
●		B		B	RX8XXX/SWO/CI	DVB Common Interface
●				●	RX8XXX/SWO/BISS	BISS Modes 1 and E
●				●	RX8XXX/SWO/BISS/MSD	BISS Modes 1 and E Multi-Service Decrypt
●					RX8200/SWO/IP/PROMPEG	SMPTE 2022 Pro-MPEG FEC
●					RX8200/SWO/HDSDI/3G	MPEG-4 HD 4:2:2 1080p 50/60 Decoding
●					RX8200/SWO/MP2/SD/422	MPEG-2 SD 4:2:2 Decoding
●					RX8200/SWO/MP2/HD/422	MPEG-2 HD 4:2:2 Decoding
●					RX8200/SWO/MP4/SD/422	MPEG-4 SD 4:2:2 Decoding
●					RX8200/SWO/MP4/HD/422	MPEG-4 HD 4:2:2 Decoding
●					RX8200/SWO/DCONV	Down-conversion
●					RX8200/SWO/UPCONV	Up-conversion
●					RX8200/SWO/XCONV	Cross-conversion
●					RX8200/SWO/FSYNC	Frame Sync Input
●					RX8200/SWO/4AUD	4 x Audio Capacity
●					RX8200/SWO/LDELAY	Low Latency Decode

6.1.1 DVB-S2 Input Card (RX8200/HWO/DVBS2)

This option is only available for the RX8200 Receiver and is fitted as standard to the base models of RX8310, 8315 and 8330.

With accompanying software options, the DVB-S2 Input card supports DVB-S, QPSK demodulation and DVB-S2, QPSK and 8PSK demodulation.

RX8200/HWO/DVBS2 provides four L-band inputs.



Cautions!

The receiver provides DC power (refer to *Chapter 3, Operating the Equipment Locally*) via the active L-Band input connector to drive an LNB (Low-Noise Block Down-Converter). Do not connect equipment other than an LNB to this connector. Failure to do this may result in damage to the external equipment.

The F-type Connector is not suitable for repeated connection and disconnection. When intended for use in this way, fit a sacrificial connector and connect to it.

6.1.2 8-VSB Input Card (RX83XX/HWO/8VSB)

This option is only available for the RX8320 ATSC Broadcast Receiver.

The 8-VSB Input card supports ATSC demodulation.

6.1.3 Gigabyte 100/1000Base T Ethernet (RX8XXX/HWO/IP/GIGE)

This option is available for the RX8320 ATSC Broadcast Receiver and the RX8200, 8315, 8320 and 8330 DVB Receivers.

The 100/1000Base T Input card supports an MPEG transport stream over IP and SMPT 2022 Pro-MPEG FEC with license key. Two 100/1000 Base T inputs are provided and this system also has a very low latency level.

6.1.4 G.703 ATM Input Card (RX8XXX/HWO/G703)

This option is available for the RX8320 ATSC Broadcast Receiver and the RX8315, 8320 and 8330 DVB Receivers.

The G.703 ATM input card provides E3 or DS-3 inputs and offers a choice of 34 or 45 Mbps rates.

6.1.5 MPEG-2 4:2:2 SD Decoding Card (RX82XX/HWO/MP2/422)

This option is only available for the RX8200 DVB Receiver.

The MPEG-2 4:2:2 SD Decoding Card provides 4:2:2 video decoding facilities.

6.1.6 MPEG-4 AVC 4:2:2 Decoding Card (RX8200/BAS/2)

This option is only available for the RX8200 DVB Receiver.

RX8200/BAS/2 is equipped with MPEG-4 4:2:2 decoding functionality. This function is dormant and is enabled with additional software options.

6.1.7 IP Output Card (RX8XXX/HWO/IP/OUT)

This option is available for the RX8200, 8310, 8315 and 8330 DVB Receivers.

The IP Output card supports 1000BaseT Ethernet transmission of encapsulated transport stream.

The mapping of MPEG-2 TS packets into IP data frames is done according to the protocol stack shown in *Figure 6.1*. The figure shows the Protocol Stack in use when mapping MPEG-2 into IP frames and Ethernet.

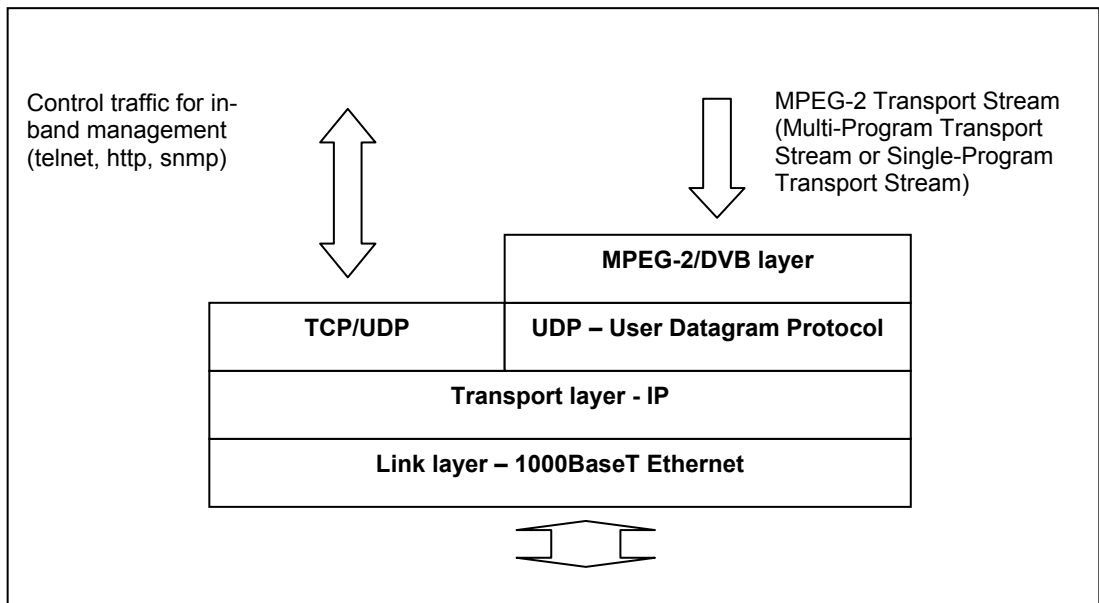


Figure 6.1: The Protocol Stack

The MPEG-2/DVB layer is specified in ISO/IEC IS 13818 – Generic Coding of Moving Pictures and Associated Audio. The UDP layer is compliant with RFC768 – User Datagram Protocol. A configurable number of 188 byte MPEG-2 TS packets are mapped straight into an UDP frame with no additional overhead. The MTU for Ethernet is usually 1500 bytes. This limits the number of MPEG-2 TS packets per UDP frame to lie within one to seven.

The IP layer is according to RFC791 – Internet Protocol Specification.

Figure 6.2 shows a more detailed picture of the MPEG-2 data transfer. TS-packets are mapped in a datagram, using User Data Protocol (UDP), Internet Protocol (IP) and Ethernet.

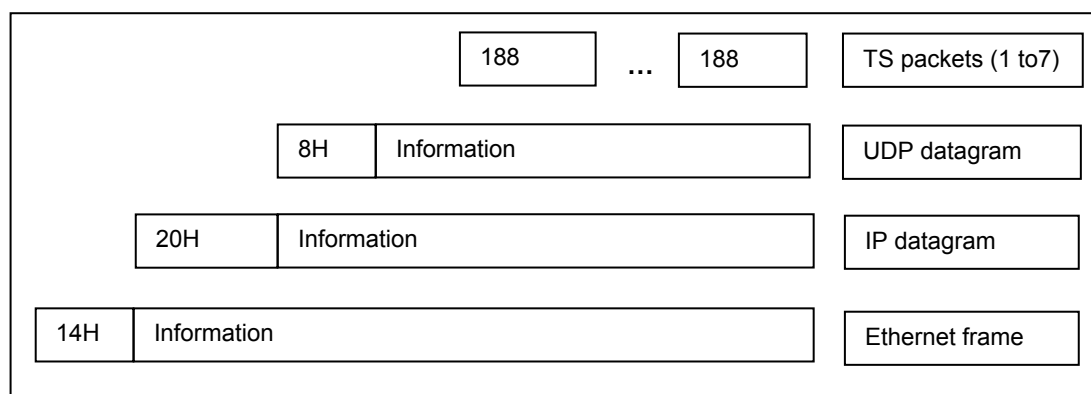


Figure 6.2: Building the Ethernet Frame

6.1.8 SD Video and ASI Output Card (RX8200/HWO/SD)

This option is only available for the RX8200 Receiver.

The SD Video and ASI Output card provides two composite video outputs and two switchable ASI/SDI outputs.

6.1.9 HD and SD Video and ASI Output Card (RX8200/HWO/HD/3G)

This option is only available for the RX8200 Receiver.

The HD and SD Video and ASI Output card provides one composite video output, one RGB/YPrPb analog video output and three switchable ASI/SDI/HD-SDI outputs.

6.1.10 High Quality Down-conversion (RX8200/HWO/HQDCONV)

This option is only available for the RX8200 Receiver.

This option provides down-conversion of decoded HD video to SD resolution. Native HD and SD video outputs are available simultaneously. This option provides grade 1 quality down-converted SD video.

6.1.11 RS232 Low Speed Asynchronous Data and Remote Control (RX8200/HWO/RS232)

This option is only available for RX8200 Receiver.

This option provides RS232 low speed asynchronous data output and RS232 remote control capability.

6.1.12 Balanced Audio Output Card (RX8200/HWO/BAL/AUD)

This option is only available for the RX8200 Receiver.

The Balanced Audio Output card provides two stereo pairs of balanced analog and digital outputs. If four stereo pairs are required, two cards should be ordered.

6.1.13 XLR Terminal Audio Break-Out Cable (RX8XXX/CABLE/XLR)

This option is available for the RX8200, 8310, 8315, 8320 and 8330 Receivers.

The XLR Terminal Audio Break-Out Cable provides XLR terminal connections for analog and digital audio output and one stereo pair per cable via two screw terminal connectors.

6.1.14 Screw Terminal Audio Break-Out Cable (RX8XXX/CABLE/SCRTRM)

This option is available for the RX8200, 8310, 8315, 8320 and 8330 Receivers.

The Screw Terminal Audio Break-Out Cable provides screw terminal connections for analog and digital audio output and one stereo pair per cable via two screw terminal connectors.

6.2 Software Enabled Options

These options may be enabled through software license keys. Contact the Customer Services Helpdesk for details (see *Preliminary Pages*).

6.2.1 DVB-S2 QPSK (RX8XXX/SWO/DVBS2/QPSK)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

The DVB-S2 QPSK software option provides DVB-S2 QPSK capability to the DVB-S2 input card.

6.2.2 DVB-S2 8PSK (RX8XXX/SWO/DVBS2/8PSK)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

The DVB-S2 8PSK software option provides DVB-S2 QPSK and 8PSK capability to the DVB-S2 input card.

6.2.3 DVB-S2 Low Symbol Rate (RX8XXX/SWO/DVBS2/LSYM)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

The DVB-S2 Low Symbol Rate software option enables a DVB-S2 symbol rate of 1-5 Msym/s.

6.2.4 MPEG-2 SD Decode (RX8XXX/SWO/MPEG2/SD)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

This option enables MPEG-2 SD 4:2:0 decoding.

6.2.5 MPEG-2 HD Decode (RX8XXX/SWO/MPEG2/HD)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

This option enables MPEG-2 HD and MPEG-2 SD 4:2:0 decoding.

6.2.6 MPEG-4 AVC SD Decode (RX8XXX/SWO/MPEG4/SD)

This option is only available for the RX8320 ATSC Receiver.

This option enables MPEG-4 AVC SD MP/HP@L3 video decoding.

6.2.7 MPEG-4 AVC HD Decode (RX8XXX/SWO/MPEG4/HD)

This option is only available for the RX8320 ATSC Receiver.

This option enables MPEG-4 AVC HD video to be down-converted and presented as SD on the CVBS output. MPEG-4 AVC SD MP/HP@L4 video decoding is also supported.

6.2.8 MPEG-2/4 AVC SD 4:2:0 Decode (RX8XXX/SWO/MP2/MP4/SD)

This option is available for the RX8200 (fitted as standard on SWO/IP/OUT and SWO/SDI), 8310, 8315 and 8330 Receivers.

This option enables MPEG-2 and MPEG-4 AVC SD 4:2:0 video decoding.

6.2.9 MPEG-2/4 AVC HD 4:2:0 Decode (RX8XXX/SWO/MP2/MP4/SD/HD)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

This option enables MPEG-2 SD and HD and MPEG-4 AVC SD and HD 4:2:0 video decoding.

6.2.10 Single-Service Filtering (RX8XXX/SWO/SING/SERVFILT)

This option is available for the RX8200, 8310, 8315, 8320 and 8330 Receivers.

This option filters a complete service from a Multiple Program Transport Stream (MPTS) source and generates an Single Program Transport Stream (SPTS). When the Output tab/Filter Group/Service Filter Mode/Single Service option is selected the Filter column of the *ServicePlus* web page is enabled (see 5.2.10 *Service Plus* web page description).

The service may be selected using the Service Program Number and the selection will be retained during rebooting operations. All components of the service are automatically filtered and available at the output. If a different service is selected, the new components will replace those of the previously selected service.

If the RX8XXX can decrypt the source TS, the output of the filtered service may be selected for descrambling.

