

IRD-2900 Series

Professional Integrated Receiver Decoders



USER MANUAL

SCOPUS DOCUMENTS (P/N 100793)

(REV. 4.6/ SW v1.80/ DECEMBER 2007)

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Scopus Video Networks Ltd.

International Headquarters

10 Ha'amal St., Park Afek

Rosh Ha'ayin, 48092

Israel

Tel: (972)-3-900-7777

Fax: (972)-3-900-7888

Email: info@scopus.netWeb: www.scopus.net**Scopus Video Networks Inc.**

America

3 Independence Way

Princeton, NJ 08540.

USA

Tel: (609)-987-8090

Fax: (609)-987-8095

Email: info@scopususa.comWeb: www.scopususa.com**DOCUMENT HISTORY**

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The information contained herein is merely descriptive in nature, and does not constitute a binding offer for sale of the product described herein.

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INTRODUCTION

Scopus Video Networks Ltd. takes great pride in delivery of its products and makes every endeavor to ensure its clients full satisfaction.

On behalf of the whole Scopus team, we would like to extend our congratulations on your investment in the IRD-2900 Series of Professional Integrated Receiver Decoders.



MANUAL SCOPE AND STRUCTURE

This manual is comprised of the following main chapters:

1. OVERVIEW

An introduction and general description of the product, including highlights, benefits & typical applications, functional & physical descriptions, and main capabilities & specifications.

2. INSTALLATION

All the required procedures for installing and activating the unit. The procedures include site preparation & requirements, installation in a 19" rack, cable connections, rear panel options, pin-out descriptions, initial settings, and the serviceability check.

3. CONTROL INTERFACES

Various control interfaces, common tools, screen or windows and examples.

4. IRD-2900 OPERATION AND MANAGEMENT

The main section of this manual details screens and explaining every function and each parameter.

5. APPENDICES

The appendices in this manual cover the issues of software upgrade, aspect ratio configurations, warning messages, configuration file, and installation procedures in German and French.

TECHNICAL SUPPORT

In case of technical problems with the IRD-2900 components, refer to additional system documentation. Usually, this may assist you to resolve technical difficulties.

Call your local distributor for technical support if required.

RETURNING FAULTY PARTS

Before Returning an Item:

- Request an RMA (Return Merchandise Authorization) tracking number from your local distributor.
- Scopus Video Networks Support will assign the number; this must accompany the item being returned and is referred to in all correspondence.
- Send the item to Scopus Video Networks with the number included in the accompanying documentation (shipping and customs forms).

CUSTOMER SUPPORT POINT OF CONTACT (POC)

Scopus Video Networks Ltd.

International Headquarters

10 Ha'amal St., Park Afek

Rosh Ha'ayin, 48092

Israel

Tel: (972)-3-900-7777

Fax: (972)-3-900-7888

Email: support@scopus.net

Web: www.scopus.net

Scopus Video Networks Inc.

Americas

100 Overlook Center Drive, 3rd Floor

Princeton, NJ 08540.

USA

Tel: (609)-987-8090

Fax: (609)-987-8095

WARRANTY

SCOPUS Video Networks Ltd. warrants that the product and any part thereof, including but not limited to spare parts will, when properly installed, conform to SCOPUS Video Networks Ltd. published specifications. Also, the product and any parts thereof, including but not limited to spare parts, will be free from defects deriving from faulty workmanship and faulty materials under standard use and service, for a period of twelve (12) months following the date of manufacture thereof.

The supply of spare parts at a reasonable cost shall be available for a period of three (3) years from the date of delivery.

This warranty does not cover ordinary wear and tear of the product or other defects due to circumstances beyond SCOPUS Video Networks Ltd. control, such as: unsuitable operating means, chemicals, electro-mechanical issues, or electrical influences and damages, which may be caused by interference by the CUSTOMER or any unauthorized third party.

Defective cards and assemblies will be sent to SCOPUS Video Networks Ltd. for repair. The repaired cards and assemblies will be returned to the CUSTOMER within 30 days from their receipt by SCOPUS Video Networks Ltd.

Cards and assemblies repaired during the twelve (12) month warranty period will carry a warranty of six (6) months from date of repair or until the end of original warranty period, whichever is the later date.

SCOPUS Video Networks Ltd. sole liability under this warranty shall be limited to the repair or replacement with equivalent units at SCOPUS Video Networks Ltd. facilities, of any product or parts thereof that do not conform to SCOPUS Video Networks Ltd. published specifications or that are defective in material or workmanship, as specified above. The expense of installing repaired or replaced parts shall be borne by the CUSTOMER.

SCOPUS Video Networks Ltd. sole obligation under this warranty is to be the supplier of the product to the CUSTOMER and to provide such services as set out in this warranty according to the SCOPUS Video Networks Ltd. terms and conditions provided for herein. In no event will SCOPUS Video Networks Ltd. be liable to the CUSTOMER for any: business expenses, loss of profits, or incidental, indirect, or consequential damages, however caused, unless such expenses, loss, or damages shall have derived from an infringement of patents or copyrights.

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Beyond the warranty period, SCOPUS Video Networks Ltd. shall repair or replace defective cards and assemblies according to its standard and relevant price list at such time. Cards and assemblies thus repaired shall carry a warranty of six (6) months.

COMPLIANCE	EMC	SAFETY
	EN55022 (CISPR 22)	EN60950
	EN55024 (CISPR 24)	CB (IEC60950)
	EN55013 (CISPR 13)	UL60950
	EN55020 (CISPR 20)	cTUVus
	FCC part 15 (class B)	
	CB	

CE CERTIFICATION

The IRD-2900 meets all the CE Class A requirements.

In order to meet CE requirements, the following cables must be connected on all ASI outputs (when applicable). When cables are connected to these outputs then the device is compliant with the use of FAIR-RITE 0443164151.

FCC COMPLIANCE NOTICE

Trade Name	Scopus
Product Name	Integrated Receiver Decoder
Product Model Number	IRD-2900 Series

These devices comply with Part 15 of the FCC Rules.

OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- These devices do not cause harmful interference.
- These devices must accept any interference received, including interference that may cause non relevant operation.

The FCC Wants You to Know

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 instructions, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your expense.

FCC Warning

Modifications not expressly approved by the manufacturer could void your authority to operate the equipment under FCC Rules.

WEEE/ROHS COMPLIANCE POLICY

Scopus Video Networks Ltd. complies with the European Union's Directive 2002/96/EC as amended by Directive 2003/108/EC, on Waste Electrical and Electronic Equipment, also known as "WEEE." Scopus understands all of its products to fall under the WEEE Directive as IT and telecommunications equipment.

Scopus will comply with the European Union's Directive 2002/95/EC on the Restriction of use of Hazardous Substances, also known as "RoHS", by July 01, 2006. All our products are either compliant or exempt from the RoHS Directive's lead-free requirements as far as the use of lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunication, is concerned.

Scopus ensures that all products will either be re-used or recycled in compliance with the WEEE Directive.

GREEN PROCUREMENT POLICY

As part of its commitment to comply with global environmental initiatives, Scopus will continue to actively work with its supply chain to ensure the ongoing compliance with EU directives as well as the procurement and utilization of reliable, environmentally responsible alternatives to hazardous substances.

WEEE RECYCLING

The EU has set up targets for the recovery of waste from electric and electronic equipment (WEEE). In order to assist EU member states to preserve, protect and improve the quality of the environment, protect human health and utilize natural resources prudently and rationally, Scopus strives to recycle in compliance with the WEEE Directive any of its products that cannot be re-used.

Scopus customers should:

- Discard equipment in dedicated disposal areas only.
- Arrange proper recycling of unneeded equipment, e.g. by re-using the equipment or giving it away to charity.
- For the take-back of Scopus equipment, customers must act in accordance with the Scopus take-back policy, as provided in the website.

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Chapter 1.

OVERVIEW

1.1. GENERAL INFORMATION



The IRD-2900 professional MPEG-2 DVB and ATSC processing platform is designed to meet even the most demanding application requirements while maximizing ease of use and flexibility. With a graphical front-panel display, the IRD-2900 Series includes:

- Variety of Telco and cable front-end options
- MPEG-over-IP inputs
- MPEG-over-IP output
- ASI transport-stream input
- SNMP and web based management support

The IRD-2900 Series concurrently decodes up to two video programs from the transport stream.

The IRD-2900 Series features the following product lines:

- **IRD-296x** - Professional single 4:2:0 decoder IRD
- **IRD-298x** - Professional single 4:2:0/4:2:2 decoder IRD
- **IRD-299x** - Professional dual 4:2:0 decoders IRD-2900

Housed in a true 1RU slim-line chassis and featuring low power consumption, the IRD-2900 fully integrates with the Scopus product platform.

1.2. HIGHLIGHTS AND BENEFITS

The processing platform's main features and options include:

- MPEG2 4:2:0/4:2:2 decoder
- H.264 4:2:0 field upgradeable using Scopus-Neotion module
- Variety of front-end options including DVB-S, DVB-S2, DVB-DSNG, G.703, MPEG-over-IP and DS3-ATM
- DVB-S2 professional
- MPEG-over-IP (MPEGoIP) inputs supporting up to 44Mbps (SPTS and MPTS)
 - Configurable De-Jitter delay
 - Physical Link Redundancy
 - Logical Source Redundancy
 - FEC (Forward Error Correction) ProMPEG CoP3v2
- MPEGoIP output supporting up to 60Mbps
- IP-over-MPEG output up to 60 Mbps (MPE decapsulation)
- 1 or 2 L-Band inputs
- ASI transport stream input and output
- Service and PID Filtering over the ASI and IP outputs (dynamic and static modes)
- DVB common interface (2 slots – 1 active simultaneously)
- SDI, AES/EBU and analogue outputs
- Up to 4 pairs of audio outputs supporting:
 - Musicam
 - Dolby Digital® AC-3 Pass-Through
 - Dolby Digital® AC-3 2.0 Down Mixing
 - Linear PCM Audio and Dolby-E Pass-Through (up to 3 outputs)
- Embedded audio in SDI and re-insertion of VBI
- VBI re-insertion in composite and SDI
- Genlock for high-end accurate frame synchronization and phase compensation.
- Redundancy support, 2 GPI Dry Contact relays with separate control
- OSD (On-Screen Display) subtitling
- Various of management interfaces: Graphical front-panel, user-friendly Web-Interface, command-line-interface (CLI) and SNMP
- SW permission mechanism enables future upgrade
- 50 different user defined setups

1.3. APPLICATIONS

The IRD-2900 processing platform is a technologically advanced choice for a wide range of applications. Some typical uses include:

- Digital turnaround
- CATV IP head-end receiver/decoder
- CATV IP distribution edge decoder
- Satellite distribution
- Telco distribution
- DSNG
- Syndication

Scopus offers this series of professional IRDs in a wide range of standard configurations, with the flexibility to select specific interfaces and applicable required features.

1.4. FUNCTIONALITY

The TS Router block receives input streams from an available source, for example: L-Band, MPEG-over-IP IN and ASI IN. Then the block routes the selected input to the Master and Slave decoders. Each decoder decodes one program from the input stream, routed by the TS router block, and provides decoded digital audio and video streams. These streams are provided to the Video Router block that routes them to the relevant outputs as well as to the analog video output. The Analog Video Output receives a digital video, converts the digital video into analog video, and outputs the analog video. The analog and digital audio output component outputs the digital and analog audio.

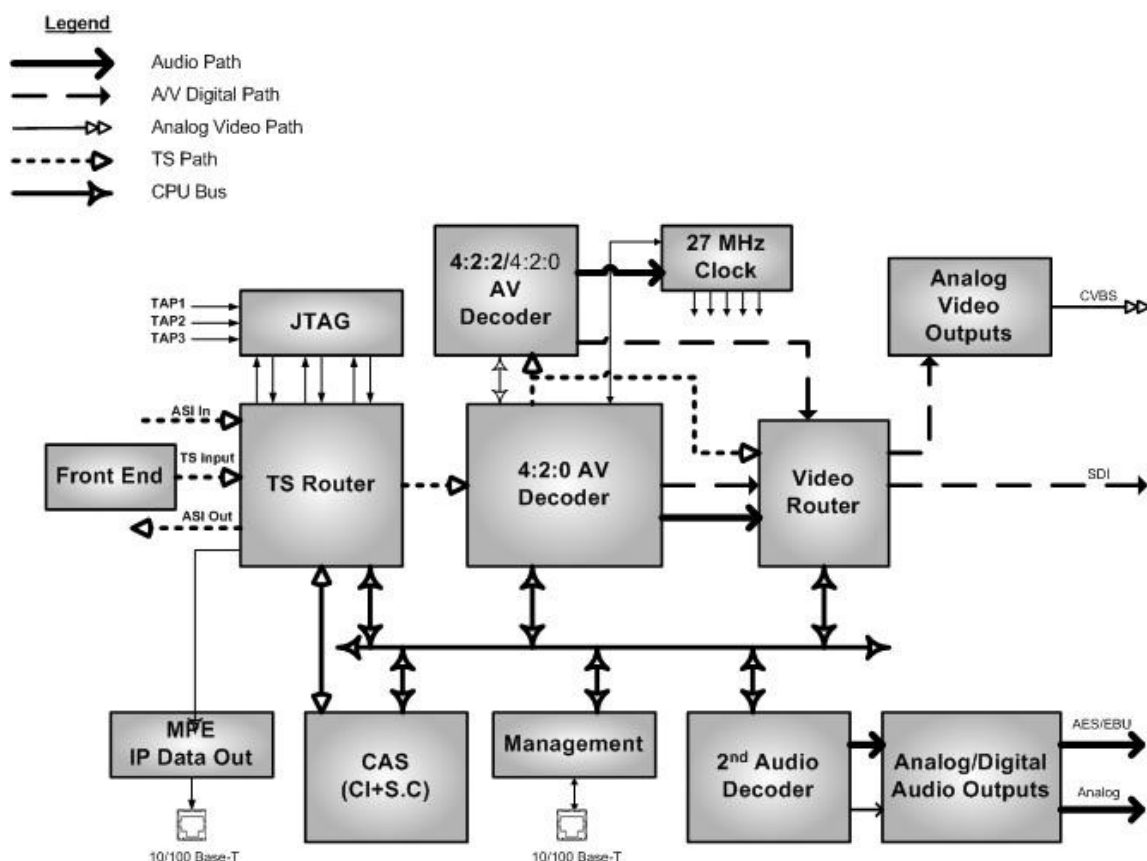


Figure 1-1: Signal Path in the IRD-2900 – Functionality Block Diagram

1.5. MECHANICAL STRUCTURE

The IRD-2900 is housed in a rugged industrial enclosure, 1RU by 19" (rack mount).



Figure 1-2: IRD-2900 Unit

1.5.1. Front Panel

The front panel allows control using a four-way touch pad, **[Enter]** key, **[Esc]** key, and two programmable **[F1]/[F2]** keys. Operational commands and parameters are displayed on a graphical LCD. The four-way touch pad allows parameter modification and scrolling through the embedded VBI menus. Two LEDs show the WARNING and PWR/FAIL status (see Figure 1-3).

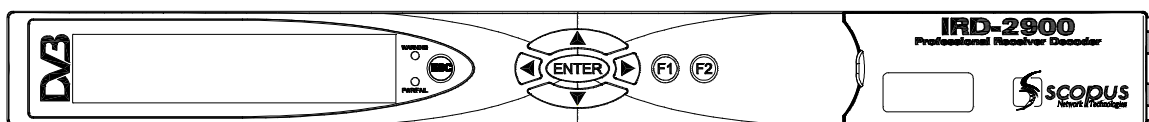


Figure 1-3: Front View of the IRD

1.5.2. Various Front-Ends

IRD-2900 supports the following interfaces:

- DVB-S Single L-Band input
- DVB-S Dual L-Band input
- DVB-DSNG Dual L-Band input
- DVB-S2 Dual L-Band input
- MPEG over IP (MPEGoIP) dual input
- G.703 E3 single input with Loop-through
- ASI-In Decoder only (except for IRD-2960)

In this manual all rear panels are displayed with the DVB-S interface. Each model has standard features and interfaces as well as features requiring active software licenses.

The MPEGoIP input interface can be supported by all IRD-2900 devices. Figure 1-4 illustrates the IRD-2961 rear panel with an MPEGoIP input interface.

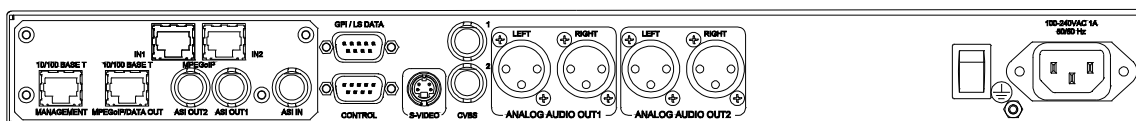


Figure 1-4: IRD-2961 Rear Panel (IP Input interface)

Figure 1-5 illustrates the IRD-2961 rear panel with **DVB-S (QPSK) Dual Input** configuration.

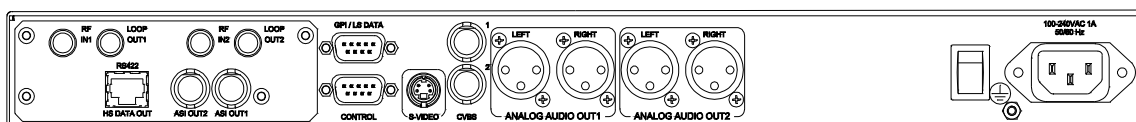


Figure 1-5: IRD-2961 Rear Panel (DVB-S Dual Input interface)

Figure 1-6 displays the IRD-2961 rear panel with Decoder Only configuration.

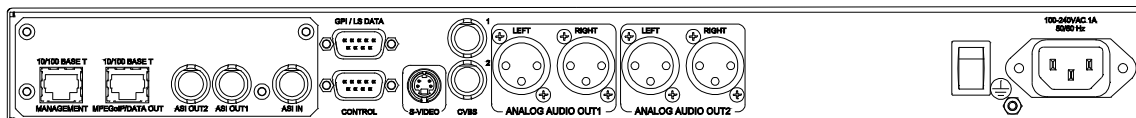


Figure 1-6: IRD-2961 Rear Panel (Decoder Only interface)

NOTE

*IRD-2900 models supporting **MPEGoIP** output and **IP data out** (MPE de-capsulation) output can be configured to support either **MPEGoIP** or **IP data out**.*

1.5.3. Software Permission (Licensing)

Each IRD-2900 model is provided with a basic feature package. In order to suit specific requirements, additional license-permitted features are available. The Next chapter specifies the basic and optional features available for each model.

In order to enable optional features perform one of the following:

- **Upon unit ordering** - order the relevant features. The unit will be provided with the ordered features enabled.
- **After unit ordering** - order the relevant features. In this case, a 16 character **key** issued by Scopus video networks will be provided. The key must be entered to the unit thru the front-panel or the web-interface. For details see section 4.2.11.6

NOTE

*When **RS-232 low-speed-data** and/or **RS-422 high-speed-data** are enabled the **PID Filtering** is unavailable.*

1.5.4. IRD-2900 models

1.5.4.1. IRD-2960 Interfaces and Features

The IRD-2960 is a single 4:2:0 Decoder IRD. The IRD-296x devices consist of two composite video interfaces. The CVBS #1 connector is used for broadcasting quality video and the CVBS #2 connector is used for monitoring. Figure 1-7 illustrates the IRD-2960 rear panel. The IRD-2960 basic features and software-licensed features are also detailed.

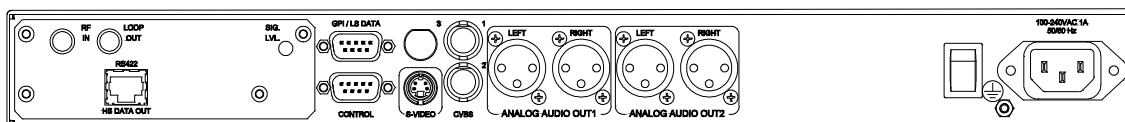


Figure 1-7: IRD-2960 Rear Panel (Standard)

Basic Features

- 1 composite video - Broadcast quality (upper connector)
- 1 composite video - Monitoring quality (lower connector)
- 2 active analog – audio - stereo balanced interfaces
- GPI

Software-Licensed Features

- Dolby digital (AC-3) LT/RT downmixing
- RS-232 low speed data output
- RS-422 high speed data output
- H.264 (Scopus-Neotion module)
- DVB-S2 Advance Modulation (optional)

NOTES

*The IRD-2960 does not support the Decoder Only configuration.
The Russian SECAM D/K (composite video only) is available only through Special orders.*

1.5.4.2. IRD-2961 Interfaces and Features

The IRD-2961 is a single 4:2:0 decoder IRD. The IRD-296x family consists of two composite video interfaces. The CVBS #1 connector is used for broadcast quality video and the CVBS #2 connector is used for monitoring.

Figure 1-8 illustrates the IRD-2961 rear panel. The IRD-2961 basic features and software-licensed features are also detailed.

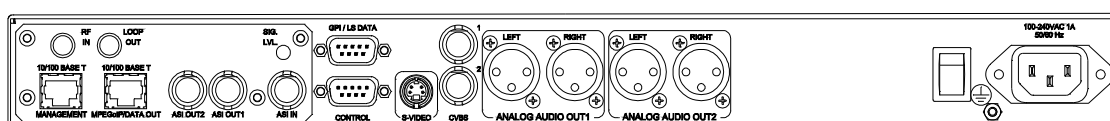


Figure 1-8: IRD-2961 Rear Panel

Basic Features

- 1 composite video - Broadcast quality (upper connector)
- 1 composite video - Monitoring quality (lower connector)
- 2 active analog – audio - stereo balanced interfaces
- SNMP management (10/100 Base-T)
- Web based management (10/100Base-T)
- GPI

Software-Licensed Features

- ASI Input
- Dual (identical) ASI outputs
- MPEG-over-IP output or IP data output (MPE de-capsulation)
- Dolby Digital (AC-3) LT/RT downmixing
- Pro MPEG FEC
- IP Dual input (link and source redundancy)
- PID and service filtering
- RS-232 low speed data output
- H.264 (Scopus-Neotion module)
- DVB-S2 Advance Modulation (optional)

NOTES

In the case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900. The Russian SECAM D/K (composite video only) is available only through special orders.

1.5.4.3. IRD-2962 Interfaces and Features

The IRD-2962 is a single 4:2:0 decoder. The entire IRD-296x family consists of two composite video interfaces. The CVBS #1 connector is used for broadcast quality video and the CVBS #2 connector can be used for monitoring.

Figure 1-9 illustrates the IRD-2962 rear panel. The IRD-2962 basic features and software-licensed features are also detailed.

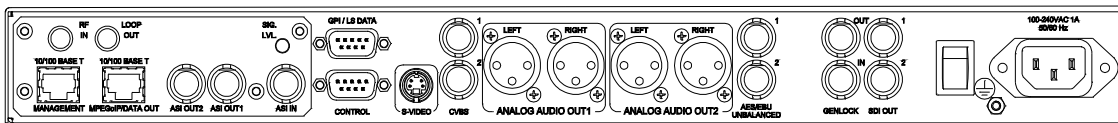


Figure 1-9: IRD-2962 Rear Panel

Basic Features

- 1 composite video - Broadcast quality (upper connector)
- 1 composite video - Monitoring quality (lower connector)
- 2 SDI interfaces
- Embedded VBI and up to 2 stereo channels in SDI
- 2 activated analog-audio-stereo balanced interfaces
- 2 activated AES/EBU-SPDIF audio-unbalanced interfaces
- SNMP management (10/100 Base-T)
- Web-based management (10/100 Base-T)
- GPI
- Front panel A/V monitoring connectors

Software-Licensed Features

- ASI Input
- Dual (identical) ASI outputs
- MPEG-over-IP output or IP data output (MPE de-capsulation)
- Genlock input and loop-through output
- Dolby Digital (AC-3) LT/RT downmixing.
- Pro MPEG FEC
- PID and service filtering
- H.264 (One Program Only)
- RS-232 low speed data output
- H.264 (Scopus-Neotion module)
- DVB-S2 Advance Modulation (optional)

NOTE

In the case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900.

1.5.4.4. IRD-2963 Interfaces and Features

The IRD-2963 is a single 4:2:0 decoder. The entire IRD-296X family consists of two composite video interfaces. The CVBS #1 connector is used for broadcast quality video and the CVBS #2 connector is used for monitoring.

Figure 1-10 illustrates the IRD-2963 rear panel. The IRD-2963 basic features and software-licensed features are described below.

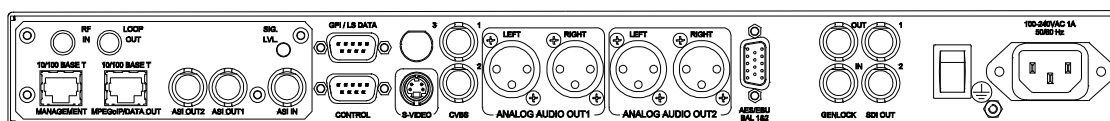


Figure 1-10: IRD-2963 Rear Panel

Basic Features

- 1 composite video - Broadcast quality (upper connector)
- 1 composite video - Monitoring quality (lower connector)
- 2 SDI interfaces
- Embedded VBI and up to 2 stereo channels in SDI
- 2 active analog-audio-stereo balanced interfaces
- 2 active AES/EBU-SPDIF audio-balanced interfaces
- SNMP management (10/100 Base-T)
- Web-based management (10/100 Base-T)
- GPI
- Front panel A/V monitoring connectors

Software-Licensed Features

- ASI input
- Dual (identical) ASI output
- MPEG-over-IP output or IP data output (MPE de-capsulation)
- Genlock input and loop-through output
- Dolby Digital (AC-3) LT/RT downmixing
- Pro MPEG FEC
- IP Dual input (link and source redundancy)
- PID and service filtering
- RS-232 low speed data output
- H.264 (Scopus-Neotion module)
- DVB-S2 Advance Modulation (optional)

NOTES

This model requires a breakout cable to connect to the AES/EBU interfaces. In case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900

1.5.4.5. IRD-2980 Interfaces and Features

The IRD-2980 is a single 4:2:0/4:2:2 decoder. The IRD-298x family consists of two composite video interfaces. Both CVBS #1 and CVBS #2 connectors are for broadcast quality video. Figure 1-11 illustrates the IRD-2980 rear panel. The IRD-2980 basic and software-licensed features are also detailed.

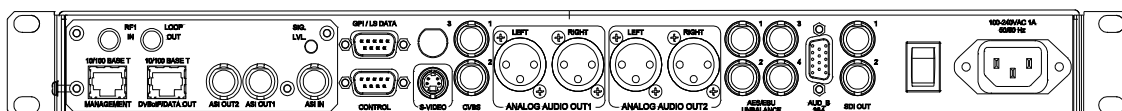


Figure 1-11: IRD-2980 Rear Panel

Basic Features

- 2 composite video interfaces – Broadcast quality
- 2 SDI interfaces
- Embedded VBI and up to 4 stereo channels in SDI
- Decoding 4:2:2 PP@ML (1.5–50 Mbps)
- 2 out of 4 active analog-audio-stereo balanced interfaces
- 2 out of 4 active AES/EBU-SPDIF audio unbalanced interfaces
- 1ST and 2ND active AES/EBU-SPDIF
- SNMP management (10/100 Base-T)
- Web-based management (10/100 Base-T)
- GPI
- Front panel A/V monitoring connectors

Software-Licensed Features

- ASI input
- Dual (identical) ASI output
- MPEG-over-IP output or IP data output (MPE de-capsulation)
- 3RD Active analog stereo pair
- 4TH Active analog stereo pair
- 3RD Active AES/EBU-SPDIF
- 4TH Active AES/EBU-SPDIF
- Dolby Digital (AC-3) LT/RT downmixing
- Linear PCM (SMPTE 302M 2000), Dolby-E pass-through
- Pro MPEG FEC
- IP Dual input (link and source redundancy)
- PID and service filtering
- RS-232 low speed data output
- DVB-S2 Advance Modulation (optional)

NOTES

This model requires a breakout cable to connect to the 3rd and 4th analog stereo pairs.

In the case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900.

1.5.4.6. IRD-2981 Interfaces and Features

The IRD-2981 is a single 4:2:2 decoder. The IRD-298x family consists of two composite video interfaces. Both CVBS interfaces are for service broadcast video quality.

Figure 1-12 illustrates the IRD-2981 rear panel. The IRD-2981 basic and software-licensed features are also detailed.

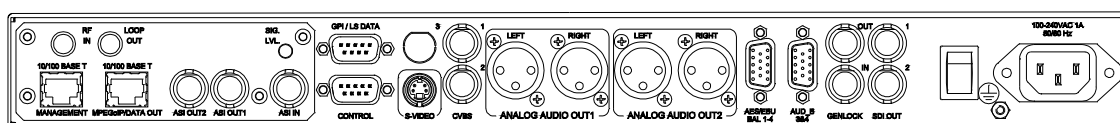


Figure 1-12: IRD-2981 Rear Panel

Basic Features

- 2 composite video interfaces – Broadcast quality
- 2 SDI interfaces
- Embedded VBI and up to 4 stereo channels in SDI
- Decoding 4:2:2 PP@ML (1.5–50 Mbps)
- 2 out of 4 active analog-audio-stereo balanced interfaces
- 2 out of 4 active AES/EBU-SPDIF audio-balanced interfaces
- Genlock input and loop-through output
- SNMP management (10/100 Base-T)
- Web-based management (10/100 Base-T)
- GPI
- Front panel A/V monitoring connectors

Software-Licensed Features

- ASI input
- Dual (identical) ASI output
- MPEG-over-IP output or IP data output (MPE de-capsulation)
- 3rd Active analog stereo pair
- 4th Active analog stereo pair
- 3rd Active AES/EBU-SPDIF
- 4th Active AES/EBU-SPDIF
- Dolby Digital (AC-3) LT/RT downmixing
- Linear PCM (SMPTE 302M 2000), Dolby-E pass-through
- Genlock input and loop-through output
- Dolby Digital (AC-3) LT/RT downmixing.
- Pro MPEG FEC
- PID and service filtering
- H.264 (One Program Only)
- RS-232 low speed data output
- DVB-S2 Advance Modulation (optional)

NOTES

This model requires a breakout cable to connect to the AES/EBU interfaces and to connect to the 3rd and 4th analog stereo pairs.

In the case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900.

1.5.4.7. IRD-2990 Interfaces and Features

The IRD-2990 is a dual 4:2:0 decoder. The IRD-299x family consists of three composite video interfaces. The CVBS #1 connector is for the broadcast quality video of decoder #1. The CVBS #2 is used for monitoring. The CVBS #3 connector is for the broadcast quality video of decoder #2.

Figure 1-13 illustrates the IRD-2990 rear panel. The IRD-2990 basic and software-licensed features are also detailed.

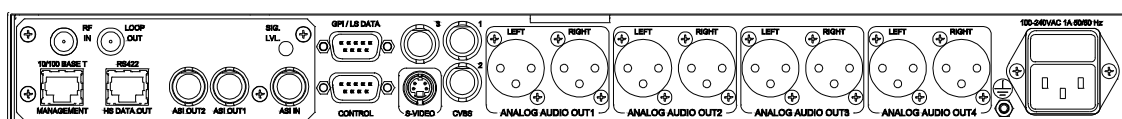


Figure 1-13: IRD-2990 Rear Panel

Basic Features

- 1 composite video for program 1- Broadcast quality (upper-right connector)
- 1 composite video for program 2 - Broadcast quality (upper-left connector)
- 1 composite video for program 1- Monitoring quality (lower connector)
- 4 active analog-audio-stereo balanced interfaces
- SNMP management (10/100 Base-T)
- Web-based management (10/100 Base-T)
- RS-422 high speed data output
- GPI

Software Licensed Features

- ASI input
- Dual (identical) ASI output
- Dolby Digital (AC-3) LT/RT downmixing
- H.264 (One program only)
- RS-232 low speed data output
- RS-422 high speed data output
- DVB-S2 Advance Modulation (optional)

NOTE

In the case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900. The Russian SECAM D/K (composite video only) is available only through special orders.

1.5.4.8. IRD-2991 Interfaces and Features

The IRD-2991 is a dual 4:2:0 decoder. The IRD-299x family consists of three composite video interfaces. The CVBS #1 connector is for the broadcast quality video of decoder #1. The CVBS #2 is used for monitoring. The CVBS #3 connector is for broadcast quality video of decoder #2.

Figure 1-13 illustrates the IRD-2991 rear panel. The IRD-2991 basic features and software-licensed features are also detailed.

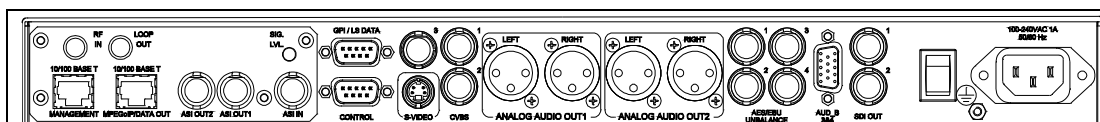


Figure 1-14: IRD-2991 Rear Panel

Basic Features

- 3 composite video interfaces (2 for broadcast, 1 for monitoring)
- 2 SDI interfaces
- Embedded VBI and up to 4 stereo channels in SDI
- 4 active analog-audio-stereo balanced interfaces
- 4 active AES/EBU-SPDIF audio unbalanced interface
- SNMP management (10/100 Base-T)
- Web-based management (10/100 Base-T)
- GPI

Software-Licensed Features

- ASI input
- Dual (identical) ASI output
- MPEG-over-IP output or IP data output (MPE de-capsulation)
- Dolby Digital (AC-3) LT/RT downmixing
- Linear PCM (SMPTE 302M 2000), Dolby-E pass-through.
- Pro MPEG FEC
- H.264 (One program only)
- PID and service filtering
- RS-232 low speed data output
- DVB-S2 Advance Modulation (optional)

NOTES

This model requires a breakout cable to connect to the 3rd and 4th analog stereo pairs.

In case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900.

1.5.4.9. IRD-2992 Interfaces and Features

The IRD-2992 is a dual 4:2:0 decoder. The IRD-299x family consists of three composite video interfaces. The CVBS #1 is for service broadcast video quality. The CVBS #2 is for service monitoring and OSD video quality. The CVBS #3 is for additional service broadcast video quality.

Figure 1-15 illustrates the IRD-2992 rear panel. The IRD-2992 basic features and software-licensed features are also detailed.

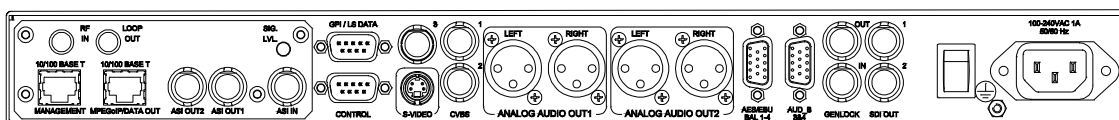


Figure 1-15: IRD-2992 Rear Panel

Basic Features

- 3 composite video interfaces (2 for broadcast, 1 for monitoring)
- 2 SDI interfaces
- Embedded VBI and up to 4 stereo channels in SDI
- 4 active analog-audio-stereo balanced interfaces
- 4 active AES/EBU-SPDIF audio balanced interfaces
- SNMP management (10/100 Base-T)
- Web-based management (10/100 Base-T)
- GPI

Software-Licensed Features

- ASI input
- Dual (identical) ASI output
- MPEG-over-IP output or IP data output (MPE de-capsulation)
- Genlock input and loop-through output
- Dolby Digital (AC-3) LT/RT downmixing
- Linear PCM (SMPTE 302M 2000), Dolby-E pass-through
- Pro MPEG FEC
- H.264 (One program only)
- PID and service filtering
- RS-232 low speed data output
- DVB-S2 Advance Modulation (optional)

NOTES

This model requires a breakout cable to connect to the AES/EBU interfaces and to connect to the 3rd and 4th analog stereo pairs.
In the case of power failure or system shutdown, ASI OUT 1 output will become ASI loop-through. Use ASI OUT 1 output for cascading a chain of IRD-2900

1.6. MANAGEMENT

The following sections detail the different management interfaces and methods available to control the iRD-2900

1.6.1. Local Management

The IRD-2900 supports two local management methods:

- **Front Panel Control** - The IRD-2900 front panel provides an easy to use graphical display with a large LCD screen and intuitive control.
- **PC Terminal Control** - The IRD-2900 supports PC terminal control from a standard PC terminal (over RS-232 or RS-485). The terminal provides access to control and monitor functionalities that are not available when using any IRD-2900 front panel feature.

1.6.2. Remote Management

IRD-2900 supports three remote management methods:

- **NMS-4000 and Future NMS-7000** - The NMS-4000 Network Management System enables management of the IRD-2900 through the transmission link. The NMS-4000 provides a menu and dialog-driven interface from which control, modification, and upgrade operations can be performed on the IRD.
- **Web-Based Management** - IRD-2900 supports web-based management. Managing IRD-2900 parameters using web-based control is as easy as point-and-click.
- **Telnet** - The IRD-2900 supports remote control throughout the Internet. The IRD-2900 can be controlled and configured from a standard PC terminal (over Ethernet). The terminal provides access to control and monitor functionalities that are not available when using any IRD-2900 front panel feature.

1.7. CHARACTERISTICS AND SPECIFICATIONS

The following section provides with the IRD-2900 Characteristics and specification.

1.7.1. Transport Stream Interface Options

FEATURE	SPECIFICATIONS
DVB-S SINGLE INPUT	• Interface - F-type 75Ω • Constellation - QPSK • Single L-band input • Frequency range - 950-2150 MHz • RF Input level: (-65) – (-25) dBm • Symbol rate range - 1-45M Sym/s • L-Band RF input with LNB control and loop-through output
DVB-S DUAL INPUT	• Interface - F-type 75Ω • Constellation - QPSK • Dual L-band input • Dual independent demodulators • Manual selection between inputs • Frequency range - 950-2150 MHz • Symbol rate range - 1-45M Sym/s • L-Band RF input with LNB control and loop-through output

FEATURE	SPECIFICATIONS
DVB-DSNG SINGLE INPUT	• Interface - F-type 75Ω • Constellation – QPSK, 8PSK and 16QAM • Single L-band input • Frequency range - 950-2150 MHz • Symbol rate range - 1-45M Sym/s • L-Band RF input with LNB control and loop-through output
DVB-S2 SINGLE INPUT	• Applications - Broadcast services and DSNG EN 302 307 • Mode – CCM, ACM • Constellations: QPSK, 8PSK, 16APSK • FEC frames: Normal (64800 bits), short (16200 bits) • Roll-Off: 0.35, 0.25, 0.20 • Pilots – On, Off • Frequency range: 950 MHz - 2150 MHz • Symbol rate range – 1Msym/s - 45Msym/s • 2 L-Band RF 75Ω inputs with LNB control • Modulation Scheme Recovery: Automatic (ACM mode) • Physical Layer Scrambling support • Multiple input transport stream (MSI) support using Input Stream Identifier (ISI)

FEATURE	SPECIFICATIONS
MPEGoIP INPUT	- Two physical links - 10/100 Base-T, RJ-45 – one active at a time - Two logical sources (sockets) – one active at a time - Physical Link and logical source redundancy (coupled) - De-Jittering buffer size - configurable 100-2000mSec - TS bit rate: up to 44 Mbps - Encapsulation type: UDP and RTP (Automatic detection) - SPTS/MPTS - Unicast/Multicast - IGMPv2 - Forward Error Correction (FEC) - ProMPEG CoP3v2 - Maximum input bit-rate: 25Mb/s - Columns only FEC protection - Matrix dimensions - Columns 1-20, Rows 4-20. Columns*Rows $\leq$ 100 (Automatic detection)
MPEGoIP OUTPUT	- TS bit rate - up to 60 Mbps - SPTS/MPTS - Encapsulation - UDP - All programs and PIDs are present in the output TS - Interface 10/100 Base-T, RJ-45
DVB-ASI INPUT	- Interface: copper, BNC 75 ohm - TS bit rate: up to 100 Mbps (Byte and Burst mode)

FEATURE	SPECIFICATIONS
DVB-ASI OUTPUT	• 2 ASI connectors: copper, BNC 75 ohm • ASI options: • ASI OUT 1 - output stream with decrypted selected program, output stream and loop-through • ASI OUT 2 - output stream with decrypted selected program, output stream • ASI output rate - up to 100 Mbps (Byte mode)
TELECOM G.703 INPUT	• Unframed PDH Data rates::E1,E2 or E3 • FEC (optional): DVB-C FEC • Loop-through output
DVB-PDH INPUT	• Interface: ATM AAL-1 • Data rates: DS3 or E3 • Loop-through output

1.7.2. Advanced Processing

FEATURE	SPECIFICATIONS
SERVICE AND PID FILTERING	• Active on ASI and IP outputs • PCR re-stamping • VBR and CBR modes (NULL stuffing) • Forward only and filter only modes • Dynamic Service filtering (tracks PIDs' modifications) • Static PID filtering • PSI/SI tables are not modified.

FEATURE	SPECIFICATIONS
DATA	• High speed data: RS-422 Up to 20 Mbps, RJ-45 (supported by IRD-2960, IRD-2990) • IP Data Out (RJ-45): up to 60Mbps (MPE de-capsulation)

1.7.3. Decoder Outputs

FEATURE	SPECIFICATIONS
VIDEO	• Video Formats: • PAL-B/G/I/M/N/D, NTSC, SECAM L/B/G/K1 • Russian SECAM D/K (composite video only supported only by special order in IRD-2960, IRD-2961 and IRD-2990) • Decoding: • 4:2:0 MP@ML (1.5 – 15 Mbps) • 4:2:2 PP@ML (1.5 – 50 Mbps) (supported only in IRD298x) • Maximum TS decoding bit rate: 108Mbps • Video resolution interpolation: Pan-scan, letter box or Pass through • Aspect ratios: 4:3/16:9 • Aspect ratio 14:9 by signaling over VBI video index • Graphical processing (OSD): DVB subtitling, EBU (Teletext) subtitling • OSD only through monitoring output • Genlock input and loop-through output and phase compensation (supported only by IRD2962, IRD2963, IRD2981 and IRD2992) • Genlock Sync lock resolution: +/- 37nSec

FEATURE	SPECIFICATIONS
H.264	Based on Scopus-Neotion CAM module Video Characteristics: • Video decoding standard: H.264 part 10 • Profile: Full D1 Main Profile up to Level 3.0 (one 4:2:0 service) • Video Format: PAL & NTSC • Video bit-rate: CBR only • Picture aspect ratio: 4:3 and 16:9 Transport-Stream characteristics: • Maximum Transport-stream BW: 40Mb/s • Minimum Transport stream stuffing: 200Kb/s • PCR should be included in the video PID
FRONT PANEL MONITORING	• Video monitor output connector (Supported only by 298x) • Audio monitor output connector (Supported only by 298x)
VBI RE-INSERTION	• All VBIs adhere the relevant standards including the line numbers • In composite video and embedded SDI • WST Teletext and inverted Teletext • WSS, VPS, VITC, CC, AMOL I, AMOL II (Nielsen), TV-Guide, V-CHIP • Enhanced VITS with built-in generator

FEATURE	SPECIFICATIONS
AUDIO	• Modes: stereo, joint stereo, dual channel, single channel • Analog max output level: +18 dBu @ 600Ω • Digital max output level: 0 dBfs • Attenuation control at -64 dB to 0 dB and mute • Dolby Digital (AC-3) Pass-through • Dolby Digital (AC-3) LT/RT downmixing • Linear PCM (SMPTE 302M 2000) supported over analog and digital outputs 2/3/4 (supported in IRD2980, IRD2981, IRD2991, IRD2992) • Dolby-E pass-through supported over digital outputs 2/3/4 (supported in IRD2980, IRD2981, IRD2991, IRD2992)

1.7.4. Conditional Access

FEATURE	SPECIFICATIONS
EMBEDDED DVB-DESCRAMBLING	• BISS mode-1 • BISS-E • CAS-5000
DVB-CI	• Interface – 2 CI slots EN-50221 (Only 1 active simultaneously) • Maximum of decrypted programs - 1 for single decoder, and 2 for dual decoder (in case the specific CAM supports it). • Maximum TS bitrate – 72 Mbps • CA methods: Multicrypt, Simulcrypt • CASs: Viaccess®, Irdeto®, Conax®, MediaGuard®, Nagravision®, Cryptoworks®, VideoGuard®, OnDigital®, CODICrypt®

1.7.5. Control and Monitoring

FEATURE	SPECIFICATIONS
LOCAL	• Graphical easy-to-use front panel • Advanced satellite scanning (CLI support only) • Operates in service and PID modes • 2 GPI dry contacts for various status and fault indications
ENHANCED DVB MONITORING	• Front panel display: signal quality, Eb/N0, BER, ASI format, network and service information, CA information, CI slots, video and audio decoded information

REMOTE	• SNMP management • Web-based management • Telnet • Terminal via RS-232 or RS-485 • Software download
OVER THE AIR	• Software download

1.7.6. Compliance

FEATURE	SPECIFICATIONS
EMC	• EN55013 (CISPR 13) • EN55020 (CISPR 20) • EN55022 (CISPR 22) • EN55024 (CISPR 24) • FCC part 15 (Class B)
SAFETY	• EN60950 • CB (IEC60950) • UL60950 • cTUVus

1.7.7. Environmental Conditions

FEATURE	SPECIFICATIONS
OPERATION	• Temperature - 0°C - 50°C • Humidity - 5% - 90% (non-condensing)
STORAGE AND TRANSPORTATION	• Temperature - -40°C - 70°C • Humidity - 0% - 95% (non-condensing)

1.7.8. Physical and Power Specifications

FEATURE	SPECIFICATIONS
PHYSICAL	• 1RU unit, 19" rack mountable • Dimensions (HxWxD) – 1RU X 19" X 14"/44mm X 482.6mm X 357mm • Weight – 3.5Kg. (7.7lbs).
POWER	• Voltage: • 100 - 240V AC, 50/60Hz • Power consumption – up to 50w max

Chapter 2.

INSTALLATION

This section details the safety precautions and inventory check when installing the IRD-2900 Series.

2.1. SAFETY PRECAUTIONS

To avoid injury and prevent equipment damage, observe the following safety precautions:

- Do not move or ship equipment unless it is correctly packaged in its original wrapping and shipping containers.
- Only Scopus trained personnel can perform service and maintenance.
- To prevent lightning damage, ground the unit according to local regulations.
- Do not permit unqualified personnel to operate the unit.

2.1.1. Restricted Access Area

The DC powered equipment should only be installed in a Restricted Access Area

2.1.2. Installation Codes

This device must be installed according to national electrical codes. For North America, equipment must be installed in accordance with the US National Electrical Code, Articles 110-16, 110-17, and 110-18 and the Canadian Electrical Code, Section 12.