The output bit rate, which is selected by the user, may be constant (by inserting NULL packets) or variable (plus the increment due to the PSI SI insertion).

In Constant mode, if overrate protection is ticked the unit will not clip any services which 'over rate' the selected bit rate. The unit also has the option to insert nulls on failure. Both of these functions are available from the **Output** tab of the web control.

6.2.10.1 PSI/SI Insertion

When the input to the receiver is a DVB TS, the PAT and the SDT-Actual are regenerated. The PMT regeneration is forced in case the PID is shared by more than a PID. If this is not the case, PMTs will be passed through as will CATs, NIT-Actual, TDT and TOT PIDs.

If the input to the receiver is an ATSC TS, only the PAT will be regenerated. THE VCT PID will be passed through as will PMTs, CAT, TDT and TOT PIDs.

6.2.10.2 PID Remapping

This feature allows the filtering of a service from a Multiple Program Transport Stream (MPTS) source and generates a custom Single Program Transport Stream (SPTS) with components selected from those included in the service. These components and the PMT PID can be remapped.

This service may be initiated by selecting the Output tab from the top of the current web screen then selecting Filter Group>Service Filter Mode>REMAP. This enables the REMAP column of the *Serviceplus* table. The required service is selected by service program number and will be retained after rebooting. To select the components which are to be filtered and remapped, the Details link should be selected. Configuration is by component type or Input PID and relies on a best-match algorithm where the most significant parameter is the component type. This configuration is only available via the web interface.

The output bit rate, which is selected by the user, may be constant (by inserting NULL packets) or variable (plus the increment due to the PSI SI insertion).

6.2.11 Multi-Service Filtering (RX8XXX/SWO/MULTI/SERVILT)

This option is available for the RX8200, 8310, 8315, 8320 and 8330 Receivers.

This option enables the filtering of services within a Multiple Program Transport Stream (MPTS) and provides a single CBR MPTS output.

This feature generates a custom MPTS by filtering services from a source MPTS. This service may be initiated by selecting the **Output** tab from the web browser then selecting Filter Mode>MULTI SERVICE. This enables the FILTER column of the Service*plus* table. From this page, the user is able to select up to 22 services to be filtered. All components of the selected service will be filtered and presented at the output MPTS.

The output bit rate, which is selected by the user, may be constant (by inserting NULL packets) or variable (plus the increment due to the PSI SI insertion).

In Constant mode, if overrate protection is ticked the unit will not clip any services which 'over rate' the selected bit rate. The unit also has the option to insert nulls on failure. Both of these functions are available from the **Output** tab of the web control.

6.2.12 High-Speed Data Output (RX8XXX/SWO/IP/DATA)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

This option enables MPE-based data de-encapsulation of IP data and requires the IP TS Output option (RX8XXX/HWO/IP/OUT) to be fitted.

6.2.13 Password Protection of Web Browser (RX8XXX/SWO/PW)

This option is available for the RX8200, 8310, 8315, 8320 and 8330 Receivers.

This option protects the web browser from malicious or accidental changes, only allowing access via a windows username and password screen.

Note: Default username = **username**. Default password = **password**.

6.2.14 IP Transport Stream Output (RX8XXX/SWO/IP/OUT)

This option is only available for the RX8320 ATSC Receiver.

This option enables the IP transport stream output and encapsulation of the transport stream into multicast. There are two Gigabit Ethernet RJ-45 interfaces always fitted which are enabled with a feature key.

Note: This option is available to all other units by selecting RX8XXX/HWO/IP/OUT. Note this will also order an IP Output Card.

6.2.15 Director (RX8XXX/SWO/DIR5)

This option is only available for the RX8200 Receiver.

This option provides Director Conditional Access (CA), over-air control and over-air software downloads.

This license provides only single service decryption.

6.2.16 Director Multi-Service Decryption (RX8XXX/SWO/DIR5/MSD)

This option is available for the RX8200, 8310 and 8330 Receivers.

This option provides multi-service decryption for Director.

6.2.17 Multi-Service CAM Decryption (RX8XXX/SWO/MSD)

This option is available for the RX8315 and 8330 Receivers.

This option enables the decryption of multiple services via professional CAMs and allows the simultaneous decryption of up to 10 services or 24 PIDs. This limit is imposed by the receiver but the actual limit is the lower limit between the receiver limit and that of the inserted CAM.

6.2.18 Serial Data Interface (RX8XXX/SWO/SDI)

This option is fitted as standard on the base models of RX8200 and 8330 Receivers.

This option allows the output of baseband audio/video and data as digital serial data as per SMPTE-259M.

6.2.19 Dolby Digital Decode (RX8XXX/SWO/AC3)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

This option enables decoding or pass-through of Dolby Digital Audio and also provides two x 5.1 decode and down-mix to 2.0 (stereo) and two x 2.0/5.1 pass-through compressed and embedded in (HD) SDI.

6.2.20 AAC Audio Decode (RX8XXX/SWO/AAC)

This option is available for the RX8200, 8310, 8315 and 8330 Receivers.

This option enables two x AAC-LC and HE-AAC decoding.

6.2.21 DVB-S2 16APSK (RX8XXX/SWO/DVBS2/16APSK)

This option is available for the RX8310, 8315 and 8330 Receivers.

This option adds DVB-S2 QPSK, 8PSK and 16APSK capability to the DVB-S2 Input Option Card.

6.2.22 Null Packet Detection Redundancy Switching (RX8XXX/SWO/DVBS2/NULL)

This option is available for the RX8200, 8310, 8315, 8320 and 8330 Receivers.

This option provides redundancy switching from a primary to secondary input when triggered by the presence of null packets in the incoming stream. The user is able to define the percentage of null packets at which the switch is triggered.

6.2.23 DVB Common Interface (RX8XXX/SWO/CI)

This option is only available for the RX8200 Receiver.

This option enables support for conditional access modules.

6.2.24 BISS CA (RX8XXX/SWO/BISS)

This option is available for the RX8200 and RX8330 Receivers.

This option enables descrambling for BISS modes 1 and E.

6.2.25 BISS Multi-Service CA (RX8XXX/SWO/BISS/MSD)

This option is available for the RX8200 and RX8330 Receivers.

This option enables multi-service decryption for BISS modes 1 and E.

6.2.26 SMPTE 2022 Pro-MPEG FEC (RX8200/SWO/IP/PROMPEG)

This option is only available for the RX8200 Receiver.

This option enables SMPTE 2022 Pro-MPEG FEC capability and requires the installation of an IP input card.

6.2.27 MPEG-2 SD 4:2:2 Decoding (RX8200/SWO/MP2/SD/422)

This option is only available for the RX8200 Receiver.

This option enables MPEG-2 SD 4:2:2 Decoding and requires the installation of the MPEG-2 SD 4:2:2 hardware option card.

6.2.28 MPEG-2 HD 4:2:2 Decoding (RX8200/SWO/MP2/HD/422)

This option is only available for the RX8200 Receiver.

This option enables MPEG-2 HD 4:2:2 Decoding and requires the installation of the MPEG-2 SD 4:2:2 hardware option card.

6.2.29 MPEG-4 SD 4:2:2 Decoding (RX8200/SWO/MP4/SD/422)

This option is only available for the RX8200 Receiver.

This option enables MPEG-2 and MPEG-4 SD 4:2:2 Decoding and requires the RX8200/BAS/2 MPEG-4 4:2:2 capable base unit.

6.2.30 MPEG-4 HD 4:2:2 Decoding (RX8200/SWO/MP4/HD/422)

This option is only available for the RX8200 Receiver.

This option enables MPEG-2 and MPEG-4 HD 4:2:2 Decoding and requires the RX8200/BAS/2 MPEG-4 4:2:2 capable base unit.

6.2.31 Down-Conversion (RX8200/SWO/DCONV)

This option is only available for the RX8200 Receiver.

This option enables the down-conversion of HD to SD and allows the simultaneous presentation of HD and SD on video output interfaces.

6.2.32 Up-Conversion (RX8200/SWO/UPCONV)

This option is only available for the RX8200 Receiver.

This option enables the up-conversion of SD to HD and allows the non-simultaneous up-conversion to 720p or 1080i resolution.

6.2.33 Cross-Conversion (RX8200/SWO/XCONV)

This option is only available for the RX8200 Receiver.

This option enables the conversion of HD video from 720p to 1080i or from 1080i to 720p.

6.2.34 Framesync (RX8200/SWO/FSYNC)

This option is only available for the RX8200 Receiver.

This option enables the framesync input, which allows the unit to synchronise the video/audio playout of the unit to an external clock so that all synchronized equipment will output A/V frames at the same time.

6.2.35 4 x Audio Capability (RX8200/SWO/4AUD)

This option is only available for the RX8200 Receiver.

This option enables up to 6 decodes (2 'basic' and 4 'advanced'). The 4 extra 'advanced' audios are compatible with MPEG-1 Layer II, Dolby Digital, AAC, Dolby E and linear audio. With this option you can embed up to 6 channels of audio into the (HD)SDI video output. If four stereo pairs of physical audio interfaces are required, two audio output cards will need to be installed.

6.2.36 Low Latency Decode (RX8200/SWO/LDELAY)

This option is only available for the RX8200 Receiver.

This option enables low latency video decode and will operate on MPEG-1 Layer II audio only. With this license, low delay modes are available which cut down the decode unit end-to-end delay within the unit. These lower delay modes will not work under all transport conditions and should be used under consultation with Ericsson.

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Preventive Maintenance and Fault-Finding

Chapter 7

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7.1 Introduction

This chapter provides the schedules and instructions, where applicable, for routine inspection, cleaning and maintenance of the equipment which should be performed by an operator. There are also some basic fault-finding procedures to follow in the event of a suspected unit failure

7.2 Preventive Maintenance

7.2.1 Routing Inspection

7.2.1.1 Cooling Fans

There are no routine checks associated with this unit other than to ensure that the unit is adequately cooled. The fans should be on continuously. This unit must never be operated unless the cooling fans are working. Check periodically.



Caution!

The fan contained within this unit is not fitted with an insect/dust filter. Pay particular attention to the environment in which it is going to be used.

Failure to ensure a free flow of air around the unit may cause overheating.

7.2.2 Cleaning

Unplug the unit from the power supply outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning the exterior of the unit.

7.2.3 Servicing

7.2.3.1 Conditions Requiring Servicing



Warning!

Removing the covers of this equipment may invalidate any warranties, cause a safety hazard or/and affect the EMC performance. Refer all servicing to service personnel who have been authorized by Ericsson.

Unplug the equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

1. When the power supply cord or plug is damaged.

2. If liquid has been spilled, or objects have fallen into the product.
3. If the product has been exposed to rain or water.
4. If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
5. If the product has been dropped or the case has been damaged.
6. When the product exhibits a distinct change in performance.
7. If the equipment has been subject to a lightning strike or power surge.

7.2.3.2 Replacement Parts

When replacement parts are required, be sure only parts specified by Ericsson (or having the same characteristics as the original part) have been used. Unauthorized substitutions may result in fire, electric shock or other hazards.

7.2.3.3 Checks on Completion of Servicing

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in a safe operating condition. Performance and EMC checks may also be required.

7.3 Maintenance and Support Services

7.3.1 Introduction

Ericsson is a leader in the design, integration and implementation of digital broadcasting products and systems. It has a large team dedicated to keeping our customers on-air 24 hours a day, 365 days a year.

With regional offices worldwide, and ultra-modern specialist service facilities in the US, UK and Asia, Ericsson covers the world. There is a customer service centre open round the clock, every day of the year.

Years of design and support experience enable Ericsson to offer a range of service options that will meet your needs at a price that makes sense.

7.3.2 Warranty

All Ericsson Products and Systems are designed and built to the highest standards and are covered under a comprehensive 12 month warranty.

7.3.3 Levels of Continuing Ericsson Service Support

For stand-alone equipment, then Ericsson **BASIC Essential Support** is the value for money choice. BASIC provides you with year-by-year Service long after the warranty has expired.

For systems support you can choose either **Gold Business Critical Support** or **Silver Business Advantage**. These packages are designed to save you costs and protect your income through enlisting the help of Ericsson support specialists.

Call Ericsson Sales for more details.

7.4 Fault-finding

7.4.1 General

The information contained in this chapter is intended to isolate the unit as the faulty equipment if a system failure occurs.



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 Ericsson trained and approved service engineers are permitted to service this equipment.



Caution!

Do not remove the covers of this equipment. Unauthorized maintenance or the use of non-approved replacements may affect the equipment specification and invalidate any warranties.

This Reference Guide does not include any maintenance information or procedures that would require the removal of covers.

If the following information fails to clear the abnormal condition, please contact Customer Services using the information given in the *Preliminary Pages* of this *Reference Guide*.

7.4.2 System Defaults

The system defaults can be restored at any time using the Restore System Defaults option.

7.4.3 Preliminary Investigations

Always investigate the failure symptoms fully, prior to taking remedial action. Fault diagnosis for the equipment operator is limited to the following tasks, since the operator should **NOT** remove the covers of the equipment:

1. Ensure all leads and connectors are in place and serviceable.
2. Ensure the unit is powered. If not investigate the power source. Check the fuse.
3. Ensure the alarm status LED on the front of the unit is not lit. If it is, investigate the Alarm status.
4. Use the C/N Margin display to ensure that the C/N Margin is greater than 0 dB. If it is not, check the input to the Receiver. (When utilizing satellite input)

7.4.4 AC Fuse Replacement



Caution...

This product should only be operated from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home or business, consult your appliance dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions.

The power supply used in this equipment is a wide-ranging, ac power supply unit designed for use in ambient air temperature conditions of 0°C to +50°C for 100- 240 V AC, 50-60 Hz (see *Annex B, Technical Specification* for details). There are no links or switches to be altered for operation from different AC supplies. The RX8000 Receiver is designed for User Accessible Fuse Replacement. In addition to the fuse in the supply cable plug (if appropriate) there is a fuse held in an integral fuse carrier at the AC power inlet at the rear of the unit.

Table 7.1 Fuse Information

Item	Specification
Fuse	Single pole, fitted in live conductor in power input filter at rear of unit.
Fuse type	5 mm x 20 mm anti-surge (T) HBC, IEC/EN 60127-2 Sheet 5
Fuse rating	2 A, 250 V AC

To replace the AC power fuse perform the following:



Warning!

Before replacing the rear panel fuse, disconnect the unit from the supply. Failure to do this may expose hazardous voltages. Unplug the unit from the local supply socket.

1. Ensure that power is turned off and the power cable is disconnected from the AC power inlet.
 2. Ease out the fuse carrier by placing a small, flat-bladed screwdriver in the notch at the top of the carrier.
-
-



Caution...

When replacing the power input fuse, always ensure that a fuse of the correct type and rating is fitted. Failure to do so may result in inadequate protection.

3. Replace the fuse in the carrier.
4. Insert the fuse carrier back in the AC power inlet.

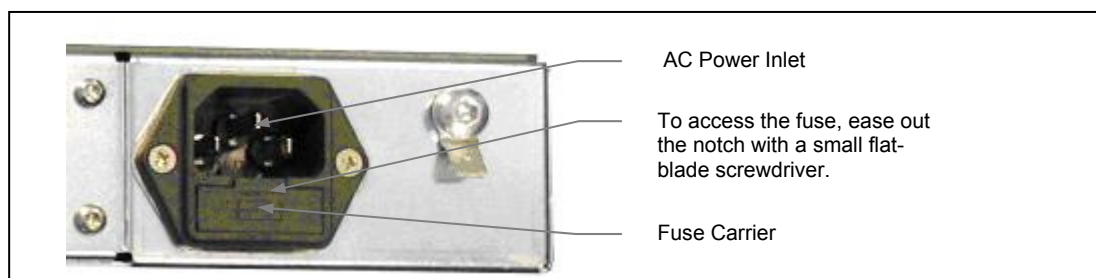


Figure 7.1 Fuse Carrier

If the replacement fuse also blows, do not continue. Disconnect the equipment and contact Ericsson Customer Services (see *Preliminary Pages*) for advice.

7.4.5

Power Supply Problems



Warning!

Do not attempt to service the Power Supply Unit as opening or removing covers may expose dangerous voltages or other hazards. Refer all servicing to service personnel who have been authorized by Ericsson.

Use the following techniques to fault-find according to the observed symptom(s) when a power supply failure is suspected.

7.4.6 Summary Status LED Unlit

If the Summary Status LED is unlit, fault-find the problem as detailed in *Table 7.2*.

Table 7.2 Summary Status LED Unlit Fault-finding

Step	Action	If Result of Action is Yes...	If Result of Action is No...
1	Check Status LED. Is the unit still working?	If the unit is clearly working normally then the Status LED itself is probably at fault. Call a Service Engineer.	Proceed to next step.
2	Check Power Source. Connect a known-working piece of equipment to the power source outlet. Does it work?	The problem lies within the unit or power cable. Proceed to next step.	The problem lies with the power source. Check building circuit breakers, fuse boxes, etc. If problem persists, contact the electricity supplier.
3	Check Power Cable and Fuse. Unplug the power connector from the unit and try it in another piece of equipment. Does it work?	The problem lies within the unit. Proceed to next step.	The problem lies with either the cable itself, or with the fuse in the plug. Replace the fuse or try to substitute another cable.
4	Check PSU Module(s) and Fuse(s). Ensure the power connector is unplugged. Remove the fuse from the rear panel connector and inspect it. Has the fuse blown?	Replace the fuse with one of the correct type and rating. If the PSU still does not work, unplug the power cable and call a Service Engineer.	Possible problem with the PSU module. Call a Service Engineer.

7.4.7 Fan(s) Not Working/Overheating

The unit is fitted with fans, all of which run continuously. The unit contains a temperature sensor that will highlight if there is a cooling problem. In the event of overheating problems, refer to *Table 7.3*.

Note: Failure to ensure a free air-flow around the unit may cause overheating. This condition is detected by a temperature sensor; it may be used to trigger an automatic alarm.

Table 7.3 Fans Not Working/Overheating

Step	Action	If Result of Action is Yes...	If Result of Action is No...
1	Check Fan Rotation. Inspect the fans located at the sides of the enclosure. Are the fans rotating? Check the temperature (select Chassis / Temperature Alarms on the Device Info web page).	Check that the unit has been installed with sufficient space allowed for air-flow (see <i>Chapter 2, Installing the Equipment</i>). If the ambient air is too hot, additional cooling may be required.	Possible break in the DC supply from the PSU module to the suspect fan(s). Call a Service Engineer.

7.4.8 Input Card Failure

Use Table 7.4 to aid in diagnosing a input card fault.

Table 7.4 Input Card Fault-finding

Step	Action	If Result of Action is Yes...	If Result of Action is No...
1	Check the status of the Input Card. Is there a modulator failure alarm being shown on the Status web page?	If the unit indicates a critical failure, call a Service Engineer.	If no modulator failure alarm is shown, go to Step 2.
2	Check the status of the input ports. Do the ports reflect the reported status?	Discuss the perceived problem with Ericsson Customer Support.	If the port is not providing a valid input when it has been enabled, call a Service Engineer.

7.5 Disposal

7.5.1 Moulded Plugs

If the moulded plug fitted to the mains cable supplied with this equipment is not required, use another cable. If the supplied plug is to be changed, cut it off and dispose of it safely.



Warning!

If the molded plug fitted to the mains cable supplied with this equipment is not required, please cut it off and dispose of it safely. Failure to do this may endanger life as live ends may be exposed if the removed plug is inserted into a mains outlet.

7.5.2 Equipment

Dispose of this equipment safely at the end of its life. Local codes and/or environmental restrictions may affect its disposal. Check with your local authority.

Glossary

Annex A

The following list covers most of the abbreviations, acronyms and terms as used in Ericsson Manuals, User and Reference Guides. All terms may not be included in this Reference Guide.

µm	Micrometre (former name - micron): a unit of length equal to one millionth (10 ⁻⁶) of a metre.
1000BaseT	The term for the Electrical Gigabit Ethernet interface. This is the most common interface for Gigabit Ethernet. Most Gigabit-enabled PCs and equipment use this interface.
3:2 pull-down	A technique used when converting film material (which operates at 24 pictures per second) to 525-line video (operating at 30 pictures per second).
4:2:0	Digital video coding method in which the colour difference signals are sampled on alternate lines at half the luminance rate.
4:2:2	Digital video coding method in which the colour difference signals are sampled on all lines at half the luminance rate.
422P@ML	422 Profile at Main Level: A subset of the MPEG-2 standard, which supports digital video storage (DVD etc.) and transmissions up to 50 Mbps over various mediums. Used for Contribution and Distribution applications.
5B6B	5 Binary Bits Encoded to 6 Binary Bits: Block code.
ADPCM	Adaptive Differential Pulse Code Modulation: An advanced PCM technique that converts analogue sound into digital data and vice versa. Instead of coding an absolute measurement at each sample point, it codes the difference between samples and can dynamically switch the coding scale to compensate for variations in amplitude and frequency.
ACC	Authorization Control Computer.
ADT	Audio, Data And Teletext.
AFC	Automatic Frequency Control.
AFS	Automation File Server.
AGC	Automatic Gain Control.

AMOL I and II	Automatic Measure of Line-ups I and II: Used by automated equipment to measure programme-viewing ratings.
ARP	Address Resolution Protocol. A protocol used to "resolve" IP addresses into underlying Ethernet MAC addresses.
ASI	Asynchronous Serial Interface.
ASIC	Application-Specific Integrated Circuit: A customized chip designed to perform a specific function.
Async	Asynchronous.
ATM	Asynchronous Transfer Mode: A connection orientated, cell based, data transport technology designed for Broadband ISDN (B-ISDN). It provides a circuit-switched bandwidth-on-demand carrier system, with the flexibility of packet switching. It offers low end-to-end delays and (negotiable on call set up) Quality of Service guarantees. Asynchronous refers to the sporadic nature of the data being transmitted. Cells are transmitted only when data is to be sent, therefore the time interval between cells varies according to the availability of data.
ATSC	Advanced Television Standards Committee: An organization founded in 1983 to research and develop a digital TV standard for the U.S.A. In late 1996, the FCC adopted the ATSC standard, the digital counterpart of the NTSC standard.
B3ZS	Bipolar with Three Zero Substitution: A method of eliminating long zero strings in a transmission. It is used to ensure a sufficient number of transitions to maintain system synchronization when the user data stream contains an insufficient number of 1s to do so. B3ZS is the North American equivalent of the European HDB3.
Backward Compatibility	Refers to hardware or software that is compatible with earlier versions.
BAT	Bouquet Association Table: Part of the service information data. The BAT provides information about bouquets. It gives the name of the bouquet and a list of associated services.
baud rate	The rate of transfer of digital data when the data comprises information symbols that may consist of a number of possible states. Equivalent to bit rate when the symbols only have two states (1 and 0). Measured in Baud.
BER	Bit Error Rate: A measure of transmission quality. The rate at which errors occur in the transmission of data bits over a link. It is generally shown as a negative exponent, (e.g., 10^{-7} means that 1 in 10,000,000 bits are in error).
BISS	Basic Interoperable Scrambling System: Non-proprietary encryption from EBU (Tech3290).
Bit rate	The rate of transfer of digital data when the data comprises two logic states, 1 and 0. Measured in bit/s.
Block; Pixel Block	An 8-row by 8-column matrix of luminance sample values, or 64 DCT coefficients (source, quantized, or de-quantized).

Bouquet	A collection of services (TV, radio, and data, or any combination of the three) grouped and sold together, and identified in the SI as a group. A single service may be in several bouquets.
B-Picture; B-Frame	Bi-directionally Predictive Coded Picture/Frame: A picture that is coded using motion-compensated prediction from previous I or P frames (forward prediction) and/or future I or P frames (backward prediction). B frames are not used in any prediction.
BPSK	Binary Phase Shift Keying: A data modulation technique.
Buffer	A memory store used to provide a consistent rate of data flow.
BW	Bandwidth: The transmission capacity of an electronic line such as (among others) a communications network, computer bus, or broadcast link. It is expressed in bits per second, bytes per second or in Hertz (cycles per second). When expressed in Hertz, the frequency may be a greater number than the actual bits per second, because the bandwidth is the difference between the lowest and highest frequencies transmitted. High bandwidth allows fast transmission or high-volume transmission.
Byte-mode	Each byte is delivered separately in the ASI transport stream, with stuffing data added between the Bytes to increase the data rate to 270 Mbps. See DVB Document A010 rev. 1, Section B3.3, (ASI) Layer-2 Transport Protocol.
CA	Conditional Access: The technology used to control the access to viewing services to authorized subscribers through the transmission of encrypted signals and the programmable regulation of their decryption by a system such as viewing cards.
CAT	Conditional Access Table: Part of the MPEG-2 Program Specific Information (PSI) data. Mandatory for MPEG-2 compliance if CA is in use.
C-Band	The portion of the electromagnetic spectrum, which spans the frequency range of approximately 4 GHz to 6 GHz. Used by communications satellites. Preferred in tropical climates because it is not susceptible to fading.
CCIR	See: ITU-R.
CCITT	See: ITU-T.
Channel	a narrow range of frequencies, part of a frequency band, for the transmission of radio and television signals without interference from other channels. In the case of OFDM, a large number of carriers spaced apart at precise frequencies are allocated to a channel.
Channel Coding	A way of encoding data in a communications channel that adds patterns of redundancy into the transmission path in order to improve the error rate. Such methods are widely used in wireless communications.