Add Markings for AC units for Denmark, Finland, and Sweden (marked on product):

- **Denmark**- "Unit is class I, unit shall be used with an AC cord set suitable with Denmark deviations. Cord shall including an earthing conductor. Unit shall be plugged into a wall socket outlet which connected to protective earth. Socket outlets which are not connected to earth shall not be used!"
- **Finland** - (Marking label and in manual) -"Laite on liitettävä suojamaadoituskoskettimilla varustettuun pistorasiaan"
- **Sweden** (Marking label and in manual) - "Apparaten skall anslutas till jordat uttag."

FOR NORTH AMERICAN

power connection, select a power supply cord that is UL Listed and CSA Certified 3 - conductor, [18 AWG], terminated in a molded on plug cap rated 125 V, [15 A], with a minimum length of 1.5m [six feet] but no longer than 4.5m...For European connection, select a power supply cord that is internationally harmonized and marked "<HAR>", 3 - conductor, 0,75 mm² minimum mm² wire, rated 300 V, with a PVC insulated jacket. The cord must have a molded on plug cap rated 250 V, 10 A..."

2.2. INVENTORY CHECK

CAUTION

IF ANYTHING IS MISSING OR DAMAGED, DO NOT CONTINUE WITH THE INSTALLATION. SEE THE PROCEDURES IN THE FRONT OF THIS MANUAL FOR SCOPUS SUPPORT INFORMATION.

Before installing the unit, ensure that all the equipment has arrived and check for damage according to the following list:

ITEM	QUANTITY
IRD-2900 Professional Integrated Receiver Decoder	1
Power cable	1
User manual, IRD-2900 Professional Integrated Receiver Decoder	1
Breakout cable if applicable	1/2

2.3. INSTALLATION INSTRUCTIONS

This section explains the mechanical installation of the rack and IRD-2900 device.

2.3.1. Site Preparation

When installing the IRD-2900 in a standard 19" rack, verify that the rack is fully prepared for the installation. To facilitate easy access during installation and maintenance, leave sufficient space behind the rack.

The IRD-2900 must be installed within 1.5m (5 feet) from an easily accessible grounded AC outlet, capable of furnishing the required supply voltage as detailed in Section 2.5.1.

The use of a UPS (Uninterrupted Power Supply) and an AVR (Automated Voltage Regulation) is highly recommended to ensure uninterrupted operation.

Ensure that a qualified electrician has installed the main power supply in accordance with local power authority regulations. All powering should be wired with an earth leakage in accordance with local regulations.

**WARNING**

TO AVOID ELECTROCUTION ENSURE THAT THE RACK HAS BEEN CORRECTLY GROUNDED BEFORE SWITCHING ON THE IRD-2900 DEVICE. WHEN REMOVING THE UNIT, REMOVE THE GROUNDED CONNECTION ONLY AFTER THE UNIT IS SWITCHED OFF AND UNPLUGGED.

2.3.2. Mechanical Rack Installation

Due to its considerable weight, the device must be placed on a pair of rack-slides, specially designed for Scopus products (see Figure 2-1).

**CAUTION**

THE RACK-SLIDES MUST BE INSTALLED IN THE DEVICE'S DESIGNATED LOCATION WITHIN THE RACK, SINCE THEY ARE INTENDED TO CARRY THE DEVICE'S WEIGHT. DO NOT RELY ONLY ON THE DEVICE'S MOUNTING BRACKETS FOR SUPPORTING THE DEVICE'S WEIGHT. DOING SO MAY RESULT IN DAMAGE TO THE RACK, DEVICE, AND OTHER MOUNTED DEVICES.

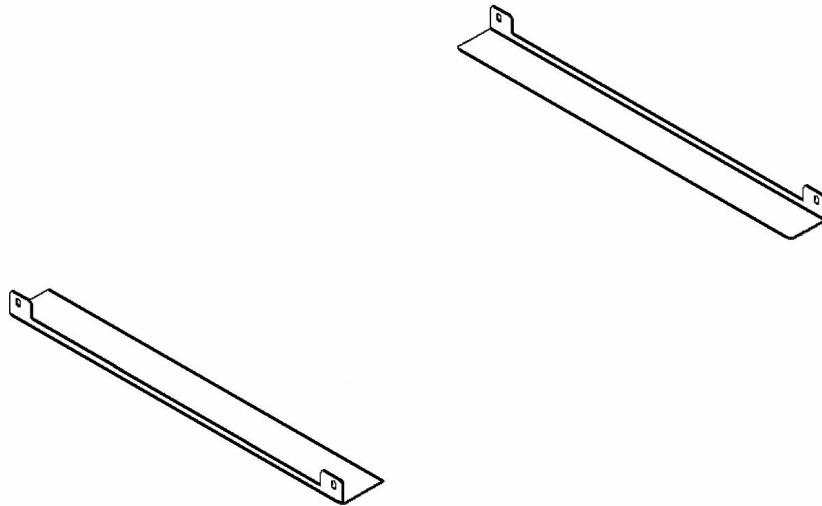


Figure 2-1: Pair of Scopus Rack Slides

Slide structure is especially designed to ensure proper ventilation of Scopus products, as it is consistent with the ventilation scheme of all Scopus rack-mount devices.

 CAUTION

USING RACK-SLIDES THAT ARE NOT SPECIALLY DESIGNED FOR SCOPUS RACK-MOUNT DEVICES MAY RESULT IN OVERHEATING AND DAMAGE TO ONE OR MORE MOUNTED DEVICES.

Figure 2-2 illustrates the exact measurements of Scopus' special rack-slides.

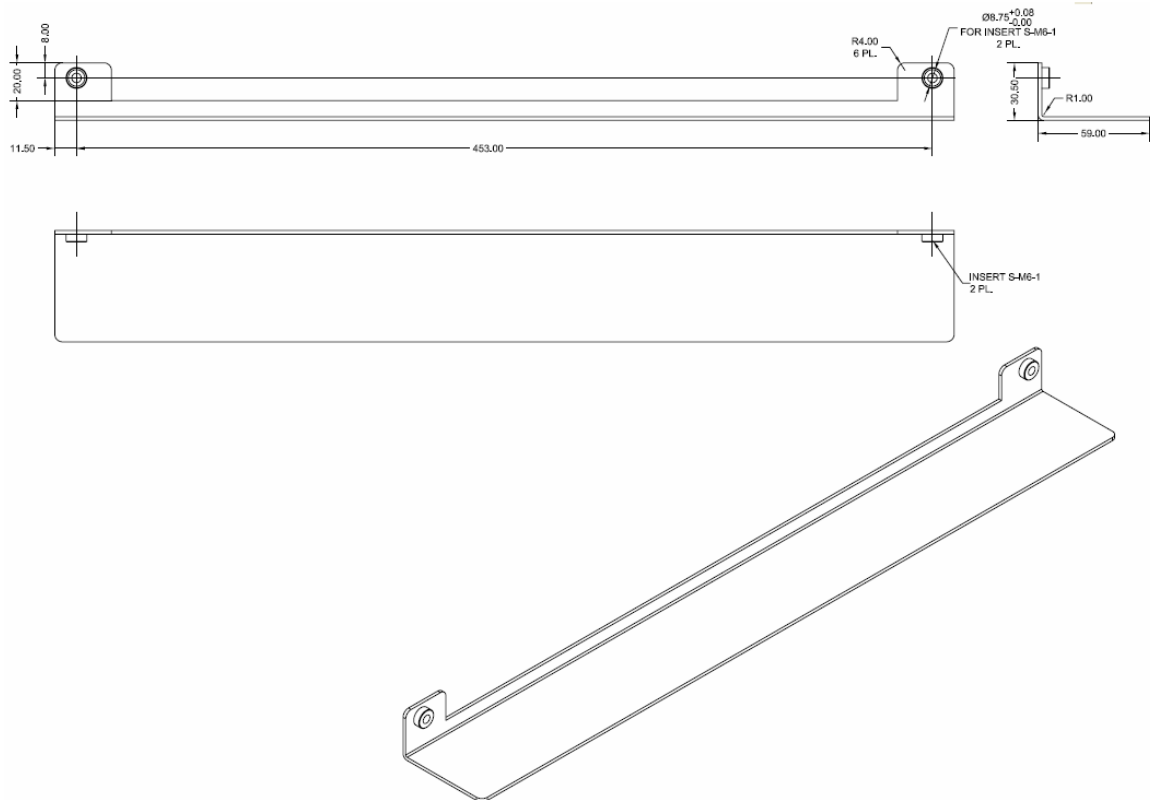


Figure 2-2: Scopus Rack Slide Measurement Specifications

Fasten the pair of rack slides to the rack's side rails in the device's designated location with four M6 screws (two on each side of the rack) before continuing. After tightly fastening the supporting rack-slides to the rack, perform the following steps to install the device within the rack:

1. Lay the device on the rack-slides in its designated location within the rack. Figure 2-3 is a see-through illustration, demonstrating the placing of the device on the rack-slides.

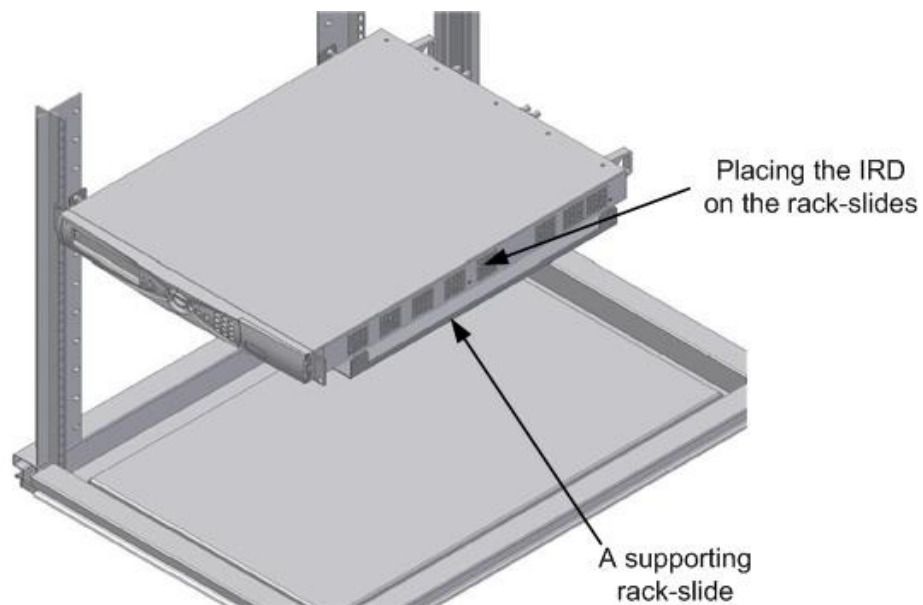


Figure 2-3: Laying the Device on the Rack-Slides

2. The device is supplied with two mounting brackets (see Figure 2-4). The mounting brackets are clipped to the device chassis on both sides before leaving the factory. Align the mounting brackets' holes with the relevant holes in the rack's side rails.

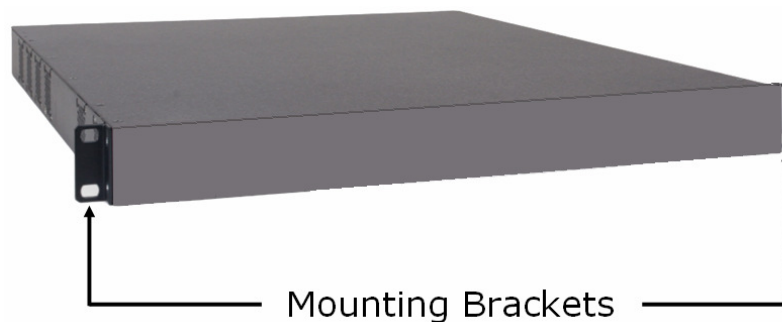


Figure 2-4: Clipped Mounting Brackets

3. Fasten the mounting brackets to the side-rails with four screws (two on each side). The device is now safely installed within the rack.

Figure 2-5 illustrates a general view of the device, when installed within the 19" rack.

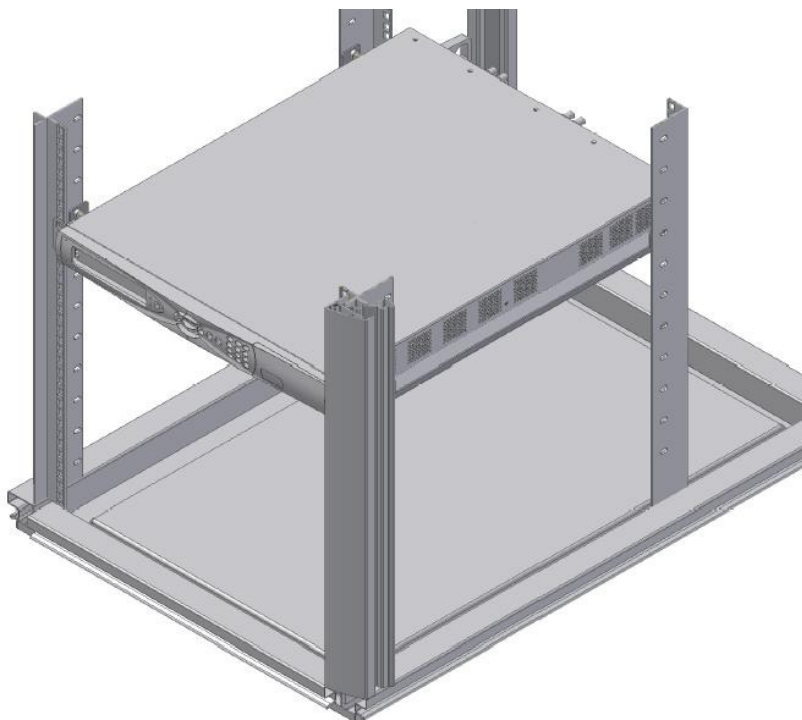


Figure 2-5: Device Mounted on a Pair of Rack-Slides

A single pair of rack-slides can carry up to 50Kg (110 lbs). This allows saving rack space by placing a number of Scopus rack-mount devices one upon the other (be careful not to exceed the specified maximum weight).

 WARNING

DO NOT APPLY OVER 50KG (110LBS) OF WEIGHT ON A SINGLE PAIR OF RACK-SLIDES. DOING SO MAY RESULT IN COLLAPSING OF THE RACK-SLIDES, SERIOUS INJURIES TO PERSONNEL, AND DAMAGE TO EQUIPMENT.

Figure 2-6 illustrates multiple devices when rack-mounted on a single pair of rack-slides.

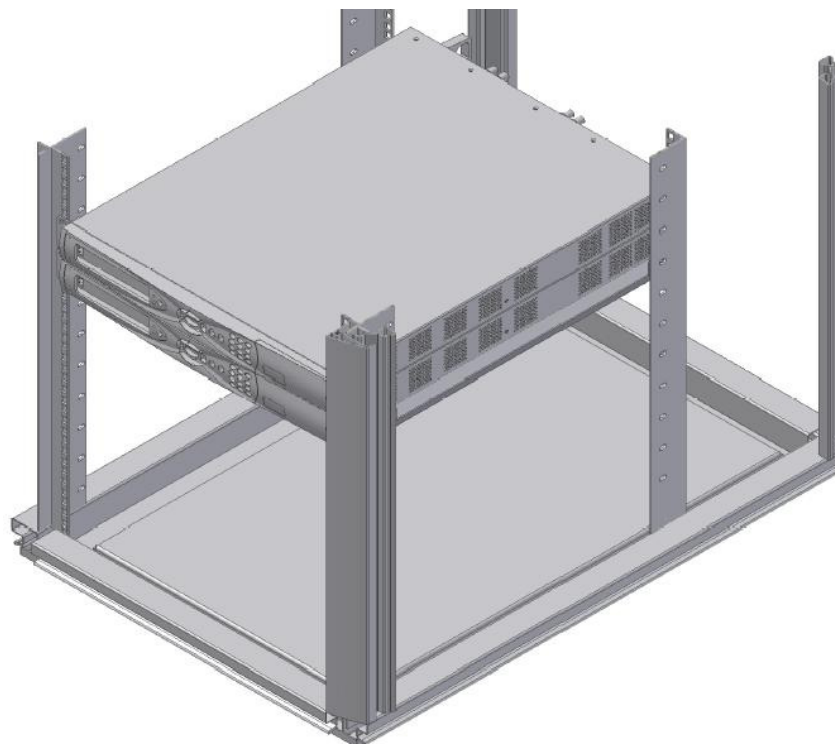


Figure 2-6: Multiple Devices Mounted on a Single Pair of Rack-Slides

2.3.3. Insertion of the DVB-CI Module (PCMCIA)

 CAUTION

DO NOT REMOVE OR INSERT THE DVB-CI MODULE OR THE SMART CARD WHILE THE IRD-2900 IS POWERING UP OR INITIALIZING.

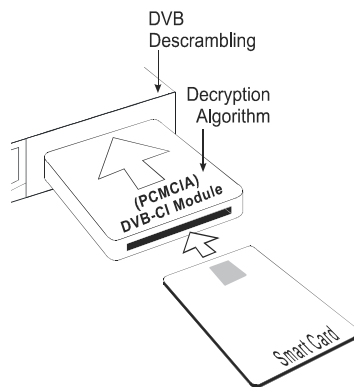


Figure 2-7: DVB-CI Module

Figure 2-7 illustrates the IRD-2900 with the DVB-CI module (PCMCIA card) and the Smart Card used to decrypt the incoming signal. The IRD-2900 is provided with two PCMCIA slots for up to two DVB-CI modules. The PCMCIA should be firmly inserted into one of the two provided slots to ensure contact. Each DVB-CI module accommodates one Smart Card, inserted with the UP mark pointing upwards and forward.

When installed, the card is detected automatically by the IRD-2900 and enabled if the three following conditions are valid:

- The installed card must be EN50221 compatible
- Services have been selected at **TV1/TV2** (for further information see section 4.2.5.1)
- Using a valid card licensing

2.4. CABLE CONNECTION

The IRD-2900 provides all the connections on its rear panel.

The rear panel is comprised of audio outputs, video outputs, data outputs, and control interfaces (see Table 2-1 for cable connection specifications).

Figure 2-8 illustrates the IRD-2992 rear panel in order show connector types.

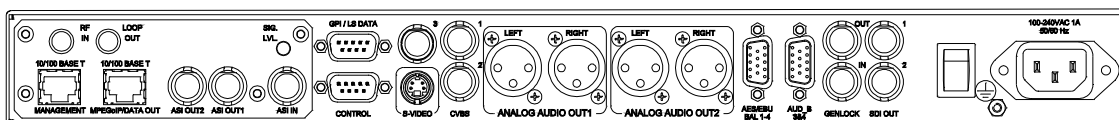


Figure 2-8: IRD-2992 Rear Panel

Table 2-1: IRD-2900 Rear Panel – Connectors and Cables

INTERFACE	CONNECTOR TYPE	CABLE TYPE
<i>L-Band Front-end RF IN</i>	75 Ω F-Type	RG-6
<i>L-Band Front-end Loop-Through Connector</i>	75 Ω F-Type	RG-6
<i>MPEGoIP Input</i>	RJ-45	FTP Cat 5
<i>Management</i>	RJ-45	FTP Cat 5
<i>MPEGoIP/DATA Output</i>	RJ-45	FTP Cat 5
<i>Analog Audio Out1 left</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Analog Audio Out1 right</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Analog Audio Out2 left</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Analog Audio Out2 right</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Video Out, S-Video Y/C</i>	75 Ω DIN connector	Super video cable
<i>Composite Video Out, CVBS1</i>	75 Ω BNC	RG-59 RG11 A/U (recommended)
<i>Composite Video Out, CVBS2</i>	75 Ω BNC	RG-59 RG11 A/U (recommended)
<i>Composite Video Out, CVBS3</i>	75 Ω BNC	RG-59 RG11 A/U (recommended)

Table 2-1: IRD-2900 Rear Panel – Connectors and Cables

INTERFACE	CONNECTOR TYPE	CABLE TYPE
Data Output (RS-232/RS-422)	9 PIN D-Type	Serial Cable
Control (RS-232/RS-485)	9 PIN D-Type	Serial Cable
Audio Balanced 3 & 4	600 Ω D-sub 15p to 4XLR	Breakout Cable 204346 (Scopus material)
AES/EBU 1-4 Unbalanced	75 Ω 4xBNC or 75 Ω D-sub 15p	BNC Cable
ASI in/out1/out2	75 Ω BNC	RG-59 RG11 A/U (recommended)
Genlock In	75 Ω BNC	RG-59 RG11 A/U (recommended)
Genlock Out	75 Ω BNC	RG-59 RG11 A/U (recommended)
SDI out 1 & 2	75 Ω BNC	RG-59

The IRD-2900 series supports terminal-control from a standard PC through a serial RS-232/RS-485 connector.

Figure 2-9 illustrates the Control Interface and Low Speed Data/GPI 9-pin male connectors pin numbering.

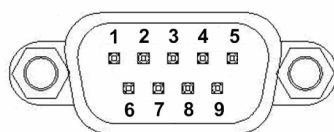


Figure 2-9: 9-Pin Male Connector Pin Numbering

Table 2-2 lists the RS-232/RS-485 Control Interface connector pin-out.

Table 2-2: RS-232/RS-485 Control Connector Pin-Out

PIN	FUNCTION	PIN	FUNCTION
1	RS-232 CD/RS-485 TX (+)	6	RS-232 DSR/RS-485 TX (-)
2	RS-232 RxD	7	RS-232 RTS
3	RS-232 TxD	8	RS-232 CTS/RS-485 RX (+)
4	RS-232 DTR	9	RS-232 Ring/RS-485 RX (-)
5	Common		

Table 2-3 lists the RS-232 low speed data and GPI interface pin-out. This connector is used at the same time for both GPI and low-speed data output.

Table 2-3: RS-232 Low Speed Data and GPI Pin-Out

PIN	FUNCTION	PIN	FUNCTION
1	GPI1 NC	6	GPI1 Common
2	RxD	7	GPI1 NO
3	TxD	8	GPI2 NC
4	GPI2 Common	9	GPI2 NO
5	Common		

Table 2-4 lists the RS-422 high speed data and interface pin-out.

Table 2-4: RS-422 High Speed Data Pin-Out

PIN	FUNCTION	PIN	FUNCTION
3	Enable (-)	6	Enable (+)
4	Data (-)	7	Clock (-)
5	Data (+)	8	Clock (+)

Table 2-5 lists the Audio 3-4 breakout cable interface pin-out.

Table 2-5: Audio 3-4 Breakout Cable Pin-Out (Scopus P/N 204346)

PIN	FUNCTION	PIN	FUNCTION
1	Audio 4 XLR Right (+)	8	Audio 4 XLR Left Common
2	Audio 4 XLR Left (+)	10	Audio 3 XLR Left Common
3	Audio 3 XLR Right Common	11	Audio 4 XLR Right (-)
4	Audio 3 XLR Right (+)	12	Audio 4 XLR Left (-)
5	Audio 3 XLR Left (+)	14	Audio 3 XLR Right (-)
7	Audio 4 XLR Right Common	15	Audio 3 XLR Left (-)

Table 2-6 lists the AES/ABU balanced breakout cable pin-out.

Table 2-6: AES/EBU Balanced Breakout Cable Pin-Out (Scopus P/N 204345)

PIN	FUNCTION	PIN	FUNCTION
1	AES/EBU 4 (+)	8	AES/EBU 3 Common
2	AES/EBU 3 (+)	10	AES/EBU 1 Common
3	AES/EBU 2 Common	11	AES/EBU 4 (-)
4	AES/EBU 2 (+)	12	AES/EBU 3 (-)
	AES/EBU 1 (+)	14	AES/EBU 2 (-)
7	AES/EBU 4 Common	15	AES/EBU 1 (-)

2.5. INITIALIZATION AND CONFIGURATION

Before powering-up the IRD-2900, ensure that all cabling is correct. Ensure that the unit is connected to the main power supply and correctly grounded.

2.5.1. Electrical Power Connection

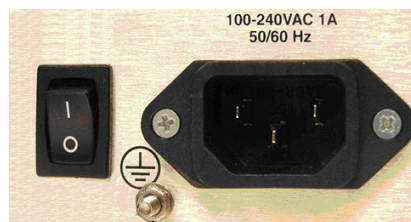
The IRD-2900 is powered by an AC power supply unit or by an optional external DC power source. The following describes the AC and CD electrical power connections.

2.5.1.1. AC Power Supply

Grounding of is provided when the AC power cable is connected to the device's AC connector. The IRD-2900 is shipped with either AC connector configuration, as shown in Figure 2-10.

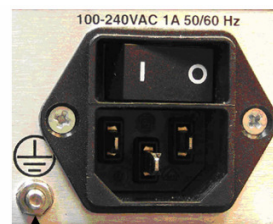
Before powering-up a rack-mounted IRD-2900, the device's grounding jackscrew must be connected to the rack housing, which must be correctly grounded (see Figure 2-10).

AC Power Supply Configuration 1



Grounding
Jackscrew

AC Power Supply Configuration 2



Grounding
Jackscrew

Figure 2-10: Power Supply Configurations and Rack-Mount Grounding Jackscrew

2.5.1.2. DC Power Supply

DC power supply is an optional feature of the IRD-2900. If the unit is fitted with a -48V CD power supply, connect the external 48V DC source by performing the following (refer to Figure 2-11):

1. Connect a (+) 48V DC source wire to the **(+)** contact on the power terminal board.
2. Connect a (-) 48V DC source wire to the **(-)** contact on the power terminal board.
3. Connect Grounding point wire to the **(GND)** contact on the power terminal board.

When the IRD is rack-mounted, the jackscrew (see Figure 2-11) must be connected to the rack housing, which in turn should be properly grounded.

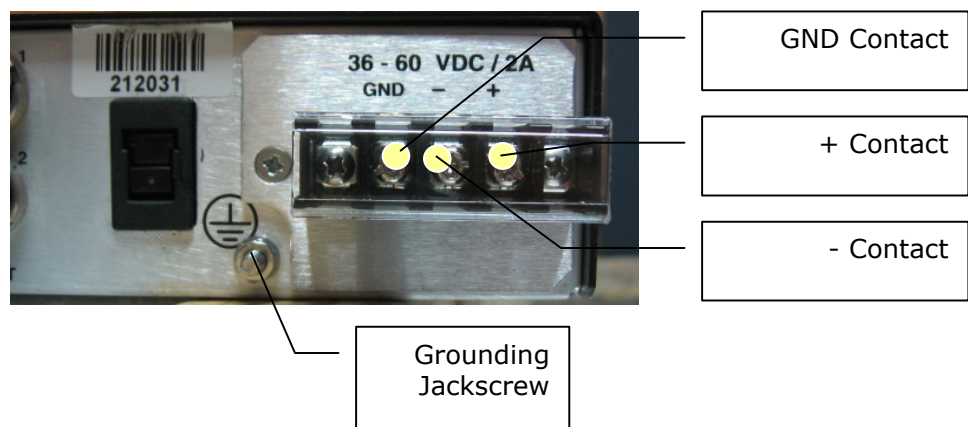


Figure 2-11: DC Power Supply and Rack-Mount Grounding Jackscrew

2.5.2. Powering Up

When powering up the IRD-2900 and the receiver is not tuned, expect one of the following warnings:

- **Front-End warning** – Demodulator not sync
- **Bit Stream warning** – No sync – 0x47 detected
- **Bit Stream warning** – PSI not detected

In case the IRD-2900 warning LED is lit orange, the operator must perform the following:

- Tune or configure the IRD-2900 device
- Select a service from the input stream

When the IRD-2900 is correctly configured, "All OK" is displayed and both LEDs are lit green.

NOTE

Prior to initialization, review Chapter 4-Operation and Management, for how to use and navigate through the menus and for information on configuration parameters.

2.5.3. Tuning

The IRD-2900 receiver must be configured to receive a transport stream. For details about an IRD-2900 device with a DVB-S receiver module, see Section 4.2.2. For details about an IRD-2900 device with an MPEG-over-IP front-end module, see Section 4.2.2.4.

2.5.4. Performing Serviceability Check

After installing, initializing, or configuring the IRD, maintenance checks must be performed to ensure that the unit is serviceable. A video monitor must be connected to the IRD-2900 to perform the check lists systematic instructions for performing a serviceability check.

Table 2-7: IRD-2900 Serviceability Check

STEP	CHECK
1	On the LCD display, the LCD status message reads "STATUS OK".
2	On the IRD-2900 front panel the two LEDs are lit green.
3	The service selected is displayed on the LCD display.
4	Video picture is displayed on monitor.
5	Audio channels left and right.

Chapter 3.

IRD-2900 CONTROL INTERFACES

This section explains the Front Panel and Web Management control interfaces used for operating, configuring, and monitoring the IRD-2900.

3.1. FRONT PANEL CONTROL INTERFACE

The front panel control interface explained in this section is composed of the following:

- **Controls and Displays** – see section 3.1.1
- **Front Panel Screens** – see section 3.1.2
- **Menu Tree** – see section 3.1.3
- **Front Panel Initialization Sequence** – see section 3.1.4

3.1.1. Controls and Displays

The front panel is used for extensive local control and for monitoring the device's operation. Figure 3-1 illustrates the IRD-2900 front panel.

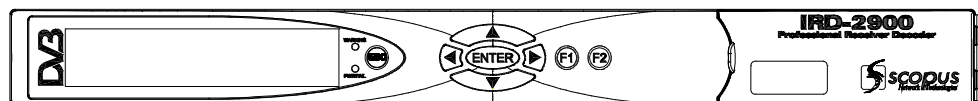


Figure 3-1: Front Panel

The IRD-2900 front panel contains:

- **LCD Display**

The LCD display is a large, easy to use, graphical display. It is used to display enhanced menus with graphical interfaces, such as: charts, radio buttons, tables, and icons.

- **Status LEDs**

The two LEDs indicate WARNING and PWR/FAIL statuses, when both LEDs are lit green the IRD-2900 status is OK. The WARNING LED (Green/Orange) indicates the operational status. The PWR/FAIL LED (Green/Red) indicates the hardware status.

- **Arrow Keys**

The arrow keys include [Up], [Down], [Right], [Left]. The keys are used to navigate between the different menu items and sub-menus. They are also used to select and change parameters during setup and configuration procedures.

- **[Enter] Key**

The Enter key is used for selecting or entering a configuration setup.

- **[Esc] Key**

The ESC key is used to abort a configuration setup or to return to the menu's previous level.

- **Programmable Keys**

The [F1] and [F2] buttons allow quick access to specific front-panel menu screen. Each programmable key can store one menu screen path.

To create a quick access shortcut:

1. Go to the wanted front-panel menu screen. Use the keypad to navigate.
2. Press and hold the [F1] key or the [F2] key, when press [Esc].
3. Press [ENTER] (while holding the [F1] key or the [F2] key).
4. Release the [ENTER] key.
5. Release the [F1] key or [F2] key.

3.1.2. IRD-2900 Front Panel Screen Types

The IRD-2900 display leads to the following five screen types:

- Menu Navigation screen
- Edit Menu screen
- Table Menu screen
- Edit Value screen
- Select Value screen

NOTE

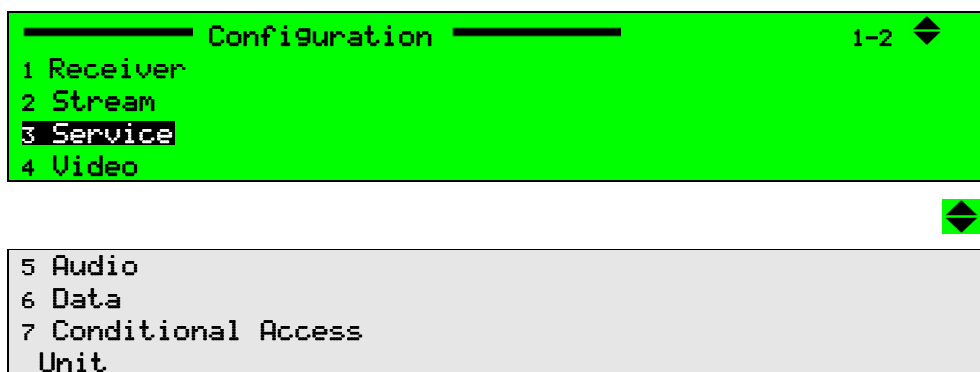
The Front panel can display only up to four menu items at a time. When a menu has more than four items, the first four are visible in the panel, followed by a scroll icon [↕]. Additional items can be accessed using the [up]/[down] arrows. To illustrate the difference between the two types of items, two types of screen shots were used in this user manual: dark grey for the visible items and light grey for the hidden ones.

Sections 3.1.2.1 to 3.1.2.5 detail the different front panel screen types.

3.1.2.1. Menu Navigation Screen

The **Menu Navigation** screen enables navigating through the tree structure of the IRD-2900 menu.

In this example, the menu navigation screen displays the following items:



A. Top line indicates the menu name (Configuration) and the menu hierarchal position (1-2, for example **Configuration** under the **Root** menu).
[▲Up]/[◀Up/Down]/[▼Down] symbols indicate that up or down scrolling is enabled.

B. Next up to four displayed lines is a list of numbered items.

C. Additional Available Items

The list can include more than four items, but only four items are visible at a time. When more than four items are enabled, you can scroll using the [UP]/[Down] arrow keys.

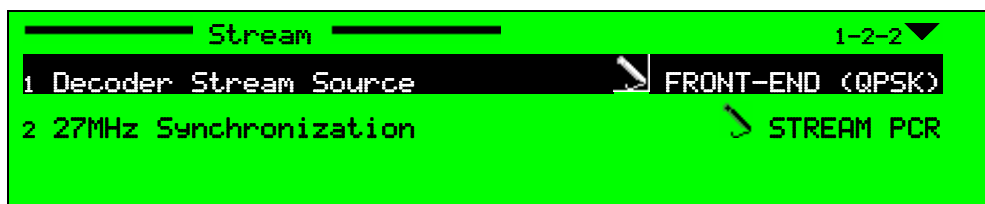
The currently selected option is displayed with white characters over a black background (see Item #3 in the example above).

To access the next menu level press [Enter] to select the marked item (either another menu navigation screen or an Edit Menu screen).

3.1.2.2. Edit Menu Screen

The **Edit** menu screen enables selecting, changing or displaying the value of a parameter or set of parameters.

In this example, the **Edit Menu** screen displays the following items:



A. Top line indicates the menu name (**Stream**) and the menu hierarchal position (**1-2-2**, for example **Root-Configuration-Stream**) in the IRD-2900 Menu Tree. [▲Up]/[◀Up/Down]/[▼Down] symbols indicate that up or down scrolling is enabled.

B. Next up to four displayed lines is a list of numbered items relevant to the menu and their current values. The information provided for each list item is:

- **Left-aligned column** displays a numbered list of parameters.
- **Right-aligned column** displays parameter values.
 - Editable parameters have a pencil icon  next to them.
 - Parameters without the pencil icon are for information only.

C. Additional Available Items

The list can include more than four items, but only four items are visible at the time. When more than four items are enabled, you can scroll the list using the **[UP]/[Down]** arrow keys.

The currently selected option is displayed with white characters over a black background (see Item #1 in the example above).

Press **[ESC]** to abort the selection or to return to the menu's previous level.

Press **[Enter]** to select the pointed  editable option; a parameter-editing screen is displayed. This can be a Table Menu screen, an Edit Value screen, or a Select Value screen.

3.1.2.3. Table Menu Screen

The **Table** menu screen displays parameter information, using a table format.

In this example, the **Table Menu** screen displays the following columns:

Name	ID	Type	Mode
1 ☒ PROGRAM 1	000A	TV	FTA
2 ☐ PROGRAM 2	0046	TV	FTA
3 ☐ PROGRAM 3	0050	TV	CAS
4 ☐ PROGRAM 4	01F7	TV	CAS

A. Top line displays the headers for each table column.

B. Next up to four displayed lines is a numbered list of parameters relevant to the menu and their current values. A radio button indicates which parameter is currently active (☒ is currently enabled and ☐ is currently disabled)

C. Additional Available Items

The list can include more than four items, but only four items are visible at a time. When more than four items are available, you can scroll the list using the **[UP]/[Down]** arrow keys.

The currently selected option is displayed with white characters over a black background (see Item #2 in the example above).

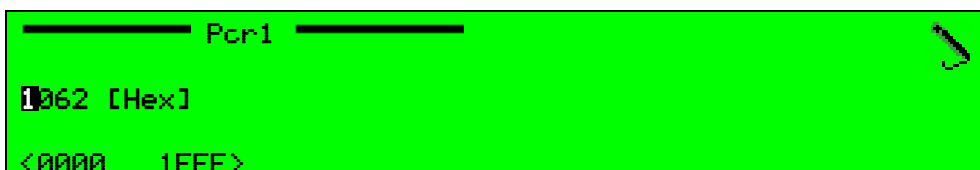
Press **[ESC]** to abort the selection and return to the Edit Menu screen without changing the parameters.

Press **[Enter]** to select the currently enabled button ☒. The selected option becomes enabled and the former active option is disabled.

3.1.2.4. Edit Value Screen

The **Edit Value** screen enables setting a parameter value. The parameter value can be a number or a string of characters. Each digit or character is set up individually.

In this example, the **Edit Value** screen displays the following information:



- A. Top line** displays the parameter name (**Pcr1**). The pencil icon  indicates that the parameter value is editable.
- B. Second line** displays the current parameter value. Change the value of the parameter with the arrow keys:
 - **[Left]** and **[Right]** arrow keys are used to mark a digit or a character for change. The marked digit or a character is displayed with white character over black background (see example in page 3-5)
 - **[Up]** and **[Down]** arrow keys are used to scroll up or down the digits (0 through 9) or the characters (a to z, A to Z, 0 to 9 and so on.). The scroll range can be limited to prevent values being out of range.
- C. Third line** displays the allowed range of parameter values.

Press **[ESC]** to abort the setup and return one level up to the Edit Value Screen without changing the parameters.

Press **[Enter]** to accept the value. The display returns one level up to the Edit Value Screen and the new value is displayed as the current parameter value.

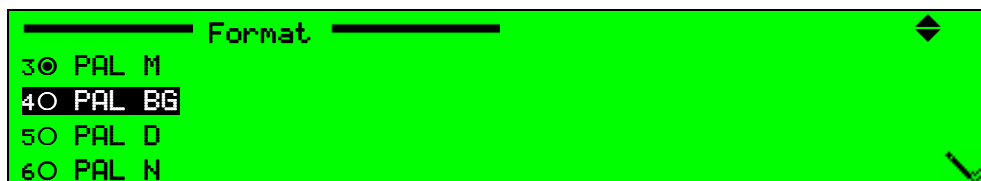
NOTE

When entering an wrong or out-of-range value the display dismisses the last change and returns one level up in the menu tree.

3.1.2.5. Select Value Screen (Multiple Choices)

The **Select Value** screen displays a list of selectable items.

In this example, the **Select Value** screen displays the following information:



A. Top line displays the parameter name (**Format**). The pencil icon indicates that the items are selectable from the list of displayed options.

[▲Up]/[◀Up/Down]/[▼Down] symbols indicate that up or down scrolling is enabled.

B. Next up to four displayed lines is a numbered list of parameters relevant to the menu and their current values. A radio button indicates which parameters are currently activated (● is currently enabled and ○ is currently disabled)

C. Additional Available Items

The list can include more than four items, but only four items are visible at a time. When more than four items exist, you can scroll the list using the [UP]/[Down] arrow keys.

The currently selected option is displayed with white characters over a black background (see Item #4 in the example above).

Press [ESC] to abort setup and return one level up to the Select Value Screen without changing the parameters.

Press [Enter] to select the marked option (the selected option is enabled ● and the former enabled option is disabled ○). The display returns up one level to the Select Value screen; the new option is displayed as the current parameter option.

3.1.3. IRD-2900 Menu Tree

Setup, control, and monitoring of the IRD-2900 operation can be performed locally by using the IRD-2900 Menu.

This menu is displayed on the front panel LCD display and is operated using the front panel control keys. The basic tree structure of the IRD-2900 front panel menu is illustrated in Figure 3-2.

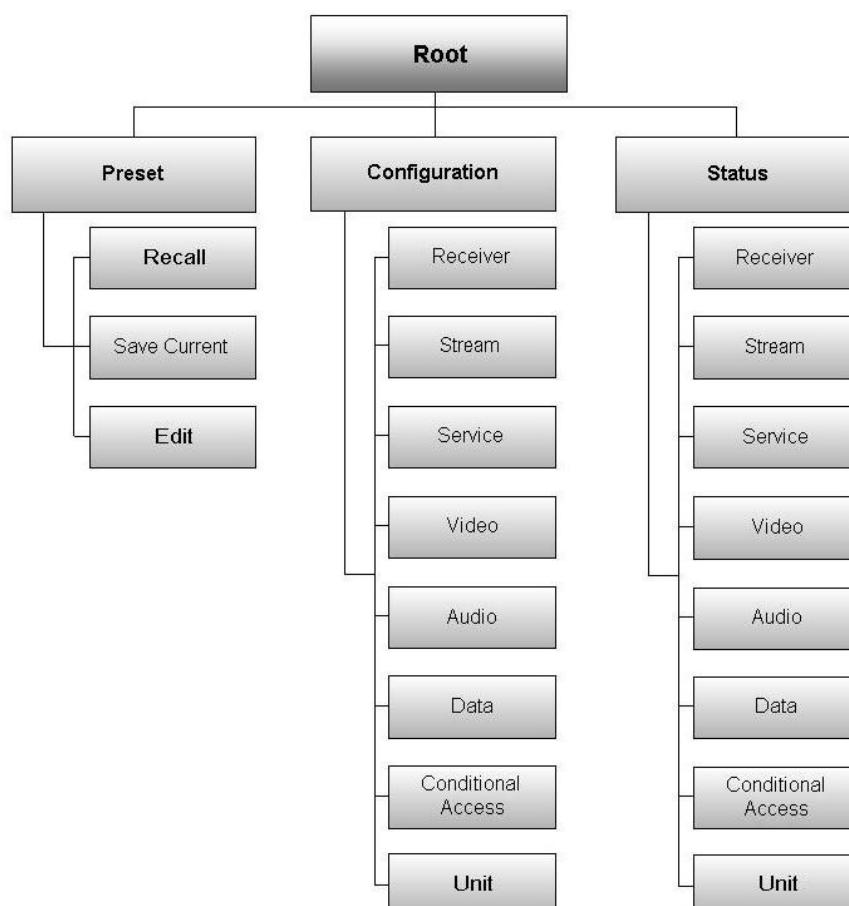


Figure 3-2: IRD-2900 Front Panel Menu (Root Menu) - Basic Structure

3.1.4. Front Panel Initialization Sequence

To activate the **IRD-2900 Front Panel Root** Menu perform the following:

1. Power up the IRD-2900. The IRD-2900 initialization phase begins and the initialization message is displayed.



2. When initialization complete, the IRD-2900 displays one of two options:

- **Status OK** – Both LEDs are lit green.



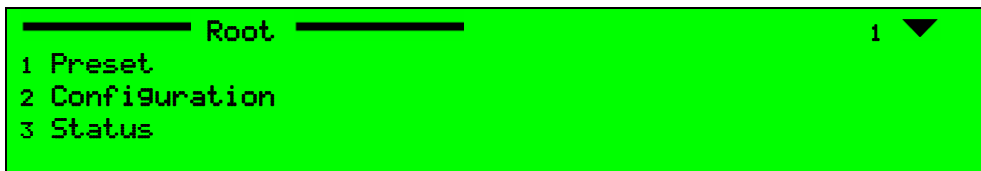
NOTE

*Blank **Service1** and/or **Service2** fields at the front panel' root screen, means service not chosen. In order to select services see section 4.2.5.1*

- **Front-End Warning** – The warning LED turns orange (For details see Appendix E).



3. Click **[Enter]** to activate and enter the IRD-2900 Root Menu:



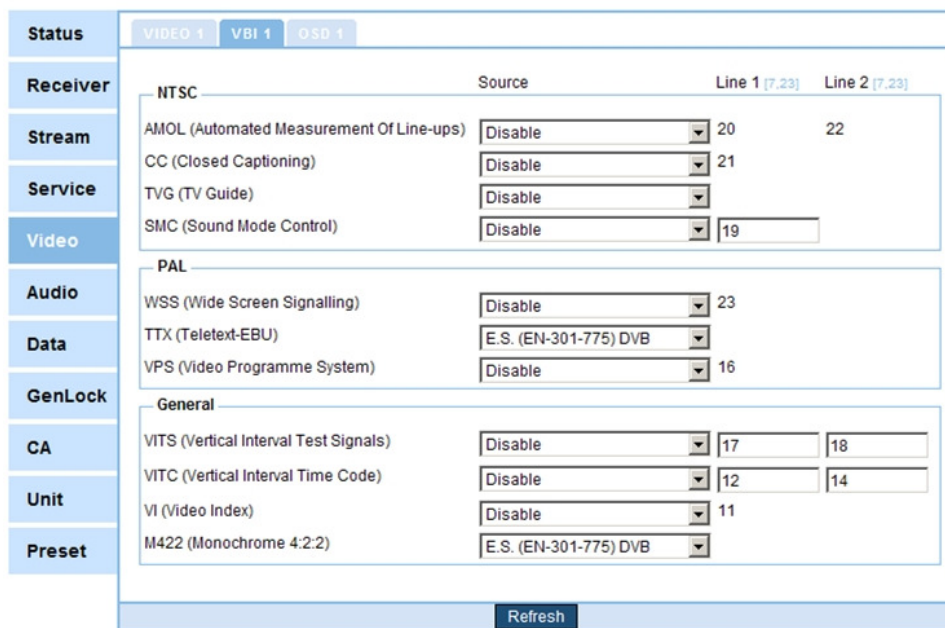
The Root Menu provides the following main branch options:

- **IRD-2900 Preset Menu** – See Section 4.1 for details.
- **IRD-2900 Configuration Menu** – See Section 4.2 for a detailed description.
- **IRD-2900 Status Menu** – See Section 4.3 for details.

3.2. WEB-BASED MANAGEMENT INTERFACE

The IRD-2900's Web-Based Management software is a user-friendly graphical interface that allows easy control and configuration of the device as well as monitoring the device's current condition. All this is performed through a remote computer, using a regular web browser. No additional software is needed. Managing the IRD-2900 using the Web-based management GUI is as easy as point-and-click.

The Web-Management interface is used for remotely controlling, configuring, and monitoring the device, using a standard PC and any standard web browser (see Figure 3-3 for general view example).