Chrominance	The colour part of a TV picture signal, relating to the hue and saturation but not to the luminance (brightness) of the signal. In a composite-coded colour system, the colour information (chrominance, often referred to as chroma) is modulated onto a high frequency carrier and added to the monochrome-format video signal carrying the luminance (Y). In a component-coded colour system, the two colour-difference signals (R-Y)(B-Y) usually referred to as $C_R C_B$ (digital) or $P_R P_B$ (analogue), are used to convey colour information. When $C_R C_B$ ($P_R P_B$) is added to the luminance (Y), the complete picture information is conveyed as $Y C_R C_B$ ($Y P_R P_B$).
Closed Captioning	A TV picture subtitling system used with 525-line analogue transmissions.
CODE	Create Once Distribute Everywhere.
Codec	The combination of an Encoder and a complementary Decoder located respectively at the input and output of a transmission path.
COFDM	Coded OFDM: COFDM adds forward error correction to the OFDM transmission consisting of Reed-Solomon (RS) coding followed by convolutional coding to add extra bits to the transmitted signal. This allows a large number of errors at the receive end to be corrected by convolutional (Viterbi) decoding followed by RS decoding.
Composite	CVBS Video Signal, 1 V _{pk-pk}
Compression	Reduction in the number of bits used to represent the same information. For the purposes of a broadcast system, it is the process of reducing digital picture information by discarding redundant portions of information that are not required when reconstituting the picture to produce viewing clarity. Compression allows a higher bite-rate to be transmitted through a given bandwidth.
Compression System	Responsible for compressing and multiplexing the video / audio / data bitstreams, together with the authorization stream. The multiplexed data stream is then ready for transmission.
$C_R C_B$	Digital Colour difference signals. These signals, in combination with the luminance signal (Y), define the colour and brightness of each picture element (pixel) on a TV line. See: Chrominance
CRC	Cyclic Redundancy Check: A mathematical algorithm that computes a numerical value based on the bits in a block of data. This number is transmitted with the data and the receiver uses this information and the same algorithm to ensure the accurate delivery of data by comparing the results of algorithm and the number received. If a mismatch occurs, an error in transmission is presumed.
CVBS	Colour Video Black Sync Signal
dB	Decibels: A ratio of one quantity to another using logarithmic scales to give results related to human aural or visual perception. dB is a ratio whereas dBm, for example, is an absolute value, quoted as a ratio to a fixed point of 0 dBm. 0 dBm is 1 mW at 1 kHz terminated in 600Ω. 0 dBmV is 1 mV terminated in 75Ω.

DCE	Data Communications Equipment: Typically a modem. It establishes, maintains and terminates a session on a network but in itself is not the source (originator) or destination (end receiving unit) of signals (e.g. a computer, see DTE). A DCE device may also convert signals to comply with the transmission path (network) format.
DCT	Discrete Cosine Transform: A technique for expressing a waveform as a weighted sum of cosines. Raw video data is not readily compressible. DCT is not in itself a compression technique but is used to process the video data so that it is compressible by an encoder. DCT processes the picture on an 8x8-pixel block basis, converting the data from an uncompressible X Y form (as displayed by an oscilloscope) to a compressible frequency domain form (as displayed by a spectrum analyzer). Can be forward DCT or inverse DCT.
DDS	Direct Digital Synthesiser.
Decoder	The unit containing the electronic circuitry necessary to decode encrypted signals. Some Decoders are separate from the receiver but in satellite TV broadcasting, the term is often used interchangeably as a name for an Integrated Receiver Decoder (IRD). The term IRD, or IRD / Decoder, is usually associated with satellite TV broadcasting while Cable systems are based on Converters or on Set-Top Boxes / Converters.
Decoding Time stamp	A field that may be present in a PES packet header that indicates the time that an access unit is to be decoded in the system target Decoder.
DENG	Digital Electronic News Gathering
DID	Data Identifier.
Differential Coding	Method of coding using the difference between the value of a sample and a predicted value.
DiffServ	Differentiated Services. A mechanism used on layer 3 - e.g. the IP layer - to differentiate between traffic of various types. DiffServ is based on the ToS field and provides a mechanism for the network to give e.g. video traffic higher priority than other traffic (for example Internet traffic).
DIL	Dual In Line: The most common type of package for small and medium scale integrated circuits. The pins hang vertically from the two long sides of the rectangular package, spaced at intervals of 0.1 inch.
DIN	Deutsches Institut für Normung: German Standards Institute.
Downlink	The part of the satellite communications circuit that extends from the satellite to an Earth station.
Downconvert	The process by which the frequency of a broadcast transport stream is shifted to a lower frequency range.
DPCM	Differential Pulse Code Modulation: An audio digitization technique that codes the difference between samples rather than coding an absolute measurement at each sample point.

DSNG	Digital Satellite News-Gathering.
DSP	Digital Signal Processor.
DTE	Data circuit Terminating Equipment: A communications device that originates (is the source) or is the end receiving unit (destination) of signals on a network. It is typically a terminal or computer.
DTH	Direct-To-Home. The term used to describe uninterrupted transmission from the satellite directly to the subscriber, that is, no intermediary cable or terrestrial network utilized.
DTMF	Dual-Tone MultiFrequency
DVB	Digital Video Broadcasting: A European project which has defined transmission standards for digital broadcasting systems using satellite (DVB-S), cable (DVB-C) and terrestrial (DVB-T) medium, created by the EP-DVB group and approved by the ITU. Specifies modulation, error correction, etc. (see EN 300 421 for satellite, EN 300 429 for cable and EN 300 744 for terrestrial).
DVB SI	Digital Video Broadcasting Service Information.
DVB-PI	DVB-Professional Interfaces: TTV Lan search shows – DVB Physical Interfaces
DWDM	Dense Wavelength Division Multiplexing. A mechanism to utilize existing fiber with even more bandwidth by adding extra signals using other wavelengths/colors
Earth	<p>Technical Earth: Ensures that all equipment chassis within a rack are at the same potential, usually by connecting a wire between the Technical earth terminal and a suitable point on the rack. This is sometimes known as a Functional earth.</p> <p>Protective Earth: Used for electric shock protection. This is sometimes known as a safety earth.</p>
EBU	European Broadcast Union.
ECM	Entitlement Control Message.
EDI	Ethernet Data Input
EIA	Electronics Industries Association (USA).
EIT	<p>Event Information Table: Equipment: A component of the DVB-Service Information (SI) stream generated within an Encoder, containing information about events or programmes such as event name, start time, duration, etc.</p> <p>System: EIT (Present/Following) contains the name of the current and next event. It may include an optional descriptor (synopsis) giving brief details of content. EIT (Schedule) is used to produce a full EPG. The EIT is the only DVB-SI table, which can be encrypted.</p>
Elementary Stream	A generic term for a coded bitstream, be it video, audio or other.
EMC	Electromagnetic Compatibility.
EMM	Entitlement Management Message.

Encryption	Encoding of a transmission to prevent access without the appropriate decryption equipment and authorization.
EPG	Electronic Programme Guide: On-screen programme listing using thumbnail pictures and/or text.
Ethernet	The most widely used local area network (LAN) defined by the IEEE as the 802.3 standard. Transmission speeds vary according to the configuration. Ethernet uses copper or fibre-optic cables.
ETS	European Telecommunications Standard.
ETSI	European Telecommunications Standards Institute.
FBAS	German for CVBS
FCC	Federal Communications Commission.
FDM	Frequency Division Multiplex: A common communication channel for a number of signals, each with its own allotted frequency.
FEC	Forward Error Correction: A method of catching errors in a transmission. The data is processed through an algorithm that adds extra bits and sends these with the transmitted data. The extra bits are then used at the receiving end to check the accuracy of the transmission and correct any errors.
FFT	Fast Fourier Transformation: A fast algorithm for performing a discrete Fourier transform.
FIFO	First In, First Out: A data structure or hardware buffer from which items are taken out in the same order they were put in. Also known as a shelf from the analogy with pushing items onto one end of a shelf so that they fall off the other. A FIFO is useful for buffering a stream of data between a sender and receiver that are not synchronized - i.e. they not sending and receiving at exactly the same rate.
FM	Frequency Modulation: Analogue modulation procedure
Footprint	The area of the Earth's surface covered by a satellite's downlink transmission. Also (generally) the area from which the satellite can receive uplink transmissions.
FTP	File Transfer Protocol: A protocol used to transfer files over a TCP/IP network (Internet, UNIX, etc.). For example, after developing the HTML pages for a Web site on a local machine, they are typically uploaded to the Web server, using FTP. Unlike e-mail programs in which graphics and program files have to be attached, FTP is designed to handle binary files directly and does not add the overhead of encoding and decoding the data.
G.703	The ITU-T standard which defines the physical and electrical characteristics of hierarchical digital interfaces.
GOP	Group of Pictures: MPEG video compression works more effectively by processing a number of video frames as a block. The Ericsson AB Encoder normally uses a 12 frame GOP; every twelfth frame is an I frame.

GUI	Graphical User Interface: The use of pictures rather than just words to represent the input and output of a program. A program with a GUI runs under a windowing system and has a screen interface capable of displaying graphics in the form of icons, drop-down menus and a movable pointer. The on-screen information is usually controlled / manipulated by a mouse or keyboard.
HDTV	High Definition Television.
HPA	High Power Amplifier: Used in the signal path to amplify the modulated and up-converted broadcast signal for feeding to the uplink antenna.
HSYNC	Horizontal (line) SYNCs.
HTTP	HyperText Transfer Protocol. The fundamental protocol used on the Internet for transmission of WEB pages and other data between servers and PCs
HU	Height Unit
Hub	A device in a multi-point network at which branch nodes interconnect.
ICAM	Integrated Conditional Access Module: Embedded in the IRD and responsible for descrambling, plus packet filtering and reception. It also contains the physical interface to the subscriber's viewing card.
ICMP	Internet Control Message Protocol. ICMP messages, delivered in IP packets, are used for out-of-band messages related to network operation or mis-operation
IGMP	Internet Group Management Protocol. IGMP is a protocol used to manage multicasts on the Internet. For a host (receiver unit) to receive a multicast, it needs to transmit IGMP "join" messages on the right format. Three versions exist. IGMPv2 is common today but IGMPv3 is the next step.
IDU	Indoor unit
IEC	International Electrotechnical Committee.
IF	Intermediate Frequency: Usually refers to the 70 MHz or 140 MHz output of the Modulator in cable, satellite and terrestrial transmission applications.
Interframe Coding	Compression coding involving consecutive frames. When consecutive frames are compared, temporal redundancy is used to remove common elements (information) and arrive at difference information. MPEG-2 uses B and P frames, but since they are individually incomplete and relate to other adjacent frames, they cannot be edited independently.
Intraframe Coding	Compression coding involving a single frame. Redundant information is removed on a per frame basis. All other frames are ignored. Coding of a macroblock or picture that uses information only from that macroblock or picture. Exploits spatial redundancy by using DCT to produce I frames; these are independent frames and can be edited.

IP	Internet Protocol: The IP part of TCP/IP. IP implements the network layer (layer 3) of the protocol, which contains a network address and is used to route a message to a different network or sub-network. IP accepts packets from the layer 4 transport protocol (TCP or UDP), adds its own header to it and delivers a datagram to the layer 2 data link protocol. It may also break the packet into fragments to support the Maximum Transmission / Transfer Unit (MTU) of the network.
I-picture; I-frame	Intracoded Picture/Frame: A picture / frame, which is coded using purely intracoding with reference to no other field or frame information. The I frame is used as a reference for other compression methods.
IPPV	Impulse Pay Per View: One-time events, purchased at home (on impulse) using a prearranged SMS credit line.
IRD	Integrated Receiver Decoder: The Receiver with an internal MPEG Decoder, which is connected to the subscriber's TV. The IRD is responsible for receiving and de-multiplexing all signals. The unit receives the incoming signal and if CA is active, decodes the signal when provided with a control word by the viewing card. Domestic IRDs are also known as Set-Top Units or Set-Top Boxes.
IRE	Institute of Radio Engineers: No longer in existence but the name lives on as a unit of video amplitude measurement. This unit is 1% of the range between blanking a peak white for a standard amplitude signal.
ISDN	Integrated Services Digital Network: The basic ISDN service is BRI (Basic Rate Interface), which is made up of two 64 kbps B channels and one 16 kbps D channel (2B+D). If both channels are combined into one, called bonding, the total data rate becomes 128 kbps and is four and a half times the bandwidth of a V.34 modem (28.8 kbps). The ISDN high speed service is PRI (Primary Rate Interface). It provides 23 B channels and one 64 kbps D channel (23B+D), which is equivalent to the 24 channels of a T1 line. When several channels are bonded together, high data rates can be achieved. For example, it is common to bond six channels for quality videoconferencing at 384 kbps. In Europe, PRI includes 30 B channels and one D channel, equivalent to an E1 line.
ISO	International Standards Organisation.
ISOG	Inter-union Satellite Operations Group.
ITS	Insertion Test Signal: A suite of analogue test signals placed on lines in the VBI. Also known as VITS.
ITT	Invitation To Tender.
ITU-R	International Telecommunications Union - Radiocommunications Study Groups (was CCIR).
ITU-T	International Telecommunications Union - Telecommunications Standardization Sector (was CCITT).

JPEG	Joint Photographic Experts Group: ISO/ITU standard for compressing still images. It has a high compression capability. Using discrete cosine transform, it provides user specified compression ratios up to around 100:1 (there is a trade-off between image quality and file size).
kbps	1000 bits per second.
Kbit	1024 bits, usually refers to memory capacity or allocation.
Ku-band	The portion of the electromagnetic spectrum, which spans the frequency range of approximately 12 GHz to 14 GHz. Used by communications satellites. Preferred for DTH applications because this range of frequency is less susceptible to interference.
LAN	Local Area Network: A network, which provides facilities for communications within a defined building or group of buildings in close proximity.
L-band	The frequency band from 950 MHz to 2150 MHz, which is the normal input-frequency-range of a domestic IRD. The incoming signal from the satellite is down-converted to L-band by the LNB.
LED	Light Emitting Diode.
LNB	Low Noise Block Down-Converter: The component of a subscriber satellite transmission receiving dish which amplifies the incoming signal and down-converts it to a suitable frequency to input to the IRD (typically 950 MHz - 1600 MHz).
LO	Local Oscillator.
lsb	Least significant bit.
Luminance	The television signal representing brightness, or the amount of light at any point in a picture. The Y in $Y C_R C_B$.
LVDS	Low Voltage Differential Signal: LVDS is a generic multi-purpose Interface standard for high speed / low power data transmission. It was standardized in ANSI/TIA/EIA-644-1995 Standard (aka RS-644).
Macroblock	A 16x16-pixel area of the TV picture. Most processing within the MPEG domain takes place with macro blocks. These are converted to four 8x8 blocks using either frame DCT or field DCT. Four 8 x 8 blocks of luminance data and two (4:2:0 chrominance format), four (4:2:2) or eight (4:4:4) corresponding 8 x 8 blocks of chrominance data coming from a 16 x 16 section of the luminance component of the picture. Macroblock can be used to refer to the sample data and to the coded representation of the sample values and other data elements.
Mbps	Million bits per second.
MCC	Multiplex Control Computer: A component of a System 3000 compression system. The MCC sets up the configuration for the System 3000 Multiplexers under its control. The MCC controls both the main and backup Multiplexer for each transport stream.
MCPC	Multiple Channels Per Carrier.

MEM	Multiplex Element Manager: A GUI-based control system, part of the range of Ericsson AB compression system control element products. The evolution 5000 MEM holds a model of the system hardware. Using this model, it controls the individual system elements to configure the output multiplexes from the incoming elementary streams. The MEM monitors the equipment status and controls any redundancy switching.
Meta-data	Meta-data is descriptive data that is "tagged" to a movie or audio clip. Meta-data is essential for the broadcaster.
MMDS	Multichannel Microwave Distribution System: A terrestrial microwave direct-to-home broadcast transmission system.
Motion Compensation	The use of motion vectors to improve the efficiency of the prediction of sample values. The prediction uses motion vectors to provide offsets into the past and/or future reference frames or fields containing previously decoded sample values that are used to form the prediction error signal.
Motion Estimation	The process of estimating motion vectors in the encoding process.
Motion Vector	A two-dimensional vector used for motion compensation that provides an offset from the coordinate position in the current picture or field to the coordinates in a reference frame or field.
MP@ML	Main Profile at Main Level: A subset of the MPEG-2 standard, which supports digital video storage (DVD etc.) and transmissions up to 15 Mbps over various mediums.
MP@HL	Main Profile at High Level: A subset of the MPEG-2 standard, which supports digital video storage (DVD etc.) and transmissions up to 80 Mbps over various mediums.
MPEG	Moving Pictures Experts Group: The name of the ISO/IEC working group which sets up the international standards for digital television source coding.
MPEG-2	Industry standard for video and audio source coding using compression and multiplexing techniques to minimise video signal bit rate in preparation for broadcasting. Specified in ISO/IEC 13818. The standard is split into layers and profiles defining bit rates and picture resolutions.
MPLS	Multi-protocol Label Switching. A Quality of Service mechanism for IP networks that allow IP packets to flow along a predefined path in a network, improving the reliability and robustness of the transmission.
MPTS	Multi-Program Transport Streams. Transport Streams that carry multiple TV/Radio services.
msb	Most significant bit.
Msymbol/s	(Msym/s) Mega (million) Symbols per second (10^6 Symbols per second).
Multiplex	A number of discrete data streams (typically 8 to 12), from encoders, that are compressed together in a single DVB compliant transport stream for delivery to a Modulator.

Multicast	An IP mechanism that allows transmission of data to multiple receivers. A multicast can also have several transmit sources simultaneously. In video applications, multicast is typically used to distribute a video signal from a central source to multiple destinations.
MUSICAM	Masking pattern adapted Universal Sub-band Integrated Coding And Multiplexing: An audio bit rate reduction system relying on sub-band coding and psychoacoustic masking.
Mux	Multiplexer: Transmission Multiplexer: receives EMMs from the ACC, ECMs from the BCC, video/audio data from the encoders, and the SI stream from the SIC. It then multiplexes them all into a single DVB-compliant transport stream, and delivers the signal to the uplink after modulation. The Multiplexer also contains the cypher card, which scrambles the services according to the control words supplied by the BCC.
Network	In the context of broadcasting: a collection of MPEG-2 transport stream multiplexes transmitted on a single delivery system, for example, all digital channels on a specific cable system.
NICAM	Near Instantaneously Companded Audio Multiplex: Official name is NICAM 728. Used for digital stereo sound broadcasting in the UK employing compression techniques to deliver very near CD quality audio. 728 refers to the bit rate in kbps.
NIT	Network Information Table: Part of the service information data. The NIT provides information about the physical organization of each transport stream multiplex, and the characteristics of the network itself (such as the actual frequencies and modulation being used).
nm	Nanometre: a unit of length equal to one thousand millionth (10^{-9}) of a metre.
NMS	Network Management System. A system used to supervise elements in an IP network. When a device reports an alarm, the alarm will be collected by the NMS and reported to the operator. NMS systems typically collect valuable statistics information about the network performance and can warn the operator early.
NTSC	National Television Systems Committee: The group, which developed analogue standards used in television broadcast systems in the United States. Also adopted in other countries (e.g. Mexico, Canada, Japan). This system uses 525 picture lines and a 59.97 Hz field frequency.
NVOD	Near Video On-Demand: Method of offering multiple showings of movies or events. The showings are timed to start at set intervals, determined by the broadcaster. Each showing of a movie or event can be sold to subscribers separately.
NVRAM	Non-volatile Random Access Memory: Memory devices (permitting random read / write access) that do not lose their information when power is removed. Stores the default configuration parameters set by the user.
ODU	Outdoor Unit

OFDM	Orthogonal Frequency Division Multiplex: A modulation technique used for digital TV transmission in Europe, Japan and Australia; more spectrally efficient than FDM. In OFDM, data is distributed over a large number of carriers spaced apart at precise frequencies. The carriers are arranged with overlapping sidebands in such a way that the signals can be received without adjacent channel interference.
OPPV	Order ahead Pay Per View: An advance purchase of encrypted one-time events with an expiry date.
OSD	On-screen display: Messages and graphics, typically originating from the SMS, and displayed on the subscriber's TV screen by the IRD, to inform the subscriber of problems or instruct the subscriber to contact the SMS.
Packet	A unit of data transmitted over a packet switching network. A packet consists of a header followed by a number of contiguous bytes from an elementary data stream.
PAL	Phase Alternating Line: A colour TV broadcasting system where the phase of the R-Y colour-difference signal is inverted on every alternate line to average out errors providing consistent colour reproduction.
PAT	Program Association Table: Part of the MPEG-2 Program Specific Information (PSI) data and is mandatory for MPEG-2 compliance. The PAT points (maps) to the PMT.
PCM	Pulse Code Modulation: A process in which a signal is sampled, each sample is quantized independently of other samples, and the resulting succession of quantized values is encoded into a digital signal.
PCR	Program Clock Reference: A time stamp in the transport stream from which the Decoder timing is derived.
PDC	Program Delivery Control: A Teletext service allowing simple programming (i.e. VideoPlus) of VCR recording times. If the desired program is rescheduled, PDC updates the programming information in the VCR.
Pel	Picture Element: Also known as a pixel. The smallest resolvable rectangular area of an image either on a screen or stored in memory. On-screen, pixels are made up of one or more dots of colour. Monochrome and grey-scale systems use one dot per pixel. For grey-scale, the pixel is energized with different intensities, creating a range from dark to light (a scale of 0-255 for an eight-bit pixel). Colour systems use a red, green and blue dot per pixel, each of which is energized to different intensities, creating a range of colours perceived as the mixture of these dots. If all three dots are dark, the result is black. If all three dots are bright, the result is white.

PES	Packetised Elementary Stream: A sequential stream of data bytes that has been converted from original elementary streams of audio and video access units and transported as packets. Each PES packet consists of a header and a payload of variable length and subject to a maximum of 64 kbytes. A time stamp is provided by the MPEG-2 systems layer to ensure correct synchronization between related elementary streams at the Decoder.
PID	Packet Identifier: the header on a packet in an elementary data stream, which identifies that data stream. An MPEG-2 / DVB standard.
PIN	Personal Identification Number: A password used to control access to programming and to set purchase limits. Each subscriber household can activate several PINs and may use them to set individual parental rating or spending limits for each family member.
Pixel	PIX (picture) Element: The digital representation of the smallest area of a television picture capable of being delineated by the bit-stream. See Pel for more information.
pk-pk	peak to peak: Measurement of a signal or waveform from its most negative point to its most positive point.
PLL	Phase-Locked Loop. A phase-locked loop is a control system which controls the rotation of an object by comparing its rotational position (phase) with another rotating object as in the case of a sine wave or other repeating signal. This type of control system can synchronize not only the speed, but also the angular position of two waveforms that are not derived from the same source.
PMT	Program Map Table: Part of the MPEG-2 Program Specific Information (PSI) data and is mandatory for MPEG-2 compliance. Each service has a PMT, which lists the component parts (elementary streams of video, audio, etc.) for the various services being transmitted.
P-picture/P-frame	A picture / frame produced using forward prediction. It contains predictions from either previous I frames or previous P frames. The P frame is used as a reference for future P or B frames.
ppm	Parts per million.
PPV	Pay Per View: A system of payment for viewing services based on a usage / event basis rather than on on-going subscription. Subscribers must purchase viewing rights for each PPV event that they wish to view. PPV events may be purchased as IPPV or OPPV.
Program	PC - A sequence of instructions for a computer. TV - A concept having a precise definition within ISO 13818-1 (MPEG-2). For a transport stream, the timebase is defined by the PCR. The use of the PCR for timing information creates a virtual channel within the stream.
Programme	A linking of one or more events under the control of a broadcaster. For example, football match, news, film show. In the MPEG-2 concept, the collection of elementary streams comprising the programme, have a common start and end time. A series of programmes are referred to as events.

P_RP_B	Analogue Colour difference signals. Refer to C _R C _B for an explanation.
PROM	Programmable Read-Only Memory: A device, which may be written once with data for permanent storage, and then read whenever required. Special types of PROM permit the erasure of all data by Ultraviolet light (EPROM) or by application of an electronic signal (EEPROM).
PS	Program Stream: A combination of one or more PESs with a common timebase.
PSI	Program Specific Information: Consists of normative data, which is necessary for the de-multiplexing of transport streams and the successful regeneration of programs (see also: SI).
PSIP	Program System Information Protocol: The ATSC equivalent of SI for DVB.
PSK	Phase Shift Keying: A method of modulating digital signals particularly suited to satellite transmission.
PSR	Professional Satellite Receiver: See also: IRD.
PSU	Power Supply Unit.
QAM	Quadrature Amplitude Modulation: A method of modulating digital signals, which uses combined techniques of phase modulation and amplitude modulation. It is particularly suited to cable networks.
QoS	Quality of Service. A common term for a set of parameters describing the quality you get from an IP network: Throughput, availability, delay, jitter and packet loss.
QPSK	Quadrature Phase Shift Keying: A form of phase shift keying modulation using four states.
QSIF	Quarter Screen Image Format.
Quantise	A process of converting analogue waveforms to digital information. 8-bit quantization as set out in ITU-R Rec. 601. Uses 256 levels in the range 0 – 255 to determine the analogue waveform value at any given point. The value is then converted to a digital number for processing in the digital domain.
RAM	Random Access Memory: A volatile storage device for digital data. Data may be written to, or read from, the device as often as required. When power is removed, the data it contains is lost.
RAS	Remote Authorization System: A Ericsson AB proprietary public-key encryption system used to prevent unauthorized viewing of a TV programme or programmes.
RF	Radio Frequency.
RGB	Red, Green, Blue: The Chroma information in a video signal.
RIP2	Routing Information Protocol v2. A protocol used between network routers to exchange routing tables and information.

ROM	Read Only Memory: A non-volatile storage device for digital data. Data has been stored permanently in this device. No further information may be stored (written) there and the data it holds cannot be erased. Data may be read as often as required.
RS	Reed-Solomon coding: An error detection and correction, coding system. 16 bytes of Reed-Solomon Forward Error Correction code are appended to the packet before transmission bringing the packet length to 204 bytes. The 16 bytes are used at the receiving end to correct any errors. Up to eight corrupted bytes can be corrected.
RSVP	ReSerVation Protocol. A Quality-of-service oriented protocol used by network elements to reserve capacity in an IP network before a transmission takes place.
RTP	Real-time Transfer Protocol. A protocol designed for transmission of real-time data like video and audio over IP networks. RTP is used for most video over IP transmissions.
RLC	Run Length Coding: Minimization of the length of a bit-stream by replacing repeated characters with an instruction of the form 'repeat character x y times'.
SCPC	Single Channel Per Carrier.
Spectral Scrambling	A process (in digital transmission) used to combine a digital signal with a pseudo-random sequence, producing a randomized digital signal that conveys the original information in a form optimized for a broadcast channel.
Scrambling	Alteration of the characteristics of a television signal in order to prevent unauthorized reception of the information in clear form.
SDI	Serial Digital Interface.
SDT	Service Description Table: Provides information in the SI stream about the services in the system; for example, the name of the service, the service provider, etc.
SDTI	Serial Data Transport Interface. A mechanism that allows transmission of various types of data over an SDI signal. This may be one or more compressed video signals or other proprietary data types. The advantage of SDTI is that existing SDI transmission infrastructure can be used to transport other types of data.
SELV	Safety Extra Low Voltage (EN 60950).
SFP	Small Form-factor Pluggable module. A standardized mechanism to allow usage of various optical interfaces for Gigabit Ethernet. Several types of SFP modules exist: Single-mode fiber modules for long-distance transmission and multi-mode fiber modules for shorter distances. SFP is also known as "mini-GBIC".
SIP	Session Initiation Protocol. A common acronym for the ongoing effort to standardize signaling over IP networks, i.e. connection set-up and tear-down. SIP makes it possible to "dial" a remote receiver of data and set-up the connection in this way.