Tab	Section	Feature	Source	Line 1 [7,23]	Line 2 [7,23]
Receiver	NTSC	AMOL (Automated Measurement Of Line-ups)	Disable	20	22
		CC (Closed Captioning)	Disable	21	
		TVG (TV Guide)	Disable		
		SMC (Sound Mode Control)	Disable	19	
Audio	PAL	WSS (Wide Screen Signalling)	Disable	23	
		TTX (Teletext-EBU)	E.S. (EN-301-775) DVB		
		VPS (Video Programme System)	Disable	16	
		CA	General	VITS (Vertical Interval Test Signals)	Disable
VITC (Vertical Interval Time Code)	Disable			12	14
VI (Video Index)	Disable			11	
M422 (Monochrome 4:2:2)	E.S. (EN-301-775) DVB				

Refresh

Figure 3-3: Web-Based Management Window – General View

NOTE

The web-based management is best viewed by Internet Explorer 6.0. Scopus cannot guarantee viewing quality in older IE versions or other web-browsers, such as FireFox, Opera, and so on.

The section is divided into the following groups:

- **Control and Displays** – Details the web-management screen sections and their control elements (see Section 3.2.1)
- **Initializing the Web-Based Management** – Details the initialization procedure of the Web- management control interface (see Section 3.2.2)

3.2.1. Controls and Displays

The web-based management is divided into menus and submenus. Each menu's sub-menu displays (in an explorer window) a list of parameters related to the menu. In case of any additional parameters, such as advanced configuration parameters, another parameter-section is displays in the explorer window (see example in Figure 3-4).

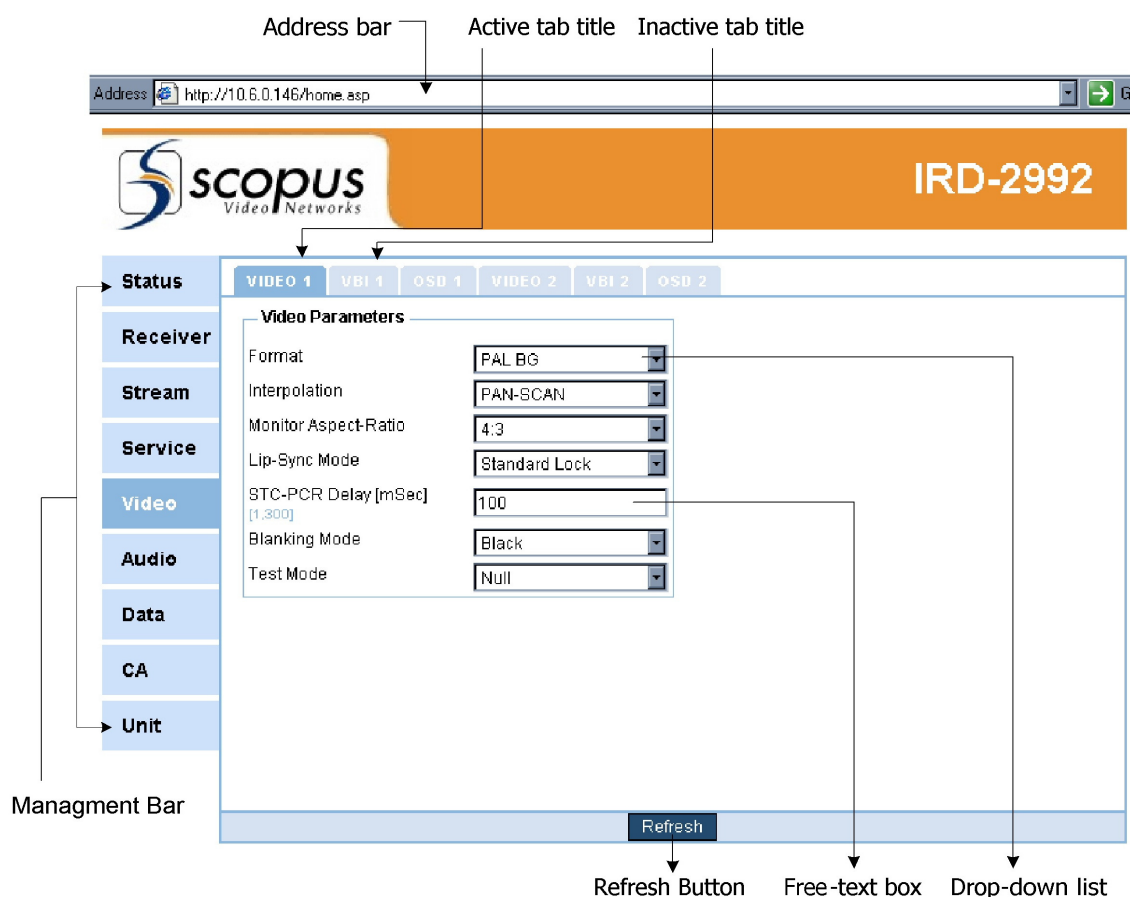


Figure 3-4: IRD-2900 Web-Based Management Interface Screen (Example)

The following sections detail the different web-management display objects.

3.2.1.1. Display Elements

The web-based management is divided into display sections for an easy orientation and to offer a user-friendly control interface. The following paragraphs detail the different sections:

1. TITLE

A static title to the web-based management, displays the Scopus logo and the device's type (IRD-2900, see Figure 3-5).



Figure 3-5: Web-Based Management Title

2. MENU AND SUB-MENU TABS

The tabs surround the explorer window section (see the following paragraph). The menu tabs are displayed at all times. The sub-menu tabs are dynamic, and change according to the selected menu (for more information, see Section 3.2.1.2. See tabs example in Figure 3-6).

Status	VIDEO 1	VBI 1	OSD 1	VIDEO 2	VBI 2	OSD 2
Receiver	Video Parameters Format PAL BG Interpolation PAN-SCAN Monitor Aspect-Ratio 4:3 Lip-Sync Mode Standard Lock STC-PCR Delay [mSec] [1,300] 100 Blanking Mode Black Test Mode Null					
Stream						
Service						
Video						
Audio						
Data						
CA						
Unit						

Figure 3-6: Web-Based Management Menu and Sub-Menu Tabs

3. STATUS MENU

The Status menu, located under the **'Status'** tab, displays a read-only table. The table details information regarding the various services encoded by the unit (see Figure 3-7. For detailed information about the Status menu, see Section 4.3).

Status								
Receiver	General Status							
	Receiver lock				Stream sync			
	Ok				Ok			
Stream	DVB-S							
	Signal Quality [%]	Eb/NO [dB]	Link Margin [dB]	BER	Frequency Tune [GHz]	Frequency Offset [KHz]	FEC Rate	Spectral Inversion
Service	19	05.54	+00.0	8.1e-6	1.760000	-00945	3/4	Normal
Video	Stream Information							
	Transport Stream Rate [Mbps]		Transport Stream ID		Original Network ID		Network Name	Stream Date and Time
	38.015		8300		318		GlobeCast	

Figure 3-7: Status Menu

3.2.1.2. Control Elements

The different display sections use different control elements to navigate, view, and manage the IRD-2900 configuration. The following paragraphs detail these sections.

1. MAIN MENU TABS

The main-menu tabs are light-blue tabs that allow the user to select one of the main menus in the encoder (such as video, audio, unit, and so on).

The main-menu tabs are listed at the left-side of the explorer-window section. A selected main-menu tab changes its color from light-blue to darker blue (see Figure 3-8).

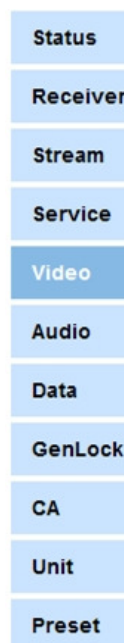


Figure 3-8: Main-Menu Tabs

2. SUB MENU TABS

The sub-menu tabs are light-blue tabs that allow the user to select one of the specific sub-menus available in the selected menu.

For example, '**Audio**' main menu holds the '**Audio 1**' and '**Audio 2**' tabs, allowing the user to select Audio 1 or Audio 2 configuration menus.

The sub-menu tabs are aligned above the explorer-window section. A selected sub-menu tab changes its color from light-blue to darker-blue (see Figure 3-9).



Figure 3-9: Sub-Menu Tabs

3. EDIT VALUE PARAMETER

The parameters-sections in the explorer window display lists of editable parameters, available for user-configuration. The edit-value parameters provides a free-text field for the user to type the required value (from within a given range).

The edit-value parameter is divided into two sections:

- **Left Side** - Displays the parameter's name. Measure units are specified within brackets ([]) and the available range is specified in light-blue.
- **Right Side** - A free-text field. To edit the text, the user must click the field once, for the cursor to appear. Once the cursor is displayed the user can type the requested value.



Figure 3-10: Edit-Value Parameter

NOTE

*In order for the new value to take affect the user must type **[Enter]** after inserting the new value.*

4. SELECT VALUE PARAMETER

The parameters-sections in the explorer window display lists of editable parameters, available for user-configuration. The select-value parameters display a drop-down list of available values.

The select-value parameter is divided into two sections:

- **Left Side** - Displays the parameter's name.
- **Right Side** - A select-value field displaying the currently-selected value. Clicking the downward-arrow at the right-end of the field displays the drop-down list of all available values.



Figure 3-11: Select-Value Parameter

5. REFRESH BUTTON

The 'Refresh' button is located at the bottom of each screen and available at all times. Clicking this button refreshes the web-page. This is useful for updating changes that were configured in the front-panel.



Figure 3-12: Refresh Button

3.2.2. Initializing the Web-Based Management

Setting the management connection through the front panel involves the following procedures:

- Set the IP Address
- Set the Subnet Mask
- Set the Default Gateway

NOTE

In order to avoid any errors and faults, Scopus recommends all Ethernet configurations to be preformed through the front-panel or the RS323 only

A. To set the IP Address:

1. Access the IP Address edit screen. To access the screen, from the Root menu select **Configuration→Unit→Ethernet Management port→IP Address**.
2. Enter a valid IP Address.
3. Verify that the entered IP address is not allocated to any other device.

B. To set the Subnet Mask:

1. Access the Subnet Mask edit screen. To access the screen, from the Root menu select **Configuration→Unit→Ethernet Management port→Subnet Mask**.
2. Enter a valid subnet mask.

C. To set the Default Gateway:

1. Access the Default Gateway edit screen. To access the screen, from the Root menu select **Configuration→Unit→Ethernet Management port→Default Gateway**.
2. Enter a valid Default Gateway.

3. Verify that the IP Address (set in the procedure A) is correlated with the Default Gateway address.

3.2.2.1. Accessing the Web-Management

Once the IP definitions are set according to the network, the user can access the web-based management interface. To access the web-management, perform the following:

1. Launch the web browser.

NOTE

The web-based management is supported and can be operated through most web browsers. However, Scopus recommends Internet Explorer 5.0 and higher for optimal operation.

2. Enter the IRD-2900 IP Address in the **Address** field, in the following format: <http://xxx.xxx.xxx.xxx> (where xxx.xxx.xxx.xxx is the IP address of the Management port). Once the web-management is displayed, the address changes to <http://xxx.xxx.xxx.xxx/home.asp>. See the example in Figure 3-13:

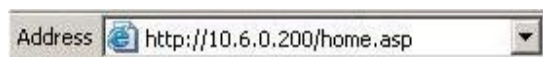


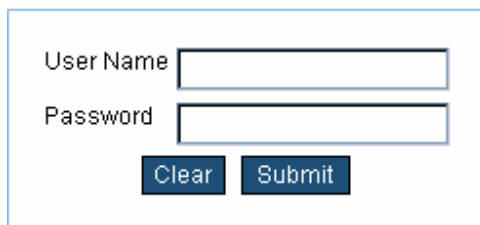
Figure 3-13: IP Address Field

To access the web-based management, user-name and password must be entered. The default values are:

- User name – ird
- Password – ird

Enter your user name and password in the access box. Press Submit to confirm or Clear to start over. For password change see section 4.2.11.2

Figure 3-14 displays the Web Management access box.



A screenshot of a web management access box. It contains two text input fields: 'User Name' and 'Password'. Below the 'Password' field are two buttons: 'Clear' and 'Submit'.

Figure 3-14: IRD-2900 Web Management Access Box

Once the initialization is complete and the web-management is displayed, the user can set up the system. For details on the web-management operation, see Chapter 4.

Chapter 4.

OPERATION AND MANAGEMENT

This chapter details controlling the IRD-2900 with its front panel and Web management interfaces.

The Front Panel control interface contains all the existing IRD-2900 control parameters, while the Web management interface allows easy access to the same parameters from a remote computer. Therefore the description of these two interfaces is interlaced and brought together in this chapter.

4.1. PRESET

The IRD-2900 allows creating, storing and managing up to 50 different user-defined setups. Each setup stores the following parameters:

- **Front-End** - (Satellite, IP, ATM, ASI) all parameters.
- **Service** (Dual for 299x or Single 298x-296x) selected parameters.
- **Audio** - Decode mode and Volume parameters.
- **CAS** - BISS keys (mode and keys).

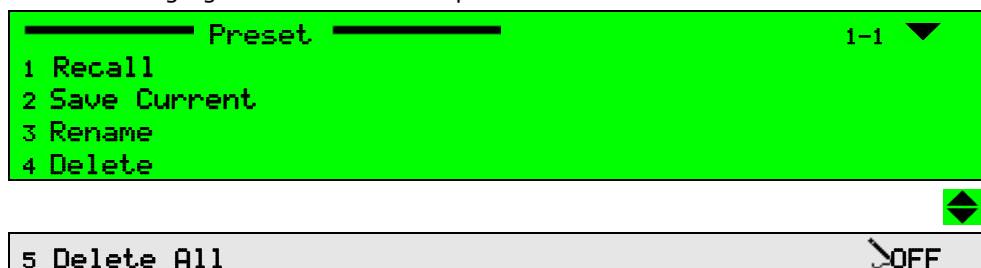
NOTE

*The IRD-2900 **configuration** includes all parameters detailed in section 4.2, however, a **Setup** includes only the parameters mention above.*

The setups are configurable through the front panel, web-interface CLI and SNMP.

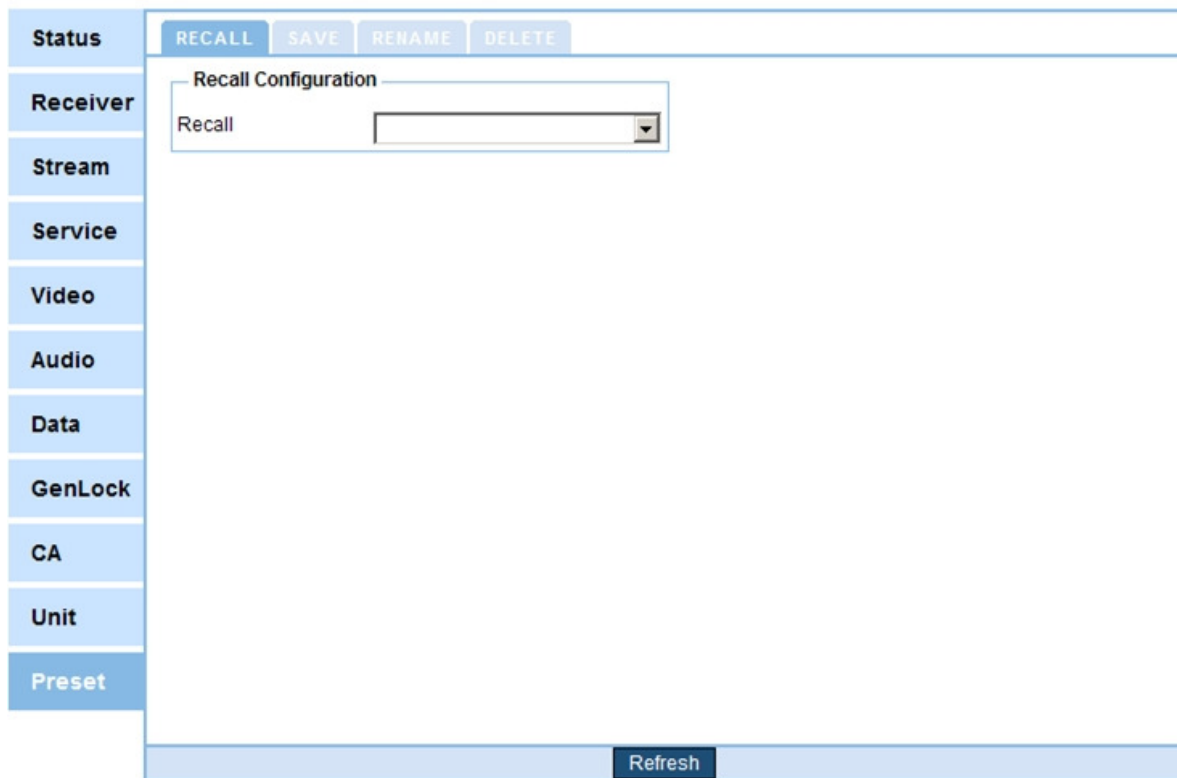
To access the Preset menu through the front panel, go to **Root→Preset**.

The following figure shows the front panel Preset menu:



To access the Preset menu through the web-interface from the management bar, click on the **Preset** tab.

The following figure shows the web-interface Preset menu:



The screenshot shows the 'Preset' menu in the web interface. On the left is a vertical navigation bar with tabs: Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA, Unit, and Preset (which is highlighted). The main content area has four sub-tabs: RECALL, SAVE, RENAME, and DELETE. The 'RECALL' sub-tab is active, showing a 'Recall Configuration' section with a 'Recall' label and a dropdown menu. At the bottom right of the main area is a 'Refresh' button.

Figure 4-1: Web Interface Preset Screen

The Preset menu consists of the following five submenus:

- **Recall** – For details see section 4.1.1.
- **Save current** – For details see section 4.1.2.
- **Rename** – For details see section 4.1.3.
- **Delete** – For details see section 4.1.4.
- **Delete all** – For details see section 4.1.5 (front-panel only).

The following sections detail the Preset submenus.

4.1.1. Recall Preset

Recall submenu allows loading saved presets from the unit's non-volatile storage.

To recall a preset through the front panel:

1. To access the Preset menu from the front panel go to:

Root → Preset → Recall.

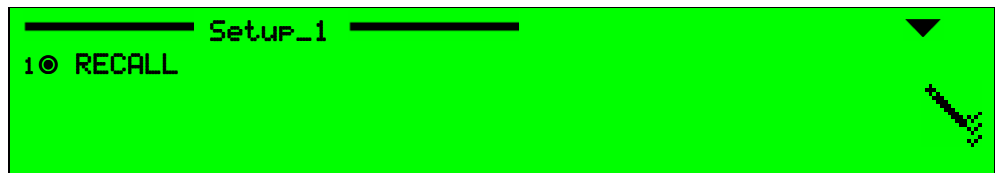
The following figure shows the front panel Recall screen:



The Recall screen lists all stored presets and allows selecting a preset to recall.

2. Select one of the listed presets by using the **[UP]**, **[down]** and **[ENTER]** keys.

When selecting a preset to recall – the following screen appears:



This screen shows the selected preset name at its title and the option **Recall**.

3. Select the **RECALL** submenu tab.

NOTE

When selecting a preset, the front panel's orange warning light might lit until the unit is synced with the new setup applied.

To recall a preset through the web-interface:

1. From the management bar, click the **Preset** tab.
2. Click **Recall** tab. Figure 4-2 shows the Recall tab:

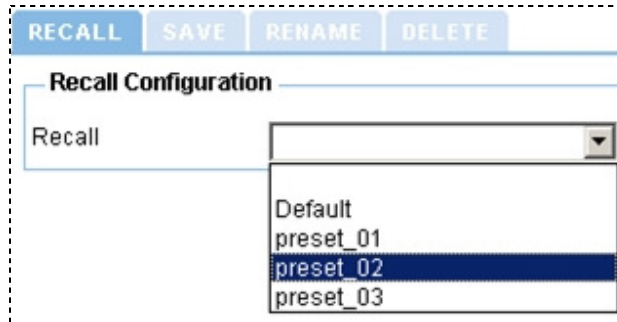


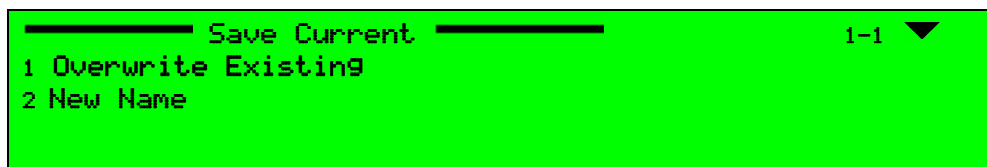
Figure 4-2: Web Interface Preset Recall Tab

3. Open the Recall drop-down menu. From the list select a preset to recall.

4.1.2. Save Current Preset

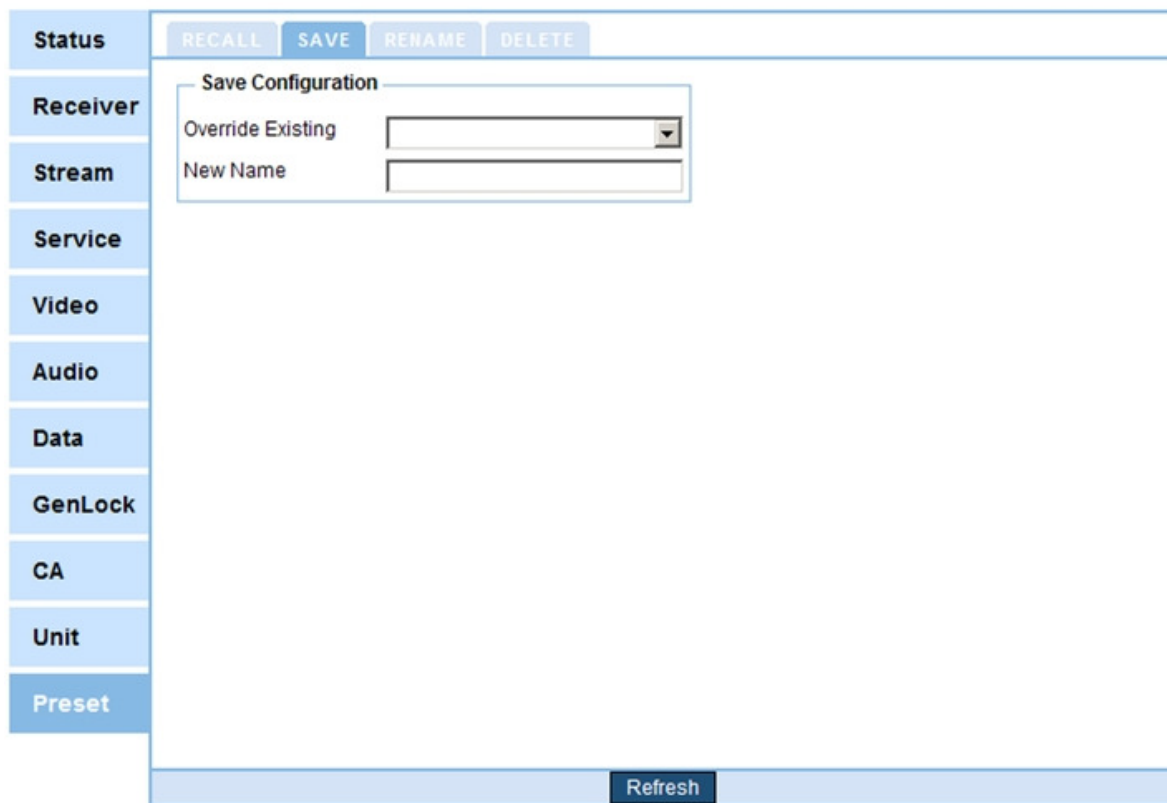
The IRD-2900 can store up to 10 different setups. **Save Current** submenu allows saving the unit's current setup. To access the Save Current menu through the front panel, go to **Root → Preset → Save Current**.

The following figure shows the front panel Save Current submenu screen:



To access the Save menu from the web-interface, go to **Preset → Save**.

The following figure shows the web-interface Save submenu screen:



The screenshot shows a web interface for saving a preset. On the left is a vertical sidebar with buttons for Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA, Unit, and Preset. The 'Preset' button is highlighted. At the top of the main area are four tabs: RECALL, SAVE, RENAME, and DELETE. The 'SAVE' tab is active. Below the tabs is a 'Save Configuration' section with two input fields: 'Override Existing' (a dropdown menu) and 'New Name' (a text box). At the bottom right of the main area is a 'Refresh' button.

Figure 4-3: Web Interface Save Preset Screen

Save Current menu includes two options:

- **Overwrite Existing** –For details see section 4.1.2.1.
- **New Name-** –For details see section 4.1.2.2.

NOTE

Scopus recommends storing the default manufacture's setup as a preset.

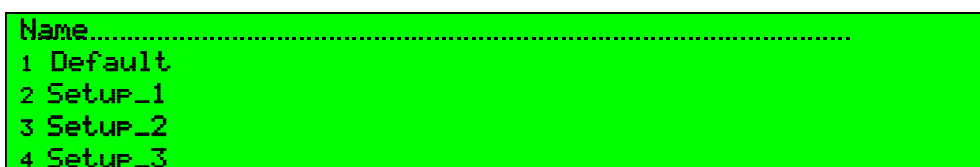
4.1.2.1. Overwrite an Existing Preset

The **Overwrite Existing** option allows saving the unit's current setup over a stored one.

To overwrite an existing preset through the front panel:

1. Access the Overwrite Existing screen. From the front panel go to **Root → Preset → Save Current → Overwrite Existing**.

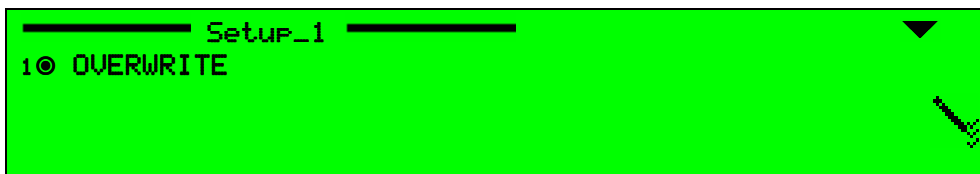
The following figure shows the front panel Overwrite Existing screen:



The Overwrite Existing screen lists all stored presets and allows selecting a preset to overwrite.

2. Select one of the listed presets by using the **[UP]**, **[DOWN]** and **[ENTER]** keys.

When selecting a preset to overwrite – the following screen appears:



This screen shows the selected preset name at its title and the option **Overwrite**.

3. Select **OVERWRITE**.

To overwrite an existing preset through the web-interface:

1. From the management bar, click on the **Preset** tab.
2. Click on **Save** tab. Figure 4-4 shows the Save tab:

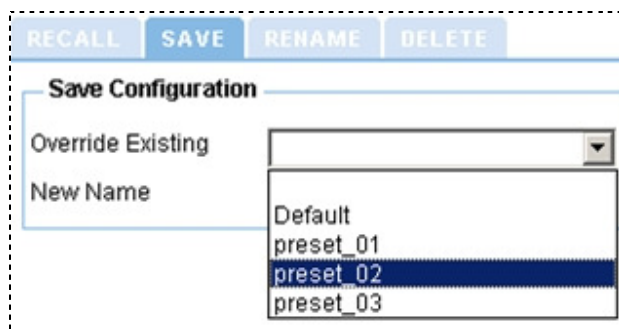


Figure 4-4: Web Interface Save Tab

3. Open the Overwrite Existing drop-down menu. From the list select a preset to overwrite.

4.1.2.2. Name a New Preset

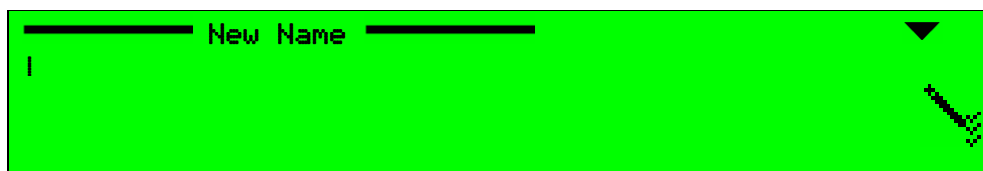
New Name option allows saving the unit's current setup under a new name.

To Name a new preset through the front panel:

1. Access the New Name screen. From the front panel go to:

Root → Preset → Save Current → New Name.

The following figure shows the front panel New Name edit screen:



2. Name the preset by using the keypad. To select a character, use the **[UP]** and **[DOWN]** keys. To move between the characters, use the **[LEFT]** and **[RIGHT]** keys. To save, press **[ENTER]**.

To name a new preset through the web-interface:

1. From the management bar, click on the **Preset** tab.
2. Click on **Save** tab. Figure 4-5 shows the New Name section:

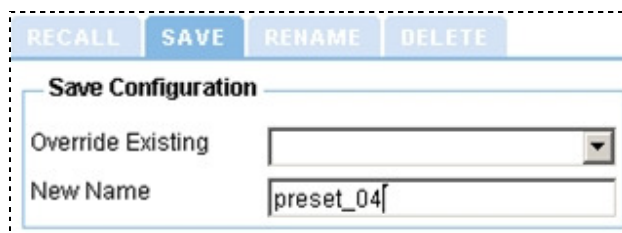


Figure 4-5: Web Interface – Save Preset As New Name Tab

3. Type a name for the preset in the New-Name textbox.
4. Press **[ENTER]** to finish.

4.1.3. Rename Preset

The **Rename** submenu allows editing a stored preset name.

To rename a preset through the front panel:

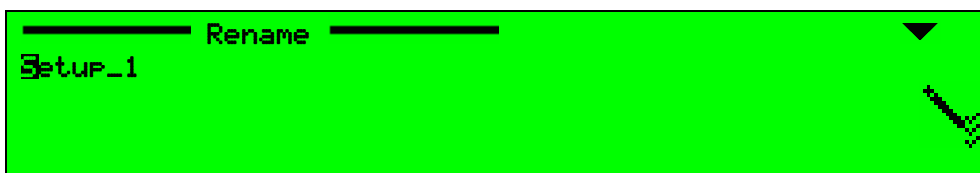
1. Access the Overwrite Existing screen. From the front panel go to **Root → Preset → Rename**.

The following screen appears, lists all stored presets and allows selecting a preset to rename.



2. Select one of the listed presets by using the **[UP]**, **[DOWN]** and **[ENTER]** keys.

When selecting a preset to rename – the Rename edit screen appears:

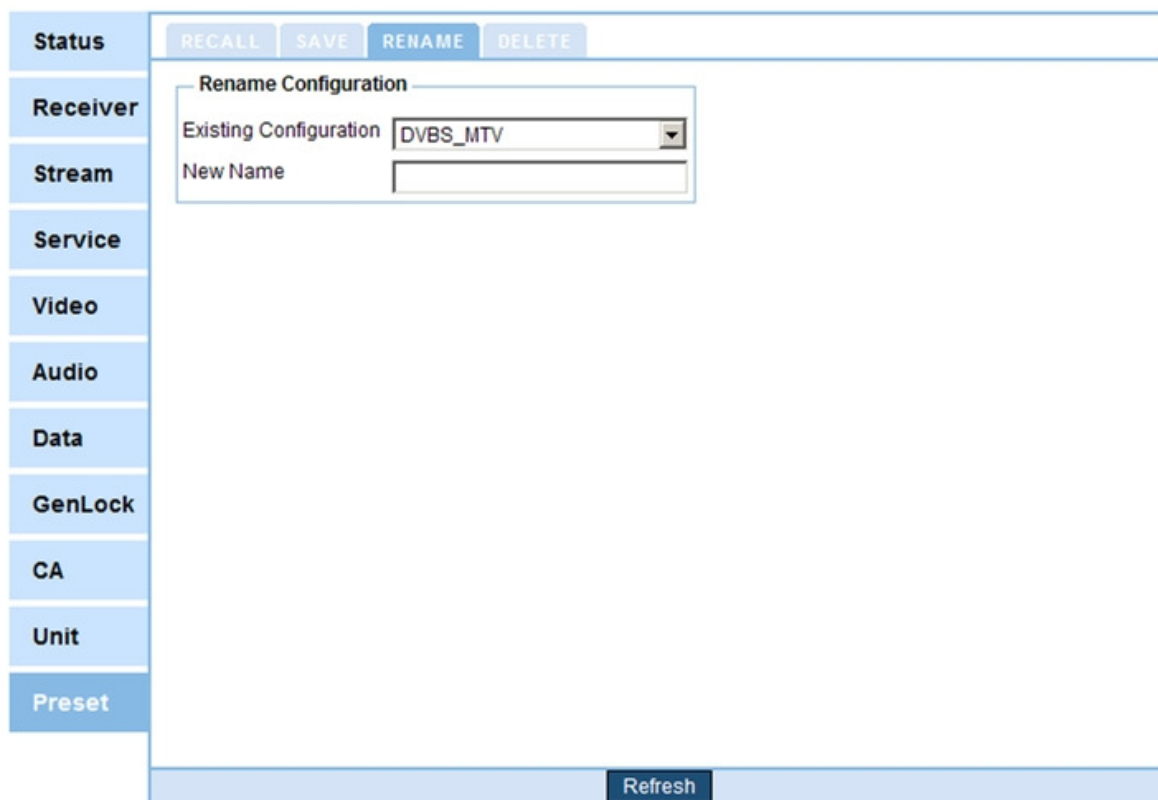


3. Name the preset by using the keypad. To change a character, use the **[UP]** and **[DOWN]** keys. To move between the characters, use the **[LEFT]** and **[RIGHT]** keys. To save, press **[ENTER]**.

To rename a preset through the web-interface:

1. From the management bar, click on the **Preset** tab.

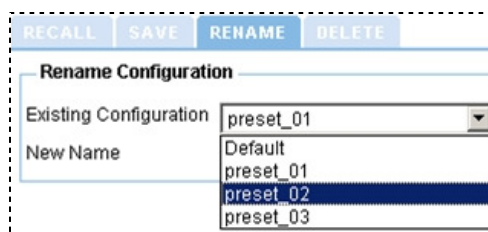
The following figure shows the web-interface Rename submenu screen:



The screenshot shows the 'Rename Configuration' screen in the web interface. On the left is a vertical sidebar with menu items: Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA, Unit, and Preset. The 'Preset' item is highlighted. At the top of the main content area are four tabs: RECALL, SAVE, RENAME (which is active), and DELETE. Below the tabs is the 'Rename Configuration' section, which contains a dropdown menu for 'Existing Configuration' (currently showing 'DVBS_MTV') and a text input field for 'New Name'. At the bottom right of the main content area is a 'Refresh' button.

Figure 4-6: Web Interface Rename Preset Screen

2. Click on **Rename** tab. Figure 4-7 shows the Rename tab:



This image is a close-up of the 'Rename Configuration' section from Figure 4-6, enclosed in a dashed border. It shows the 'Existing Configuration' dropdown menu open, displaying a list of options: 'Default', 'preset_01', 'preset_02' (which is highlighted with a blue background), and 'preset_03'. The 'New Name' text input field is visible below the dropdown.

Figure 4-7: Web Interface – Rename Preset Tab

3. Open the Existing Configuration drop-down menu. From the list select a preset to rename.
4. Type a new name for the preset in the New-Name textbox.

4.1.4. Delete Preset

The **Delete** submenu allows removing stored preset.

To delete a preset through the front panel:

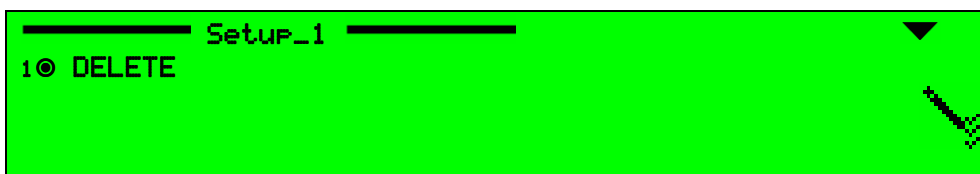
1. Access the Delete screen. From the front panel go to **Root → Preset → Save Current → Delete**.

The following screen appears, lists all stored presets and allows selecting a preset to delete.



2. Select one of the listed presets by using the **[UP]**, **[DOWN]** and **[ENTER]** keys.

When selecting a preset to delete – the following screen appears:



This screen shows the selected preset name at its title and the option **Delete**.

3. Select **DELETE**.

To delete a preset through the web-interface:

1. From the management bar, click on the **Preset** tab.

The following figure shows the web-interface Delete submenu screen:

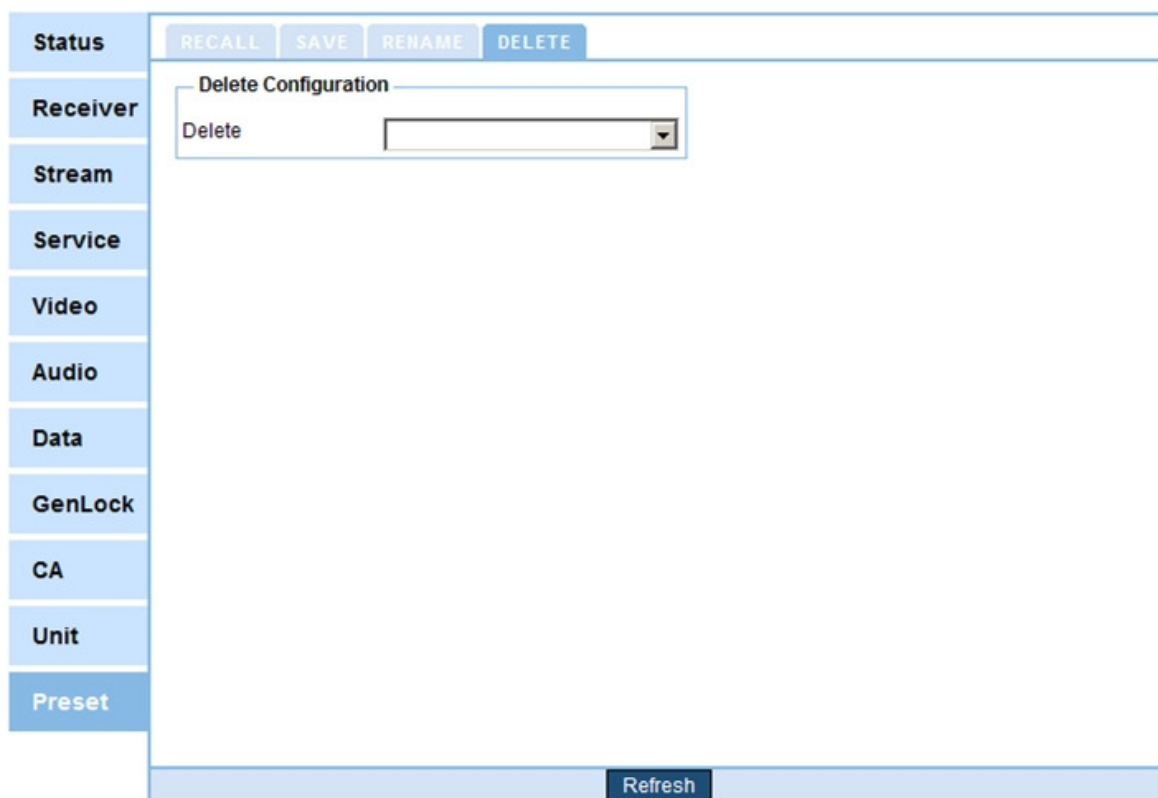


Figure 4-8: Web Interface Delete Preset Screen

2. Click on **Delete** tab. Figure 4-9 shows the Delete tab:

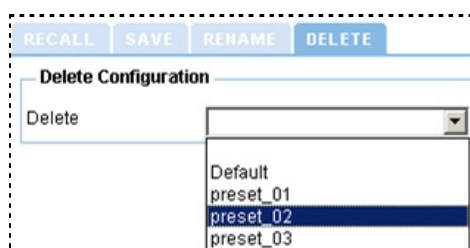


Figure 4-9: Web Interface – Delete Preset Tab

3. Open the Delete drop-down menu. From the list select a preset to delete.

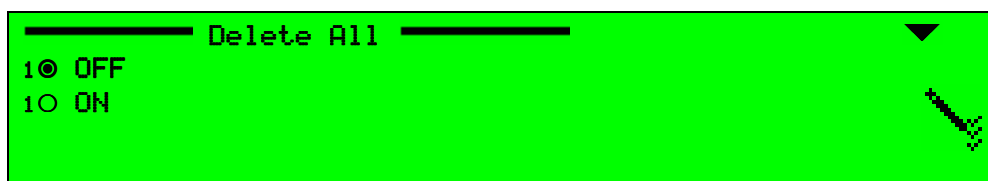
4.1.5. Delete All Presets

The **Delete All** submenu allows removing all stored preset.

To delete all presets through the front panel:

1. Access the Delete screen. From the front panel go to **Root → Preset → Save Current → Delete All**.

The following figure shows the front panel Delete All screen:



Save Current menu includes two options:

- **OFF** –The function is disabled.
- **ON-** –Delete all stored presets.

2. Select **ON**.

4.2. CONFIGURATION

The Configuration menu screen allows the user to manage the IRD-2900 through the front panel. The Configuration menu consists of eight sub-menus. Each sub-menu manages a specific IRD module.

The following lists IRD-2900 configuration sub-menus:

- **Receiver** - For details, see Section 4.2.1.
- **Stream** - For details, see Section 4.2.3.
- **Service** - For details, see Section 4.2.4.
- **Video** - For details, see Section 4.2.6.
- **Audio** - For details, see Section 4.2.7.
- **Data** - For details, see Section 4.2.8.
- **GenLock** - For details, see Section 4.2.9.
- **Conditional Access** - For details, see Section 4.2.10.
- **Unit** - For details, see Section 4.2.11.

NOTE

Sub-menus parameters may be vary from one model to another according to the IRD-2900 technical specifications and licensing

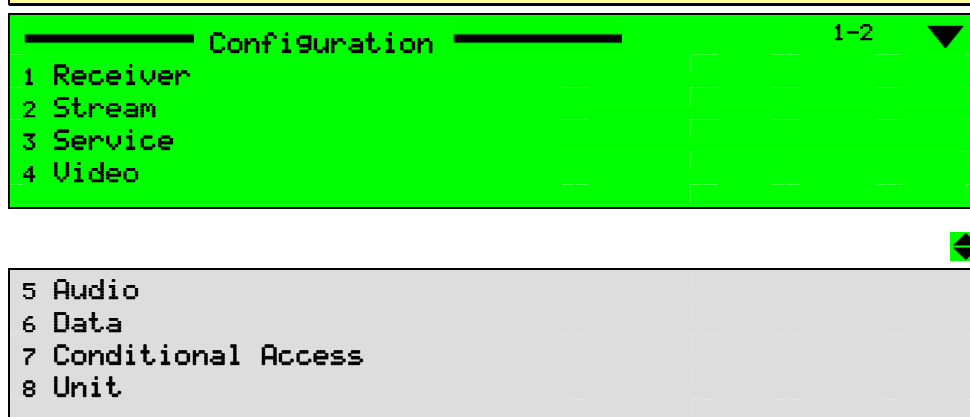


Figure 4-10: IRD-2900 Configuration Main Menu

NOTE

The IRD-2900 can support either IP or L-Band receiver modules. The configuration menu structure changes according to each of these available module options.

4.2.1. Receiver Modules

The purpose of the receiver module is to single out a selected Transport Stream from the transmission that reaches the IRD-2900 inputs, to demodulate it, and pass on the digital transport stream to the decoder module.

Different networks require various receiver types. According to its licensing, the IRD-2900 supports two types of receivers:

1. **Satellite Receiver Modules:**

- **DVB-S Receiver Module** The configuration parameters of the DVB-S receiver module are detailed in Section 4.2.2.1.
- **DVB-S2 Receiver Module** The configuration parameters of the DVB-S2 receiver module are detailed in Section 4.2.2.2.
- **DSNG Module** The configuration parameters of the DSNG receiver module are detailed in Section 4.2.2.3.
- **ATM Module** The configuration parameters of the ATM receiver module are detailed in Section 4.2.2.4.

2. **IP Receiver Module:** The configuration parameters of the IP receiver module are detailed in Section 4.2.2.5.

To access the Receiver Configuration menu using the front panel, select **Configuration→Receiver** (independently of the receiver module type).

4.2.2. Satellite Receiver Modules

This section details the front panel menus that enable configuring of the **DVB-S**, **DVB-S2** and **DVB-DSNG** receivers in an IRD-2900 front panel.

4.2.2.1. DVB-S Receiver Configuration

This section details the front panel menus that enable configuring the DVB-S receiver in an IRD-2900 DVB-S front end device. The following is the DVB-S Receiver Configuration menu as displayed on the IRD-2900 front panel screen:

Receiver		1-2-1 ▼
01 Frequency		1.068000 [GHz]
02 Symbol Rate		29.818000 [Mbaud]
03 FEC Rate		AUTOMATIC
04 Spectral Inversion		AUTOMATIC



05 LNB Power Supply	18V (HORIZONTAL)
06 LNB 22 KHz	OFF (Low Band)
07 Freq Drift Compensation	OFF
08 LNB L.O. Type	UNIVERSAL (9.75,...)
09 Frequency Range	L BAND
10 Frequency Scan	OFF
11 DVBS-MCLK	135[MHz]

Figure 4-11 displays the corresponding DVB-S Receiver Parameters menu (Web Management screen).

Status	FRONT END (DVB-S)	
Receiver	Receiver Parameters	
Stream	Frequency Range	L Band
Service	Frequency [Hz] [950000, 2150000]	1324000
Video	Symbol Rate [Baud] [1000000, 45000000]	27500000
Audio	FEC Rate	Automatic
Data	Spectral Inversion	Automatic
CA	Freq Drift Compensation	Off
Unit	Frequency Scan	Off
Preset	LNB Power Supply	13V (Vertical)
	LNB 22 KHz	Off (Low Band)
	LNB L.O. Type	Universal (9.75, 10.6)
	Refresh	

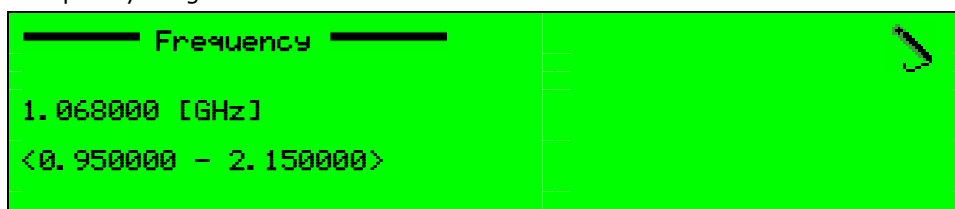
Figure 4-11: DVB-S Receiver Parameters Menu Screen

The DVB-S Receiver Configuration parameters are detailed in the following paragraphs:

FREQUENCY

The Frequency parameter must be set in accordance with the required satellite transponder frequency. The frequency can be acquired from the satellite transponder information.