STB	Set-Top Box: A box that sits on top of a television set and is the interface between the home television and the cable TV company. New technologies evolving for set-top boxes are video-on-demand, video games, educational services, database searches, and home shopping. The cable equivalent of the IRD.
SFN	Single Frequency Network: The SFN technique allows large geographic areas to be served with a common transmission multiplex. All transmitters in the network are synchronously modulated with the same signal and they all radiate on the same frequency. Due to the multi-path capability of the multi-carrier transmission system (COFDM), signals from several transmitters arriving at a receiving antenna may contribute constructively to the total wanted signal. The SFN technique is not only frequency efficient but also power efficient because fades in the field strength of one transmitter may be filled by another transmitter.
SI	Service Information: Digital information describing the delivery system, content and scheduling (timing) of broadcast data streams. DVB-SI data provides information to enable the IRD to automatically demultiplex and decode the various streams of programmes within the multiplex. Specified in ISO/IEC 13818[1]. (DVB)
Single Packet Burst Mode	A burst of ASI bytes (either 188 or 204, depending on packet length) is contiguously grouped into an MPEG-2 transport stream packet. Stuffing data is added between the packets to increase the data rate to 270 Mbps. See DVB Document A010 rev. 1, Section B3.3, (ASI) Layer-2 Transport Protocol.
Smart Card	A plastic card with a built-in microprocessor and memory used for identification, financial transactions or other authorizing data transfer. When inserted into a reader, data is transferred to and from the host machine or a central computer. It is more secure than a magnetic stripe card and it can be disabled if the wrong password is entered too many times. As a financial transaction card, it can be loaded with digital money and used in the same way as cash until the balance reaches zero. The file protocol is specific to its intended application.
SMATV	Satellite Mast Antenna Television: A distribution system, which provides sound and television signals to the households of a building or group of buildings, typically used to refer to an apartment block.
SMPTE	Society of Motion Picture and Television Engineers.
SMS	Subscriber Management System: A system which handles the maintenance, billing, control and general supervision of subscribers to conditional access technology viewing services provided through cable and satellite broadcasting. An SMS can be an automatic (e.g. Syntellect) system where subscribers order entitlements by entering information via a telephone. Alternatively, an SMS can be a manual system, which requires subscribers to speak with an operator who then manually enters their entitlement requests. Some systems support multiple SMSs.
SNG	Satellite News-Gathering.
SNMP	Simple Network Management Protocol.

SNTP	Simple Network Time Protocol is an Internet protocol used to synchronize the clocks of computers to some time reference. It is a simplified version of the protocol NTP protocol which is too complicated for many systems.
Spatial Redundancy	Information repetition due to areas of similar luminance and/or chrominance characteristics within a single frame. Removed using DCT and Quantization (Intra-Frame Coding).
SPI	Synchronous Parallel Interface.
Statistical Redundancy	Data tables are used to assign fewer bits to the most commonly occurring events, thereby reducing the overall bit rate. Removed using Run Length Coding and Variable Length Coding.
TAXI	Transparent Asynchronous Tx / Rx Interface: A proprietary high speed data interface.
TCP / IP	Transmission Control Protocol/Internet Protocol: A set of communications protocols that may be used to connect different types of computers over networks.
TDM	Time Division Multiplex: One common, communications channel carrying a number of signals, each with its own allotted time slot.
TDT	Time and Date Table: Part of the DVB Service Information. The TDT gives information relating to the present time and date.
Temporal Redundancy	Information repetition due to areas of little or no movement between successive frames. Removed using motion estimation and compensation (Inter-Frame Coding).
Time stamp	A term that indicates the time of a specific action such as the arrival of a byte or the presentation of a presentation unit.
TOT	Time Offset Table: This optional SI table supports the use of local offsets as well as the UTC time/date combination. The purpose of the table is to list by country the current offset from UTC and the next expected change to that offset (to track when daylight saving occurs). The offset resolution is to within 1 minute over a range of ± 12 hours from UTC.
Transport Stream	A set of packetised elementary data streams and SI streams, which may comprise more than one programme, but with common synchronization and error protection. The data structure is defined in ISO/IEC 13818-1 [1] and is the basis of the ETSI Digital Video Broadcasting standards.
Transport Stream Packet Header	A data structure used to convey information about the transport stream payload.
TS	Transport Stream.
TSDT	Transport Stream Descriptor Table: A component of the MPEG-2 PSI data. This table describes which type of Transport stream it is in (i.e. DVB, ATSC etc.). It may also contain other descriptors.
TSP	Transport Stream Processor.
U	44.45 mm (rack height standard).

UART	Universal Asynchronous Receiver Transmitter: A device providing a serial interface for transmitting and receiving data.
UDP	User Datagram Protocol. A protocol above the IP layer that provides port multiplexing in addition. In essence, you can transmit IP data packets to several receiving processes in the same unit/device.
Unicast	Point-to-point connection, i.e. the "opposite" of multicast which is one to many (or many to many). In this mode, a transmit unit sends video data direct to a unique destination address.
Upconvert	The process by which the frequency of a broadcast transport stream is shifted to a higher frequency range.
Uplink	The part of the communications satellite circuit that extends from the Earth to the satellite.
UPS	Uninterruptable Power Supply: A method of supplying backup power when the electrical power fails or drops to an unacceptable voltage level. Small UPS systems provide battery power for a few minutes; enough to power down the computer in an orderly manner. This is particularly important where write back cache is used. Write back cache is where modified data intended for the disk is temporarily stored in RAM and can be lost in the event of a power failure. Sophisticated systems are tied to electrical generators that can provide power for days. UPS systems typically provide surge suppression and may provide voltage regulation.
UTC	Universal Time Coordinate: An internationally agreed basis for timekeeping introduced in 1972 and based on international atomic time (corresponds to Greenwich Mean Time or GMT).
VITC	Vertical Interval Time Code.
VITS	Vertical Interval Test Signal: See: ITS.
VLAN	Virtual LAN, a network of units that behave as if they are connected to the same wire even though they may actually be physically located on different segments of a LAN.
VPS	Video Programming System: A German precursor to PDC
WSS	Wide Screen Switching: Data used in wide-screen analogue services, which enables a receiver to select the appropriate picture display mode.
WST	World System Teletext: System B Teletext. Used in 625 line / 50 Hz television systems (ITU-R 653).
XILINX	A type of programmable Integrated Circuit.
XLR	Audio connector featuring three leads, two for signal and one for GND.
XML	eXtensible Markup Language. A very common self-describing text-based data format. Used for many purposes: Meta-data, configuration files, documents, etc. The readability of the format has made it very popular and is now the fundament for many types of WEB services.

Y (Luminance)	Defines the brightness of a particular point on a TV line. The only signal required for black and white pictures.
Y/C	Broadcast video with separate colour, Y (luminance) and C (Chroma) (sometimes called S-Video).
YUV	Y: Luminance component (Brightness), U and V: Chrominance (Colour difference)

Technical Specification

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B.1 Output

B.1.1 Supported Video Resolutions

The RX8000 Receiver supports MPEG-2 and MPEG-4 AVC, 4:2:0.

Table B.1 Supported Video Resolutions

Input Resolutions (H x V)	Frame-Rates	Output Format (H x V)	Specification
1920 x 1080 1440 x 1080 1280 x 1080 960 x 1080	29.97 25	720 x 480 interlaced, 1920 x 1080 interlaced 720 x 576 interlaced, 1920 x 1080 interlaced	SMPTE 274M
1280 x 720 960 x 720	59.94 50	720 x 480 interlaced, 1280 x 720 progressive 720 x 576 interlaced, 1280 x 720 progressive	SMPTE 296M
All SD Formats	29.97 25	720 x 480 interlaced 720 x 576 interlaced	SMPTE 174M

B.1.2 Supported Video Bit Rates

The equipment supports decoding of non-encrypted compressed video at rates of up to 80 Mbps MPEG-2 and 85 Mbps MPEG-4 AVC.

Table B.2 Supported Video Rates

Coding Technology	Parameter	Limit
MPEG-4 AVC	Level 3	12 Mbps
MPEG-4 AVC	Level 4	25 Mbps
MPEG-4 AVC	Level 4.2	50 Mbps CABAC, 85 Mbps CAVLC
MPEG-2	4:2:0, Main Level	15 Mbps
MPEG-2	4:2:0, High Level	80 Mbps
MPEG-2	4:2:2, Main Level	50 Mbps
MPEG-2	4:2:2, High Level	90 Mbps

B.1.3 Composite Video Output

The equipment supports video decoding as per ITU-R BT.470 and ANSI/SMPTE 170M.

Table B.3 625 Line

Description	Test Signal	Limit
Bar Level	VITS17	700mV +/- 7mV
Bar Tilt	VITS17	<0.5%
Sync Level	VITS17	300mV +/- 3mV
DC Offset	VITS17	+/- 100mV
Chrominance to Luminance Gain Inequality	Colour Bars	100 +/- 5%
Chrominance to Luminance Phase Inequality	VITS17	<20nS
K factor K 2T	VITS17	<1%
Pulse X bar K rating	VITS17	100 +/- 1%
Frequency Response (MultiBurst)	VITS18 0.5 MHz	0dB +/- 0.2 dB
	VITS18 1 MHz	0dB +/- 0.2 dB
	VITS18 2 MHz	0dB +/- 0.2 dB
	VITS18 4 MHz	0dB +/- 0.3 dB
	VITS18 4.8 MHz	0dB +/- 0.3 dB
	VITS18 5.8 MHz	0dB +/- 0.8 dB
Differential Gain	VITS330	<1.5%
Differential Phase	VITS330	<1 Degree
Non-Linearity	VITS17	<5%
Jitter	VITS17	<5nS
Weighted Luminance Noise	Luminance Ramp	<60 dB
Weighted Luminance Noise	Flat Grey Field	<63 dB
Chrominance PM Noise	Flat Red Field	<55 dB

Table B.4 525 Line

Description	Test Signal	Limit
Bar Level	NTC-7 comp	100 IRE +/- 1 IRE
Bar Tilt	NTC-7 comp	<0.5%
Sync Level	NTC-7 comp	40 IRE +/- 0.5 IRE

Description	Test Signal	Limit
DC Offset	NTC-7 comp	+/- 100mV
Chrominance to Luminance Gain Inequality	NTC-7 comp	100 +/- 5%
Chrominance to Luminance Phase Inequality	NTC-7 comp	<20nS
K factor K 2T	NTC-7 comp	<1%
Pulse X bar K rating		100 +/- 1%
Frequency Response (MultiBurst)	FCC Multi-burst 0.5 MHz 1.25 MHz 2 MHz 3 MHz 3.58 MHz 4.1 MHz	0dB +/- 0.2 dB 0dB +/- 0.2 dB 0dB +/- 0.2 dB 0dB +/- 0.2 dB 0dB +/- 0.3 dB 0dB +/- 0.3 dB
Differential Gain	NTC-7 comp	<2%
Differential Phase	NTC-7 comp	<1 Degree
Non-Linearity	NTC-7 comp	<5%
Jitter		<5nS
Weighted Luminance Noise	Luminance Ramp	<60 dB
Weighted Luminance Noise	Flat Grey Field	<63 dB
Chrominance PM Noise	Flat Red Field	<55 dB

B.1.4 Analogue HD Video Output

Table B.5 HD Analogue Output Specification

Parameter	Value for Y, R, G, B	Value for Pb, Pr	Condition	Notes
Amplitude	700 mV \pm 2%	700 mV \pm 2%	100% colour bar	
DC offset	\pm 10 mV	\pm 10 mV	Black field	
Bandwidth	DC to 10 MHz \pm 0.2 dB 10 MHz to 20 MHz	DC to 10 MHz \pm 0.2 dB 10 MHz to 15	Sweep	

Parameter	Value for Y, R, G, B	Value for Pb, Pr	Condition	Notes
	± 1 dB 20 MHz to 30 MHz +1 dB/-2.5 dB	MHz ± 1 dB		
Group delay	DC to 30 MHz < 50nS	DC to 30 MHz < 50nS		
Noise	DC to 30 MHz < -50 dB	DC to 30 MHz < -50 dB	100% ramp	
Out-of-band noise	30 MHz to 100 MHz < -50 dB	15 MHz to 100 MHz < -50 dB	Sweep	
Linearity	< 5%	< 5%	5 step	
Inter-channel delay	< 10 nS	< 10 nS	100% colour bar	
Interchannel crosstalk	< -40 dB	< -40 dB	Multiburst	
Blanking rise and fall time	100 nS \pm 50 nS	100 nS \pm 50 nS	Flat field	20% to 80%
Active line width inequality	<50 nS	<50 nS	Flat field	
Sync edge to start of active picture	2.586uS +80nS/-0nS	2.586uS +80nS/-0nS		50% to 50%
Sync amplitude Pos and Neg	300mV \pm 5%	300mV \pm 5%		
Tri-level Sync rise and fall time	54 nS \pm 20 nS	54 nS \pm 20 nS		20% to 80%
Output impedance	75 Ω nominal	75 Ω nominal		
Return loss	DC to 20 MHz > 20 dB	DC to 20 MHz > 20 dB		

Table B.6 Sync Output Specification

Parameter	Value	Condition	Notes
H and V Sync. High Voltage	>2.5V	2.2k Ω	
H and V Sync. Low Voltage	<0.5V	2.2k Ω	

B.1.5 HD SDI Digital Video

HD SDI output supports:

- Embedded Decoded Audios
- Closed Captioning (EIA 708B)
- VITC
- VANC

Table B.7 Digital Video Output Connectors

Item	Specification
Safety status	SELV
Connector type	BNC, Female, 75 Ω
Connector designation	HD SDI 1 HD SDI 2 HD SDI 3
Output standard (USA)	ANSI/SMPTE 292M
SDI output level	800 mV pk-pk nominal $\pm 10\%$
Jitter Performance, Nominal	SMPTE Recommended Practices RP 192 –1996 Jitter Measurement Procedures in Bit-Serial Digital Interfaces

B.2 Audio Decoding and Output Stage

B.2.1 General

The RX83xx Receiver is capable of simultaneously decoding two PES streams of audio from the transport stream or the RX8200 is capable of decoding four PES streams. Each of the decoders is identical in operation, but act independently of the other.