The following figure illustrates the Frequency screen. In this example, the valid frequency range is between 0.95 and 2.15GHz.



The valid frequency range varies according to the selected band.

Table 4-1: Band Frequency Range

BAND	MINIMUM FREQUENCY	MAXIMUM FREQUENCY
<i>Ku-Band</i>	10.700000GHz	12.750000GHz
<i>C-Band</i>	3.200000GHz	4.200000GHz
<i>L-Band</i>	0.950000GHz	2.150000GHz

SYMBOL RATE

The Symbol Rate parameter must be set according to the satellite transponder symbol rate. The Symbol Rate value can be acquired from the satellite transponder information or can be calculated, with the bit rate information. The following figure illustrates the Symbol Rate screen.



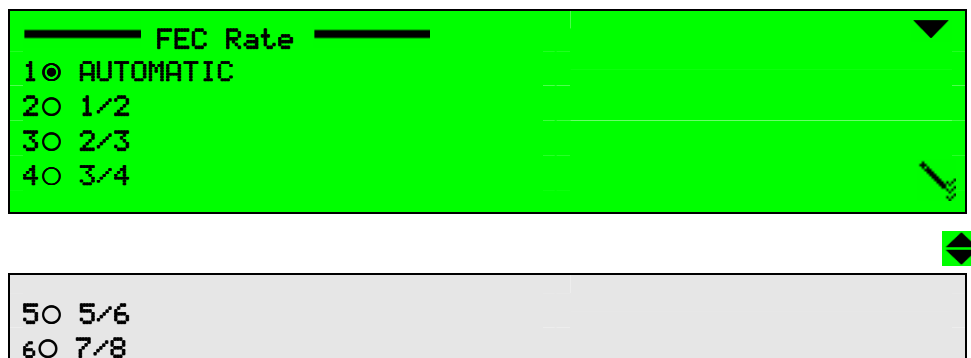
Available values range from 01.000000 to 45.000000 Mbaud.

NOTE

It is important to input the accurate Symbol Rate down to the sixth digit after the decimal point.

FEC RATE

The FEC Rate parameter sets the Forward error correction rate value. The FEC parameter can be acquired from the satellite transponder information or can be set to automatic. When in Automatic mode, the IRD-2900 device tries all FEC rates until locking the rate to the transport stream. The following figure illustrates the FEC Rate screen.



The available options are:

- Automatic
- 1/2
- 2/3
- 3/4
- 5/6
- 7/8

NOTE

If the specific Viterbi rate is not provided, selecting the Automatic option enables the IRD-2900 to automatically detect the Viterbi rate.

SPECTRAL INVERSION

The Spectral Inversion parameter sets the spectral mode of operation. This parameter is configured according to the information provided from the broadcast head-end or can be set to automatic.

When set to automatic mode, the IRD-2900 tries the two spectral modes until obtaining synchronization. The following figure illustrates the Spectral Inversion screen.



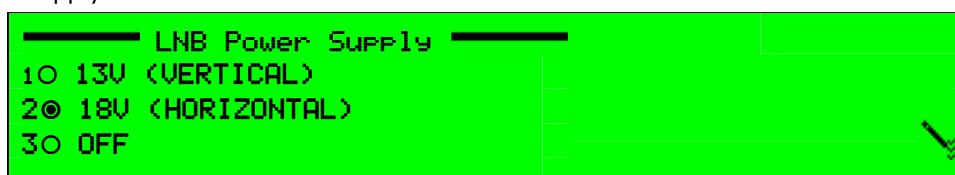
The available options are:

- **AUTOMATIC** – Automatically selects between Normal and Inverted spectral mode
- **INVERTED** – Inverted spectral mode
- **NORMAL** – Normal spectral mode

LNB POWER SUPPLY

The IRD-2900 sets the polarization of the receiving antenna by providing different voltage levels to the LNB, 13v for vertical polarization and 18v for horizontal polarization.

The polarization of the receiving antenna is determined according to the polarity of the satellite transponder. The following figure illustrates the LBN Power Supply screen.



The available options are:

- **OFF** - No voltage is supplied to the LNB. Use this option either when cascading IRDs using the loop-through connector on the L-Band interface or when this voltage is supplied to the LNB by external source.
- **13V (VERTICAL)** – Vertical polarization
- **18V (HORIZONTAL)** – Horizontal polarization

LNB 22 KHz

The receiver controls the LNB band by sending a 22 kHz signal. When the signal is sent, the LNB uses its High Band Local Oscillator (L.O.). When the signal is not sent, the LNB uses its Low Band L.O.

The local oscillator is used to convert the signal from Ku-Band or C-Band to L-Band. Two local oscillators exist one for each band to leverage full spectrum. The following figure illustrates the LNB 22KHz screen.



The available options are:

- **OFF** – Low band L.O.
- **ON** – High band L.O.

FREQ DRIFT COMPENSATION

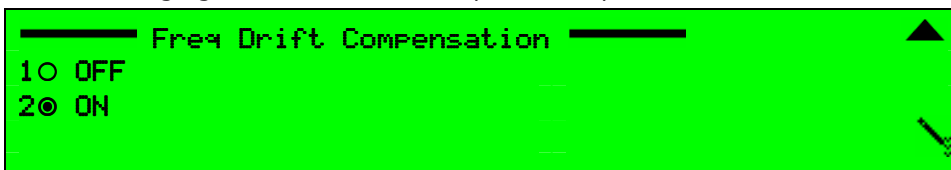
The IRD-2900 uses Freq Drift Compensation to automatically correct inaccurate frequencies set by the operator.

When the operator sets the receiver frequency, the IRD-2900 checks whether it is set to the optimum frequency. When a deviation is detected, the IRD-2900 calculates the offset from the original setting and enables correcting it.

Turning on the Freq Drift Compensation activates the automatic frequency adjustment. When Drift compensation is turned off, the device uses the original frequency setting that was inserted by the operator.

This feature also enables the receiver to follow the drifts of the LNB.

The following figure illustrates the Freq Drift Compensation screen.



The available options are:

- **OFF** – Drift Compensation is off; the receiver remains with the configured frequency.
- **ON** - Drift Compensation is on; the receiver adjusts its optimal frequency.

LNB L.O. TYPE

The LNB L.O. Type parameter defines the LNB oscillator type in use. Two standards are generally used: 'Universal' and 'Wide Band'.

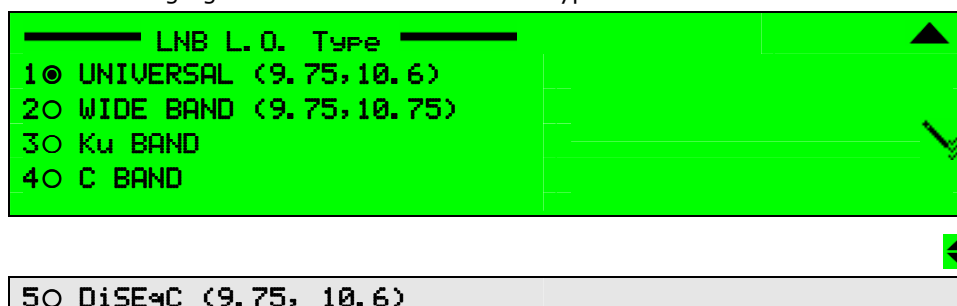
In addition, the oscillator value can be manually configured.

The LNB L.O. type can be acquired from satellite transponder information. Most satellites use the 'Universal' type of L.O. unless otherwise specified.

NOTE

Manual configuration of the oscillator frequency is rarely used and is intended only for advanced users.

The following figure illustrates the LNB L.O. Type screen.



Available LNB L.O. types are:

- **UNIVERSAL (9.75,10.6)** – Defines LNB universal L.O. type
- **WIDE BAND (9.75, 10.75)** – Defines LNB wide band L.O. type
- **Ku-BAND** – Defines Ku-Band LNB L.O. type
- **C-BAND** – Defines C-Band LNB L.O. type
- **DiSEqC (9.75, 10.75)**

NOTE

When selecting the Ku-Band or the C-Band, you must manually set the L.O. frequency (see the following Section in this chapter).

FREQUENCY RANGE

The Frequency Range parameter defines the input frequency in the Ku, C or L bands.

This parameter affects the displayed frequencies and ranges of the IRD-2900 DVB-S receiver parameters. The following figure illustrates the Frequency Range screen.



The available options are:

- **L-BAND** – Receiving in the L-Band frequency range
- **Ku-BAND** – Receiving in the Ku-Band frequency range
- **C-BAND** – Receiving in the C-Band frequency range

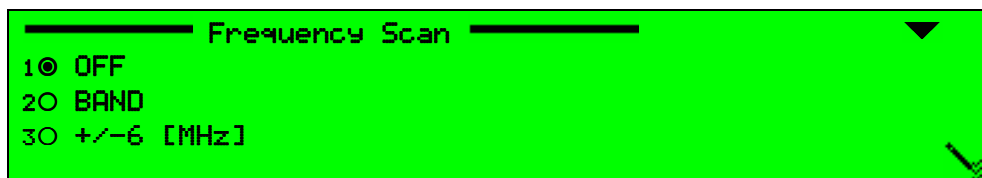
FREQUENCY SCAN

The Frequency Scan screen allows scanning a selected frequency range if the stream's frequency is unknown. The symbol rate must be known and set in the IRD. The IRD-2900 scans the frequency range, while seeking a valid DVB stream. Upon locating a valid DVB stream, the IRD-2900 marks the located frequency and service name. Results output either to the RS-232 port (terminal) or Telnet. The following screen displays the Frequency Scan screen

NOTE

The IRD-2900 scans only the L-band frequency range. Located frequencies are shown in L-Band and must be modified for the relevant frequency value if they are tuned to either C-band or Ku-band.

The following figure illustrates the Frequency Scan screen.

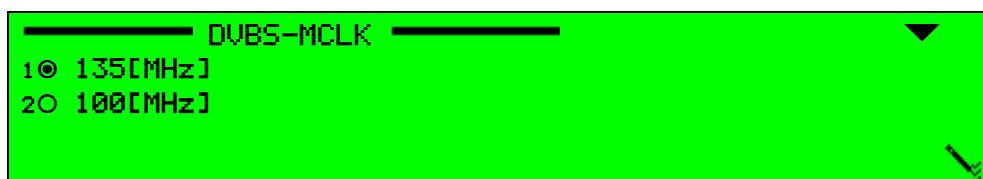


The available options are:

- **OFF** – Frequency scan is disabled.
- **BAND** – Frequency scan is enabled. This mode allows scanning all bands.
- **+/-6 [MHz]** – Frequency scan is enabled. This mode allows scanning a selected frequency range if the stream's frequency is unknown. This feature is especially useful for low symbol rates signals (less than 10Msym/s). All reception parameters must be set, including symbol rate and frequency. When operating the scanning, the IRD searches for a valid signal within a range of 12MHz (configured frequency ± 6 MHz). The IRD locks on the first detected valid signal, and automatically sets the configured frequency accordingly.

DVBS-MCLK

The DVBS-MCLKscreen allows setting the DVBS Main Clock frequency. The following figure illustrates the DVBS-MCLK screen.



The available frequencies are:

- **135[MHz]** – This option is set by defaults.
- **100[MHz]**

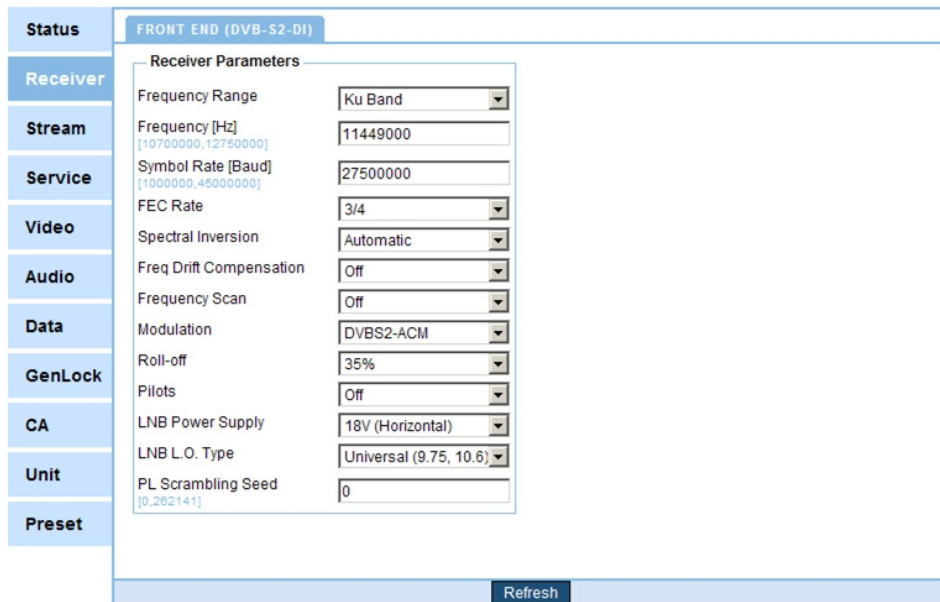
4.2.2.2. DVB-S2 Receiver Configuration

This section details the front panel menus that enable configuring the DVB-S2 receiver in an IRD-2900 DVB-S2 front end device.

The following is a screen of the DVB-S2 Receiver configuration menu as displayed on the front panel screen:

Receiver		1-2-1 ▼
01 Frequency	1.000000 [GHz]	
02 Symbol Rate	27.000000 [Mbaud]	
03 Modulation	DVB-S2-N-QPSK	
04 Roll-off	35%	
◀ ▶		
05 Pilots	ON	
06 FEC Rate	8/9	
07 Spectral Inversion	AUTOMATIC	
08 PL Scrambling Seed	000000	
09 LNB Power Supply	18V (HORIZONTAL)	
10 LNB 22 KHz	OFF (Low Band)	
11 Freq Drift Compensation	OFF	
12 LNB L.O. Type	UNIVERSAL <9.75,...	
13 Frequency Range	L BAND	
14 Frequency Scan	OFF	
15 DVBS-MCLK	135[MHz]	

Figure 4-12 displays the corresponding DVB-S2 Receiver Parameters menu (Web Management screen).



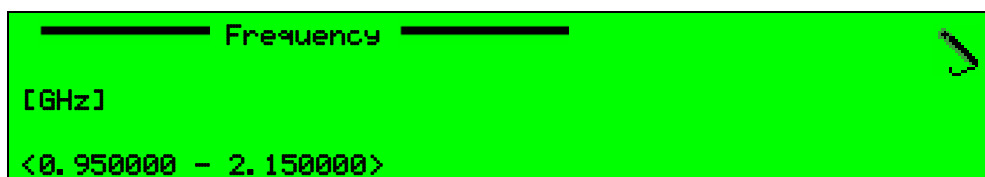
Status	FRONT END (DVB-S2-01)
Receiver	Receiver Parameters
Stream	Frequency Range: Ku Band
Service	Frequency [Hz]: 11449000
Video	Symbol Rate [Baud]: 27500000
Audio	FEC Rate: 3/4
Data	Spectral Inversion: Automatic
GenLock	Freq Drift Compensation: Off
CA	Frequency Scan: Off
Unit	Modulation: DVBS2-ACM
Preset	Roll-off: 35%
	Pilots: Off
	LNB Power Supply: 18V (Horizontal)
	LNB L.O. Type: Universal (9.75, 10.6)
	PL Scrambling Seed: 0
	Refresh

Figure 4-12: DVB-S2 Receiver Parameters Menu Screen

The DVB-S2 Receiver Configuration parameters are detailed as follows:

FREQUENCY

The Frequency menu is used for tuning the IRD-2900 receiver to the relevant satellite frequency. The following figure illustrates the Frequency screen.



Frequency

[GHz]

<0.950000 - 2.150000>

The displayed frequency range corresponds with the frequency band that is currently selected.

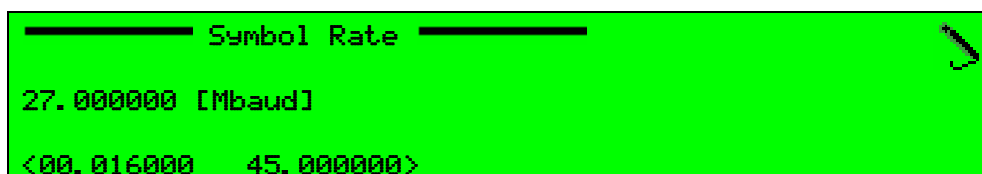
Table 4-2 lists the different bands, and their respective frequency ranges.

Table 4-2: Band Frequency Designations

BAND	FREQUENCY
<i>L-Band</i>	0.950000-2.150000GHz
<i>C-Band</i>	3.200000-4.200000GHz
<i>Ku-Band</i>	10.700000-12.750000GHz

SYMBOL RATE

The Symbol Rate menu is used for adjusting the receiver's symbol rate to the symbol rate of the received signal. The following figure illustrates the Symbol Rate screen.



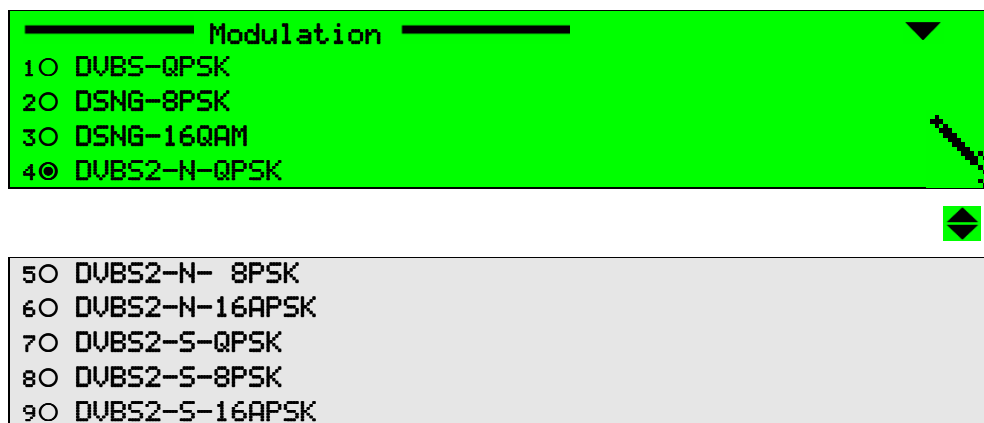
Available values range from 00.016000 to 45.000000 Mbaud

NOTE

*The symbol rate must be set to match the **exact** symbol rate value used by the satellite transponder.*

MODULATION

The Modulation menu allows setting the IRD-2900 receiver to the relevant modulation method. The following figure illustrates the Modulation screen.



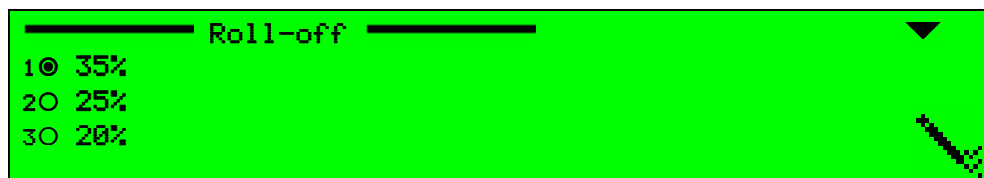
Available modulation options are:

- **DVBS-QPSK**
- **DSNG-8PSK**
- **DSNG-16QAM**
- **DVBS2-N-QPSK**
- **DVBS2-N-8PSK**
- **DVBS2-N-16APSK**
- **DVBS2-S-QPSK**
- **DVBS2-S-8PSK**
- **DVBS2-S-16APSK**

ROLL- OFF

The Roll-off menu is used for setting the receiver's roll-off factor value according to the roll-off factor of the transmitted signal.

The Roll-off factor is the factor that is used for the base-band shaping of the transmitted signal. Set the Roll-Off factor in accordance with the transmitted Roll-Off factor. The following figure illustrates the Roll-Off screen.

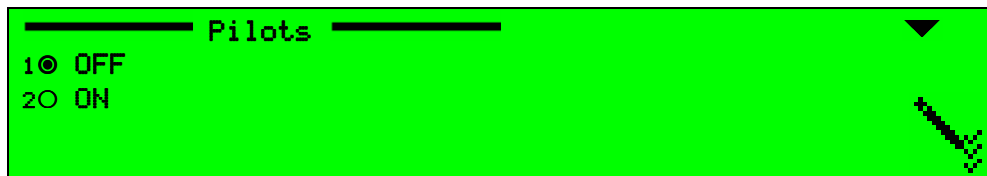


Available options for the Roll-off factor are:

- **35%**
- **25%**
- **20%**

PILOTS

In order to expedite carrier recovery, the standard allows two operating modes for each modulation type: Pilot-less (i.e. no Pilot symbols are inserted) and Piloted, where Pilot symbols are inserted to aid carrier synchronization. The Pilots menu enables to choose between the two operating modes. The following figure illustrates the Pilots screen.



The available options are:

- **OFF** – selects Pilot-less mode
- **ON** - selects Piloted mode

NOTE

The PLSCODE informs the receiver regarding the pilot configuration, which resides in the PLHEADER. Usually, only a few modes, such as 8PSK rate 2/3, 16APSK rate 2/3 and 3/4, and 32APSK rate 3/4, need pilot assistance for carrier recovery.

FEC RATE

The FEC Rate menu enables to set the Forward Error Correction rate according to the FEC rate of the transmitted signal. The following figure illustrates the FEC Rate screen.

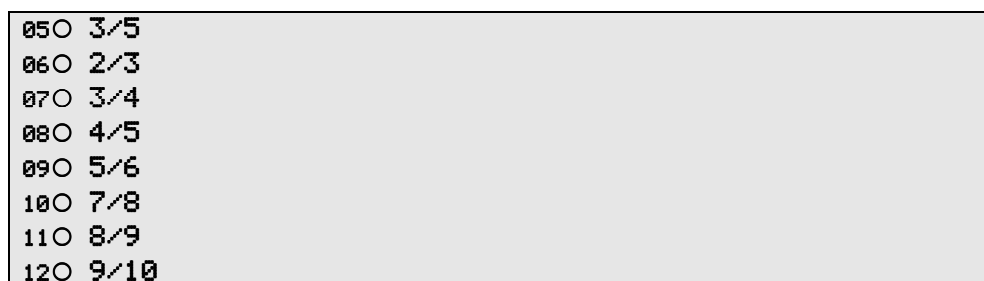
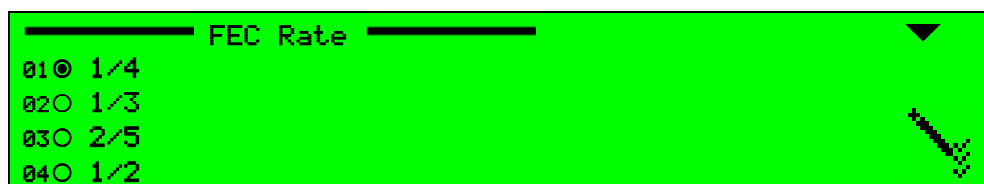


Table 4-3 shows the available FEC rates are:

Table 4-3: IRD-2900 Rear Panel – Connectors and Cables

MODULE	AVAILABLE FEC RATES
DVB-S2, QPSK	1/4, 1/3, 2/5, 1/2, 3/5, 2/3, 3/4, 4/5, 5/6, 8/9, 9/10
DVB-S2, 8PSK	3/5, 2/3, 3/4, 5/6, 8/9, 9/10
DVB-S2, 16APSK	2/3, 3/4, 4/5, 5/6, 8/9, 9/10

SPECTRAL INVERSION

The Spectral Inversion menu is used for setting the spectral inversion mode. The following figure illustrates the Spectral Inversion screen.



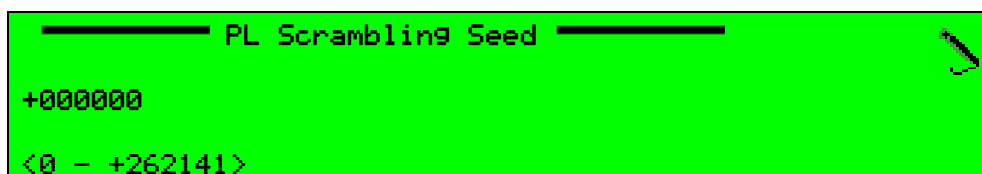
The available options are:

- **AUTOMATIC** – the IRD-2900 automatically detects and sets the Spectral Inversion Mode
- **INVERTED** – sets the IRD-2900 receiver to “inverted” Spectral Inversion Mode.
- **NORMAL** – sets the IRD-2900 receiver to normal Spectral Inversion Mode.

PL SCRAMBLING SEED

The Physical Layer Scrambling feature allows descrambling of the entire physical layer frame except its header part. The physical level scrambling is done according to a seed sequence that the user enters.

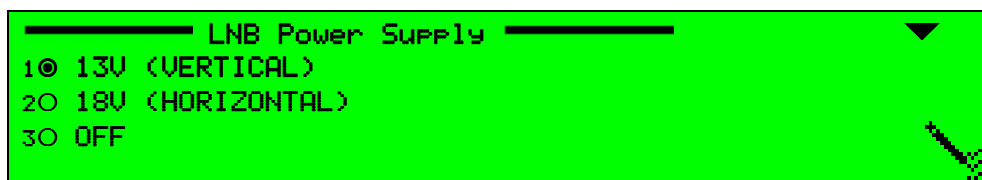
The use of different PL Scrambling sequences allows a reduction of interference correlation between different services. For the same purpose, it is possible to reuse a shifted version of the same sequence in different satellite beams. Furthermore the seed can be associated to a satellite operator or transponder, thus permitting identification of an interfering signal via the PL Scrambling seed detection. The PL Scrambling Seed screen allows setting the physical scrambling. The following figure illustrates the PL Scrambling Seed screen.



The PL Scrambling seed ranges from 0 to +262141.

LNB POWER SUPPLY

The LNB Power Supply menu is used for setting the power supply voltage level to the LNB in order to control the received signal polarization. The following figure illustrates the LNB Power Supply screen.

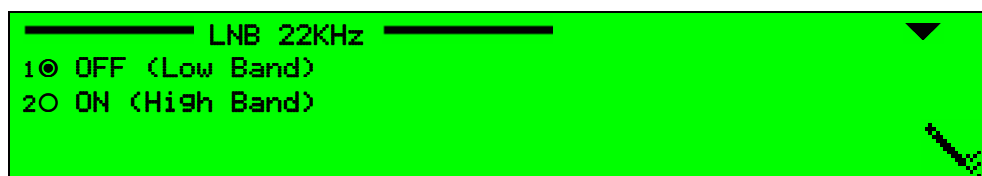


The available options are:

- **13V (VERTICAL)** – sets the LNB polarization to vertical
- **18V (HORIZONTAL)** – sets the LNB polarization to horizontal
- **OFF** – power to the LNB is disabled.

LNB 22KHz

The LNB-22KHz menu enables selecting between LNB low band and high band reception, by generating a 22 kHz signal that is sent to the LNB for this purpose. The following figure illustrates the LNB 22KHz screen.

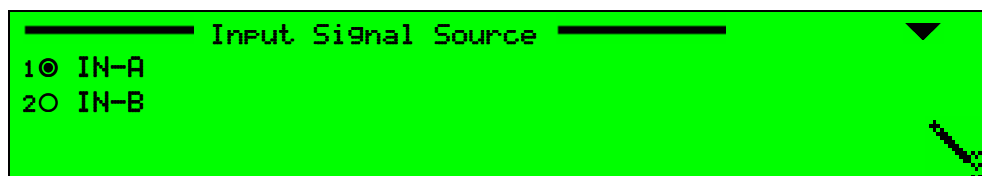


The available options are:

- **OFF (Low Band)** – the 22 kHz signal is not generated, and low band reception is selected
- **ON (High Band)** - the 22 kHz signal is generated and high band reception is selected.

INPUT SIGNAL SOURCE

The Input Signal Source menu selects the RF interface source through which to acquire the signal to be received. This menu exists only in Dual RF Input IRD-2900 devices. The following figure illustrates the Input Signal Source screen.



The available options are:

- **IN-A** – the IRD-2900 receives the input signal from RF IN 1 interface
- **IN-B** - the IRD-2900 receives the input signal from RF IN 2 interface

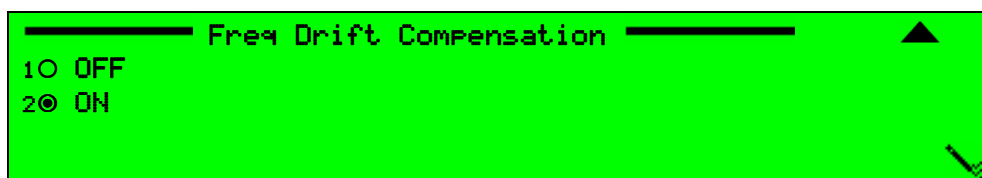
FREQ DRIFT COMPENSATION

The IRD-29000 uses Freq Drift Compensation Feature to automatically correct inaccurate frequencies inserted by the operator.

When the operator sets the receiver frequency, the IRD-2900 checks whether the inserted frequency is set to the optimal frequency. When a deviation is detected, the IRD-2900 calculates the offset from the original setting and enables correcting it.

Turning on the Freq Drift Compensation in the following menu activates the automatic frequency adjustment. When Drift compensation is turned off, the device uses the original frequency setting that was inserted by the operator.

The following figure illustrates the Freq Drift Compensation screen.

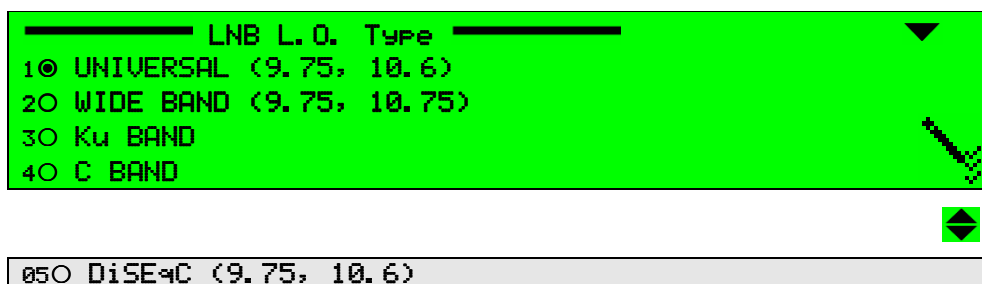


The available options are:

- **OFF** – Drift Compensation is off; the receiver remains tuned to the configured frequency.
- **ON** - Drift Compensation is on; the receiver tunes to the optimum frequency.

LNB L.O. Type

The LNB L.O. Type menu enables selecting the type of installed LNB. The following figure illustrates the LNB L.O. Type screen.



The available options are:

- **UNIVERSAL** (9.75, 10.6)
- **WIDE BAND** (9.75, 10.75)
- **Ku BAND**
- **C BAND**
- **DiSEqC** (9.75, 10.6)

FREQUENCY RANGE

The Frequency Range menu is used for selecting the receiver's active frequency band. The following figure illustrates the Frequency Range screen.

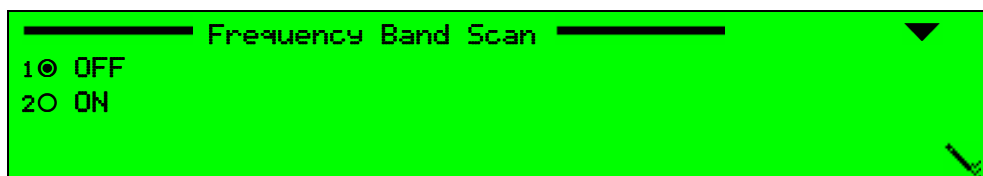


Available frequency band options are:

- **L BAND** – selects the frequency range 0.950000 - 2.150000 GHz
- **Ku BAND** - selects the frequency range 3.200000 - 4.200000 GHz
- **C BAND** - selects the frequency range 10.700000 - 12.750000 GHz

FREQUENCY SCAN

The Frequency Band Scan menu is used for mapping all the available transmission frequencies received by the antenna. The symbol rate during the scan is constant and must be set according to the satellite's symbol rate. Upon locating a valid DVB stream, the IRD-2900 logs the located frequency and service name and outputs the log through the RS232 port (terminal) or through Telnet. The following figure illustrates the Frequency Scan screen.

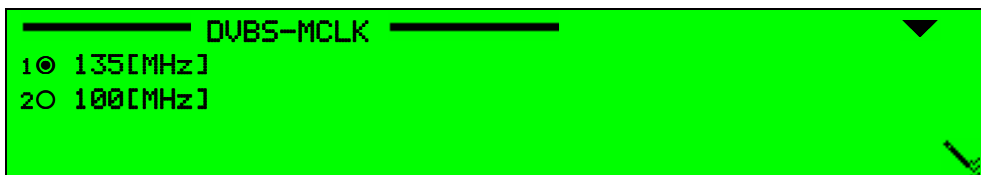


The available options are:

- **OFF** – band scan is disabled
- **ON** – starts the band scan

DVBS-MCLK

The DVBS-MCLK screen allows setting the DVBS Main Clock frequency. The following figure illustrates the DVBS-MCLK screen.



The available frequencies are:

- **135[MHz]** – This option is set by defaults.
- **100[MHz]**

NOTE

The DVBS-MCLK menu affects the DVBS module only.

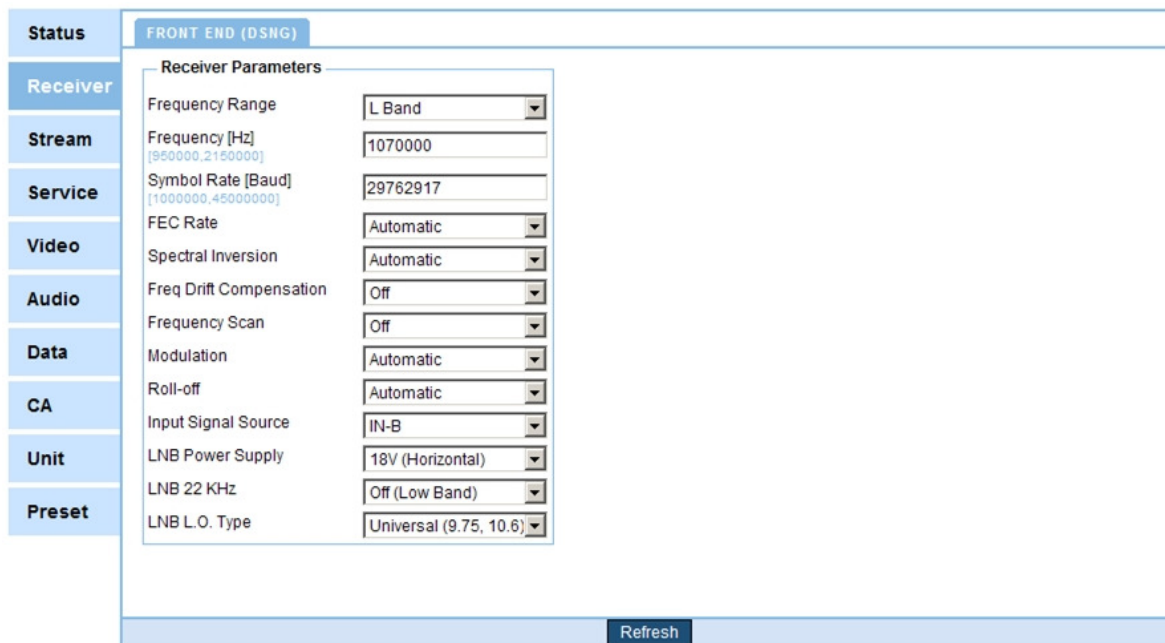
4.2.2.3. DVB-DSNG Module

This section details the front panel menus that enable configuring the DVB-DSNG receiver in an IRD-2900 DVB-DSNG front end device.

The following is the DVB-DSNG Receiver Configuration menu as displayed on the IRD-2900 front panel screen:

Receiver		1-2-1 ▼
01 Frequency		1.138000[GHz]
02 Symbol Rate		29.575707[Mbaud]
03 Modulations		AUTOMATIC
04 Roll off		AUTOMATIC
◆		
05 FEC Rate		AUTOMATIC
06 Spectral Inversion		AUTOMATIC
07 LNB Power Supply		18V(Horizontal)
08 LNB 22Hz		OFF(Low Band)
09 Input Serial Source		IN-A
10 Freq Drift Correction		OFF
11 LNB L.O Type		UNIVERSAL(9.75...
12 Frequency Range		L BAND
13 Frequency Band Scan		OFF

Figure 4-13 displays the corresponding DVB-DSNG receiver parameters menu (Web Management screen).



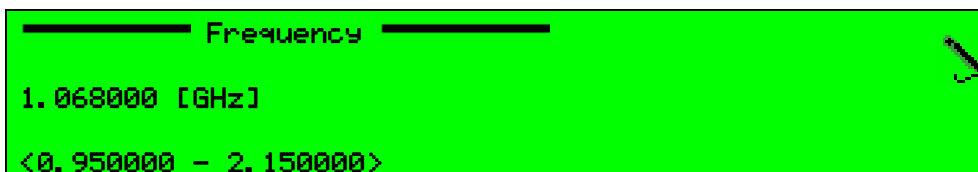
FRONT END (DSNG)	
Receiver Parameters	
Frequency Range	L Band
Frequency [Hz]	1070000
Symbol Rate [Baud]	29762917
FEC Rate	Automatic
Spectral Inversion	Automatic
Freq Drift Compensation	Off
Frequency Scan	Off
Modulation	Automatic
Roll-off	Automatic
Input Signal Source	IN-B
LNB Power Supply	18V (Horizontal)
LNB 22 KHz	Off (Low Band)
LNB L.O. Type	Universal (9.75, 10.6)

Figure 4-13: DVB-DSNG Receiver Parameters Menu Screen

FREQUENCY

The Frequency parameter must be set in accordance with the required satellite transponder frequency. The frequency can be acquired from the satellite transponder information.

In this example, the valid frequency range is between 0.95 and 2.15GHz.



```

Frequency
1.068000 [GHz]
<0.950000 - 2.150000>
  
```

The valid frequency range varies according to the selected band.

Table 4-4: Band Frequency Range

BAND	MINIMUM FREQUENCY	MAXIMUM FREQUENCY
<i>Ku-Band</i>	10.700000GHz	12.750000GHz
<i>C-Band</i>	3.200000GHz	4.200000GHz
<i>L-Band</i>	0.950000GHz	2.150000GHz

SYMBOL RATE

The Symbol Rate parameter must be set according to the satellite transponder symbol rate. The Symbol Rate value can be acquired from the satellite transponder information or can be calculated, with the bit rate information.



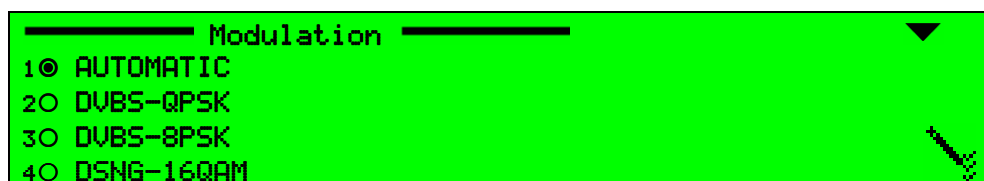
Available values range from 01.000000 to 45.000000 Mbaud.

NOTE

It is important to input the accurate Symbol Rate down to the sixth digit after the decimal point.

MODULATION

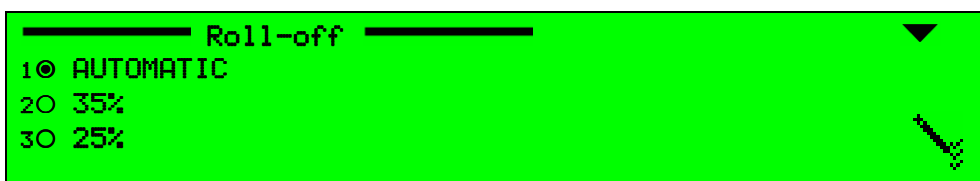
The Modulation menu allows setting the IRD-2900 receiver to the relevant modulation method.



ROLL- OFF

The Roll-off menu is used for setting the receiver's roll-off factor value according to the roll-off factor of the transmitted signal.

The Roll-off factor is the factor that is used for the base-band shaping of the transmitted signal. Set the Roll-Off factor in accordance with the transmitted Roll-Off factor.

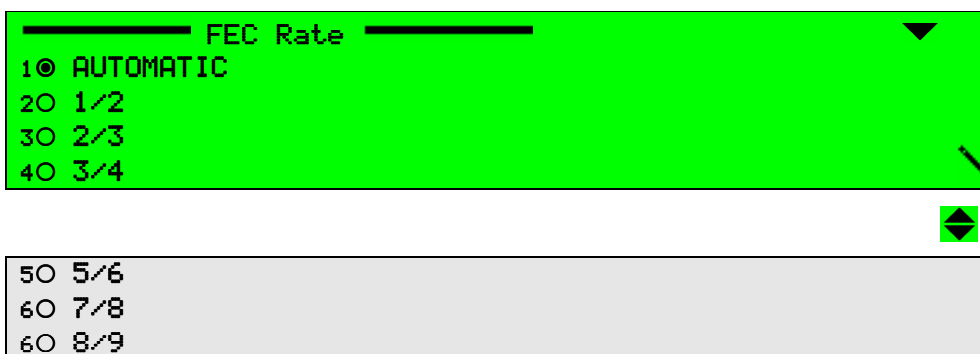


Available options for the Roll-off factor are:

- **35%, 25%, 20%**

FEC RATE

The FEC Rate parameter sets the Forward error correction rate value. The FEC parameter can be acquired from the satellite transponder information or can be set to automatic. When in Automatic mode, the IRD-2900 device tries all FEC rates until locking the rate to the transport stream.



The available options are:

- **Automatic**
- **1/2**
- **2/3**
- **3/4**
- **5/6**
- **7/8**
- **8/9**

NOTE

If the specific Viterbi rate is not provided, selecting the Automatic option enables the IRD-2900 to automatically detect the Viterbi rate.

SPECTRAL INVERSION

The Spectral Inversion parameter sets the spectral mode of operation. This parameter is configured according to the information provided from the broadcast head-end or can be set to automatic.

When set to automatic mode, the IRD-2900 tries the two spectral modes until obtaining synchronization.



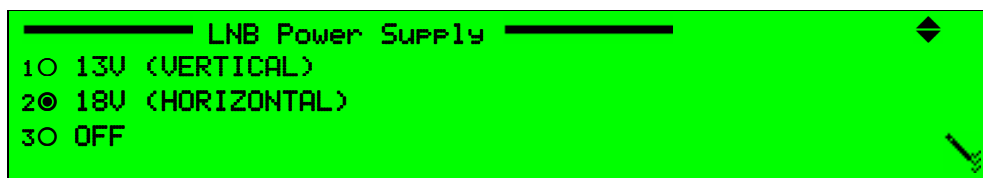
The available options are:

- **Automatic** – Automatically selects between Normal and Inverted spectral mode
- **INVERTED** – Inverted spectral mode
- **NORMAL** – Normal spectral mode

LNB POWER SUPPLY

The IRD-2900 sets the polarization of the receiving antenna by providing different voltage levels to the LNB, 13v for vertical polarization and 18v for horizontal polarization.

The polarization of the receiving antenna is determined according to the polarity of the satellite transponder.



The available options are:

- **OFF** – No voltage is supplied to the LNB. Use this option either when cascading IRDs using the loop-through connector on the L-Band interface or when this voltage is supplied to the LNB by external source.
- **13V (Vertical)** – Vertical polarization
- **18V (Horizontal)** – Horizontal polarization

LNB 22 KHz

The receiver controls the LNB band by sending a 22 kHz signal. When the signal is sent, the LNB uses its High Band Local Oscillator (L.O.). When the signal is not sent, the LNB uses its Low Band L.O.

The local oscillator is used to convert the signal from Ku-Band or C-Band to L-Band. Two local oscillators exist one for each band to leverage full spectrum.

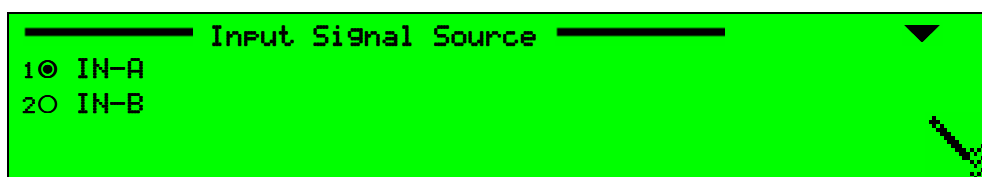


The available options are:

- **OFF** – Low band L.O.
- **ON** – High band L.O.

INPUT SIGNAL SOURCE

The Input Signal Source menu selects the RF interface source through which to acquire the signal to be received. This menu exists only in Dual RF Input IRD-2900 devices.



The available options are:

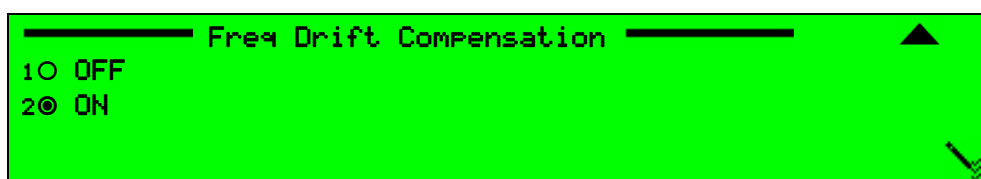
- **IN-A** – the IRD-2900 receives the input signal from RF IN 1 interface
- **IN-B** – the IRD-2900 receives the input signal from RF IN 2 interface

FREQ DRIFT COMPENSATION

The IRD-2900 uses Freq Drift Compensation to automatically correct inaccurate frequencies set by the operator.

When the operator sets the receiver frequency, the IRD-2900 checks whether it is set to the optimum frequency. When a deviation is detected, the IRD-2900 calculates the offset from the original setting and enables correcting it.

Turning on the Freq Drift Compensation activates the automatic frequency adjustment. When Drift compensation is turned off, the device uses the original frequency setting that was inserted by the operator.



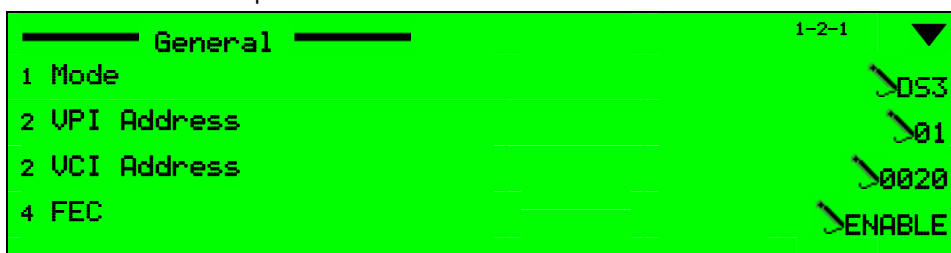
The available options are:

- **OFF** – Drift Compensation is off; the receiver remains with the configured frequency.
- **ON** – Drift Compensation is on; the receiver adjusts its optimal frequency.

4.2.2.4. DVB-ATM Module

This section details the front panel menus that enable configuring the DVB-ATM receiver in an IRD-2900 DVB-ATM front end device.

The following is the **DVB-ATM Receiver Configuration** menu as displayed on the IRD-2900 front panel screen:

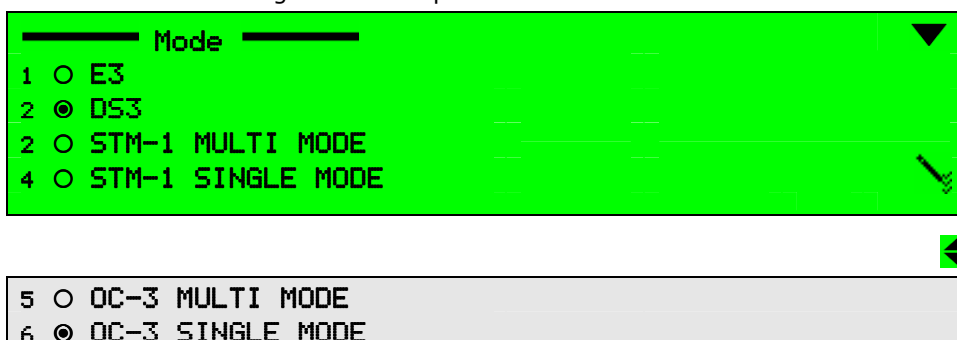


The available options are:

- **Mode** – this parameter allows the user to set the operational mode of the ATM receiver.
- **VPI Address** –this parameter allows the user to set the path address for the ATM receiver.
- **VCI Address** – this parameter allows the user to set the channel address for the ATM receiver.
- **FEC** – this parameter allows the user to enable FEC for the ATM receiver.

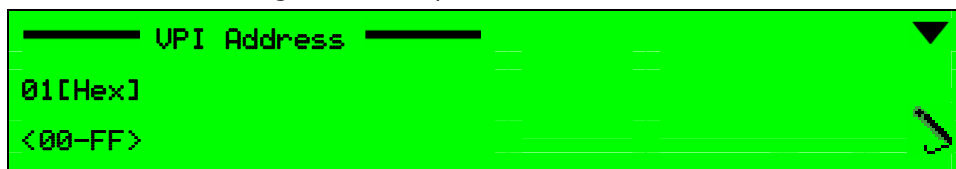
MODE

The Mode parameter allows the user to set the operational mode of the ATM receiver. The following is the front panel Mode screen:



VPI ADDRESS

The VPI Address parameter allows the user to set the path address for the ATM receiver. The following is the front panel VPI Address screen:

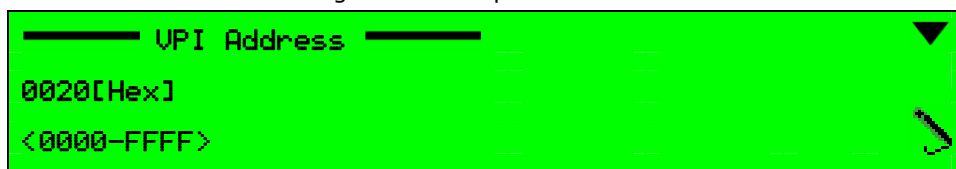


The image shows a monochrome screen with a title bar at the top that reads "VPI Address". Below the title bar, the current value "01[Hex]" is displayed. Underneath, the range "<00-FF>" is shown. On the right side of the screen, there is a small icon of a pen and a checkmark, indicating that the value can be edited and confirmed.

The available values range from 00 to FF.

VCI ADDRESS

The VCI Address parameter allows the user to set the channel address for the ATM receiver. The following is the front panel VCI Address screen:

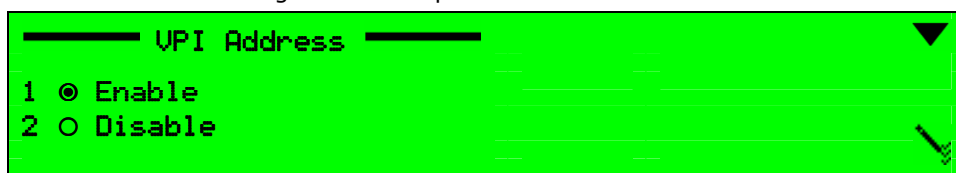


The image shows a monochrome screen with a title bar at the top that reads "VCI Address". Below the title bar, the current value "0020[Hex]" is displayed. Underneath, the range "<0000-FFFF>" is shown. On the right side of the screen, there is a small icon of a pen and a checkmark, indicating that the value can be edited and confirmed.

The available values range from 00 to FF.

FEC

The FEC parameter allows the user to enable or disable FEC for the ATM receiver. The following is the front panel FEC screen:

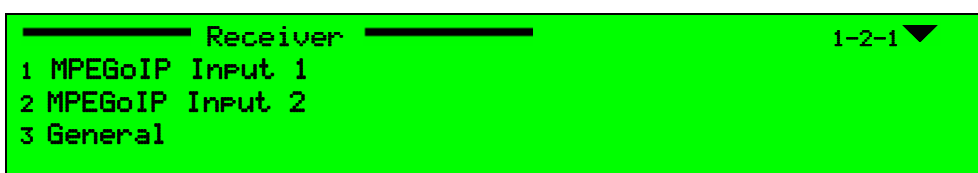


The image shows a monochrome screen with a title bar at the top that reads "FEC". Below the title bar, there are two options: "1 ☒ Enable" and "2 ☐ Disable". On the right side of the screen, there is a small icon of a pen and a checkmark, indicating that the selection can be edited and confirmed.

4.2.2.5. IP Receiver Configuration Menu

This section details the front panel menus that enable configuring the IP receiver in an IRD-2900 IP front end device.

The following is the IP Receiver configuration menu as it is displayed on the IRD-2900 front panel screen:



The available options are:

- **MPEGoIP Input 1** - allows the user to configure the MPEGoIP receiver connected to the rear panel *MPEGoIP IN 1* interface
- **MPEGoIP Input 2** - allows the user to configure the MPEGoIP receiver connected to the rear panel *MPEGoIP IN 2* interface
- **General** - allows the user to configure parameters such as redundancy, De-jittering delay, and FEC.

MPEGoIP INPUT 1

The MPEGo-IP Input 1 sub-menu allows the user to configure the MPEGoIP receiver connected to the rear panel MPEGoIP interface.

NOTE

MPEGoIP Input 2 menu is identical to the MPEGoIP Input 1 menu

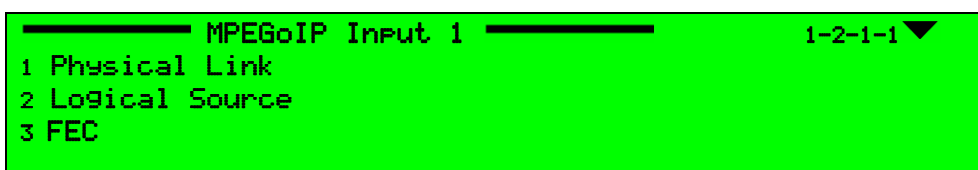
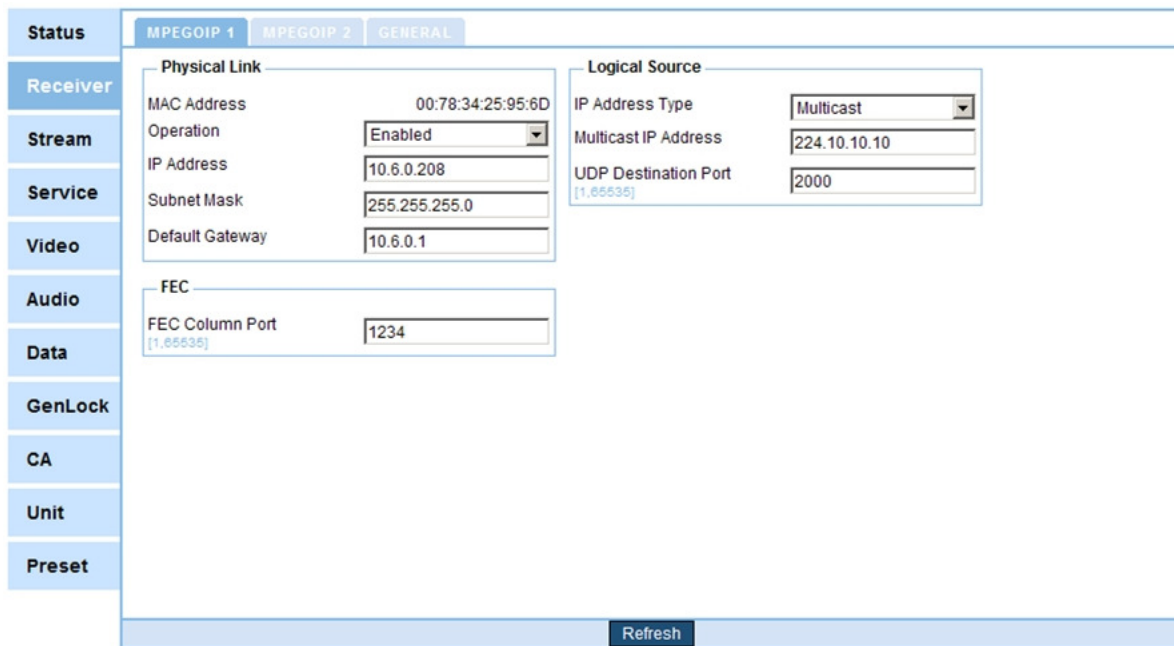


Figure 4-14 displays the corresponding DVB-IP Receiver MPEGoIP 1 Parameters Menu (Web Management screen).



Section	Parameter	Value
Physical Link	MAC Address	00:78:34:25:95:6D
	Operation	Enabled
	IP Address	10.6.0.208
	Subnet Mask	255.255.255.0
	Default Gateway	10.6.0.1
Logical Source	IP Address Type	Multicast
	Multicast IP Address	224.10.10.10
	UDP Destination Port	2000
FEC	FEC Column Port	1234

Figure 4-14: DVB-IP Receiver – MPEGoIP 1 Parameters Menu Screen

The available options are:

- **Physical Link** – for configuring this physical link parameters
- **Logical Source (Socket)** – for configuring the IP parameters of the TS source end-device ("logical port" parameters)
- **FEC** – for configuring the Forward Error Correction parametersThe three options are detailed follows.

The three options are detailed as follows:

PHYSICAL LINK

The physical Link menu is used for enabling the operation of the physical link (the MPEGoIP IN1 interface in this example), as well as for configuring its parameters.



Available options are

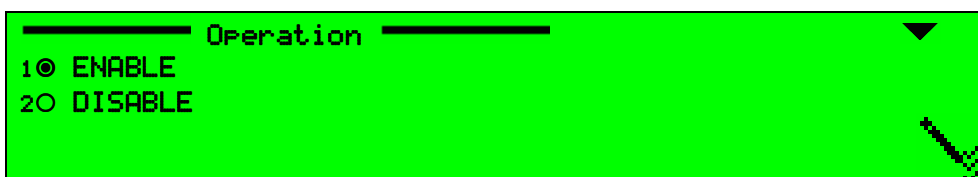
- **Operation** - for enabling or disabling this port
- **IP Address** - this MPEGoIP input port's IP address
- **Subnet Mask** - this MPEGoIP input port's Subnet Mask
- **Default Gateway** - the default gateway address

NOTE

*The operator must enter valid IP addresses before the IRD-2900 can operate. If one or more IP addresses are not entered correctly, the following message is displayed: "**Front-End Warning – IP Configuration Error**". This message remains until all IP addresses are entered correctly.*

OPERATION

The Operation menu is used for enabling or disabling this MPEGoIP input port.



The available options are:

- **ENABLE** – enables the relevant MPEGoIP input (*MPEGoIP IN1* in this example)
- **DISABLE** - disables the relevant MPEGoIP input (*MPEGoIP IN1* in this example).

IP ADDRESS

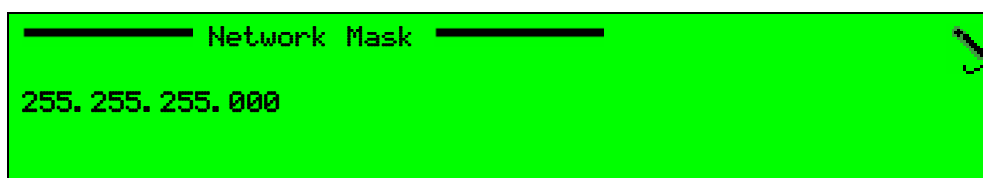
The IP Address menu is used for setting the IP address of this physical MPEGoIP input port (MPEGoIP IN1 in this example)



Use the front panel right/left arrows to navigate between the digits locations, and the up/down arrows to toggle the digits for creating the address.

NETWORK MASK

The Network Mask menu is used for setting the Network Subnet Mask of the physical MPEGoIP input port (*MPEGoIP IN1* in this example)



Use the front panel right/left arrows to navigate between the digits locations and the up/down arrows to toggle the digits for creating the address.

DEFAULT GATEWAY

The Default Gateway menu is used for setting the default gateway address for the IRD-2900's physical MPEGoIP input port



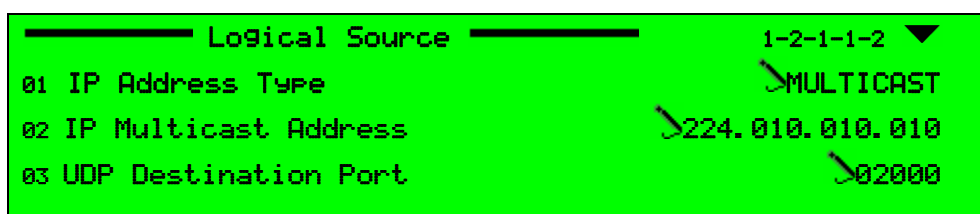
Use the front panel right/left arrows to navigate between the digits locations, and the up/down arrows to toggle the digits for creating the address.

NOTE

Both MPEGoIP input ports must use the same gateway.

LOGICAL SOURCE (SOCKET)

The Logical Source menu is used for configuring the connection with the end device ("logical port").

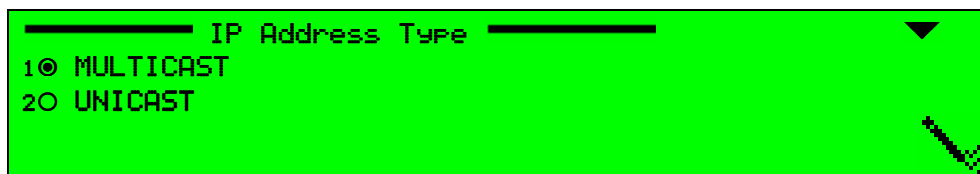


The available options are:

- **IP Address Type** - for choosing between Multicast and Unicast address types
- **IP Multicast Address** - the logical port's IP address (this menu is displayed only when Multicast IP address type is selected)
- **UDP Destination Port** - the logical port's UDP port from which to receive data

IP ADDRESS TYPE

This menu is used for choosing the Multicast or Unicast address type.

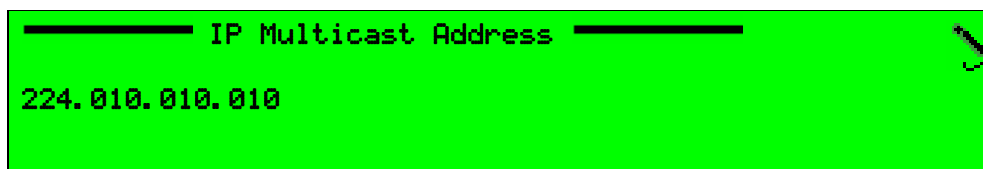


The available options are:

- **MULTICAST** – for selecting Multicast IP address type. When selected, the IP Multicast address menu is displayed, which enables configuring the Multicast address. An IGMP Join request is sent for connecting with the IP Multicast address that was configured. The IRD-2900 filters the relevant transport stream with the configured Multicast IP address and UDP port.
- **UNICAST** - for selecting Unicast IP address type. The IRD-2900 filters the relevant transport stream only by the configured UDP port.

IP MULTICAST ADDRESS

The IP Multicast Address menu enables setting the logical port's IP address (this menu is displayed only when the Multicast IP address type is selected).



Use the front panel right/left arrows to navigate between the digits locations, and the up/down arrows to toggle the digits for creating the address.

UDP DESTINATION PORT

The UDP Destination Port menu enables setting the logical port's UDP port number

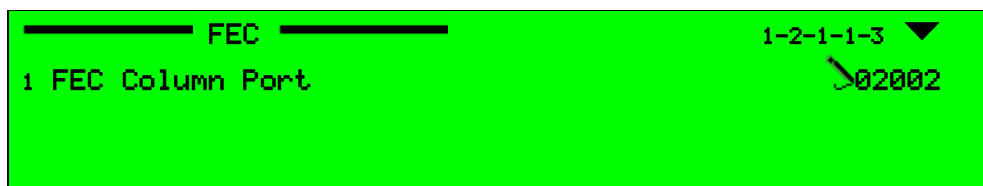


Use the front panel right/left arrows to navigate between the digits locations and the up/down arrows to toggle the digits for creating the address.

FEC (FORWARD ERROR CORRECTION)

The IRD-2900 IP Front End-**FEC** Implementation complies with ProMPEG CoP3v2, with the following limitations:

- Columns support only
- Maximum TS bit-rate - 20 Mbps



Selecting FEC Column Port displays the following screen, which allows setting the UDP port number carrying the FEC data.



Available values range from 0 to 65535.

Use the front panel **[right]**/ **[left]** arrows to navigate between the digit location and the **[up]**/ **[down]** arrows to toggle for the required digits.

NOTE

The default FEC Column port is set to N+2, where N is the value of the UDP Destination port.

GENERAL

General sub-menu screen allows the user to set several parameters:

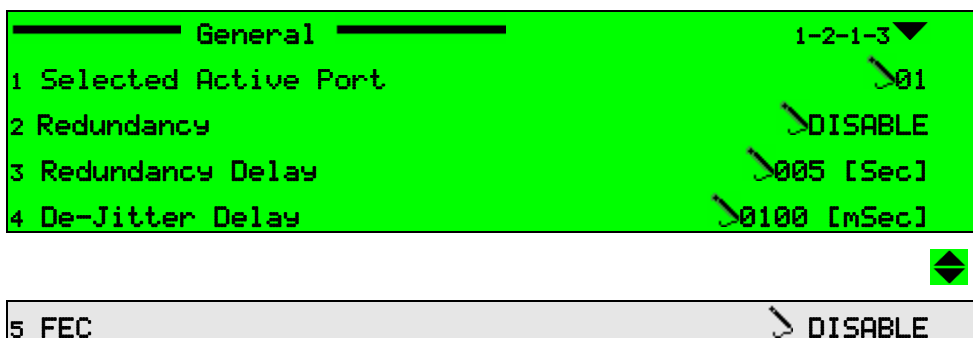


Figure 4-15 displays the corresponding DVB-IP Receiver **General** Parameters Menu (Web Management screen).

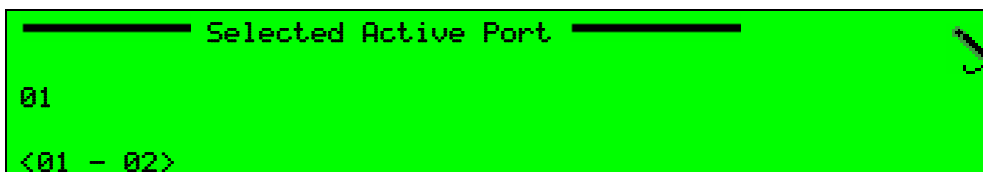
Status	MPEG-IP 1	MPEG-IP 2	GENERAL										
Receiver	<table><tr><td>Active Port</td><td>2</td></tr><tr><td>Redundancy</td><td>Disabled</td></tr><tr><td>Redundancy Delay [Sec]</td><td>5</td></tr><tr><td>De-Jitter Delay [mSec]</td><td>500</td></tr><tr><td>FEC</td><td>Disabled</td></tr></table>			Active Port	2	Redundancy	Disabled	Redundancy Delay [Sec]	5	De-Jitter Delay [mSec]	500	FEC	Disabled
Active Port				2									
Redundancy				Disabled									
Redundancy Delay [Sec]				5									
De-Jitter Delay [mSec]				500									
FEC	Disabled												
Stream													
Service													
Video													
Audio													
Data													
GenLock													
CA													
Unit													
Preset													
Refresh													

Figure 4-15: DVB-IP Receiver – General Parameters Menu Screen

- **Selected Active Port** – for selecting the active input port. This port will become active and remain active unless a redundancy event caused the IRD-2900 to switch to the other input port.
- **Redundancy** - enables or disables the IRD-2900 redundancy feature
- **Redundancy Delay** - for setting the time delay that defines a redundancy event
- **De-Jitter Delay** - for setting the de-jitter buffer time delay
- **FEC** – enables or disables the FEC feature

SELECTED ACTIVE PORT

The **Selected Active Port** menu is used for selecting the active input port. This port will become active, and remain active unless a redundancy event caused the IRD-2900 to switch to the other input port.



Available values are 01 and 02.

REDUNDANCY

The IRD-2900 IP front end supports both physical link and logical source redundancy. The physical link and logical source are coupled, i.e. switching from one physical link to the other (in the case of a link redundancy event) forces switching from the corresponding logical source to the other. In the case of a logical source redundancy event, the physical links are switched as well.

- **Link Redundancy:** protects the directly connected switch/router and the physical cable connection. There are two IP physical links to the IRD-2900: *MPEGoIP IN1* and *.MPEGoIP IN2*.
- **Source Redundancy:** protects the transport stream source (encoder/streamer). Two logical sources (i.e. sockets), containing identical streams, must be configured to enable Source redundancy.

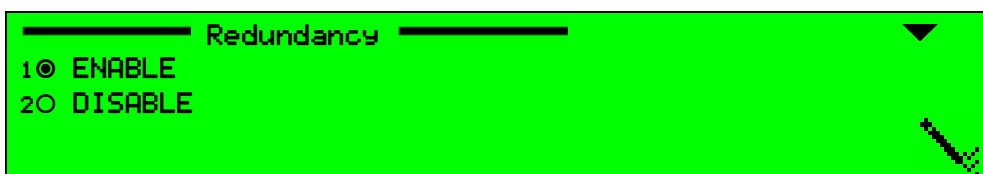
REDUNDANCY EVENT

A redundancy event causes the IRD-2900 to switch from the active Physical Link and Logical Source to the passive ones.

The device identifies a redundancy event when all the following conditions apply:

- Redundancy mode is enabled
- Active physical link failure (through PHY indication) or active logical source failure detection (no stream is being received for a preconfigured *Redundancy Delay* time [see next page])
- Passive physical link is configured, up, and connected
- Passive logical source is configured and connected

The following menu is used for enabling or disabling the operation of the redundancy feature.

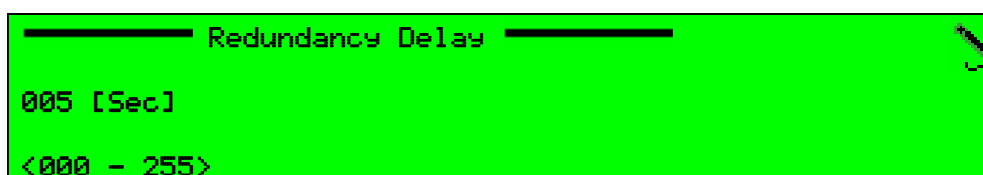


The available options are:

- **ENABLE** – enables redundancy; when a redundancy event occurs the physical link and logical source switch to passive ones
- **DISABLE** - disables redundancy

REDUNDANCY DELAY

The **Redundancy delay** menu is used for setting the time delay, which defines a redundancy event.



Redundancy delay values range from 0 to 255 seconds.

DE-JITTER DELAY

The De-jitter Delay menu is used for setting the decoder's De-Jitter delay in milliseconds.

The aim of the De-Jittering mechanism is to eliminate the inherent jitter introduced by a typical IP network. This mechanism practically acquires the source exact frequency and follows it. The IRD-2900 supports de-jittering of CBR (Constant Bit Rate) streams.

The de-jitter delay configurability enables only optimizing unit-performance according to specific needs. The longer the delay, the longer the jitter that can be eliminated (traded off by longer latency).



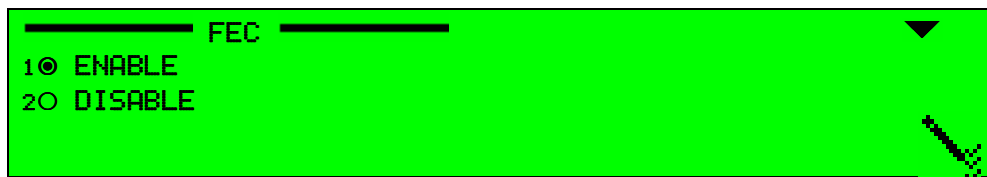
De-jitter delay values range from 100 to 2000 milliseconds.

FEC

The IRD-2900 IP Front End FEC Implementation complies with ProMPEG CoP3v2, with the following limitations:

- Columns support only
- Maximum TS bit-rate: 25 Mbps

This menu enables OR disables FEC operation.



The available options are:

- **ENABLE** – enables FEC operation; regenerates missing IP packets using FEC packets received from the configured UDP port.
- **DISABLE** - disables FEC operation; ignores FEC packets and does not regenerate missing IP packets.

4.2.3. Stream Configuration Menu

To access the Stream Configuration menu in the front panel control interface go to **Configuration → Stream**.

Figure 4-16 displays a tree diagram of the Stream Configuration Menu.

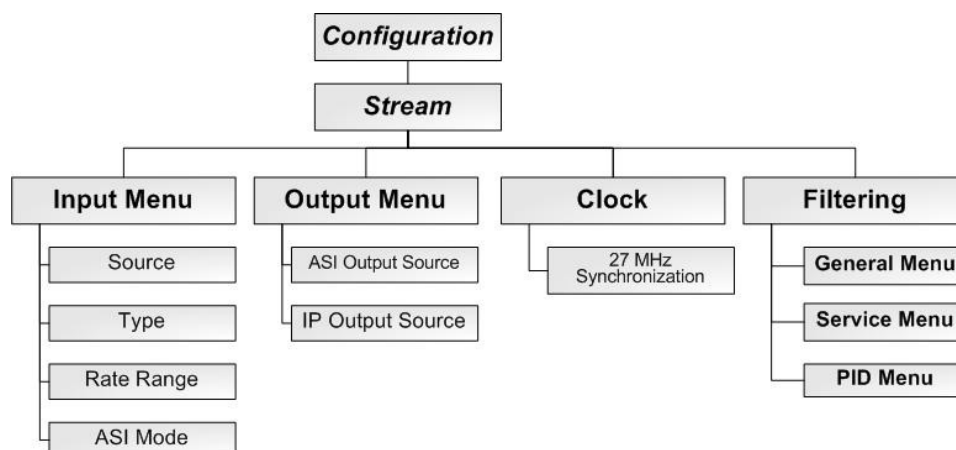


Figure 4-16: Stream Configuration Menu

The following figure displays the Stream configuration menu:

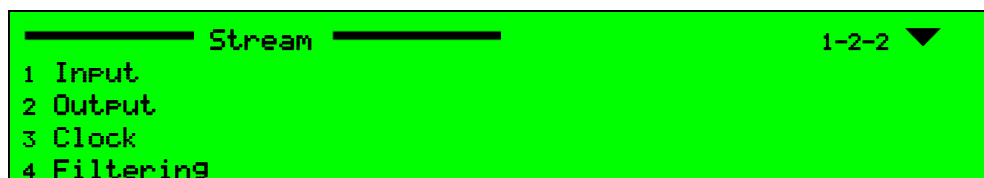
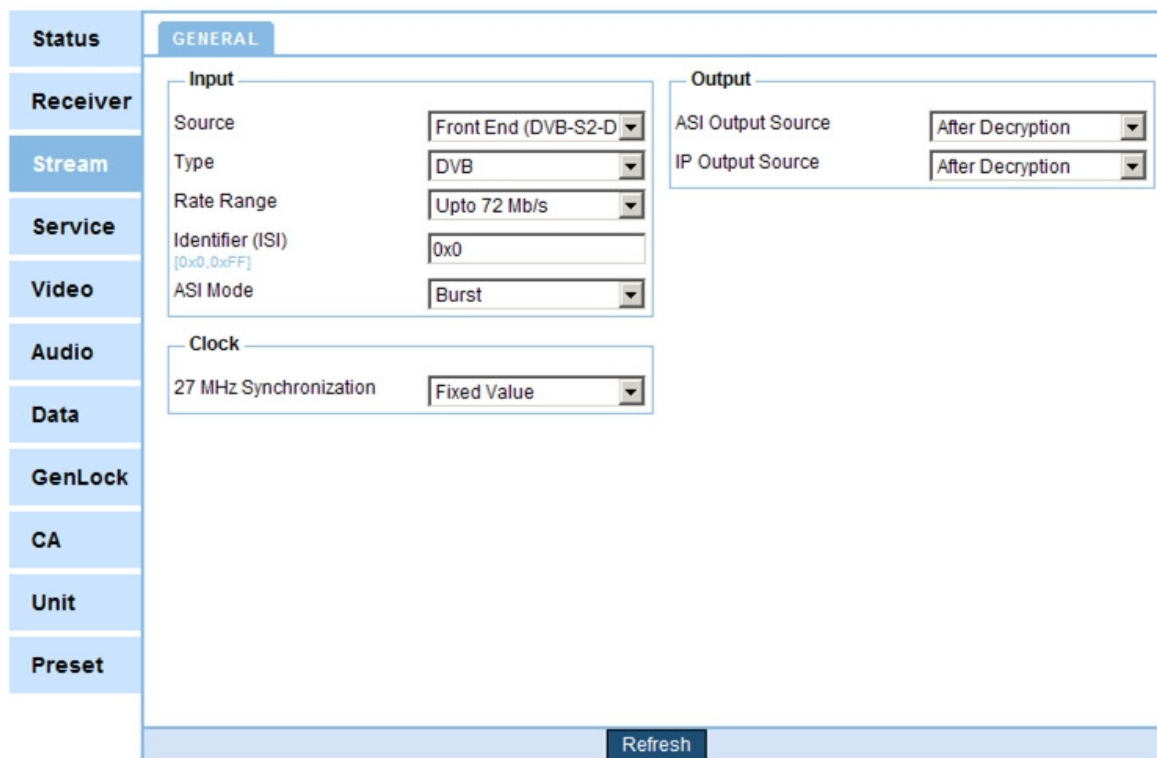


Figure 4-17 displays the corresponding Stream configuration (Web Management screen).



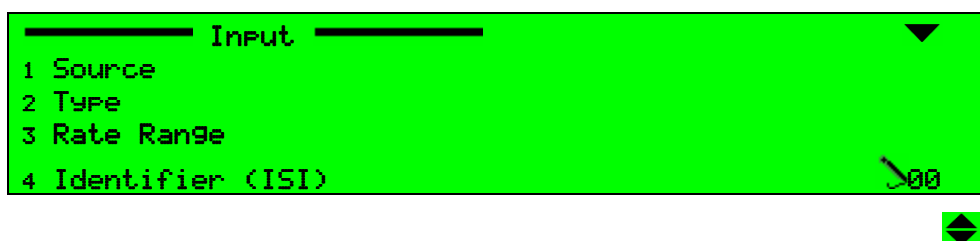
The screenshot shows a web management interface for stream configuration. On the left is a vertical menu with options: Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA, Unit, and Preset. The 'Stream' option is selected. The main area is titled 'GENERAL' and contains two sections: 'Input' and 'Output'. The 'Input' section has fields for Source (Front End (DVB-S2-D)), Type (DVB), Rate Range (Upto 72 Mb/s), Identifier (ISI) (0x0), and ASI Mode (Burst). The 'Output' section has fields for ASI Output Source (After Decryption) and IP Output Source (After Decryption). At the bottom of the main area is a 'Refresh' button.

Figure 4-17: Stream Parameters Menu Screen

The following Sections detail the Stream configuration parameters.

4.2.3.1. Input

The IRD-2900 supports a wide range of optional input interfaces, allowing the IRD-2900 to receive input streams from different sources.



The screenshot shows a green background menu for the 'Input' section. The menu items are: 1 Source, 2 Type, 3 Rate Range, and 4 Identifier (ISI). A cursor is positioned over the '4 Identifier (ISI)' option. A small icon is visible in the bottom right corner of the menu area.

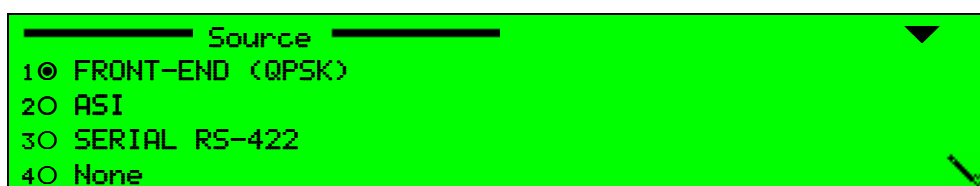
05 ASI Mode

Burst

The Source parameter defines the input stream source.

SOURCE

When the receiver is active in the IRD, the following menu is displayed:



NOTE

The Decoder Stream Source screen is dynamic and it changes according to the currently-active IRD-2900 interface.

The available options are:

- **FRONT-END** (if applicable) – Selects the Receiver Front-End Interface as the source for the input transport stream
- **ASI** – Select the ASI digital input as the source for the input transport stream
- **SERIAL RS-422** – Selects the RS-422 serial input as the source for the input transport stream

NOTE

Only qualified personnel should handle serial RS-422 option.

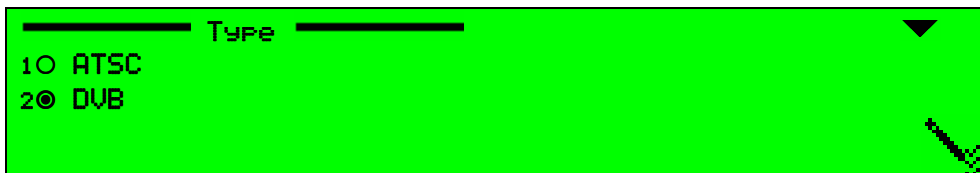
- **None** - No input source is selected for the IRD-2900.

NOTE

*When **Front-End (IP)** is selected, the **27 MHz Synchronization** option must be set to **Fixed-Value** (see next page).*

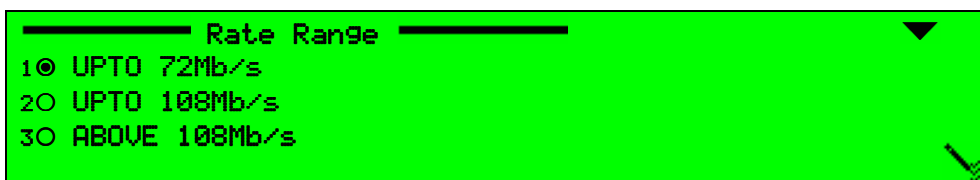
TYPE

The Type parameter allows selecting between ATSC format and DVB format.



RATE RANGE

The Rate Range parameter defines the range of the ASI input rates.



The available options are:

- **UPTO 72Mb/s** – Selected when using a CAM for descrambling
- **UPTO 108Mb/s** – Selected when not using CAM and inputting a transport Stream within a rate of 72M-108Mb/s.
- **ABOVE 108Mb/s** – Not in use.

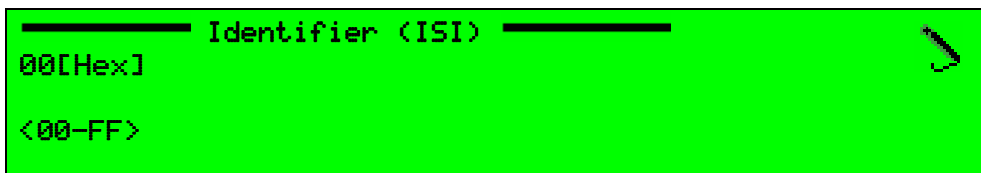
NOTE

*The **ASI Input-Rate Range** parameter in the front panel interface corresponds with **Stream Rate Range** in the Web management interface (see Figure 4-17).*

INPUT STREAM IDENTIFIER (ISI)

The IRD is support Multiple Input transport Streams (MIS). This support is being done using DVB-S2 Input Stream Identifier (ISI).

This identifier is present in the Baseband Header of a DVB-S2 Baseband Frame. The ISI is a single byte identifying the encapsulated stream in case of Multiple Input Streams and by entering it the user can choose which TS to receive.



The Identifier ISI value ranges from 00[Hex] to FF[Hex].

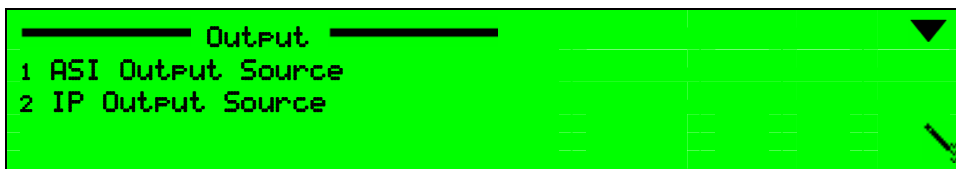
ASI MODE

The ASI Mode parameter allows selecting between BURST format and NORMAL format.

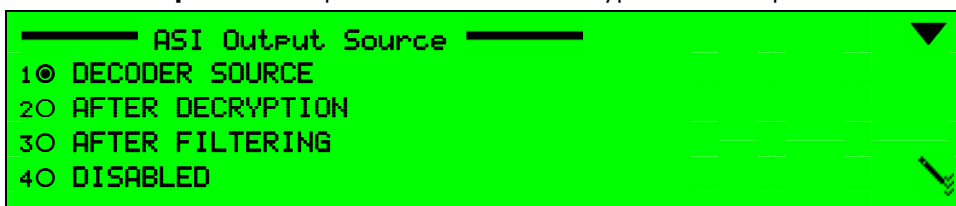


4.2.3.2. Output

The IRD-2900 supports a wide range of optional output interfaces, allowing the IRD-2900 to send output streams to different destinations.



The **ASI Output Source** parameter defines the type of ASI output source.



The available options are:

- **DECODER SOURCE** – Input stream is directly routed to the ASI output
- **AFTER DECRYPTION** – Stream passes the CAM and then is directed to the ASI output
- **AFTER FILTERING** – Stream passes the CAM and then is directed to the ASI output
- **DISABLED** – ASI output signal is disabled

IP OUTPUT SOURCE

The IP Output Source parameter defines the type of IP output source.



The available options are:

- **DECODER SOURCE** – Input stream is directly routed to the ASI output
- **AFTER DECRYPTION** – Stream passes the CAM and then is directed to the ASI output
- **AFTER FILTERING** – Stream passes the CAM and then is directed to the ASI output
- **DISABLED** – ASI output signal is disabled

4.2.3.3. Clock

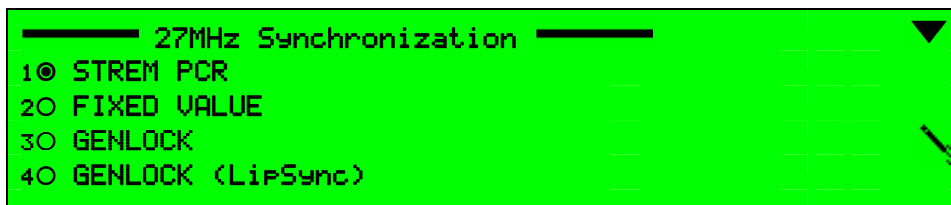
Defines the synchronization source for the IRD-2900.



27 MHz SYNCHRONIZATION

The 27 MHz Synchronization configuration option defines the synchronization source for the IRD-2900 VCXO.

The Decoder Synchronization Source is a 27 MHz clock, generated by a Voltage Controlled Crystal Oscillator (VCXO). It is used to synchronize the IRD-2900 to the MPEG stream.



The available options are:

- **STREM PCR** – The VCXO is synchronized to the program clock recovered from the PCR data.
- **FIXED VALUE** – The VCXO is running in free mode.
- **GENLOCK** – Synchronizes the IRD-2900 according to MPEG Encoder external video signal.
- **GENLOCK (LipSync)** – Additional Genlock that Synchronizes the IRD-2900 according to the Video GenLock input. This feature ensures a range of approximately 4mSec delta time between Audio/Video synchronization.

NOTE

The VCXO is factory calibrated to a fixed 27 MHz clock.

4.2.4. Filtering

Filtering is a licensing-required feature that allows the user to define a method for PID filtering on IRD-2900 ASI and IP output ports.

The following describes the filtering procedures, using both front panel and web-based management interfaces:

FILTERING THROUGH THE FRONT PANEL

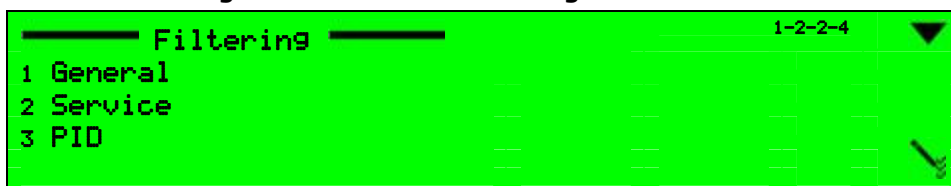
To use filtering mode through the front panel perform the following:

1. Configure ASI and/or IP outputs to filtering mode (see section 4.2.3.2). To access the After Filtering submenus go to:

Configuration→Stream→Output→ASI Output Source→After Filtering
Configuration→Stream→Output→IP Output Source→After Filtering

2. Access the filtering menu by the following path:

Root→Configuration→Stream→Filtering



3. Set the following General sub menu parameters: strategy, mode, Bit-rate mode and bit-rate. (see section 4.2.4.1). To access the General submenus go to: **Configuration→Stream→ Filtering→General**
4. In case that the service filtering strategy is selected, set the required services (see section 4.2.4.2). To access the Service submenus go to:

Configuration→Stream→ Filtering→Service

5. In case the PID filtering strategy is selected, set the required PIDs (see section 4.2.4.3). To access the General submenus go to:

Configuration→Stream→ Filtering→PID

FILTERING THROUGH THE WEB-BASED MANAGEMENT

To use filtering mode through the front panel perform the following:

1. Configure ASI or/and IP outputs to filtering mode. To access the Service submenus go to:

Stream→General→Output→ASI Output Source→After Filtering

Stream→General→Output→IP Output Source→After Filtering

2. Set the following parameters at the filtering sub menu: strategy, mode, Bit-rate mode and bit-rate (see section 4.2.4.1). To access the Filtering submenu go to: **Stream→Filtering**

Figure 4-18 shows the corresponding Filtering web-management screen.

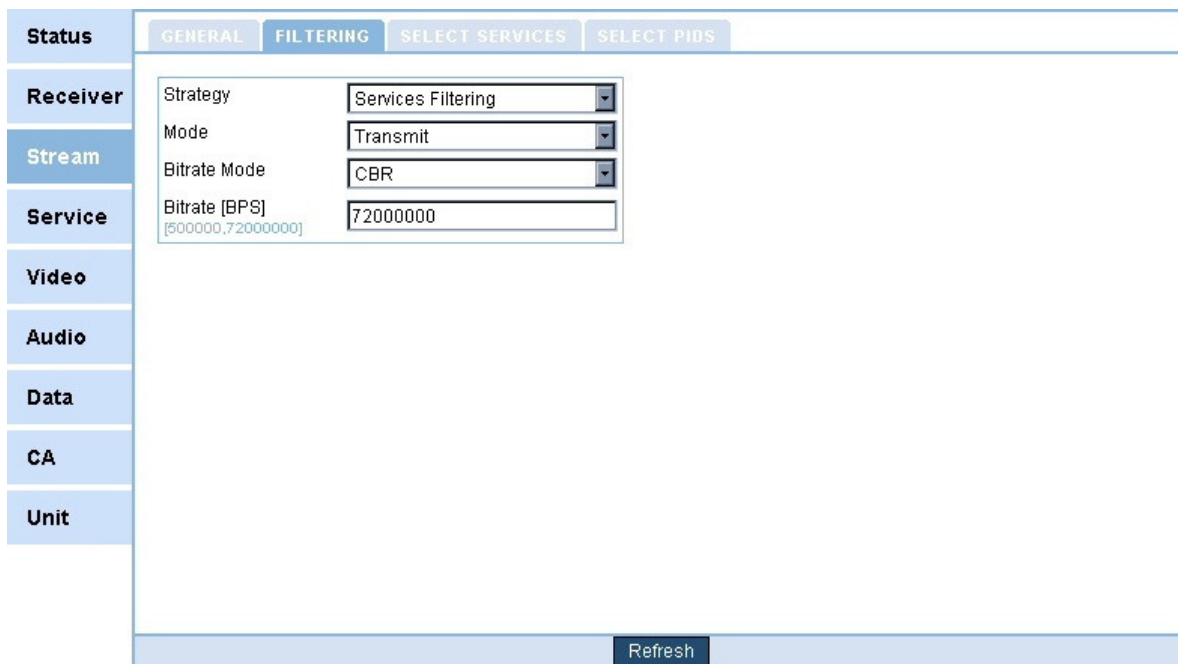


Figure 4-18: Filtering Parameters web-management screen

3. In case the service filtering strategy is selected, set the services (see section 4.2.4.2). To access the Select Services submenu go to:

Stream→Select Services

4. In case the PID filtering strategy is select, set the PIDs (see section 4.2.4.3).

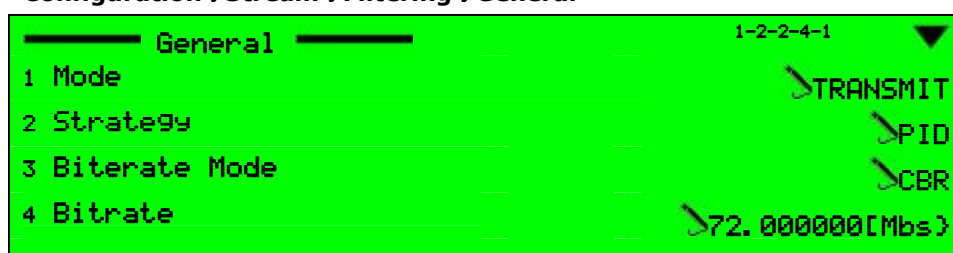
To access the Select PIDs submenu go to: **Stream→ Select PIDs**

4.2.4.1. General Filtering Parameters

The General menu provides several filtering parameters for ASI and IP output ports.