Each channel supports extraction of the following types of coded audio from the Transport Stream as follows:

- MPEG-1, Layer 2 Audio (Musicam): ISO/IEC 13818-3
- Dolby Digital AC-3 Audio: ATSC document A/52

Audio component selection is automatic or may be specified from the User Interface or remote interfaces. The RX8000 Receiver automatically detects the audio type of the selected audio component and applies the appropriate algorithm. Audio component selection is based on the position of the component descriptor in the PMT. Audio 1 takes the first component and Audio 2 the second. These may be overridden by selecting User-specified component PIDs.

B.2.2 MPEG Audio

The RX8000 Receiver supports decoding of MPEG audio as follows:

- Compression layers: MPEG-1 layers I and II
- Sampling rate: 48 kHz
- Maximum compressed data rate: 384 kbps (layer II)

B.2.3 Dolby Digital AC-3 Audio

The RX8000 Receiver is able to decode and output the primary stereo pair of a Dolby Digital AC-3 encoded audio stream. When there is data encoded on the audio surround channels, the Decoder applies downmixing, so that either a surround encoded stereo pair (LtRt downmix) or a conventional stereo pair (LoRo downmix) is available at the output.

The RX8000 Receiver is not able to decode and output all 5.1 channels individually as separate channels:

- Sampling rate: 48 kHz
- Maximum compressed data rate: 640 kbps

Note: Support for Dolby Digital decoding requires approval and licensing from Dolby.

B.3 Audio Output Format

B.3.1 General

The RX8000 Receiver provides an independent stereo pair output for each audio channel. Analogue audio is always output and the following digital audio formats can be chosen from the User Interface and remote control interfaces:

- AES3 format

B.3.2 Analogue Audio

The RX8000 Receiver supports level control of the audio outputs. Independent control of each output of each stereo pair is provided via the User Interface and remote interfaces.

Audio output connector type: 9 way female D-type

Output level: +20 dBm nominal clipping level. Selectable in range +12 to +24 dBm.

Output impedance: 50 Ω (nominal).

Table B.8 Analogue Audio Performance Specifications

Parameter	Specification
Safety status	SELV
Output connector	Male 9 pin D-sub
Output format	Balanced
Bit rates	32 kbps to 384 kbps
Sampling rates	48 KHz
Nominal Output Level	0dBu +/- 0.1 dB in 20 k Ω Output impedance: <20k Ω
Clipping Level	12 dBFS – 24 dBFS (step size 1dB)
Frequency Response 48 kHz	+/- 0.65 dB (< 25 Hz) +/- 0.5 dB (25 Hz – 16 kHz) +/- 0.65 dB (16 kHz – 20 kHz)
THD+N at 8dB 100 Hz 1 kHz	<-70 dB <-70 dB
Cross-talk @ 0dB 100 Hz 1 kHz 6.3 kHz 10 kHz	<-70 dB <-70 dB <-70 dB <-70 dB
Noise Unweighted	<66 dB
Noise A-weighted	<62 dB
Linearity @ 1 kHz +10 dB -10 dB - 20 dB -30 dB -40 dB	+/- 0.2 dB +/- 0.2 dB +/- 0.2 dB +/- 0.2 dB +/- 0.3 dB
Phase @ 0 dB (40 Hz – 15 kHz)	+/- 2 Degrees

B.3.3 Audio Routing

The RX8000 Receiver supports the following routing of audio signals:

- STEREO (Channel 1 left, Channel 2 right)
- MIXED TO BOTH (Channel 1 and 2 on left and right)
- LEFT TO BOTH (Channel 1 on left and right)
- RIGHT TO BOTH (Channel 2 on left and right)

When the input signal is STEREO, the Audio digital output format will always be STEREO.

Where a dual mono service is available, it is possible to configure the output as MIXED TO BOTH, LEFT TO BOTH and RIGHT TO BOTH.

B.3.4 Lip Sync

The audio at the output remains synchronous to the decoded video by default (i.e. where both video and audio streams are available from the same service). In such circumstances the video and audio streams share the same PCR.

The lip sync error (delay from presentation of video until presentation of audio) introduced by the Receiver is in the range of ± 2 ms.

The lip sync delay between different stereo pairs is ± 2 ms because the PTS will be presented independently for each pair.

B.3.5 Supported Audio Specifications

Table B.9 Supported Audio Specifications

Specification	Description
ISO/IEC 13818	Generic Coding of Moving Pictures and Associated Information: (MPEG-2) Audio.
ATSC A-52	Digital Audio Compression Standard (Dolby Digital).

B.3.6 Supported Audio Bit Rates

Table B.10 Supported Audio Data Bit Rates (MPEG-2)

Mono kbps	Stereo kbps
32	64
48	96
56	112
64	128

Mono kbps	Stereo kbps
80	160
96	192
112	224
128	256
160	320
192	384

B.3.7 Digital Audio Outputs

Digital audio outputs comply with E1A-422¹ and have a maximum data rate of 3.072 Mbps.

Digital audio is output on two 9-way, D-type and four BNC connectors.

Audio output is balanced 2 – 7 Volts.

B.4 Input Specifications

B.4.1 DVB-S2 Satellite Receivers

B.4.1.1 General

Table B.11 DVB-S2 Satellite Receiver Input Specification

Parameter	Specification
L-band input	
Safety status	TNV - 1
Number of inputs	4 (RX83XX/HWO/DVBS2 or RX8200/HWO/DVBS2)
Input connector type	F-type, female 75 Ω
Input impedance	75 Ω
Return loss	> 11 dB
Isolation between inputs	> 60 dB, typically 70 dB
L-band Frequency	
Tuning range ²	Fc = 950 to 2150 MHz

¹ EIA-422-A-1978: Electrical characteristics of balanced voltage digital interface circuits.

Parameter	Specification
Tuning step	1 kHz
Carrier frequency search range	± 1 to ± 5 MHz
Receive spectrum sense	Normal and inverted
L-band Power	
Input power level per carrier	-65 to -25 dBm
Total L-band input power	< -10 dBm
Oscillator power at the L-band input	< -65 dBm, $950 < F_{osc} < 2150$ MHz
DVB-S Modulation (EN 300 421)	
Modulation	QPSK
Convolutional FEC rates	1/2, 2/3, 3/4, 5/6, 7/8
Symbol rate range	$R_s = 1.0$ to 45.0 MSymbol/s
Symbol rate step	1 Symbol/s
Symbol rate lock range	± 100 ppm
Eb/No ratio	See <i>Table B.12</i>
DVB-S2 Modulation (EN 302 307)	
DVB-S2 Mode	Broadcast Services
Modulation	QPSK, 8PSK
QPSK LDPC FEC rates	1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
8PSK, LDPC FEC rates	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
LDPC FEC Frame length	Normal
Pilot tones	Automatic detection
Symbol rate range	$R_s = 5$ to 31 MSymbol/s, 1MSymbol/s min with RX8200/SWO/LSYM
Symbol rate step	1 Symbol/s
Symbol rate lock range	± 100 ppm
Maximum Channel Bit rate	90 Mbps
Maximum User Bit rate	81 Mbps
Es/No (C/No) ratio	See <i>Table B.13</i>

² The displayed frequency is either L-band or SHF dependent on the LNB frequency and the SHF carrier frequency set in the satellite receiver input menu.

Parameter	Specification
Miscellaneous	
DVB-S Phase noise tolerance ³	SSB phase-noise power spectral density < -68 – 10*log(Rs/20) dBc/Hz at $\delta F = 10$ kHz offset Phase noise power spectral density of the form $C - 20*\text{Log}(\delta F)$ $\delta F =$ Frequency offset from carrier $R_s =$ Symbol-rate (Msymbol/s)
DVB-S2 Phase noise tolerance ⁴	-25 dBc/Hz at $\delta F = 100$ Hz -50 dBc/Hz at $\delta F = 1$ kHz -73 dBc/Hz at $\delta F = 10$ kHz -93 dBc/Hz at $\delta F = 100$ kHz -103 dBc/Hz at $\delta F = 1$ MHz -114 dBc/Hz at $\delta F > 10$ MHz
LNB power and control	See <i>Table B.14</i>

Table B.12 shows the E_b/N_0 requirements for DVB-S and *Table B.13* for DVB-S2 E_s/N_0 requirements to ensure error-free demodulation for all supported FEC rates.

Table B.12 DVB-S2 Satellite Input – DVB-S E_b/N_0 Ratio

Convolutional FEC Rate	E_b/N_0 Ratio (dB) in IF Loop for correct MPEG-2 system operation
1/2	4.5
2/3	5.0
3/4	5.5
5/6	6.0
7/8	6.4

E_b/N_0 ratio is referred to user bit rate R_{u188} . See EN 300 421 specification. For more detailed specification information and advice on performance in specific applications, please contact Ericsson Customer Services.

³ These specifications apply in the presence of thermal noise at the threshold E_b/N_0 ratio given in *Table B.12*

⁴ These specifications apply in the presence of thermal noise at the threshold E_s/N_0 ratio given in *Table B.13* and assume a degradation to the thermal noise performance of 0.3 dB.

Table B.13 DVB-S2 Satellite Input – DVB-S2 Es/No Ratio

LDPC FEC Rate	DVB-S2 Theoretical⁵ Es/No Ratio (dB) in perfect linear channel for correct MPEG-2 system operation
1/2 QPSK	1.00
3/5 QPSK	2.23
2/3 QPSK	3.10
3/4 QPSK	4.03
4/5 QPSK	4.68
5/6 QPSK	5.18
8/9 QPSK	6.20
9/10 QPSK	6.42
3/5 8PSK	5.50
2/3 8PSK	6.62
3/4 8PSK	7.91
5/6 8PSK	9.35
8/9 8PSK	10.69
9/10 8PSK	10.98

For more detailed specification information and advice on performance in specific applications, please contact Ericsson Customer Services.

B.4.1.2 LNB Power and Control

The RX8000 Receiver provides LNB power and control signals through the active RF input connector. LNB power and controls are enabled through the Satellite Input Menu.

The RX8000 Receiver supports voltage controlled LNBs only. The LNB power circuit provides automatic protection against short circuits in the LNB or its cable. When the short circuit has been removed recovery is automatic. Switchable boost of the LNB voltage to allow for losses in long cables and control of 22 kHz tone insertion are provided. The LNB power characteristics comply with IEC 1319-1 and are as per *Table B.14*.

⁵ Add 0.2 dB (0.4 dB for FEC 3/5) to any system calculation for modulator – demodulator implementation margin

Table B.14 LNB Power and Control

Parameter	Specification	
	Voltage V (nominal)	Receiver Polarisation ⁶
Voltage	13 18	Vertical/circular right Horizontal/circular left
Current	350 mA maximum	
LNB control	22 ± 2 kHz tone	
Tone amplitude	0.65 ± 0.2 V _{p-p}	

B.4.2 8-VSB Terrestrial Receivers

B.4.2.1 General

Table B.15 8-VSB Receiver Input Specification

Parameter	Specification
RF input	
Safety status	TNV - 1
Number of inputs	1
Input connector type	F-type, female 75 Ω
Input impedance	75 Ω
VSWR	5
Maximum input level	-5dBm
Minimum input level	-80dBm
RF Frequency	
Tuning range	F _c = 54 to 863 MHz
Tuning step	1 kHz
LO phase noise	Min 92 dBc/Hz at 100kHz offset
Channel bandwidth	6 MHz
FEC	2/3 Trellis
Bit rate	19.39 Mbps
Maximum input level	-5dBm
Minimum input level	-80dBm

⁶ Receive Polarisation: As specified in ETS 300 784 Satellite Earth Station and Systems (SES); Television Receive-only (TVRO) earth stations operating in the 11/12 GHz frequency bands.