To access the General menu through the front panel go to:

Configuration→Stream→Filtering→General



To access the General menu through the front panel go to: **Stream→Filtering**

Figure 4-19 displays the corresponding general filtering web management screen.



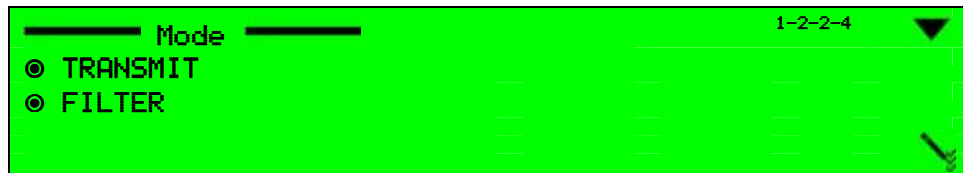
Figure 4-19: General Filtering Parameters Menu Screen

MODE

This parameter allows the user to set the selected services or PIDs to be transmitted or filtered at the output ports. Two values are available:

Configuration→Stream→Filtering→General→Mode

The following figure shows the Mode front panel screen:



The available options are:

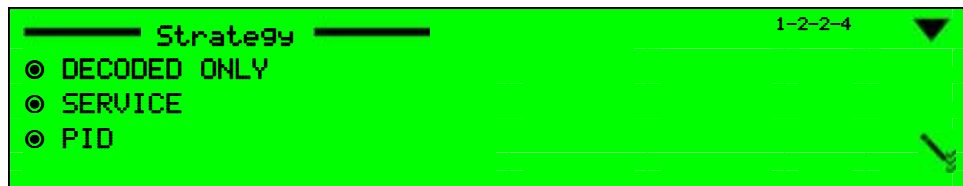
- **TRANSMIT** – this mode forwards only selected services or PIDs to the output (Excluding unselected or unreferenced services or PIDs).
- **FILTER** – this mode excludes the selected services or PIDs from the output.

STRATEGY

This parameter allows the user to select one of three filter strategies. To access the Strategy submenu, from the front panel go to:

Configuration→Stream→Filtering→General→Strategy

The following figure shows the Strategy front panel screen:



The available strategies options are:

- **Decode Only** – selects the service set on TV1 (for details see section 4.2.5.1). All of the service' PIDs (Video, Audio and so on) are transmitted or filtered (based on Mode parameter) to the ASI and/or IP outputs.
- **Services Filtering** – This mode allows the user to select specific services from a list (under "select services"). This mode is dynamic, means that the IRD follows the services' tables and automatically add or remove PIDs accordingly. The user can select two types of services:

- **Referenced services** – any service included in the PAT.
- **Unreferenced service** – the user can add any other service ID. When the service is received at the input, the IRD will forward (or filter) it accordingly. This mode is useful for scenarios where the user wants to select an unreferenced service or configures the unit before the system is fully deployed.
- **PIDs Filtering** – allows the user to select specific PIDs, which are selected from a list (under "select PIDs"). This mode is Static, meaning that the IRD forwards or filters the selected PIDs and does not change it when PMT is changed. The user can select 3 types of PIDs:
 - **Constant PIDs** – such as PAT, CAT and so on. the list is changed according to the stream type DVB or ATSC which is configured by the user
 - **Referenced PIDs** – any PID which is included in the PMT of a referenced service.
 - **Unreferenced PIDs** – the user can add any other PID number. When the PID is received at the input, the IRD will forward (or filter) it accordingly. This mode is useful for scenarios where the user wants to select an unreferenced PID or configures the unit before the system is fully deployed.

BITRATE MODE

This parameter defines the output stream as VBR or CBR. All NULL packets are removed at the input.

- **VBR** - allows variable output stream bit-rate. The IRD drops all unneeded services and PIDs according to the user selection. NULL packets are filtered at the input, and excluded from the output.
- **CBR** – allows constant output stream bit-rate; the bitrate is configured by the user. IRD drops all unneeded services and PIDs. NULL packets are dropped at the input; however, NULL packets are inserted at the output to meet the configured bit rate. The minimum configured bit rate should be 25 percents more than the selected services or PIDs accumulated maximum bit rate. This is due to momentarily burstiness scenario. In case that an overflow occurs, the following alarm Filtering CBR Bit-rate is too Low is turned on (if the alarm is not masked, a trap is generated).

BITRATE

This parameter allows setting the output bitrate limit.
The available values range is 0.500000 to 72.000000 (Mbps).

NOTES

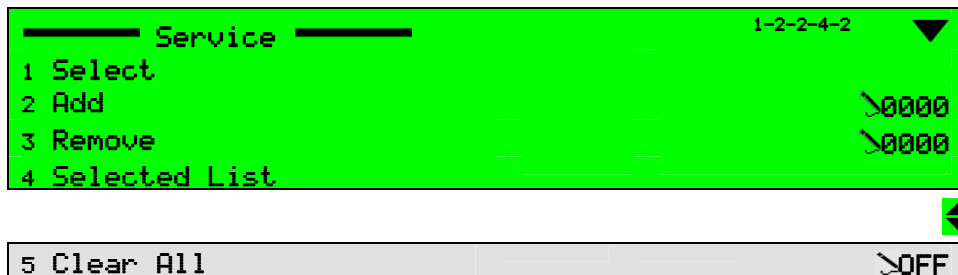
- When using VBR mode, a **Bitrate limit** must be defined.
- In order to prevent system overflow it is highly recommended to use a bit-rate value which is 25% higher than the desired bit-rate. In case of system overflowing, the IRD provides an error trap
- PSI/SI tables are NOT regenerated - Tables can be dropped (for example, in **service** mode, PMTs of the filtered services are automatically dropped). However, tables are not modified (for example, in service mode, the PAT includes all original services, including those which were dropped)

4.2.4.2. Select Services

Service menu is a feature that allows the user to select services used for filtering mode on the IRD-2900 ASI and IP output ports. The following describes service selection in filtering mode through the front panel and the web-interface.

SELECT SERVICES THROUGH THE FRONT PANEL

Service menu is located at **Configuration→Stream→Filtering→Service**



Service menu includes the following parameters:

- **Select** - This parameter lists all available services on the received transport-stream. It allows selection of specific services. The parameters displayed as the service' ID symbol next to the service' name tag. For example: '000A,PROGRAM1'.
- **ADD** - This parameter allow the user to manually add services by using the keypad and enter the service' ID. The available values range is **0000** to **FFFF** [Hex].

- **Remove** - This parameter allow the user to manually remove by using the keypad and enter the service' ID. The available values range is **0000** to **FFFF** [Hex].
- **Selected List** - This screen displays all selected services' ID symbols. For example: **010A**.
- **Clear All** - This parameter allows clearing all selected services list. The available options are:
 - **OFF** - clear list disabled.
 - **ON** - active clear list.

NOTE

Service menu is applicable only when service filtering is selected from the Strategy menu

SELECT SERVICES THROUGH THE WEB INTERFACE

Select Services is the corresponding web-management screen that allows the user to select Services for the filtering mode.

Figure 4-20 displays the corresponding Select Services Parameters (Web Management screen).

Status	GENERAL FILTERING SELECT SERVICES SELECT PIDS
Receiver	Referenced Services ☒ [10] CHANNEL 10 ☐ [40] AIR FORCE 1 ☒ [70] MUSIC (MTV) ☒ [80] CHANNEL 2 ☐ [503] SF1 Unreferenced Services ☒ [676] ☒ [767] Manual Service ID Add
Stream	
Service	
Video	
Audio	
Data	
CA	
Unit	
Refresh Submit Clear	

Figure 4-20: Select Service Menu Screen

Select Services screen includes the following parameters:

- **Referenced Services** - This parameter lists all available services on the IRD-2900. It allows selection of specific service. The parameters displayed as the service' ID next to the service' name tag. In order to select a service, select the service' check box and click **Submit**.
- **Unreferenced Services**- This parameter lists all selected unreferenced services' IDs on the IRD-2900. The parameters displayed as the service' ID and name. It allows removal of an unreferenced service. In order to remove an unreferenced services, select the service' check box and click **Submit**.

NOTE

Unreferenced Services is unavailable when no unreferenced services have been selected

- **Manual Service ID** - This parameter allow the user to manually add service-to-filter by entering the service' ID in the text box and click on **Submit**.
- **Clear** - Clicking on **Clear** button empty all selected fields.

NOTE

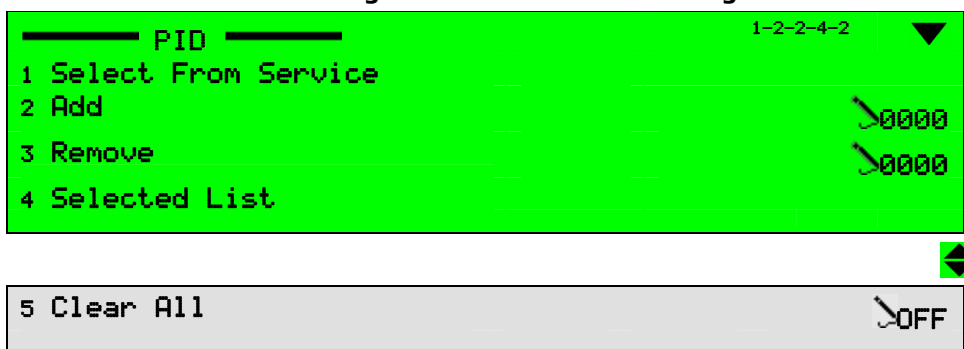
***Service** menu is applicable only when service filtering is selected from **Strategy** menu*

4.2.4.3. Select PIDs

The PID menu screen is a feature that allows the user to select PIDs on the IRD-2900 ASI and IP output ports. The following describes PIDs selection in filtering mode through the front panel and the web-interface.

SELECT PIDS THROUGH THE FRONT PANEL

PID menu is located at **Configuration→Stream→ Filtering→PID**



PID menu includes the following parameters:

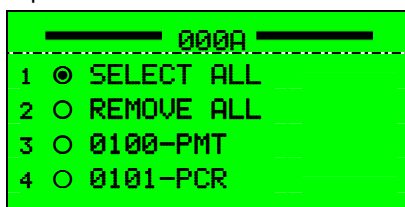
- **Select from Service** - This table menu lists all available PIDs on the received transport-stream. It allows selection of specific PIDs from a service to be filtered. The **select from service** table menu consist of the following parameters:
 - **NAME** – The service name
 - **ID** – The service identification symbol [Hex]
 - **TYPE** Service type options: TV, Radio, TLTX, NVOD, MOSAIC, PAL, SECAM, MAC, FM, NTSC, and Data.
 - **MODE** – Indicates if the service is encrypted (CAS) or free to air (FTA).

For example:

NAME	ID	TYPE	MODE	
1 © PROGRAM1	000A	TU	FTA	

When selecting a Service listed at the Select from Service table menu, a list of all available PIDs of the selected services is displayed, and the user can select specific PIDs.

For example:



The selected service's ID is displayed at the title. The first two parameters of every service list are:

- **SELECT ALL** – Select all PIDs of the current service.
- **REMOVE ALL** – Remove all PID's of the current service.

The rest of the list includes available PIDs next to the PID' type.

- **ADD** - This parameter allows the user to manually add PIDs by using the keypad and enter the PID symbol [Hex]. The available values range is **0000** to **1FFF** [Hex].
- **Remove** - This parameter allows the user to manually remove PIDs from being filtered by using the keypad and enter the PID symbol [Hex]. The available values range is 0000 to 1FFF [Hex].
- **Selected List** - This screen displays all selected PIDs, For example: **010A**.
- **Clear All** - This parameter allows clearing all selected PIDs-to-filter list. The available options are:
 - **OFF** – clear list disabled.
 - **ON** – active clear list.

NOTE

***PID** menu is applicable only when service filtering is selected from the **Strategy** menu.*

SELECT PIDs THROUGH THE WEB INTERFACE

Select PIDs is the corresponding web-management screen that allows the user to select PIDs in the filtering mode.

Figure 4-21 displays the corresponding Select PIDs configuration (Web Management screen).

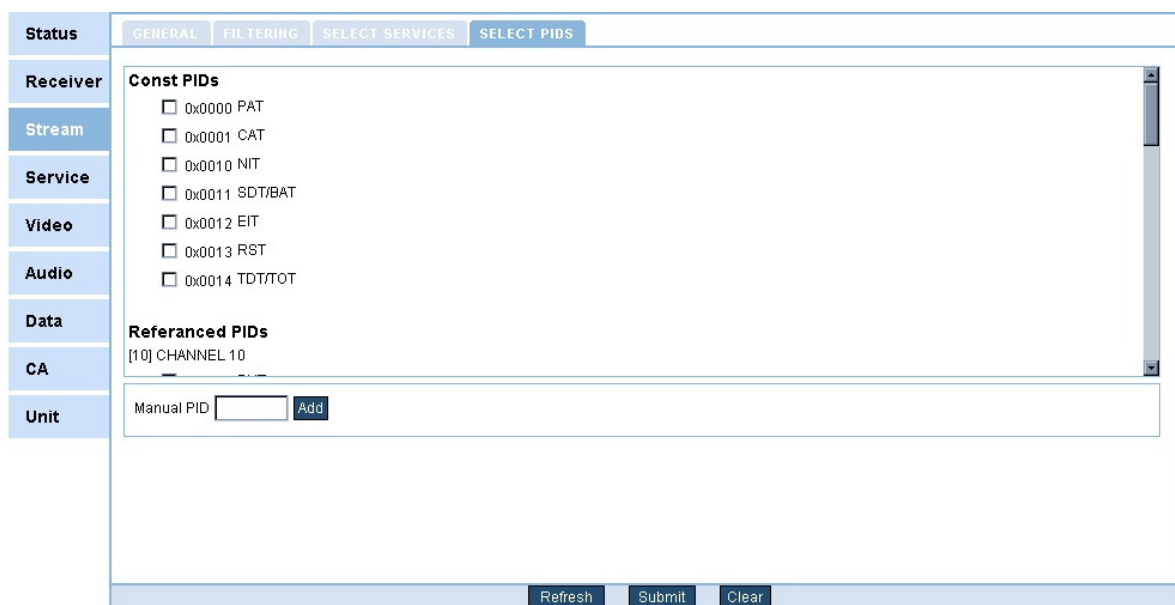


Figure 4-21: Select PIDs Menu Screen

Select PIDs screen includes following parameters:

- **Const PIDs** - This parameter lists all available SI PID's and allows the user to select SI PIDs. In order to select SI PIDs, select the PIDs check boxes and click **Submit**.
- **Referenced PIDs** - This parameter lists all available services PIDs on the received transport-stream grouped under the relevant Service' nametags. It allows selection of specific PIDs. In order to select a PID to filter, select the needed PIDs' check boxes and click **Submit**.
- **Unreferenced PIDs** - This parameter lists all selected unreferenced PIDs. it allows removal of an unreferenced PIDs. In order to remove an unreferenced PID, select the PID' check box and click **Submit**.

NOTE

***Unreferenced Services** is unavailable when no unreferenced services have been selected.*

- **Manual PID** - This parameter allows the user to manually add PIDs by entering the PIDs symbol in the text box and click on **Submit**.

NOTE

When the manually selected PID is a constant SI PID or it is part of a referenced service, the relevant checkbox is checked; otherwise, the manually selected PID is added under the unreferenced PIDs list

- **Clear** - Clicking on **Clear** button empty all selected fields.

NOTE

***Service** menu is applicable only when service filtering is selected from **Strategy** menu*

4.2.5. Service Configuration Menu

The Service Configuration menu contains parameter setups for video and VBI services.

Figure 4-22 displays a tree diagram of the Service Configuration Menu.

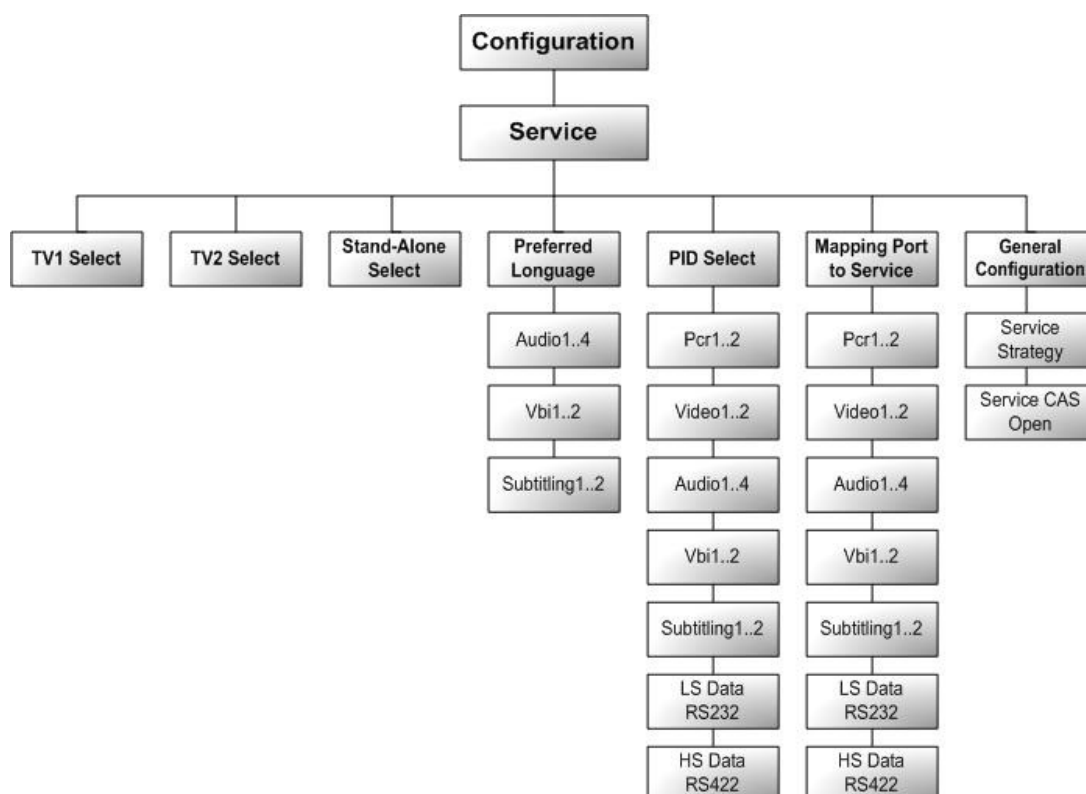
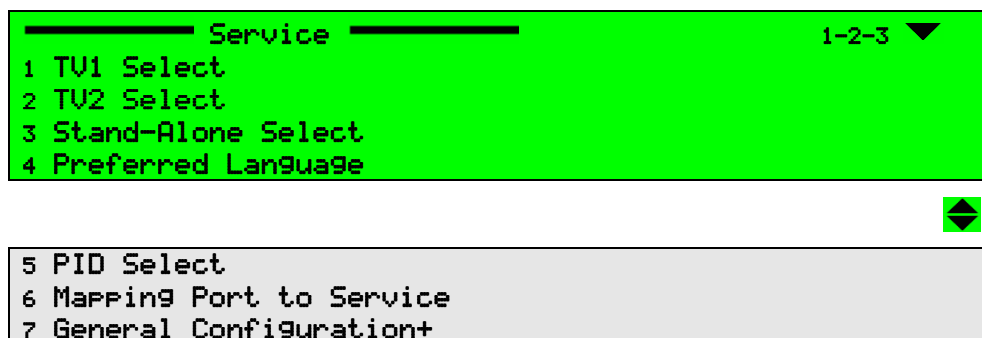


Figure 4-22: Service Configuration Menu

To access the Service Configuration menu in the front panel control interface go to **Configuration → Service**.

The following screen displays the Service configuration menu:



The Service Configuration menu parameters are as follows:

- **TV1 and TV2 Select** (if applicable)
Enables assign a service from the incoming TS to a decoder. In the case of a dual decoder, a user can assign two services from the incoming TS, one for each decoder (see Section 4.2.5.1).
- **Stand-Alone**
This feature will be supported in the future software releases.
- **Preferred Language**
This group contains parameters that define the preferred language (see Section 4.2.5.3).
- **PID Select**
This group contains parameters that define the PID components in the elementary stream (see Section 4.2.5.4).
- **Mapping Port to Service**
This group contains parameters that define the port mapping and service components for each elementary stream (see Section 4.2.5.5).
- **General Configuration**
This group contains parameters that define the response of the IRD-2900 to various operational modes (see Section 4.2.5.6).

4.2.5.1. TV1 Select (and TV2 Select)

The TV1 Select (and TV2 Select in dual decoder IRDs screen lists the services analyzed from the service descriptor contained in the SDT.

The services in the TV1 Select and TV2 Select Configuration are displayed as a four-column table.

To access the TV1 Select (and TV2 Select) Table Menu in the front panel control interface go to *Configuration* → *Service* → *TV1 Select* (or TV2 Select).

The following screen displays the TV1 Select (and TV2 Select) menu:

Name	ID	Type	Mode	▼
1Ⓢ PROGRAM 1	000A	TU	FTA	
2Ⓢ PROGRAM 2	0046	TU	FTA	
3Ⓢ PROGRAM 3	0050	TU	CAS	
4Ⓢ PROGRAM 4	01F7	TU	CAS	

The table headers are as follows:

- **NAME** – The service name
- **ID** – The service identification symbol [Hex]
- **TYPE** Service type options: TV, Radio, TLTX, NVOD, MOSAIC, PAL, SECAM, MAC, FM, NTSC, and Data.
- **MODE** – Indicates if the service is encrypted (CAS) or free to air (FTA)

Selecting a service from the TV1 and TV2 Table displays the following Service Information table screen (relevant to the selected service):

TYPE	PID	Description	Port	▼
1 PCR	1262		PCR1	
2 Video	1262		Video1	
3 Audio	1273	English-eng	AUDIO101	
4 Ubi	1269	691.Swedish-swe	UBI1	

Figure 4-23 displays the corresponding TV1 Menu (Web Management screen).

Status	TV 1	PREFERRED LANGUAGE	PID SELECT	PORT TO SERVICE	GENERAL
Receiver	Service Select Service [1] MPEG2				
Stream	Service Info Service Name MPEG2 Service Id 1 Service Type Digital television service Service Mode FTA Active in PAT Yes				
Service	PIDs PCR 0x0200 Video 0x0200 [MPEG2] Audio1 0x1010 [English-eng] Audio2 None Audio3 None Audio4 None VBI None Subtitling None Low Speed Data None				
Video					
Audio					
Data					
GenLock					
CA					
Unit					
Preset					
Refresh					

Figure 4-23: TV1 Menu Screen

The following paragraphs detail available types of elementary streams.

PCR

The PCR elementary stream is a read only parameter.

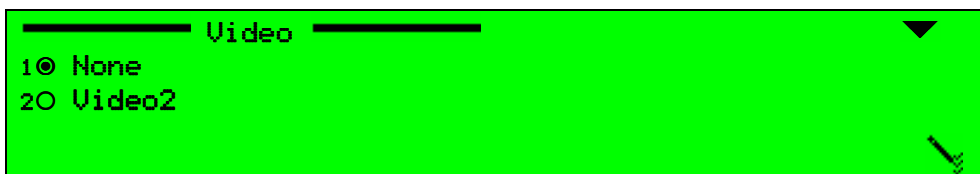
VIDEO

The following figure displays the TV1 Video screen:

Video

1 ○ None
2 ● Video1

The following figure displays the TV2 Video screen:

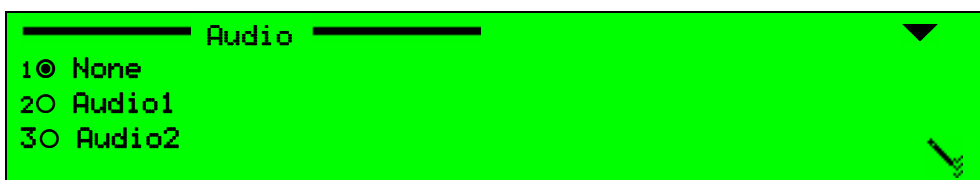


The available options are:

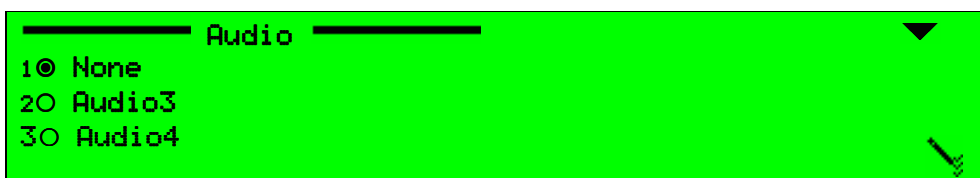
- **None** – Video 1 (or Video 2 correspondingly) is not assigned to this Service.
- **Video 1 (or Video 2)** – Video 1 (or Video 2 correspondingly) is assigned to the Service.

AUDIO

The following figure displays the TV1 Audio screen:



The following figure displays the TV2 Audio screen:



The available options are:

- **None** – No Audio is assigned to this Service.
- **Audio 1 (and Audio 3 correspondingly)** – Audio 1 (or Audio 3 correspondingly) is assigned to the service.
- **Audio 2 (and Audio 4 correspondingly)** – Audio 2 (or Audio 4 correspondingly) is assigned to the service.

VBI

The IRD-2900 Series supports decoding and displaying Teletext Subtitling graphics (according to DVB VBI standard EN 301 775, which specifies EBU Teletext subtitling data, used for language translation).

Differently from DVB subtitling, Teletext Subtitling requires the decoder to be able to create relevant language fonts. The IRD-2900 has the following Teletext Subtitling fonts installed:

- | | | |
|----------------------|---------------------|---------------------|
| • Croatian | • French | • Portuguese |
| • Czech | • German | • Romanian |
| • Danish | • Hungarian | • Serbian |
| • Dutch | • Italian | • Slovak |
| • English | • Latvian | • Slovenian |
| • English Old | • Lithuanian | • Spanish |
| • Estonian | • Norwegian | • Swedish |
| • Finnish | | |

Assigning a VBI to a Service through this menu allows adding Teletext Subtitles to the Service (for this purpose, the selected VBI PID must contain Teletext Subtitling data).

When choosing Teletext Subtitling here, the operator must also enable TLTX Subtitle Mode. For enabling TLTX Subtitle mode, see Section 4.2.6.3.

The following figure displays the TV1 VBI screen:



The following figure displays the TV2 VBI screen:



The available options are:

- **None** – This VBI PID is not assigned to the service.
- **VBI 1 (and VBI 2 correspondingly)** – VBI 1 (or VBI 2 correspondingly) is assigned to this service.

4.2.5.2. Stand-Alone Select

This feature will be supported in the future software releases.

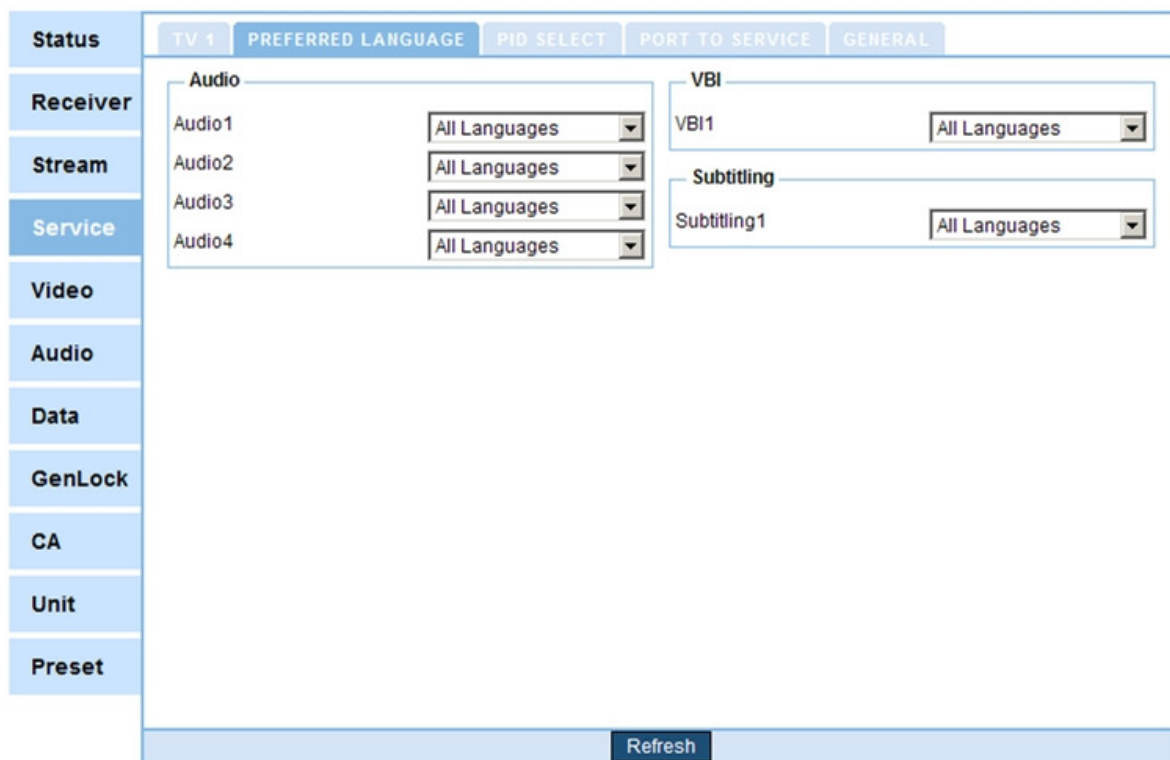
4.2.5.3. Preferred Language

The Preferred Language Edit menu screen lists the audio channels available for the received services.

To access the Preferred Language edit menu in the front panel control interface go to **Configuration → Service → Preferred Language**.

Preferred Language		1-2-3-4 ▼
1 Audio 1		ALL LANGUAGES
2 Audio 2		English Old-ang
3 Audio 3		Romanian - ron
4 Audio 4		Zulu - zul
05 VBi 1		1073
06 VBi 2		101F
07 Subtitling 1		1073
08 Subtitling 2		001F

Figure 4-24 displays the corresponding Preferred Language menu (Web Management screen).



The screenshot shows a web management interface for an IRD-2900 Series decoder. On the left is a vertical navigation menu with the following items: Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA, Unit, and Preset. The 'Service' item is currently selected. The main content area has a top navigation bar with five tabs: TV 1, PREFERRED LANGUAGE (which is active), PID SELECT, PORT TO SERVICE, and GENERAL. Below the tabs, the 'PREFERRED LANGUAGE' section is divided into two columns. The left column is titled 'Audio' and contains four entries: Audio1, Audio2, Audio3, and Audio4. Each entry has a dropdown menu set to 'All Languages'. The right column is titled 'VBI' and contains two entries: VBI1 and Subtitling1. VBI1 has a dropdown menu set to 'All Languages', and Subtitling1 has a dropdown menu set to 'All Languages'. At the bottom right of the main content area is a 'Refresh' button.

Figure 4-24: Preferred Language Screen

NOTE

*The number of audio channels provided in the **Preferred Languages Menu** is dynamic and is determined by the IRD-2900 model. Audio 3 and Audio 4 channels are available in dual decoders, IRD-2980, and IRD-2900 2981 models only.*

The operator can assign a preferred language to each of the Audio channels, as well as to the available VBIs and Subtitling.

Selecting option displays a Select Value screen that lists the following available languages:

01. ALL Languages	13. Dutch - dut	25. Hungarian - hun	37. Polish - pol
02. Albanian - alb	14. Egyptian - egy	26. Indonesian - ind	38. Portuguese - por
03. English Old - ang	15. English - eng	27. Irish - iri	39. Romany - rom
04. Arabic - ara.	16. Spanish - esl	28. Italian - ita	40. Romanian - ron
05. Armenian - arm.	17. Finnish - fin	29. Japanese - jpn	41. Russian - rus
06. Byelorussian - bel.	18. French - fra	30. Latin - lat	42. Spanish - spa
07. Bulgarian - bul.	19. French - fre	31. Macedonian - mac	43. Swedish - swe
08. Chechen - che	20. Gaelic - gae	32. Miscellaneous - mis	44. Swedish - swe
09. Chinese - chi	21. German - ger	33. Multiple - mul	45. Tamil -tam
10. Check - cze	22. Greek Modern - gre	34. Norwegian - nor	46. Thai - tha
11. Danish - dan	23. Hebrew - heb	35. Turkish - ota	47. Zuylu - zul
12. German - deu	24. Hindi - hin	36. Persian - per	

NOTE

Option **01. ALL Languages** (default).

No specific language is selected. The audio language is set according to the Service PID.

4.2.5.4. PID Select

This option is intended for advanced users only and should not be used normally.

Create a Service only through **Configuration→Service→TV1/TV2** Select.

The PID Select menu allows the operator to directly assign an ES to an output port directly, without attaching it to a Service. This option can be useful when the PMT is not available or is defective.

Before assigning the ES to an output, the operator verifies that the new PID entered is correct.



CAUTION

USING THIS CONTROL MENU DISASSOCIATES THE SELECTED ELEMENTARY STREAM FROM ANY SERVICE AND MAKE IT A STAND ALONE STREAM WITH NO ATTATCH SYNCHRONIZATION AND NO OTHER ASSOCIATED SIGNAL MAY COUSE VIDEO AND AUDIO ISSUES IF NOT HANDLES CORRECTLY. IT IS HIGHLY RECOMMENDED TO CONSULT SCOPUS CUSTOMER SUPPORT BEFORE USING THIS CONTROL MENU.

To access the PID Select Menu in the front panel control interface go to **Configuration→Service→PID Select**.

The following screen displays the PID Select menu:

PID Select		1-2-3-4 ▼
01 Pcr1		1062
02 Pcr2		1062
03 Video1		1062
04 Video2		1062
05 Audio 1		1073
06 Audio 2		101F
07 Audio 3		1073
08 Audio 4		001F
09 VBi 1		1064
10 VBi 2		1069
11 Subtitling 1		1069
12 Subtitling 2		001F
13 LS Data RS232		001F
14 HS Data RS-422		001F

Figure 4-25 displays the corresponding PID Select Menu (Web Management screen).

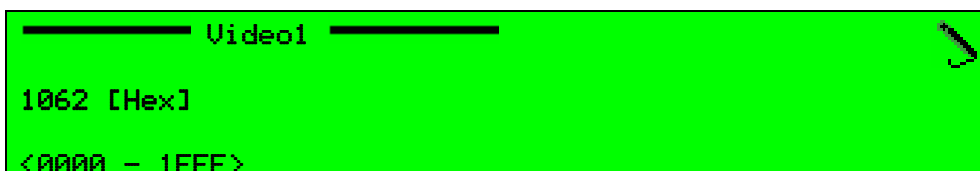
Status	TV 1	PREFERRED LANGUAGE	PID SELECT	PORT TO SERVICE	GENERAL
Receiver	PCR PCR1 [0x0,0x1FFF] 0x200				
Stream	VBI VBI1 [0x0,0x1FFF] 0x1F VBI2 [0x0,0x1FFF] 0x1F				
Service	Video Video1 [0x0,0x1FFF] 0x200				
Video	Audio Audio1 [0x0,0x1FFF] 0x1010 Audio2 [0x0,0x1FFF] 0x1F Audio3 [0x0,0x1FFF] 0x1F Audio4 [0x0,0x1FFF] 0x1F				
Audio	Subtitling Subtitling1 [0x0,0x1FFF] 0x1F				
Data	Data LSD1 [0x0,0x1FFF] 0x1F				
GenLock					
CA					
Unit					
Preset					
Refresh					

Figure 4-25: PID Select Menu Screen

The available options are:

- **Pcr1**
- **Pcr2** (if applicable)
- **Video1**
- **Video2** (if applicable)
- **Audio1**
- **Audio2**
- **Audio3** (if applicable)
- **Audio4** (if applicable)
- **VBI1**
- **VBI2** (if applicable)
- **Subtitling1**
- **Subtitling2** (if applicable)
- **LS Data RS232**
- **HS Data RS-422**

All PID-Assigning screens are identical in structure and functionality. The only difference is the screen header, which changes according to the chosen port. The following figure is an example of a PID Assigning screen, as it appears in the IRD-2900 front panel control interface (the selected port in this example is **Video1**):



The available value ranges from **0000** to **1FFF** (Hexadecimal).

NOTES

The IRD-2900 decodes and displays DVB Subtitling according to the DVB-Subtitling Standard ETS 300 743. This standard specifies the coding method of subtitles, logos, and other graphical elements for the DVB and the method of carrying them within a DVB Bit Stream.

Dual Decoder devices can decode two different programs, each with its own subtitling simultaneously.

4.2.5.5. Mapping Port to Service

The Mapping Port to Service menu enables the operator to manually map IRD-2900 physical ports to Service 1 and to Service 2.

The factory default mapping (in dual decoders) is symmetrical. Service 1 is assigned Video1, Audio1, Audio2, VBI1 etc. and Service 2 is assigned Video2, Audio3, Audio4, VBI2, etc. Operator must not change these settings unless they are well informed with IRD-2900 internal properties.



CAUTION

MAPPING PORT TO SERVICE IS INTENDED FOR ADVANCED USERS ONLY. CHANGING THIS OPTION'S VALUES IS NOT RECOMMENDED. IN ALL CASES IT IS RECOMMENDED TO USE THE MAPPING PORT TO SERVICE FACTORY DEFAULTS.

To access the Mapping Port to Service menu in the front panel control interface go to **Configuration→Service→ Mapping Port to Service** menu.

The following screen displays the Mapping Port to Service menu:

Mapping Port to Service		1-2-3-6 ▼
01 Pcr1		TV1
02 Pcr2		TV2
03 Video1		TV1
04 Video2		TV2
		◆
05 Audio 1		TV1
06 Audio 2		TV1
07 Audio 3		TV2
08 Audio 4		TV2
09 Vbi 1		TV1
10 Vbi 2		TV1
11 Subtitling 1		STAND ALONE
12 Subtitling 2		STAND ALONE
13 LS Data RS232		TV1
14 HS Data RS-422		STAND ALONE

Figure 4-26 displays the corresponding Port to Service Menu (Web Management screen).

Status	TV 1	PREFERRED LANGUAGE	PID SELECT	PORT TO SERVICE	GENERAL
Receiver					
Stream					
Service					
Video					
Audio					
Data					
GenLock					
CA					
Unit					
Preset					

PCR PCR1 TV1 Video Video1 TV1 Audio Audio1 TV1 Audio2 TV1 Audio3 TV1 Audio4 TV1	VBI VBI1 TV1 Subtitling Subtitling1 TV1 Data LSD1 TV1
---	--

Refresh

Figure 4-26: Port to Service Menu Screen

The available options are:

- Pcr1
- Video1
- Audio1
- Audio3 (if applicable)
- VBI1
- Subtitling1
- LS Data RS232
- IP Data
- Pcr2 (if applicable)
- Video2 (if applicable)
- Audio2
- Audio4 (if applicable)
- VBI2 (if applicable)
- Subtitling2 (if applicable)
- HS Data RS-422

MAPPING PORTS TO SERVICES THRU THE FRONT PANEL

In order to map a port to service thru the front panel, perform the following:

- Navigate to **Configuration→Service→ Mapping Port to Service**
- Select one of the listed ports using the keypad. For example: **PCR1**. After selection, the following menu screen lists all options for the selected port.



The available options are:

- **STAND ALONE** – This mode indicates that you can assign the elementary stream PID. In this mode, the elementary stream is independent of the services selected for Decoder#1 and decoder#2.
- **TV1** – This mode indicates that the elementary stream is related to the service assigned to Decoder#1.
- **TV2** – This mode indicates that the elementary stream is related to the service assigned to Decoder#2.

4.2.5.6. General Configuration

The Service General Configuration menu defines the IRD-2900 service selection strategy (either automatic or user-defined). It also allows the operator to instruct to the CAM (Conditional Access Module) which ES to decrypt.

To access the **General Configuration** menu, in the front panel control interface go to **Configuration→Service→General Configuration**.

The following is the front panel **General Configuration** screen:

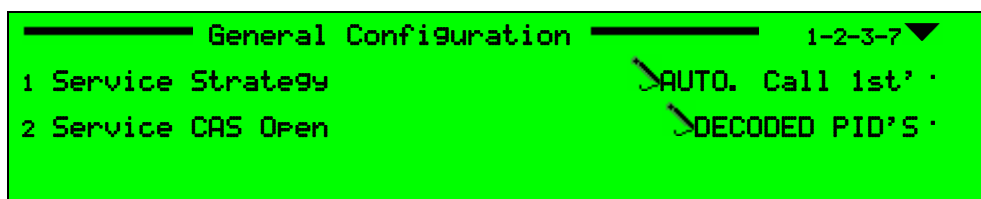
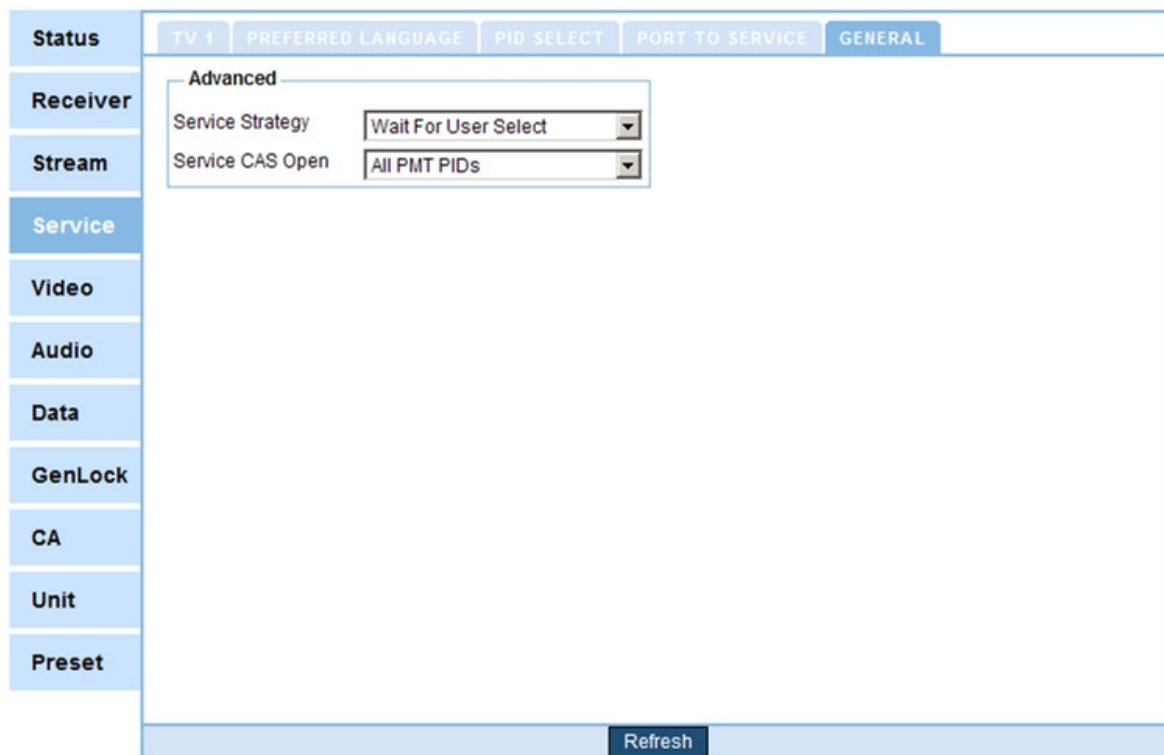


Figure 4-27 displays the corresponding General Service menu (Web Management screen).



The screenshot shows a web management interface for a receiver. On the left is a vertical menu with options: Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA, Unit, and Preset. The 'Service' option is highlighted. The main content area has tabs at the top: TV 1, PREFERRED LANGUAGE, PID SELECT, PORT TO SERVICE, and GENERAL (which is selected). Under the 'GENERAL' tab, there is an 'Advanced' section containing two dropdown menus: 'Service Strategy' set to 'Wait For User Select' and 'Service CAS Open' set to 'All PMT PIDs'. A 'Refresh' button is located at the bottom right of the main content area.

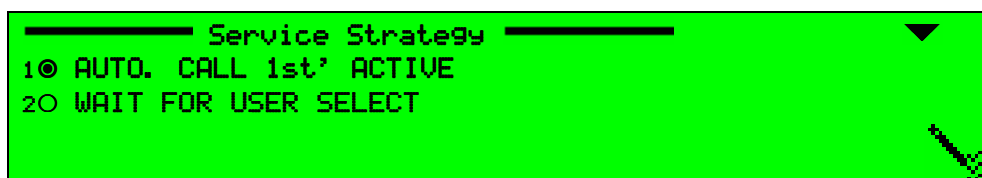
Figure 4-27: General Service Menu Screen

The General Configuration Parameters are:

- Service Strategy
- Service CAS Open

SERVICE STRATEGY

Service strategy determines the decoder' behaviour at the start-up or when the decoding program is inactive. The following options in the Service Strategy screen set the IRD-2900 service selection strategy parameters.



The available options are:

- **Auto. Call 1st Active** – The IRD-2900 locks-onto the first active service detected in the transport-stream. This mode is recommended for DSNG and other applications that frequently change the decoded program.

NOTE

*When **Auto call first active** mode is selected, the IRD-2900 might switch to the first detected program when the TS is interrupted for any reason.*

- **Wait for User Select** – The IRD-2900 searches for a specific (user-defined) service to lock-on to. the IRD-2900 is tuned to decode the selected program, even if it does not exist in the TS. This mode is recommended for broadcast applications where the decoded program is fixed, and seldom changes.

SERVICE CAS OPEN

This parameter defines which ES will be decrypted by the CAM. It is possible to either instruct the IRD-2900 to decrypt all the received ES, or allow it to decrypt only the ones that are currently being decoded.



The available options are:

- **DECODED PID'S** – the CAM descrambles only the PIDs that are currently decoded by the IRD-2900
- **ALL PMT PID'S** - the CAM descrambles all the received PIDs

4.2.6. Video Configuration Menu

The Video Configuration menu contains parameters that set the video decoder mode of operation.

Figure 4-28 displays a tree diagram of the Video Configuration Menu.

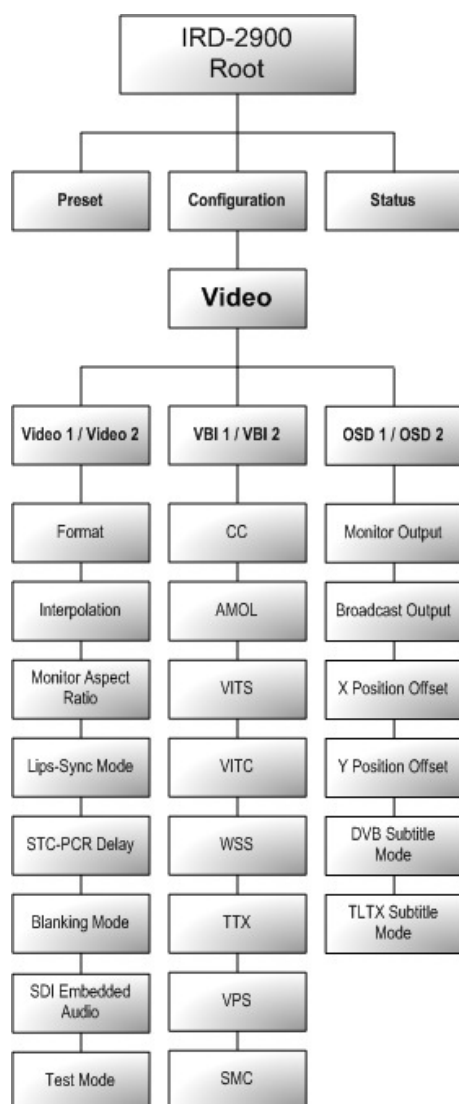


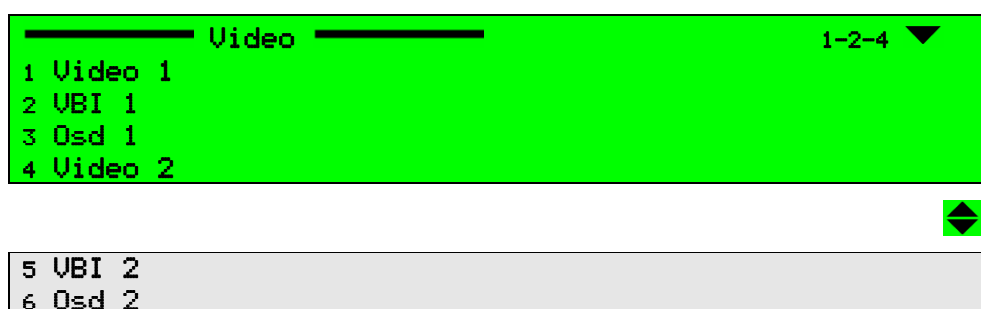
Figure 4-28: Video Configuration Menu

NOTE

The number of Video Channel Configurations (as well as the VBI) provided in the Video Configuration menu is dynamic and is determined by the IRD-2900 model.

To access the Video Configuration menu in the front panel control interface go to **Configuration → Video**.

The following screen displays the Video menu:



The Video Configuration parameters are as follows:

- **Video 1**

This group contains parameters that define the format, lip-sync mode and STC-PCR delay parameters for the video stream for a signal to decoder #1. For details on the Video 1 Parameter, see Section 4.2.6.1.

- **VBI 1**

This group contains parameters that define VBI functioning for Decoder #1. For details on the VBI 1 Parameter, see Section 4.2.6.2.

- **OSD 1**

This group contains parameters that define OSD functioning for Decoder #1. For details on the OSD 1 Parameter, see Section 4.2.6.3.

- **Video 2 (if available)**

This group contains parameters that define the format, lip-sync mode and STC-PCR delay parameters for the video stream for a signal to decoder #2. For details on the Video 2 Parameter, see Section 4.2.6.1.

- **VBI 2 (if available)**

This group contains parameters that define VBI functioning for the IRD-2900 Decoder #2. For details on the VBI 2 Parameter, see Section 4.2.6.2.

- **OSD 2** (if available)

This group contains parameters that define OSD functioning for Decoder #2.
For details on the OSD 2 Parameter, see Section 4.2.6.3.

4.2.6.1. Video 1 and Video 2 Configuration Options

The Video 1 and Video 2 menu allow the user to set parameters for Video 1 and/or Video 2 outputs (if applicable).

To access Video 1 or Video 2 menu screens navigate to **Root→Configuration→Video→Video 1** or **Video2**

The following section displays Video 1 configuration menu screens:

NOTE

Video 2 menu screens are identical to **Video 1** menu screens.

Video 1		1-2-4-1 ▼
1 Format	▶ PAL BG	
2 Interpolation	▶ PAN-SCAN	
3 Monitor Aspect-Ratio	▶ 4:3	
4 Lip-sync Mode	▶ STANDARD LOCK	
⬆ ⬇ ⬆		
5 STC-PCR Delay	▶ 040 [mSec]	
6 Blanking Mode	▶ Black	
7 SDI Embedded Audio	▶ NULL	
8 Test Mode	▶ NULL	

Figure 4-29 displays the corresponding Video1 menu (Web Management screen).

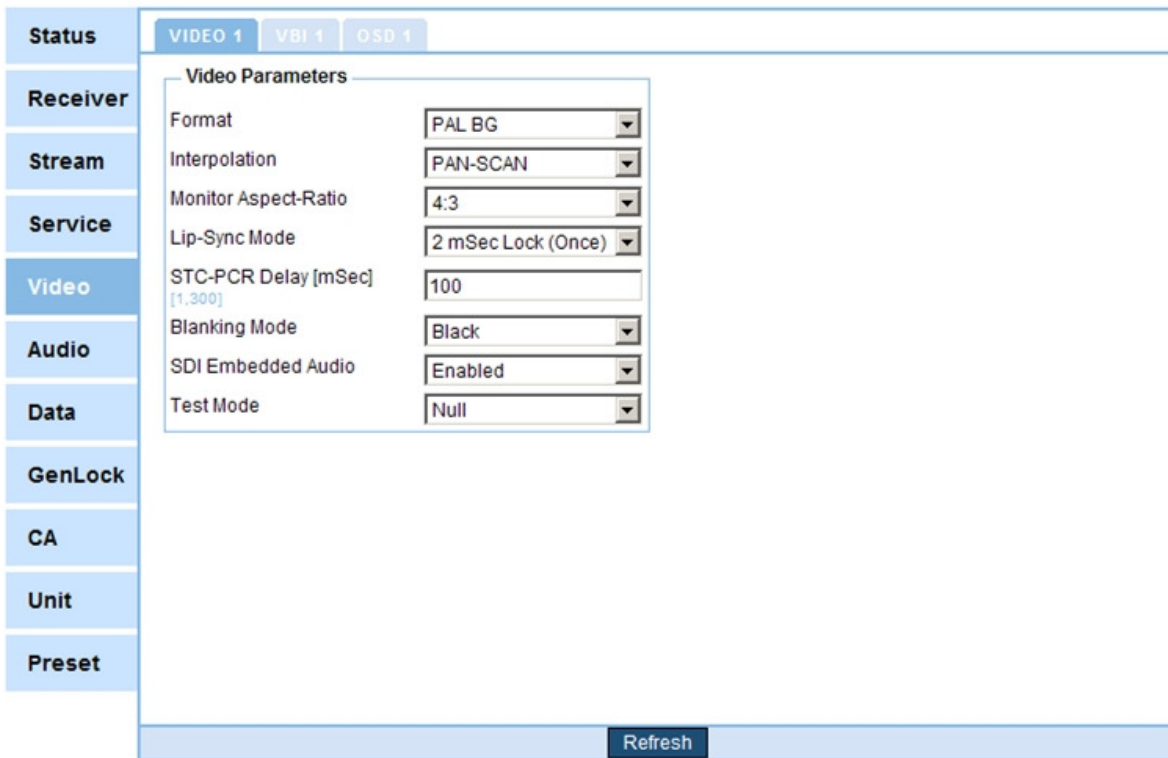


Figure 4-29: Video 1 Menu Screen

The available options are:

- **Format**
- **Interpolation**
- **Monitor Aspect-Ratio**
- **Lip-sync Mode**
- **STC-PCR Delay**
- **Blanking Mode**
- **SDI Embedded Audio**
- **Test Mode**

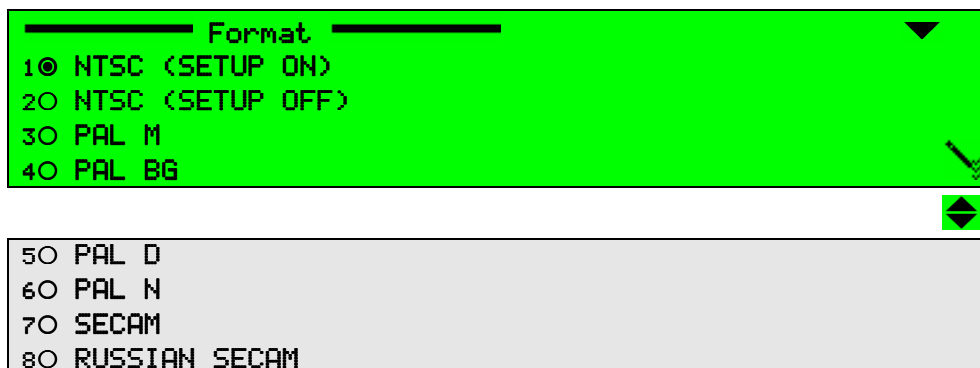
NOTE

After selecting an option under the Video (1..2) menu, the front panel returns to the Video (1..2) menu and displays the current selection.

The following paragraphs detail Video Configuration options.

FORMAT

The Format parameter selects the format of the video signal. The following figure illustrates the Format screen.



The available options are:

NTSC, PAL M, PAL BG, PAL D, PAL N, SECAM, RUSSIAN SECAM.

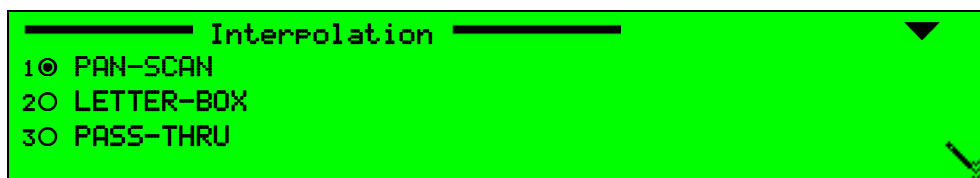
INTERPOLATION

The Interpolation parameter sets the re-sampling method of the image (should be set according to the Aspect Ratio parameter setting and to the actual aspect ratio of the received video signal)

NOTE

*See Appendix C for extensive details on how **Interpolation** configuration affects the resulting image.*

The following figure illustrates the Interpolation screen.



The available options are:

- **PAN-SCAN** – Set interpolation to Pan & Scan
- **LETTER-BOX** – Set interpolation to Letter-Box
- **PASS-THRU** – No interpolation occurs.

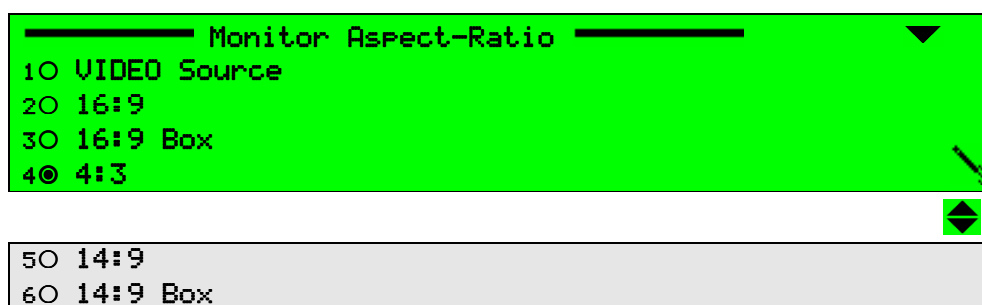
MONITOR ASPECT-RATIO

This parameter sets the intended image aspect ratio. It is used along with **Interpolation** to determine the required Aspect Ratio Conversion.

NOTE

See Appendix C for extensive details on how **Monitor Aspect-Ratio** configuration affects the resulting image.

The following figure illustrates the Monitor Aspect-Ratio screen.



The available options are:

- **VIDEO Source** – Monitor aspect ratio is determined by the video sequence
- **16:9** – Monitor aspect ratio is set to 16:9.
- **16:9 Box** – Monitor aspect ratio is set to 16:9 with letter-box.
- **4:3** – Monitor aspect ratio is set to 4:3.
- **14:9** – This option will be supported in future IRD-2900 versions.
- **14:9 Box** – This option will be supported in future IRD-2900 versions.

NOTE

The option **VIDEO Source** should not be selected along with choosing **TV MONITOR** under **Configuration → Video → VBI 1..2 → WSS**, since the two A/R may contradict each other and cause unexpected results.

NOTE

When changing the aspect ratio from 16:9 to 4:3, IRD-298x and IRD-299x might not function properly when all of the following occurs:

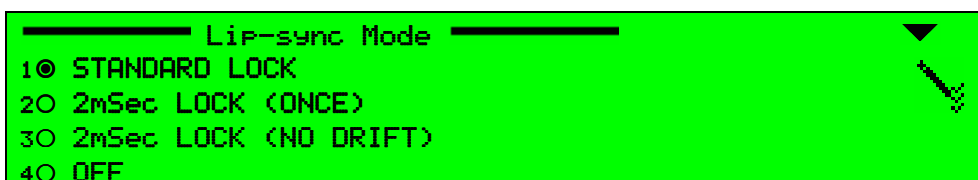
Interpolation is set to: Letter-Box.

Monitor Aspect Ratio is set to: 4:3.

Resolution of the received transport stream is set to full.

LIP-SYNC MODE

The Lip-sync parameter selects the IRD-2900 lip-sync mode of operation. The following figure illustrates the Lip-sync Mode screen.



The available options are:

- **STANDARD LOCK** – Standard sync of video and audio data within ± 40 mSec
- **2mSec LOCK (ONCE)** – Sync audio to video within ± 2 mSec. In this mode, the IRD-2900 synchronizes the audio to the video only once, monitoring audio sync to video stops. Only IRD-2980 and IRD-2981 Audio 3 and Audio 4 support this feature.
- **2mSec LOCK (NO DRIFT)** – Sync audio to video within ± 2 mSec. In this mode, the IRD-2900 continuously monitors the audio sync to video for maintaining synchronization within ± 2 mSec. Only IRD-2980 and IRD-2981 Audio 3 and Audio 4 support this feature.
- **OFF** – No Lip-Sync.

STC-PCR DELAY

The STC PCR Delay parameter sets the delay between the System Time Clock (STC) and the IRD-2900 clock. The IRD-2900 clock is recovered from PCR data to compensate for:

- Delay between STC and PCR
- Correctly processing the Presentation Time Setup (PTS)
- Preventing a buffer underflow

The following figure illustrates the STC-PCR Delay screen.



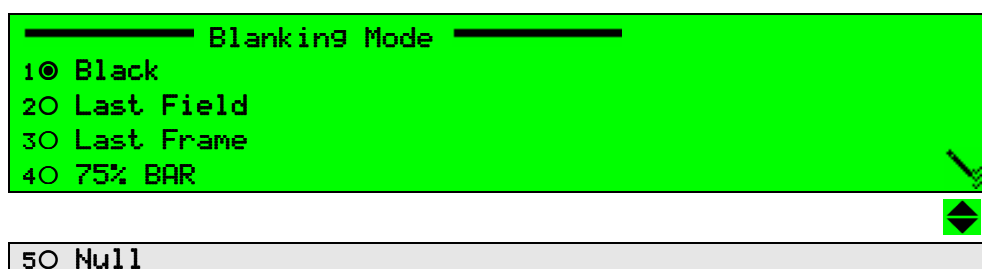
Available delay time ranges from 0 to 300 mSec.

NOTE

In the Web management interface, set the STC PCR Delay by typing the required delay (in Milliseconds) into the parameter's free text window.

BLANKING MODE

The Blanking Mode parameter sets the display mode of a service when reception stops. The following figure illustrates the Blanking Mode screen.



The available options are:

- **Black** – video output signal is a black screen.
- **Last Field** – video output signal is the last field displayed.
- **Last Frame** – video output signal is the last frame displayed.
- **75% BAR** – video output signal is a colour-bar display.
- **Null** – video outputs shut down with no output signal.

SDI EMBEDDED AUDIO

The SDI Embedded Audio menu allows using SDI with embedded audio output. The following figure illustrates the SDI Embedded Audio screen.

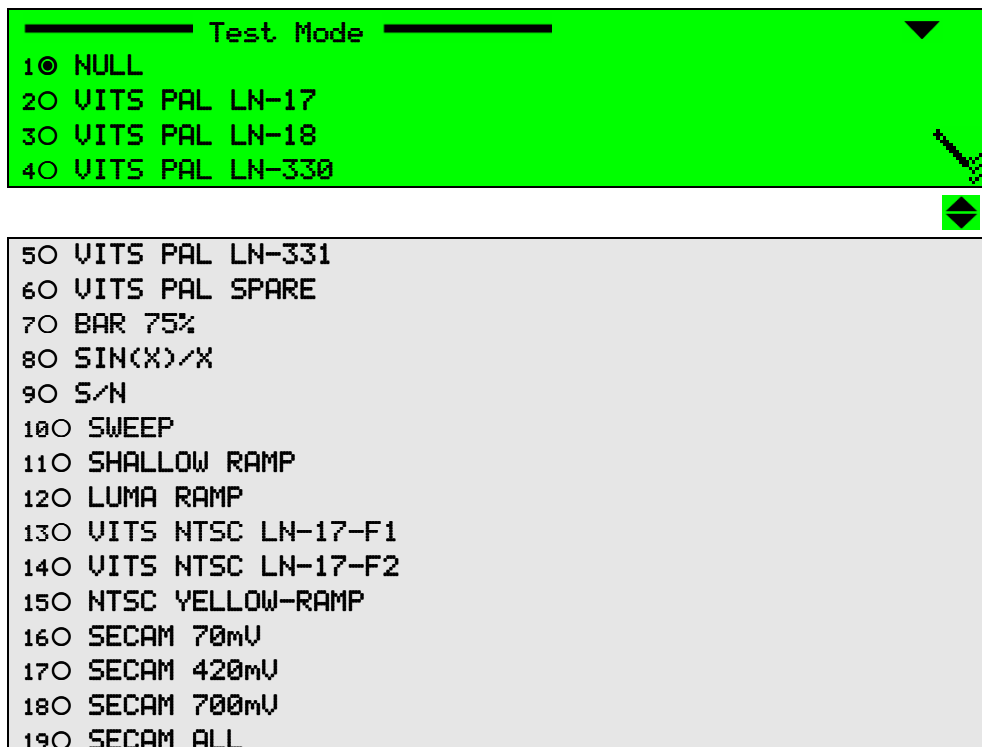


The available options are:

- **Disable** – SDI output without embedded audio.
- **Enable** – SDI output with embedded audio

TEST MODE

The IRD-2900 can generate a number of Video Test Bars for video quality testing. All the bars have a full-screen overlay (produced using a Digital Graphics engine) and are intended for 625 and 525 systems. The following figure illustrates the Test Mode screen.



Select from the following Test Bars:

- VITS PAL LN-17
- VITS PAL LN-18
- VITS PAL LN-330
- VITS PAL LN-331
- VITS PAL SPARE
- BAR 75
- SIN(X)/X
- S/N
- SWEEP
- SHALLOW RAMP
- LUMA RAMP
- VITS NTSC LN-17-F1
- VITS NTSC LN-17-F2
- NTSC YELLOW-RAMP
- SECAM 70mV
- SECAM 420mV
- SECAM 700mV
- SECAM All

4.2.6.2. VBI 1 and VBI 2

The VBI 1 (and VBI 2 in dual decoder IRD's) Menu contains all VBI (Vertical Blanking Interval) parameters that are available through the IRD.

To access the VBI 1 and VBI 2 Menus in the front panel control interface go to **Configuration → Video → Vbi1 (or Vbi2)**.

The following figure illustrates the VBI configuration menu:

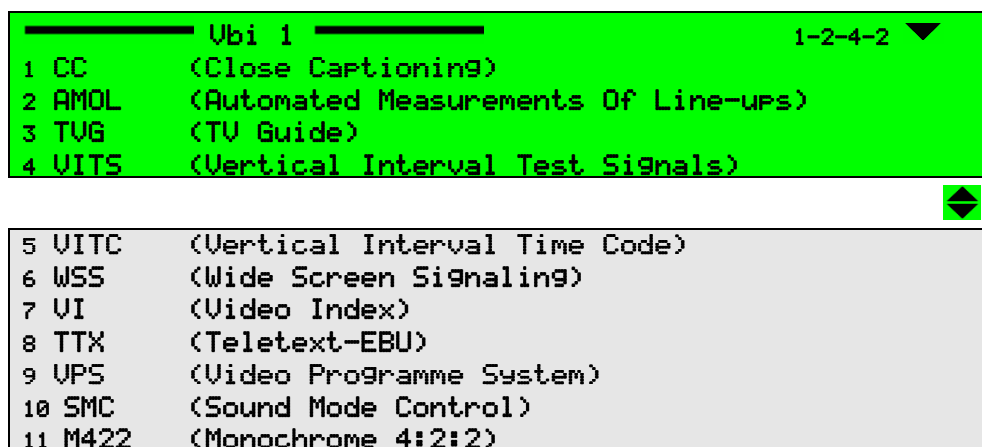


Figure 4-30 displays the corresponding VBI1 Web management screen.

Status	VIDEO 1	VBI 1	OSD 1
Receiver	NTSC Source Line 1 [7,23] Line 2 [7,23]		
Stream	AMOL (Automated Measurement Of Line-ups) Disable 20 22		
Service	CC (Closed Captioning) Disable 21		
Video	TVG (TV Guide) Disable		
Audio	SMC (Sound Mode Control) Disable 19		
Data	PAL WSS (Wide Screen Signalling) Disable 23 TTX (Teletext-EBU) E.S. (EN-301-775) DVB VPS (Video Programme System) Disable 16		
GenLock	General VITS (Vertical Interval Test Signals) Disable 17 18 VITC (Vertical Interval Time Code) Disable 12 14 VI (Video Index) Disable 11 M422 (Monochrome 4:2:2) E.S. (EN-301-775) DVB		
CA			
Unit			
Preset			
Refresh			

Figure 4-30: VBI 1 Parameters

The following paragraphs describe the VBI Configuration options.

CC (CLOSED CAPTIONING) PARAMETER

Selecting CC (Closed Captioning) displays the following screen:

CC
1-2-4-2-1 ▼

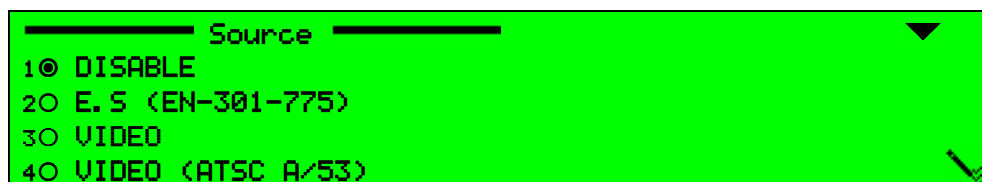
1 Source DISABLE

2 Line1 21

The **CC** screen parameters are:

- 1 **Source** – used for selecting the source of closed captioning data
- 2 **Line1** – This is a read-only parameter (closed captioning data is automatically re-inserted in line 21).

Selecting *Source* displays the following screen:



Available Closed Captioning sources are:

- **DISABLE** – CC is disabled.
- **E.S (EN-301-775)** – CC data is acquired according to the EN 301-775 DVB standard.
- **VIDEO** – The IRD-2900 automatically detects the existing CC standard and acquires the CC data accordingly.
- **VIDEO (ATSC A/53)** – The IRD-2900 automatically detects the existing CC standard and acquires the CC data accordingly, prioritizing the ATSC A/53 standard.

NOTE

The IRD-2900 supports the following CC standards:

CCube standard

Harmonic Divicom standard

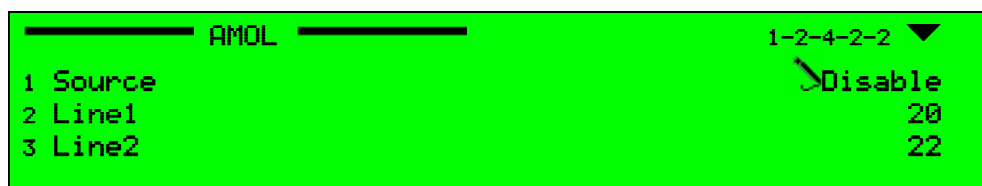
ATSC DVS-53 (Rev 57) EIA 608

ATSC DVS-53 (Rev 57) caption type 4

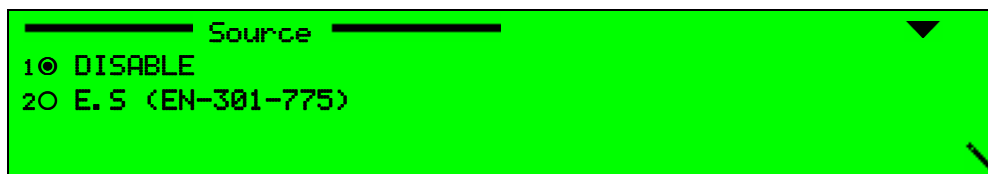
GI DVS-157

AMOL (AUTOMATIC MEASUREMENTS OF LINE-UPS)

Selecting AMOL displays the following screen:



Selecting Source displays the following screen:

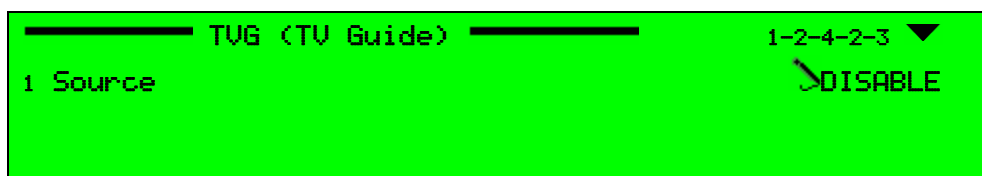


The available options are:

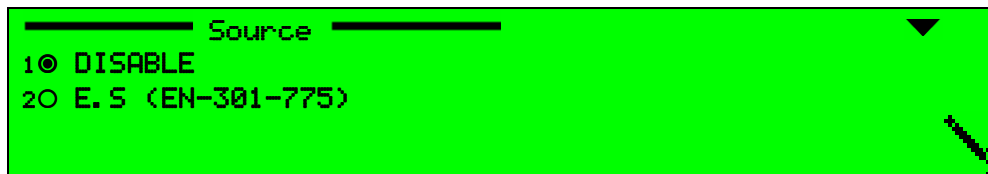
- **DISABLE** – AMOL is disabled.
- **E.S (EN-301-775)** – The IRD-2900 complies with the DVB EN 301-775 AMOL standard.

TVG (TV GUIDE)

Selecting TVG (TV Guide) displays the following screen:



Selecting *Source* displays the following screen:



The available options are:

- **DISABLE** – TV Guide reinsertion is disabled.
- **E.S (EN-301-775)** – TV Guide reinsertion is enabled according to the EN 301-775 standard

VITS (VERTICAL INTERVAL TEST SIGNALS) PARAMETER

The IRD-2900 supports 10 different VITS signals: 4 signals for PAL, 2 signals for NTSC and 4 signals for SECAM and Russian SECAM. The VITS signals are automatically selected according to the selected video format (PAL, TSC or SECAM/R.SECAM).

The PAL and NTSC VITS signals are according to ITU-T J.63 standard:

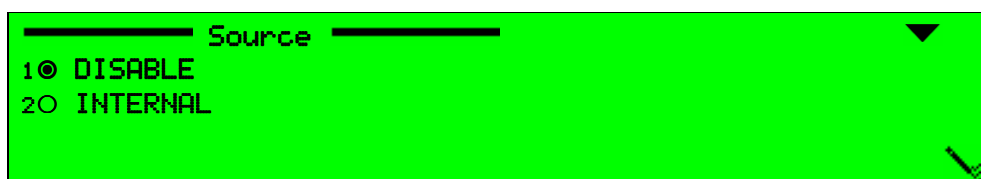
- PAL- Lines 17, 18, 330, 331
- NTSC- Line 17 Field 1, Line 17 Field 2
- SECAM/R.SECAM- Lines 17, 18, 330, 331

When working in PAL or SECAM/R.SECAM video format, the user can select two lines. The factory setting is to Line 1: 17 and Line 2: 18. In this case, the IRD-2900 will re-insert the VITS signals automatically to lines 17, 18, 330, 331. In the case of selecting different line numbers for VITS, the IRD-2900 calculates the new line numbers in which to re-insert the VITS signals. For example, changing Line 2 to 19 (instead of 18) will result in VITS signals re-inserted to lines: 17, 19, 330 and 332.

When the VBI Vertical Interval Test Signals (VITS) parameter is selected, the following screen is displayed:



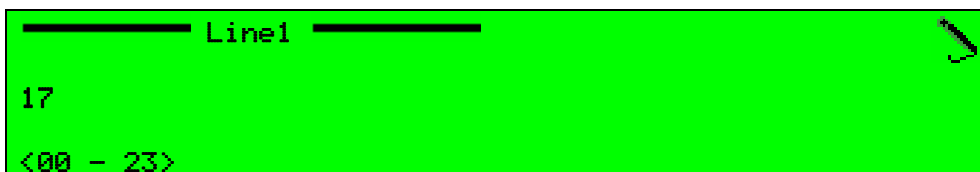
Selecting *Source* displays the following screen:



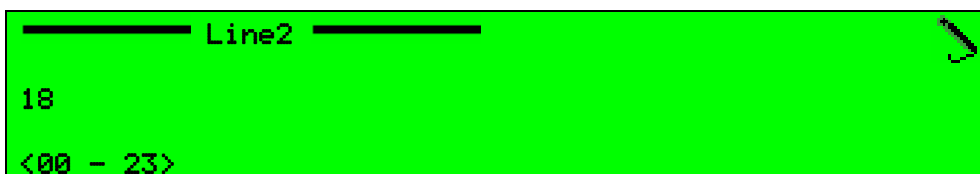
The available options are:

- **DISABLE** – VITS is disabled.
- **INTERNAL** – The IRD-2900 inserts the VITS signal according to the ITU-T standard J. 63.

When selecting the Line 1 option, the following screen is displayed:



When selecting the Line 2 option, the following screen is displayed:



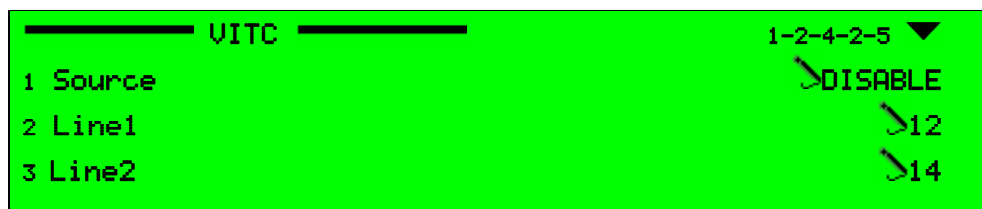
The VITS signal is inserted differently if using PAL or NTSC. When selecting PAL, VITS signals are inserted to lines 17 and 18 and to lines 330 and 331. When selecting NTSC, VITS signals are inserted to line 17-field 1 and line 17-field 2. The IRD-2900 enables the user to insert VITS signals to lines 17 and 18 as well as to any other line between 0 and 23.

NOTE

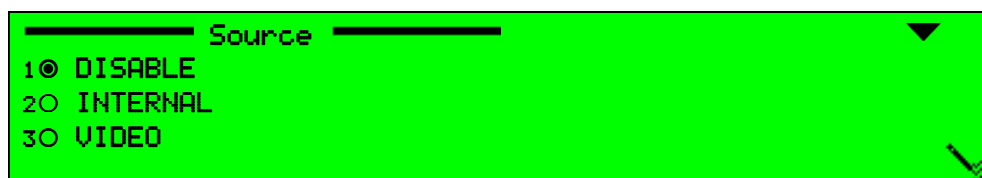
*In Russian SECAM format, there are special VITS signals, different in format from PAL VITS. The Russian SECAM VITS are inserted in lines 17 and 18 and in lines 330, and 331.
Only the IRD-2960, IRD-2961, and IRD-2990 support special Russian SECAM VITS.*

VITC (VERTICAL INTERVAL TIME CODE) PARAMETER

When the Vertical Interval Time Code (VITC) VBI parameter is selected, the following screen is displayed:



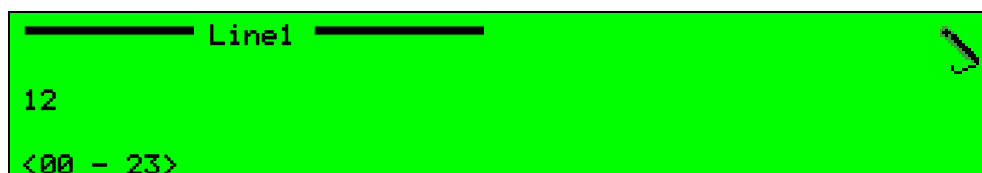
Selecting Source displays the following screen:



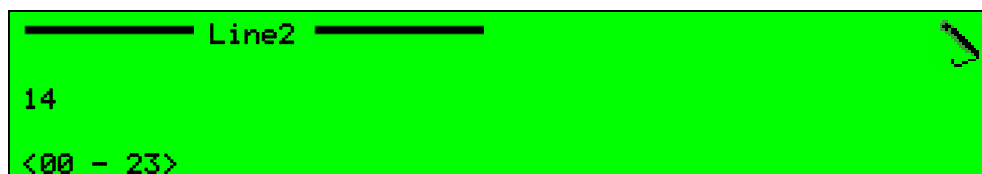
The available options are:

- **DISABLE** – VITC is disabled.
- **INTERNAL** – The IRD-2900 re-inserts the IRD-2900 uptime.
- **VIDEO** – The IRD-2900 re-inserts the VITC signal as included in the transport stream.

When selecting the **Line 1** option, the following screen is displayed:



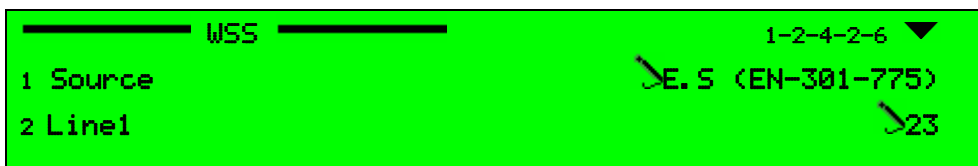
When selecting the Line 2 option, the following screen is displayed:



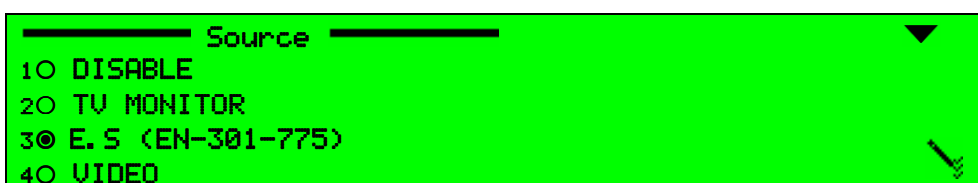
The IRD-2900 allows inserting VITC to any line between 0 and 23.

WSS (WIDE-SCREEN SIGNALLING) PARAMETER

Selecting Wide-Screen Signaling (WSS) displays the following screen:



Selecting Source displays the following screen:



The available options are:

- **DISABLE** – The IRD-2900 does not output a WSS signal.
- **TV MONITOR** – The IRD-2900 generates the WSS signal according to the Aspect Ratio value entered by the operator through **Root→Configuration→Video(1..2)→Monitor Aspect-Ratio** (complies with ITU-T standard J. 63).

NOTE

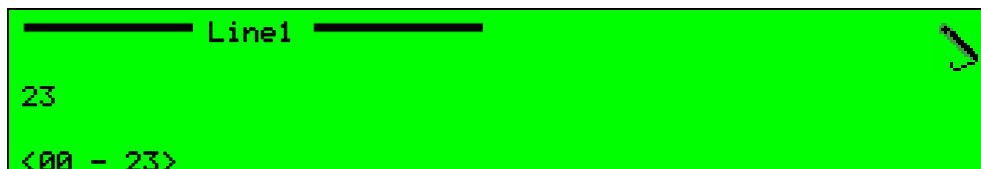
*The option **TV MONITOR** should not be selected along with choosing **VIDEO Source** under **Configuration→Video→Video 1 / 2→Monitor Aspect Ratio**, since the two A/R may contradict each other and cause unexpected results.*

- **E.S. (EN-301-775)** – The IRD-2900 generates the WSS signal according to the WSS information taken from the VBI Elementary Stream (complies with DVB EN 301-775 WSS standard).
- **VIDEO** – The IRD-2900 generates the WSS signal according to the WSS information taken from the Video Header in the Video Elementary Stream.

NOTE

*See Appendix C for extensive details on how **WSS** configuration affects the resulting image.*

Selecting Line1 displays the following screen:



The WSS signal can be inserted into a line between 0 and 23.

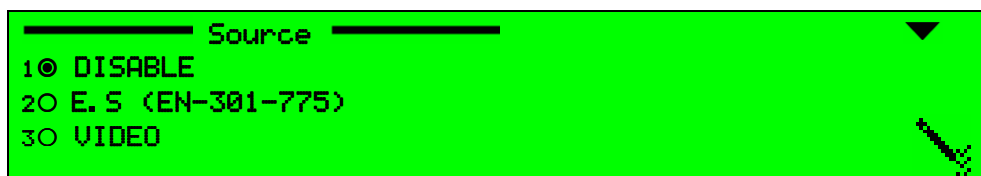
VI (VIDEO INDEX)

The IRD-2900 supports AFD (Active Video Format Description) parsing, when such data exists in the video e.s. – User Data, according to ETSI TS 101 154 Annex B. The AFD data is reinserted into VBI VI (Video Indexing) line 11, on 625 systems, according to SMPTE RP 186-1995 (only Class 1.1 "Information required to display the signal, not including pan and scan" is currently supported).

Selecting VI (Video Index) displays the following screen:



Selecting Source displays the following screen:



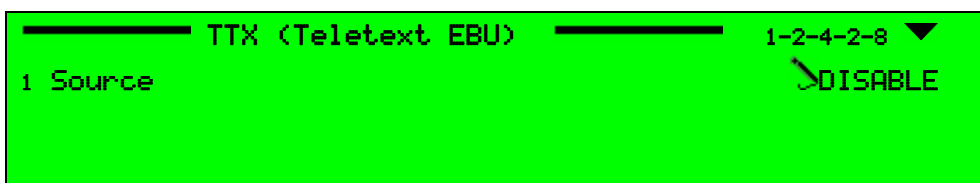
The available options are:

- **DISABLE** – VI data is not reinserted.
- **E.S.(EN-301-775)** – will be supported in the future software releases
- **VIDEO** – the IRD-2900 automatically detects the existing standard and reinserts the VI data accordingly.

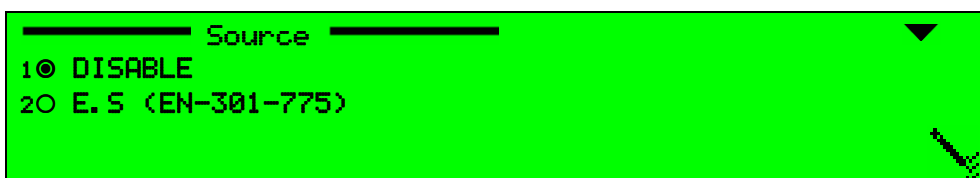
Line1 is a read-only parameter. VI data is always reinserted into line 11.

TTX (TELETEXT-EBU) PARAMETER

When the TTX (Teletext-EBU) VBI parameter is selected, the following screen is displayed:



Selecting Source displays the following screen:



The available options are:

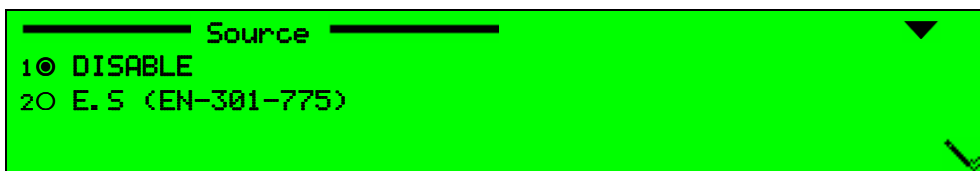
- **DISABLE** – Teletext is disabled.
- **E.S (EN-301-775)** – The IRD-2900 re-inserts the Teletext signal as included in the transport stream according to EN 301-775.

VPS (VIDEO PROGRAM SYSTEM) PARAMETER

When the VPS (Video Program System) VBI parameter is selected, the following screen is displayed:



Selecting Source displays the following screen:



The available options are:

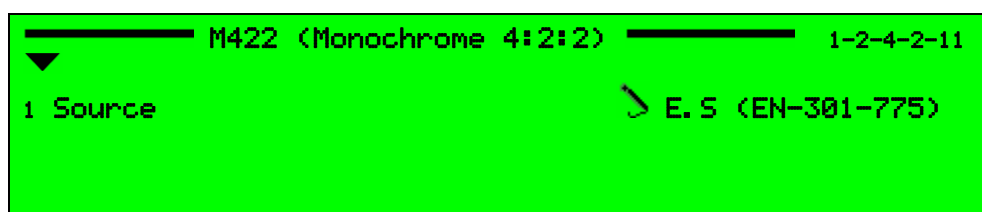
- **DISABLE** – VPS is disabled.
- **E.S (EN-301-775)** – The IRD-2900 re-inserts the signal as included in the transport stream in accordance with EN 301-775.

SMC (VIDEO PROGRAM SYSTEM)

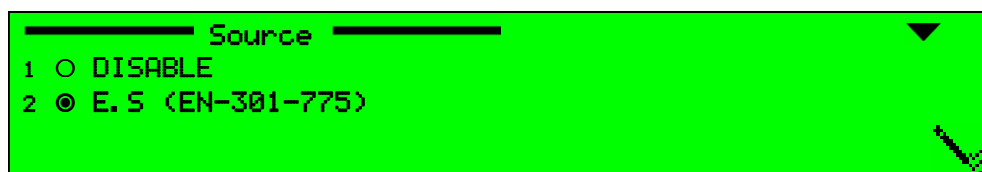
This feature will be supported in the future software releases.

M422 (MONOCHROME 4:2:2)

Selecting M422 (Monochrome 4:2:2) displays the following screen:



Selecting Source displays the following screen:



The available options are:

- **DISABLE** – Monochrome 4:2:2 reinsertion is disabled
- **E.S (EN-301-775)** – Monochrome 4:2:2 reinsertions is enabled according to the EN 301-775 standard.

4.2.6.3. OSD 1 and OSD 2

The OSD 1 and OSD 2 Menu contains parameters for Video 1 and Video 2 (if applicable).

These menus are entered from the IRD-2900 Video Configuration Menu (see Section 4.2.6). The following screens display the Video 1 and Video 2 menus:

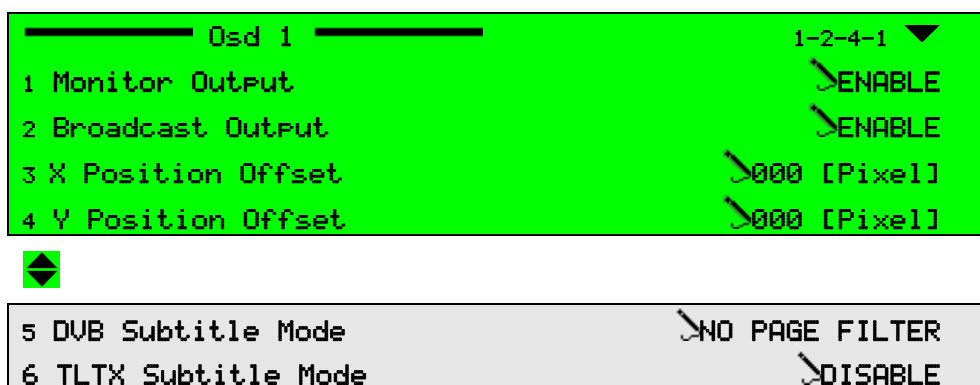


Figure 4-31 displays the corresponding OSD1 Menu (Web Management screen).

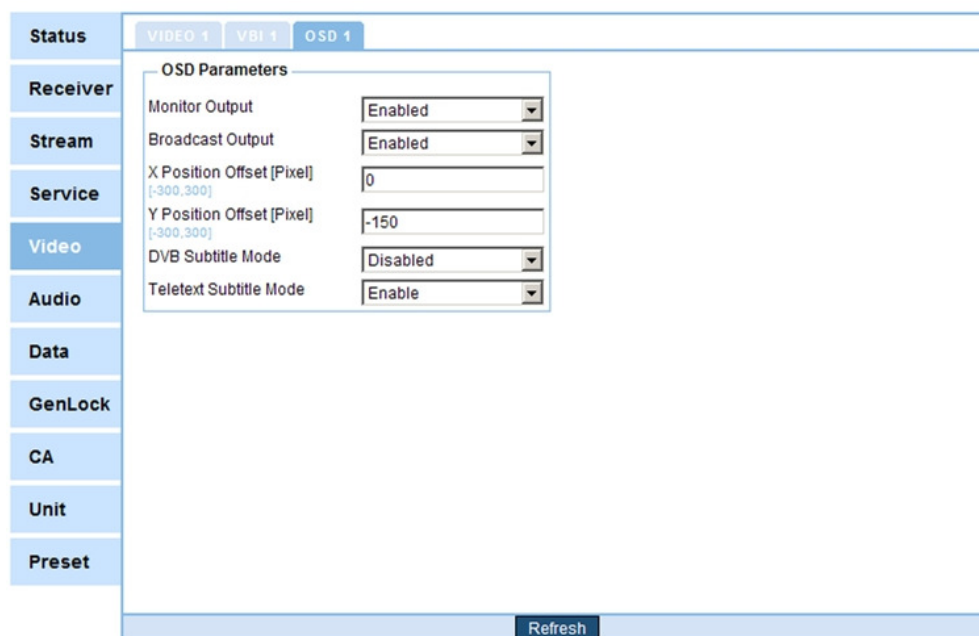


Figure 4-31: OSD1 Menu Screen

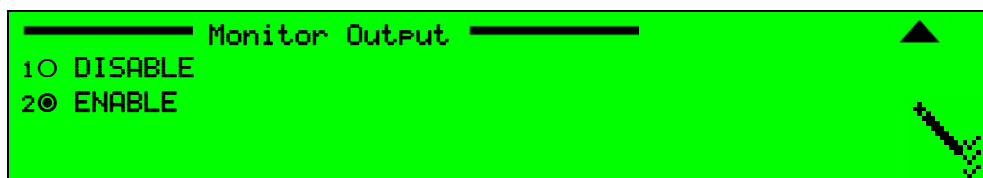
The available options are:

- Monitor Output
- Broadcast Output
- X Position Offset
- Y Position Offset
- DVB Subtitle Mode
- TLTX Subtitle Mode

The following paragraphs describe the OSD 1 and OSD 2 parameters:

MONITOR OUTPUT

Selecting Monitor Output displays the following screen:

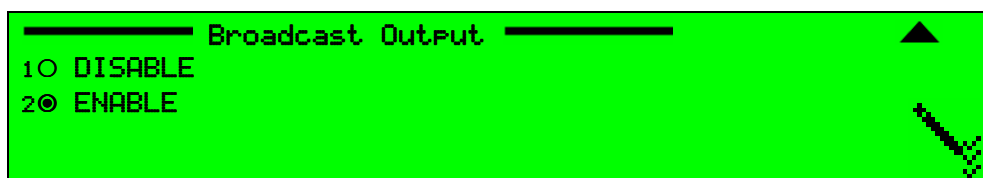


The available options are:

- **DISABLE** – Disables Monitor Output (IRD-2900 rear panel)
- **ENABLE** – Enables Monitor Output

BROADCAST OUTPUT

Selecting Broadcast Output displays the following screen:



The available options are:

- **DISABLE** – Disables Broadcast Output (IRD-2900 rear panel)
- **ENABLE** – Enables Broadcast Output

X POSITION OFFSET

Selecting X Position Offset displays the following screen:



This function determines the horizontal offset of the OSD signal.
The valid range of values is between (-300) and (+300) pixels

Y POSITION OFFSET

Selecting Y Position Offset displays the following screen:



This function determines the vertical offset of the OSD signal.
The valid range of values is between (-300) and (+300) pixels

DVB SUBTITLE MODE

Selecting DVB Subtitle Mode displays the following screen:



The available options are:

- **DISABLE** – Disables DVB Subtitling.
- **NO PAGE FILTER** – This is the IRD-2900 default setting.
- **USE PAGE FILTER** – Use this option when more than one DVB subtitling pages exist in the OSD PID. The Page Filter identifies the page that contains actual subtitling data.