B.4.3 DVB-ASI Input

Table B.16: DVB-ASI Copper

Input	Specification
Safety status	SELV
Connector type	BNC, Female
Input impedance	75 Ω
Data rate range	0.350 - 160 Mbps
Error decoding	None

B.4.4 100/1000BaseT Dual NIC Input Receivers

Table B.17 100/1000BaseT IP Dual NIC Input Specifications

Input	Specification
Safety status	SELV
Connector type	8 way RJ-45
Connector Designation	100/1000 BT
Signal Type	100/1000BaseT Ethernet (IEEE 802.3/802.3u) Full Duplex mode
Data Rate	1.5 – 216 Mbps
TS	CBR MPTS/SPTS feeds
Error correction	Pro-MPEG FEC

B.4.5 Frame Sync Connector

The receiver can frame lock to an external video source. The frame information is input as a composite synchronous signal, with or without active video. The user can offset the sync to the video output by $\pm 32,000$ HD pixels, with a resolution of one pixel.

It is possible to connect multiple receivers to the same reference signal. This input requires an external 75 Ω termination.

Table B.18 Frame Sync Connector

Item		Specification
Safety status		SELV
Connector type		BNC, Female
Connector designation		Frame Sync
Pin:	Centre	Analogue Black and Burst Input
	Shield	Ground/Chassis

B.5 Output Specifications

B.5.1 Video Outputs

See:

Table B.3 625 Line

Table B.4 525 Line in B.1.3 Composite Video Output,

Table B.5 HD Analogue Output Specification in B.1.4 Analogue HD Video Output

Table B.7 Digital Video Output Connectors in B.1.5 HD SDI Digital Video.

B.5.2 Audio Outputs

See:

Table B.8 Analogue Audio Performance Specifications in B.3.2 Analogue Audio.

B.5.3 Alarm Connector

Table B.19 Relay Alarm Output Specification

Item		Specification
Safety status		SELV
Connector type		9-way D-type female
Connector designation:		ALARM
Contact Configuration		SPDT (Change-over) All volt-free contacts, fully isolated.
Contact Rating		1 A at 24 V DC 1 A at 50 V AC
Maximum Switching Current		1 A
Maximum Switching		50 V DC / 30 V AC

Item	Specification
Voltage	
Maximum Switching Power	24 W / 60 VA
Minimum Switching Load	0.1 mA, 100 mV AC

B.5.4 DVB-ASI Output

Table B.20: DVB-ASI Copper

Input	Specification
Safety status	SELV
Connector type	BNC, Female
Input impedance	75 Ω
Data rate range	0.350 - 160 Mbps
Error decoding	None

B.5.5 1000BaseT IP Output

Table B.21 1000BaseT IP Output Specifications

Input	Specification
Safety status	SELV
Connector type	8 way RJ-45
Connector Designation	IP OUT
Signal Type	100/1000BaseT Ethernet (IEEE 802.3/802.3u)

B.6 Environmental

B.6.1 Conditions

Table B.22 Environmental Conditions

Operational	Specification
Temperature	0°C to +50°C ambient air temperature with free air-flow
Humidity	0% to 95% (non-condensing)
Cooling requirements	Convection cooling/free air-flow
Handling movement	Fixed (non-mobile) use only
Storage/Transportation	
Temperature	-20°C to +70°C (-4°F to +158°F)
Humidity	0% to 95% (non-condensing)

B.6.2 Physical

Table B.23 Physical Parameters (RX83XX)

Parameter	Specification
Height	44.3 mm
Width	442 mm (without rack fixing brackets) 482 mm (with rack fixing brackets)
Depth	350 mm (including connectors)
Rack mounting standard	1U x 19-inch (1U ≡ 44.45 mm)
Weight	Weight 4.5 - 5.0 kg depending on configuration

Table B.24 Physical Parameters (RX8200)

Parameter	Specification
Height	44.3 mm
Width	442 mm (without rack fixing brackets) 482 mm (with rack fixing brackets)
Depth	450 mm (including connectors)
Rack mounting standard	1U x 19-inch (1U ≡ 44.45 mm)
Weight	Weight 4.5 - 5.0 kg depending on configuration

B.7 Power Supply – AC Mains Input

This equipment is fitted with a wide-ranging power supply. It is suitable for supply voltages of 100-240 V AC -10% +6% at 50/60 Hz nominal.

Table B.25 AC Power Supply Specification

Item	Specification
Power distribution system	Type TN ONLY (EN 60950-1 Annex V): Power distribution system which is directly earthed, the parts of the equipment required to be earthed being connected by protective earthing conductors. This equipment must NOT be used with single-phase three-wire and PE, TT or IT Type Power distribution systems.
Connection to supply	Pluggable Equipment Type A (EN 60950-1 para 1.2.5): Equipment which is intended for connection to the building power supply wiring via a non-industrial plug and socket-outlet or a non-industrial appliance Coupler or both. Correct mains polarity must always be observed. Do not use reversible plugs with this equipment.
Class of equipment	Class I Equipment (EN 60950-1 para 1.2.4): electric shock protection by basic insulation and protective earth.
Rated voltage	100-240 V AC (single phase)
Rated frequency	50/60 Hz
Voltage selection	Wide-ranging
Rated current	RX83xx: 1 A (100-240 V AC range) RX82xx: 1.5 A (100-240 V AC range)
Input connector	CEE 22/IEC 3-pin male receptacle
Fuse	Fuse in live conductor in power input filter at rear of unit. Do not use reversible plugs with this equipment.
Fuse type	Bussmann S505 Littelfuse 215 5x20 mm time delay (T) 1500 A breaking capacity (HBC) IEC/EN 60127-2 Sheet 5
Fuse current rating	All RX8000 models: 2 A 250 V T HBC
Power consumption	45 W typical (NO options fitted) 60 W maximum

B.8 Cable Types

The signal cable types (or similar) in *Table B.26* are those recommended by Ericsson in order to maintain product EMC compliance.

Table B.26 Suitable Signal Cable Types

Signal Type	Connector	Cable
Alarm Relay	9-way D-type Male	Belden 8162 CM 2PR24 shielded E108998 (typical)
ASI Out 1 and 2	BNC	Canford Audio BBC 1/3 PSF (type 2 video cable)
ASI/SD-SDI/HD-SDI Out 1, 2 and 3	BNC	Canford Audio BBC 1/3 PSF (type 2 video cable)
ASI In	BNC	Canford Audio BBC 1/3 PSF (type 2 video cable)
Ethernet/IP (Gbit)	RJ-45	CAT 5E Data Cable S-FTP
Audio 1 and 2 or 3 and 4	9-way D-type Male to XLR	Canford Audio Cable DST 110 Ω
Audio 1 and 2 or 3 and 4	9-way D-type Male to screw terminal	Canford Audio Cable DST 110 Ω
Frame Sync	BNC	Canford Audio BBC 1/3 PSF (type 2 video cable)
RF IN	F - type	Belden 1694A 3 GHz cable
Video Out	BNC	Canford Audio BBC 1/3 PSF (type 2 video cable)
Component Video Out	15-way D-type Male	Five-way screened Haurtian computer cable EL164535 'D'
Control 1 and 2 (100BaseT)	RJ-45	CAT 5E Data Cable S-FTP
Technical Earth	6.3 mm earthed tab	Green/Yellow earth cable or similar

B.9 Compliance⁷

B.9.1 Safety

This equipment has been designed and tested to meet the requirements of the following:

EN 60950-1	European	Information technology equipment - Safety.
IEC 60950-1	International	Information technology equipment - Safety.
UL 60950-1	USA	Information Technology Equipment - Safety.

⁷ The version of the standards shown is that applicable at the time of manufacture.

B.9.2 EMC⁸

The equipment has been designed and tested to meet the following:

EN 55022 and CISPR22	European International	Emission Standard Limits and methods of measurement of radio frequency interference characteristics of information technology equipment - Class A.
EN 61000-3-2 ⁹	European	Electromagnetic Compatibility (EMC), Part 3 Limits; Section 2. Limits for harmonic current emissions (equipment input current \leq 16 A per phase).
EN 61000-3-3 ⁹	European	Electromagnetic Compatibility (EMC), Part 3. Limits; Section 3. Limitation of voltage fluctuations and flicker in low voltage supply systems for equipment with rated current \leq 16 A.
EN 55024	European	Information technology equipment - Immunity characteristics - Limits and methods of measurement.
FCC	USA	Conducted and radiated emission limits for a Class A digital device, pursuant to the Code of Federal Regulations (CFR) Title 47-Telecommunications, Part 15: Radio frequency devices, subpart B - Unintentional Radiators.

B.9.3 Telecommunications

If certain Option Modules (telecom interfaces) are fitted, this equipment comes within the scope of the RTTE Directive, 1999/5/EC. Compliance with the applicable essential requirements of this Directive (safety and EMC) are met by conformance with the safety and EMC standards listed above.

B.9.4 CE Marking



The CE mark is affixed to indicate compliance with the following directives:

DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 December 2006 on the harmonisation of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

⁸ The EMC tests were performed with the Technical Earth attached, and configured using recommended cables.

⁹ Applies only to models of the Product using AC power sources.

DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 15 December 2004 on the approximation of the laws of the Member States relating to electromagnetic compatibility

1999/5/EC of 9 March 1999 on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity. (If fitted with telecom type interface modules).

Note: The CE mark was first affixed to this product in 2008.

B.9.5

C-Tick Mark



The C-Tick mark is affixed to denote compliance with the Australian Radiocommunications (Compliance and Labelling – Incidental Emissions) Notice made under s.182 of Radiocommunications Act 1992.

Note: The C-Tick mark was first affixed to this product in 2008.

B.9.6

Packaging Statement

The outer carton and any cardboard inserts are made from 82% recycled material and are fully recyclable.

The Stratocell ® or Ethafoam 220 ® polyethylene foam inserts can be easily recycled with other low density polyethylene (LDPE) materials.

B.9.7

Packaging Markings

The symbols printed on the outer carton are described below:



Handle with care.



This way up.



Fragile.



Protect from moisture.



See *B.9.4* for compliance with directives details.



See *B.9.5* for compliance details.



Defines country of origin.



The packaging is reusable per GB 18455-2001.



This symbol guarantees that packaging with this symbol is recyclable and will be accepted by cardboard recyclers.



Recyclable per GB 18455-2001.

B.9.8 Materials Declarations

Ericsson's 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.

B.9.8.1 For the European Union

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

B.9.8.2 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. Ericsson 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 an Ericsson product contains potentially hazardous materials, this is indicated on the product by the appropriate symbol containing the EFUP. For Ericsson 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.

B.9.9 Equipment Disposal

B.9.9.1 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.

B.9.9.2 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."

B.9.10 Recycling

Ericsson SA TV Recycling has a process facility that enables customers to return Old and End-of-Life Products for recycling if it is required.

Ericsson provides assistance to customers and recyclers through our Ericsson and SATV Recycling eBusiness Portal.

This can be reached at: <https://ebusiness.ericsson.net/>.

To gain access to the Recycling site, you must be set up with a unique login and password.

To request the login, please contact tvtechpubs@ericsson.com, and include the information below:

- First/Last name
- Password request (6 numbers/characters). If you do not include this information one will be created for you.
- Phone
- Location (Country)
- Company
- Work Area (select one of the below)
 - Executive Management
 - Marketing and Sales
 - Planning/Engineering
 - Procurement/Supply
 - Project & Programme
 - Implementation
 - Operations and Maintenance
 - R&D
 - Other

Language Abbreviations

Annex C

Contents

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C.1 ISO Languages

Languages are shown in alphabetical order.

Table C.1 ISO Language Codes

NO	LANGUAGE	ABBREVIATION
5	ARABIC	ARA
	BASA	BAS
14	BENGALI	BEN
135	CHINESE	CHI
19	CZECH	CZE
21	DANISH	DAN
82	DUTCH	DUT
25	ENGLISH	ENG
31	FINNISH	FIN
34	FRENCH	FRE
22	GERMAN	GER
24	GREEK	GRK
40	GUJARATI	GUJ
52	HEBREW	HEB
42	HINDI	HIN
44	HUNGARIAN	HUN
50	ICELANDIC	ICE
49	INDONESIAN	IND
36	IRISH	IRI
51	ITALIAN	ITA
53	JAPANESE	JAP
55	JAVANESE	JAV
61	KOREAN	KOR
	MALAY	MAY
83	NORWEGIAN	NOR
90	PORTUGUESE	POR
94	ROMANIAN	ROM
95	RUSSIAN	RUS

NO	LANGUAGE	ABBREVIATION
27	SPANISH	SPA
112	SWEDISH	SWE
117	THAI	THA
123	TURKISH	TUR
128	URDU	URD
130	VIETNAMESE	VIE

C.2 Non-ISO Languages

The following non-ISO¹ languages are supported.

Table C.2 Non-ISO Language Codes

LANGUAGE	ABBREVIATION
MAIN	ONE
AUX	TWO
INTERNATIONAL SOUND	INT
AUDIO 1	AAA
AUDIO 2	AAB
AUDIO 3	AAC
AUDIO 4	AAD
AUDIO 5	AAE
AUDIO 6	AAF
AUDIO 7	AAG
AUDIO 8	AAH
AUDIO 9	AAI
AUDIO 10	AAJ
AUDIO 11	AAK
AUDIO 12	AAL
AUDIO 13	AAM
AUDIO 14	AAN
AUDIO 15	AAO
AUDIO 16	AAP

¹ International Standards Organisation.

The non-ISO languages allow tagging of audio without reference to specific languages. The system can then transmit two languages (Main and Auxiliary) which could be any type of audio.

Note: The non-ISO languages need to be user-defined in the Encoder for them to be available.

For language codes not supported by the RX8000 Receiver, the Receiver will list 'undefined' as the language descriptor. This does not affect the way the audio is selected.

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