TLTX SUBTITLE MODE

Different from DVB subtitling, Teletext Subtitling requires the decoder to create relevant language fonts. The IRD-2900 has the following Teletext Subtitling fonts installed (all fonts according to ETS 300 706):

- | | | |
|---------------|--------------|--------------|
| • Croatian | • French | • Portuguese |
| • Czech | • German | • Romanian |
| • Danish | • Hungarian | • Serbian |
| • Dutch | • Italian | • Slovak |
| • English | • Latvian | • Slovenian |
| • English Old | • Lithuanian | • Spanish |
| • Estonian | • Norwegian | • Swedish |
| • Finnish | | |

Selecting TLTX Subtitle Mode displays the following screen:



The available options are:

- **DISABLE** – Disables Teletext Subtitling
- **ENABLE** – Enables Teletext Subtitling

NOTE

*When selecting **DVB Subtitle Mode**, **TLTX Subtitle Mode** is automatically disabled, and vice versa, since only one set of subtitling is allowed per program.*

4.2.7. Audio Configuration Menu

The Audio Configuration Menu contains parameters that define the audio decoder mode of operation.

Figure 4-32 displays a tree diagram of the Audio Configuration Menu.

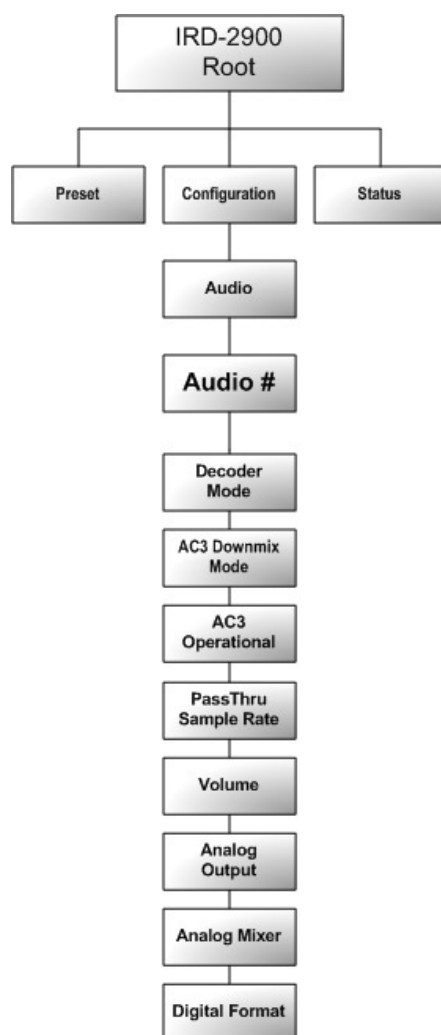


Figure 4-32: Audio Configuration Menu

NOTE

The number of Audio Channel Configurations provided in the Audio Configuration menu is dynamic and is set by the unit configuration.

To access the Audio Configuration Menu, in the front panel control interface go to: **Configuration → Audio**.

The following screen displays the Audio Configuration Menu:



The available options are:

- **Audio 1**
- **Audio 2**
- **Audio 3** (in dual decoder IRDs)
- **Audio 4** (in dual decoder IRDs)

Audios 1 through 4 have identical parameters, and are accessible through identical controls. The following is an example of Audio 1 front panel control screen. Audio 2, 3, and 4 control screens are exactly the same (except for the screen header).

NOTE

Audio1 and Audio2 correspond with Video1 and are always available. Audio3 and Audio4 correspond with Video2 and are available only in dual decoder IRDs.

4.2.7.1. Audio 1

To access the Audio 1 Menu in the front panel control interface go to **Configuration→Audio→Audio1**.

The following screen displays the Audio 1 menu:

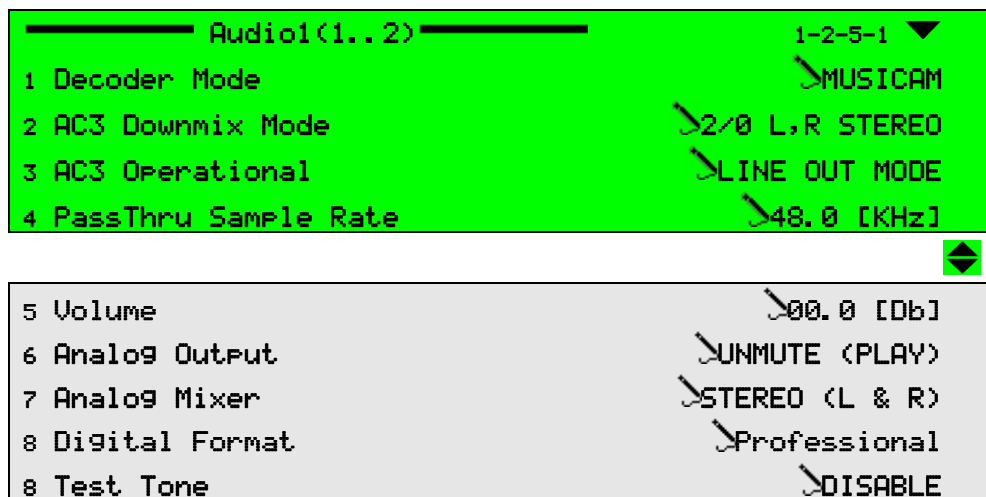


Figure 4-33 displays the corresponding Audio1 Menu (Web Management screen).

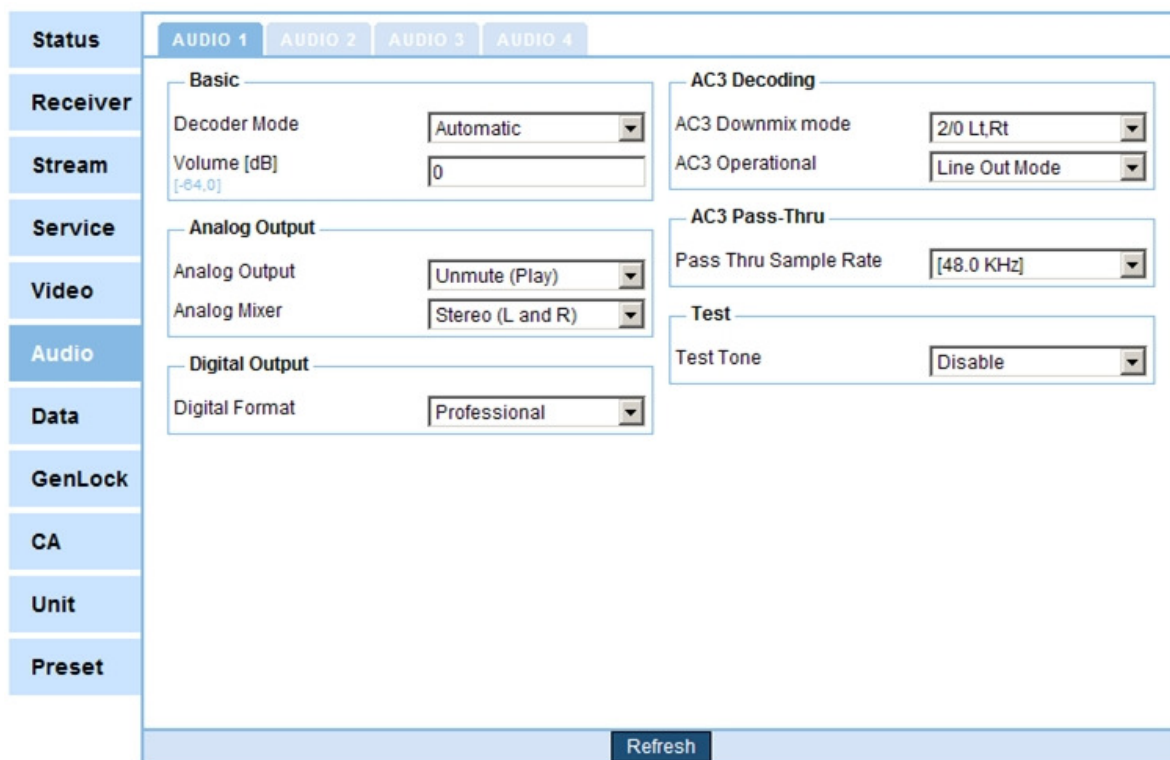


Figure 4-33: Audio 1 Menu Screen

The available options are:

- Decoder Mode
- AC3 Downmix Mode
- AC3 Operational
- PassThru Sample Rate
- Volume
- Analog Output
- Analog Mixer
- Digital Format
- Test Tone

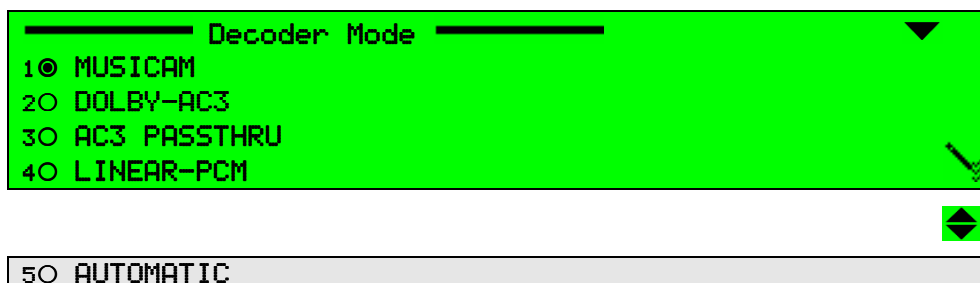
NOTES

- Although AC3 Downmix Mode, AC3 Operational Mode, and PassThru Sample Rate parameters can always be accessed from the Audio (1..4) Parameters window, they are effective only when their corresponding mode is selected in Decoder Mode.*
- In the Web Management window, AC3 Downmix Mode and AC3 Operational Mode are effective only when Dolby AC3 is selected in Decoder Mode*
- In the Web Management, window PassThru Sample Rate is effective only when PassThru is selected in Decoder Mode.*
- Digital Format will be supported by the IRD-2900 Web Control interface in the future SW releases.*

The following paragraphs detail the Audio Configuration options.

AUDIO DECODER MODE SETUP

The Audio Decoder mode option allows the user setting the following parameters for an Audio channel:



This menu controls the decoder audio mode; The available options are:

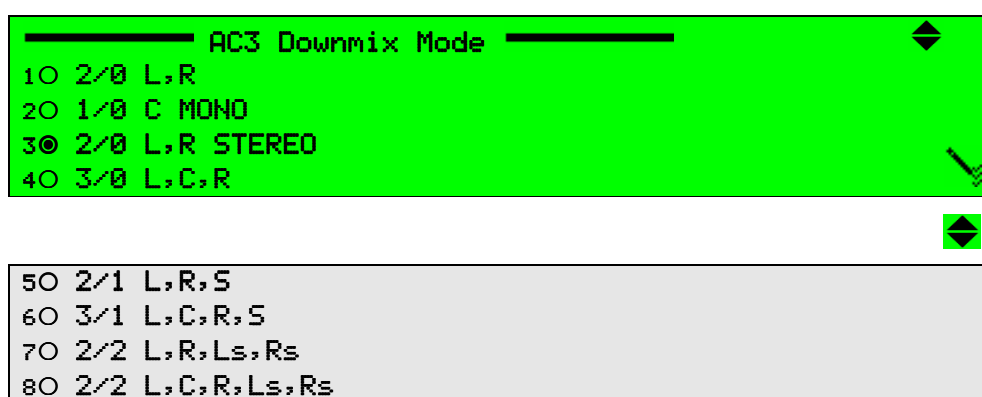
- MUSICAM** – Sets the audio decoder mode to MUSICAM
- DOLBY-AC3** – Sets the audio decoder mode for the AC-3 downmix
- AC3 PASSTHRU** – Sets the audio decoder mode to AC-3 Pass-through
- LINEAR-PCM** – Sets the audio decoder mode to Linear PCM and Dolby E Pass-through. Only IRD-2980, IRD-2981, IRD-2991, and IRD-2991 Audio 3 and Audio 4 support this feature
- AUTOMATIC** – Automatically detects the audio decoding mode

NOTE

Audio3 and Audio 4 Decoder Mode parameters must be identical .For example: when Audio3 Decoder mode is set to AC3 PASSTHRU, Audio 4 must be set to AC3 PASSTHRU as well.

AC3 DOWNMIX MODE SETUP

The AC-3 Downmix mode allows you to set the downmix mode to 2/0.



AC3 Downmix Mode

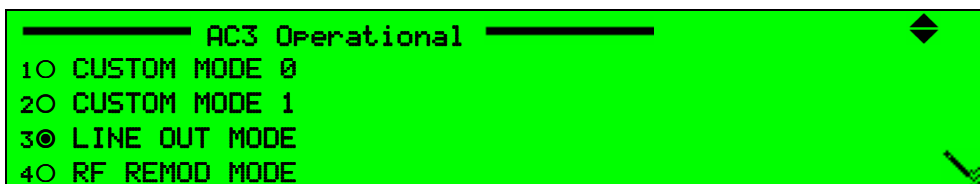
- 10 2/0 L, R
- 20 1/0 C MONO
- 30 2/0 L, R STEREO
- 40 3/0 L, C, R
- 50 2/1 L, R, S
- 60 3/1 L, C, R, S
- 70 2/2 L, R, Ls, Rs
- 80 2/2 L, C, R, Ls, Rs

The available options are:

- 2/0 L, R
- 2/0 C mono
- 2/0 L, R stereo
- 3/0 L, C, R
- 2/1 L, R, S
- 3/1 L, C, R, S
- 2/2 L, R, Ls, Rs
- 2/2 L, C, R, Ls, Rs

AUDIO AC3 OPERATIONAL SETUP

The Audio AC3 Operational parameter selects the audio output mode of operation on a specific audio for the Dolby AC-3 processed audio information (for example, Audio 1 output).



The available options are:

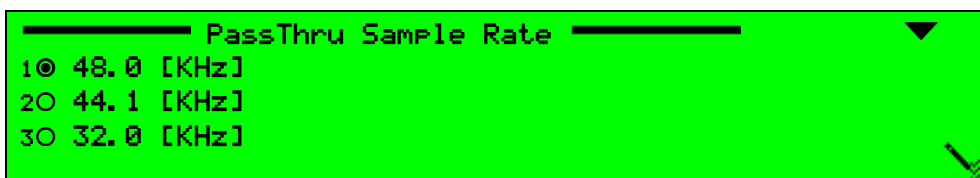
- **Custom Mode 0**
- **Custom Mode 1**
- **Line Out Mode**
- **RF Remod Mode**

NOTE

The default for Audio AC-3 Operational output is Line Out mode.

PASSTHRU SAMPLE RATE

The PassThru Sample Rate parameter allows the user setting the sampling frequency for the AC3 Pass-through.



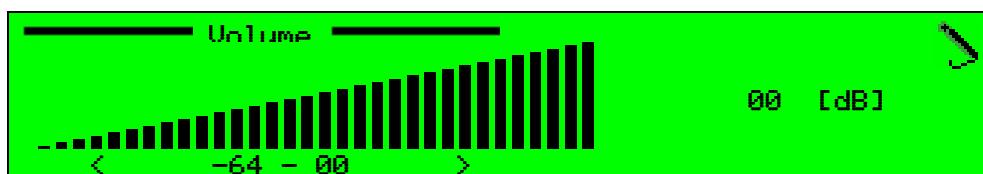
The available options are:

- **48.0 [KHz]**
- **44.1 [KHz]**
- **32.0 [KHz]**

VOLUME

The Volume parameter allows the user setting the audio volume of the audio channel.

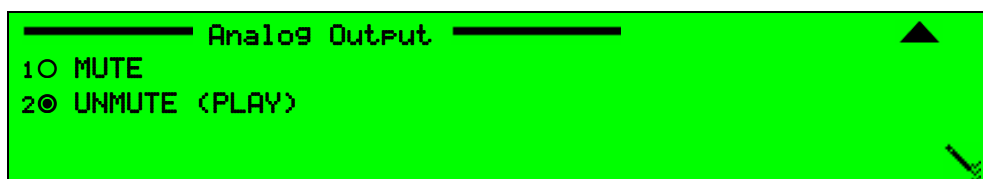
A graphical volume display illustrates the volume level.



Available values are between (-)64 and 0dB.

ANALOG OUTPUT

The Analog Output parameter sets Mute or Play mode in an audio channel output.

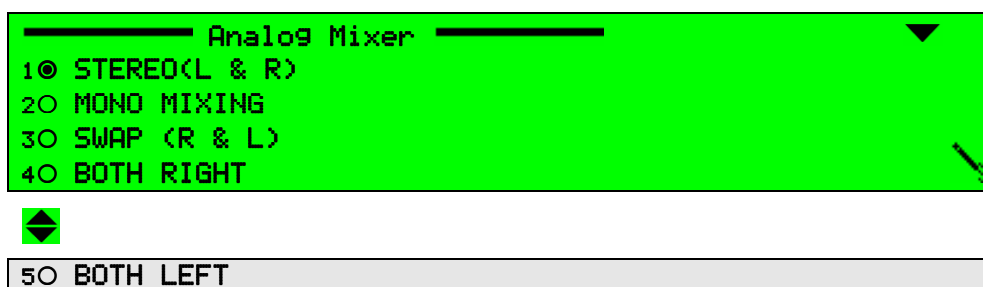


The available options are:

- **MUTE** – this analog audio output is disabled
- **UNMUTE (PLAY)** – this analog audio output is enabled

ANALOG MIXER

The Analog Mixer parameter, displayed on the following screen, allows setting the stereo and mono options of the stereo channels.



The available options are:

- **STEREO (L & R)** – Standard stereo output on the respective left and right connectors
- **MONO MIXING** – Mixes left and right stereo channel signals for mono output on both left and right connectors
- **SWAP (R & L)** – Swaps channels:
 - Left channel on right connectors
 - Right channel on left connectors
- **BOTH RIGHT** – Outputs right channels on both left and right connectors
- **BOTH LEFT** – Outputs left channels on both left and right connectors

NOTE

Audio 2 Parameters menu is identical in its form and functionality to the Audio 1 Parameters menu.

Recall that Audio 3 and Audio 4 menus correspond with Video2, and are also identical in form and functionality to Audio 1 and Audio 2.

DIGITAL FORMAT

The Digital Format parameter sets the digital audio channel output mode.



The available options are:

- **CONSUMER** – Selects AES/EBU, SPDIF Consumer Mode. – This mode passes the audio mode bits as is.
- **PROFESSIONAL** – Selects AES/EBU Professional Mode. This mode set the audio mode to stereo regardless of actual audio.

NOTE

When Consumer mode is chosen: the IRD passes the audio mode bits as is.

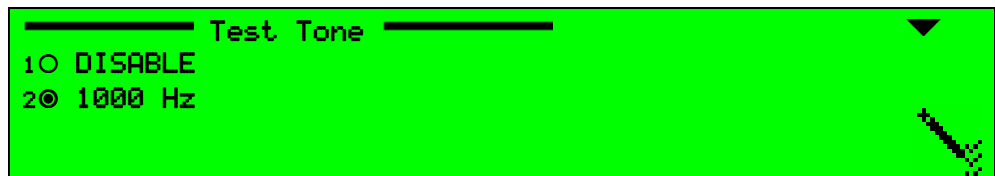
When Professional mode is chosen: the IRD sets the audio mode to stereo regardless of actual audio.

NOTE

*When choosing PROFESSIONAL, the IRD-2900 will set the Audio header's **Pro** flag to **1** ('Pro') whether the received value was 1 or 0.*

TEST TONE

The IRD-2900 can create a 1 kHz audio test signal, and output it through any of its audio outputs for testing that audio output performance. The operator must select the audio output to be tested and enable the creation of the test tone for that output.



The available options are:

- **DISABLE** – disables the test tone
- **1000 Hz** – creates a 1 kHz audio signal and outputs it through this Audio output

NOTES

It is required to stop all IRD decoding before performing Audio Output testing. Only Audio Outputs 1, 3, and 4 can currently be tested using the IRD-2900 internal 1 kHz test tone.

4.2.8. Data Configuration Menu

The Data Configuration Menu allows setting parameters to handle a data output stream.

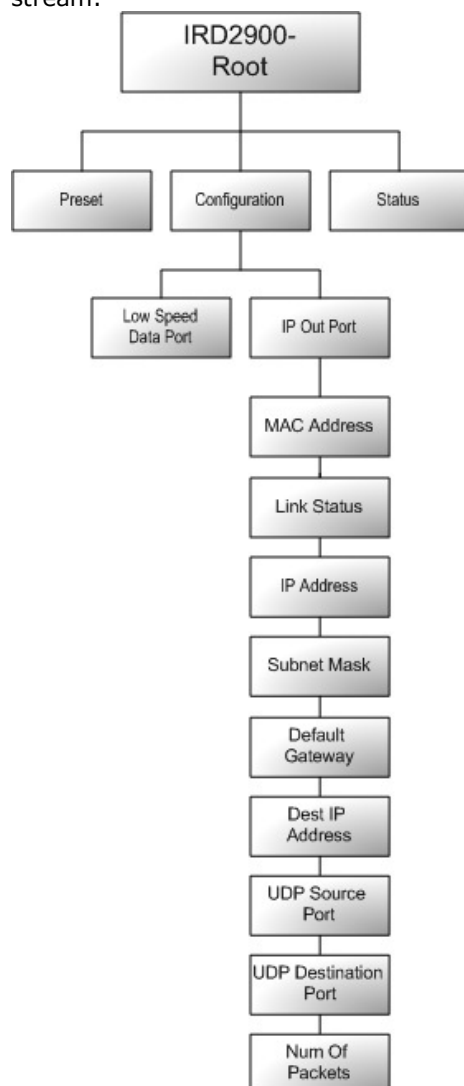


Figure 4-34 displays a tree diagram of the Data Configuration Menu.

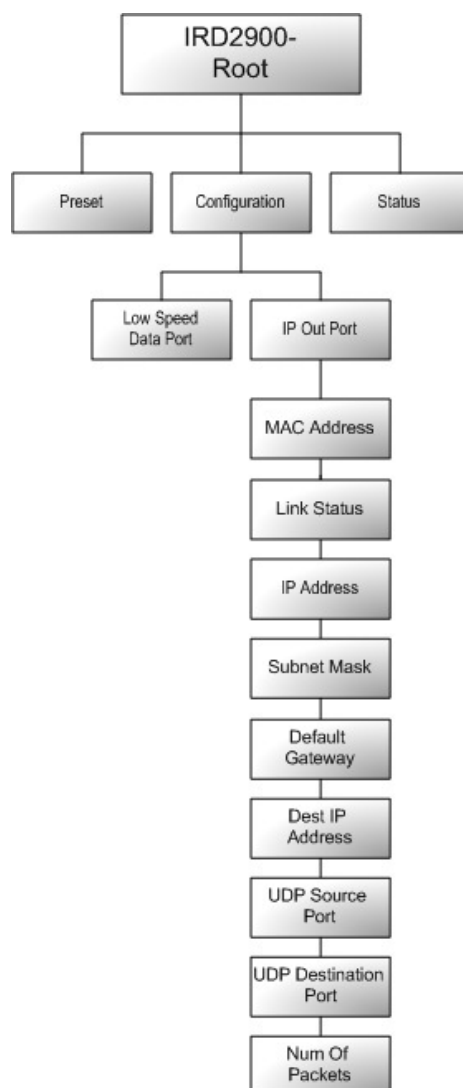
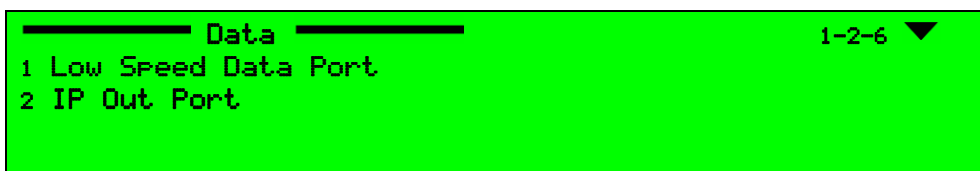


Figure 4-34: Data Configuration Menu

To access the *Data Configuration Menu* in the front panel control interface go to **Configuration→Data**.

All the IRD-2900 models except IRD-2960 and IRD-2990 support the IP Out-Port option. Following is the corresponding front-panel screen:



The IRD-2960 and IRD-2990 models support the High Speed Data Port option (and not IP Out-Port). Following is the corresponding front-panel screen for these models:



The **Data** Configuration Menu parameters are:

- **Low Speed Data Port**

Sets the type of data to be outputted through the Low Speed Data port. The IRD-2900 supports LS data output in three levels of filtering. For details see Section 4.2.8.1.

- **IP Out Port**

Sets the IRD-2900 IP Out port parameters (e.g. the chosen transfer protocol, the IRD-2900 IP address, UDP port and so on.). For detailed information, see Section 4.2.8.2.

- **High Speed Data Port** (IRD-2960 and IRD-2990 only)

Sets the transfer rate & direction, and the type of data to be sent, through the High Speed Data port. For details see Section 4.2.8.3.

4.2.8.1. Low Speed Data Port

This menu is used for setting the IRD-2900 Low Speed Data port parameters. The IRD-2900 supports Low Speed Data output through RS232. It enables different rates of transmission, as well as three levels of output-data filtering.

NOTE

The IRD-2900 automatically directs PIDs with the MPEG-2 descriptor - private_data_indicator = 15 with indicator value 0 for transmission through its Low Speed Data port.

The minimum amount of data that can be transmitted through the LS Data port is the size of one PES payload.

To access the Low Speed Data menu, in the front panel control interface go to **Configuration→Data→Low Speed Data Port**

Following is the corresponding front-panel screen:



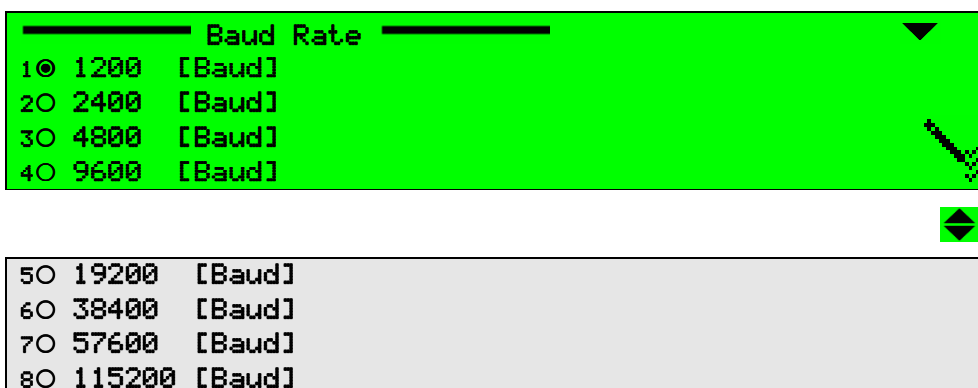
The *Low Speed Data Port* screen contains the following parameters:

- **Baud Rate**
- **Layer Filtering**

The following paragraphs provide details of these parameters.

BAUD RATE

This parameter enables electing between eight possible LS data transmission rates. Following is the corresponding front panel screen:



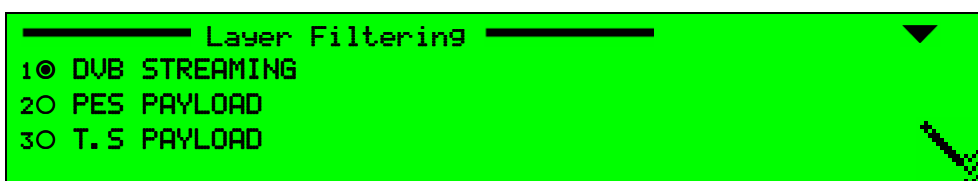
The available transmission rates are: 1200, 2400, 4800, 9600, 19200, 38400, 57600, and 115200 Baud.

NOTE

The LS Data transmission Baud Rate settings must comply with the corresponding encoder data-encapsulation rate.

LAYER FILTERING

The IRD-2900 supports three levels of Low Speed Data filtering, determining the type of data to be transmitted through the LS Data port. Following is the front panel Layer Filtering screen:



The three levels of data filtering are:

- **DVB STREAMING** – For outputting only DVB Asynchronous Data Streaming according to the EN-301-192 standard (the first 3 bytes of the PES_data_packet are stripped)
- **PES PAYLOAD** – For outputting only the PES payload (the PES header is stripped)
- **T.S PAYLOAD** or outputting only the transport stream payload (the TS header and the adaptation field are stripped)

4.2.8.2. IP-Out-Port Configuration Menu

NOTE

When selecting MPE mode verify that the MPE encapsulator setup is such that the MPEG packet contains data of a single IP frame (for example, a single MPEG packet cannot contain data belonging to two separate IP frames).

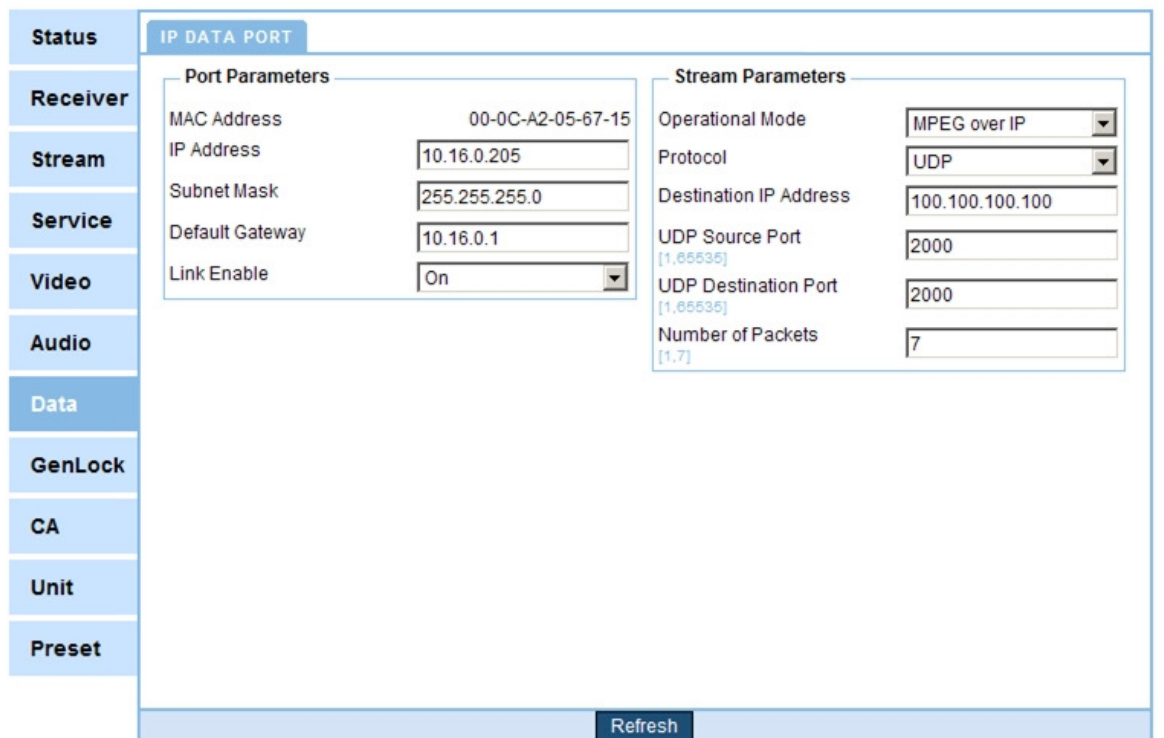
This menu is used for setting the IP-Out port parameters.

To access the *IP-Out-Port Menu* in the front panel control interface go to **Configuration→Data→IP Out Port**.

The following screen displays the **IP Out Port** menu:

IP Out Port		1-2-6-2 ▼
1 Operational Mode		↘MPEGoIP
2 Protocol		↘UDP
3 IP Address		↘010.008.000.216
4 Network Mask		↘255.255.255.000
5 Default Gateway		↘010.008.000.001
6 Dest IP Address		↘010.013.100.003
7 UDP Source Port		↘02000
8 UDP Destination Port		↘02000
9 Num of Packets		↘07

Figure 4-33 displays the corresponding IP Data Port menu (Web Management screen).



IP DATA PORT	
Port Parameters MAC Address: 00-0C-A2-05-67-15 IP Address: 10.16.0.205 Subnet Mask: 255.255.255.0 Default Gateway: 10.16.0.1 Link Enable: On Stream Parameters Operational Mode: MPEG over IP Protocol: UDP Destination IP Address: 100.100.100.100 UDP Source Port: 2000 UDP Destination Port: 2000 Number of Packets: 7	
Refresh	

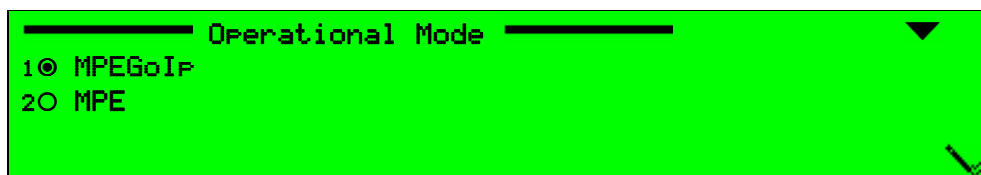
Figure 4-35: IP Data Port Menu Screen

The available options are:

- **Operational Mode**
- **Protocol**
- **IP Address**
- **Network Mask**
- **Default Gateway**
- **Dest IP Address**
- **UDP Source Port**
- **UDP Destination Port**
- **Num of Packets**

OPERATIONAL MODE

The Operational Mode screen displays the currently active mode of operation and allows setting the mode using the following Select Value screen:



The available options are:

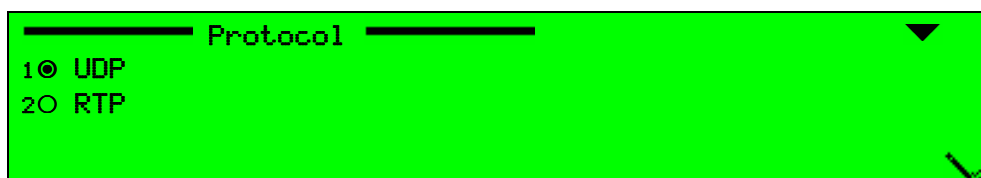
- **MPEGoIP** – MPEG-over-IP mode
- **MPE** – IP data (MPE de-capsulation)

NOTE

When Operational mode is set to MPEG-over-IP, all other items in the IP-Out-Port menu must be configured. When Operational mode is set to MPE, then the IP address, Subnet Mask, and Default Gateway items must be configured.

PROTOCOL

The Protocol screen displays the currently active L3 protocol and allows setting the protocol using the following Select Value screen.

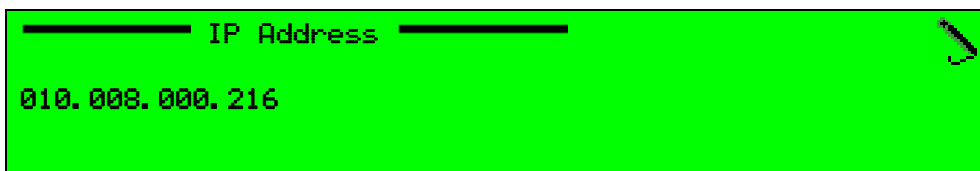


The available options are:

- **UDP** – User Datagram Protocol
- **RTP** – Real Time Protocol (this feature will be supported in future software releases)

IP ADDRESS

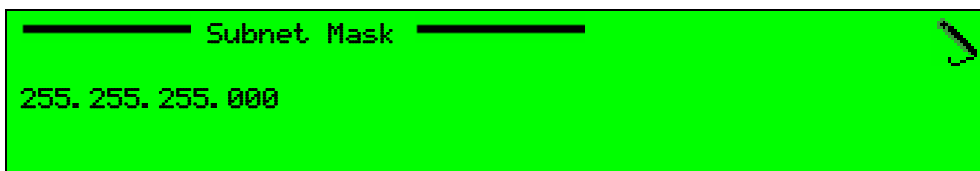
The IP Address parameter allows setting the IP Address of the output port.

A screenshot of a configuration window with a black background. At the top, the text "IP Address" is displayed in a light blue font, flanked by horizontal lines. Below this, the IP address "010.008.000.216" is entered in a light blue monospaced font. A small cursor icon is visible at the end of the text.

The value in each field must be a whole number between 0 and 255.

SUBNET MASK

The Subnet Mask parameter defines the network sub-mask.

A screenshot of a configuration window with a black background. At the top, the text "Subnet Mask" is displayed in a light blue font, flanked by horizontal lines. Below this, the subnet mask "255.255.255.000" is entered in a light blue monospaced font. A small cursor icon is visible at the end of the text.

The value in each field must be a whole number between 0 and 255.

DEFAULT GATEWAY

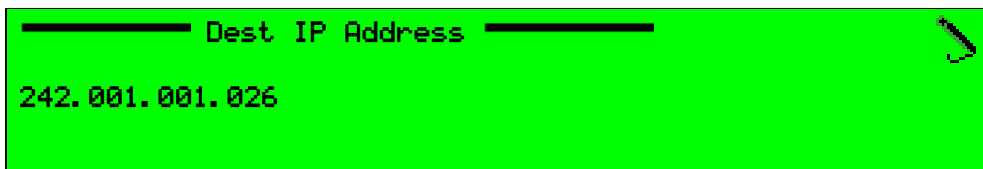
The Default Gateway parameter allows setting the network default gateway address. This is the address of a local IP router on the same network as the IRD-2900 that is used to forward traffic beyond the local network.

A screenshot of a configuration window with a black background. At the top, the text "Default Gateway" is displayed in a light blue font, flanked by horizontal lines. Below this, the default gateway address "010.008.000.001" is entered in a light blue monospaced font. A small cursor icon is visible at the end of the text.

The value in each field must be a whole number between 0 and 255.

DESTINATION IP ADDRESS

The Destination IP Address parameter allows setting the required destination IP address.



The value in each field must be a number between 0 and 255.

UDP SOURCE PORT

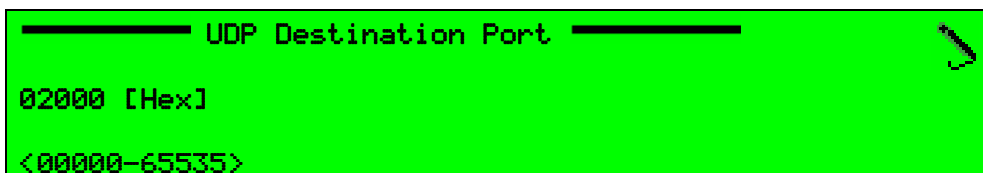
The UDP Source Port parameter allows setting the source UDP port number.



The value in each field must be a whole number between 0 and 65535.

UDP DESTINATION PORT

The UDP destination Port parameter allows setting the UDP Destination port number.



The value is a whole number between **0** and **65535**.

NUMBER OF PACKETS

The Number of Packets parameter allows setting the number of MPEG packets to be contained in an IP frame (using the following Edit Value Screen).



Available values are between **1** and **7**.

4.2.8.3. High Speed Data

HS data is only supported in IRD-2960 and IRD-2990 models.

The *High Speed Data Menu* is used for setting the transfer rate & direction (MSB↔LSB) and the type of data to be sent, through the High Speed Data port.

To access the High Speed Data Menu in the front panel control interface go to

Configuration→Data→High Speed Data Port.

Following is the corresponding front-panel screen:



The HS Data parameters are detailed as follows:

Tx Clock

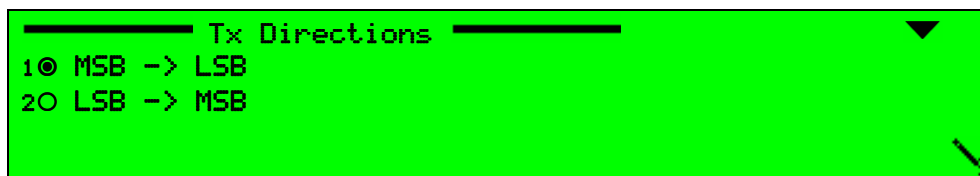
The Tx Clock parameter sets the speed of the high speed data port.



Legal values range from 00.064000 to 27.000000 Mbps.

TX DIRECTION

The Tx Direction parameter defines whether MSB or LSB is sent first.

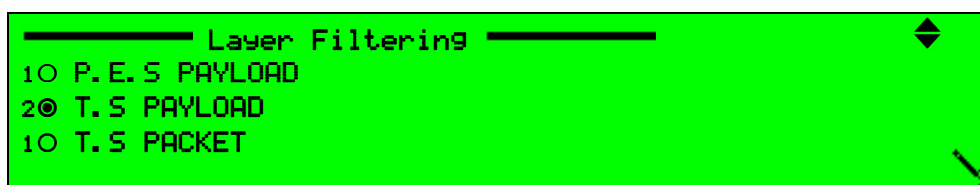


The available options are:

- **MSB → LSB** – MSB sent first
- **LSB → MSB** – LSB sent first

LAYER FILTERING

The **Layer Filtering** parameter selects a filtering mode to data.



The available options are:

- **P.E.S PAYLOAD** – Strips the header of the packetized elementary stream (PES).
- **T.S PAYLOAD** – Strips the transport stream header (first 4 bytes out of the 188 bytes packet)
- **T.S PACKET** – Enables the entire transport stream packet (188 bytes)

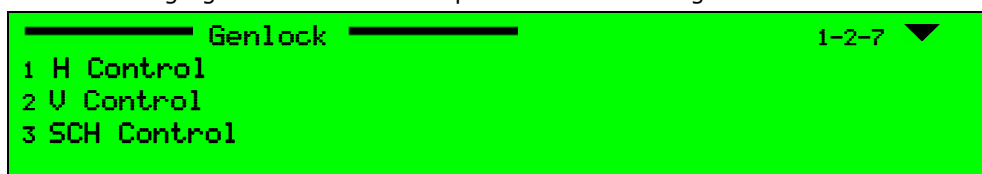
4.2.9. GenLock Configuration

The GenLock configuration menu is used for synchronize the IRD with an external video input.

To access the Preset menu through the front panel, go to:

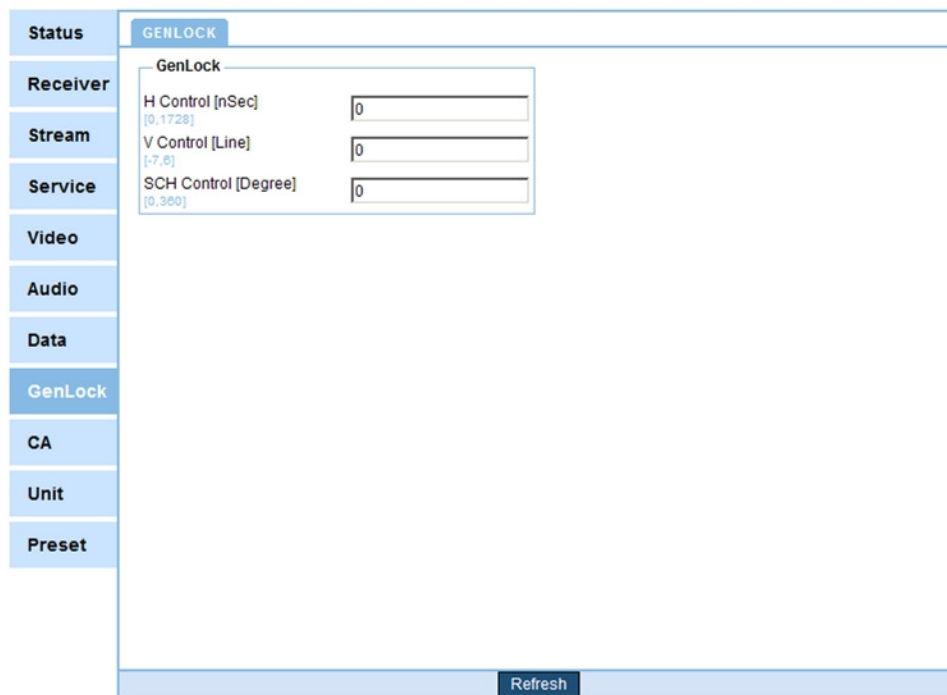
Root → Configuration → Genlock.

The following figure shows the front panel GenLock configuration menu:



To access the Genlock configuration screen through the web-interface from the management bar, click on the **Genlock** tab.

Figure 4-36 shows the web-interface Genlock screen:



The image shows a web browser interface for the GenLock configuration. On the left is a vertical navigation menu with buttons for "Status", "Receiver", "Stream", "Service", "Video", "Audio", "Data", "GenLock" (which is highlighted), "CA", "Unit", and "Preset". The main content area has a title "GENLOCK" at the top. Below the title is a section labeled "GenLock" containing three input fields: "H Control [nSec]" with a range of "[0, 1728]" and a value of "0", "V Control [Line]" with a range of "[1, 8]" and a value of "0", and "SCH Control [Degree]" with a range of "[0, 360]" and a value of "0". At the bottom right of the main content area is a "Refresh" button.

Figure 4-36: Web Interface Genlock Screen

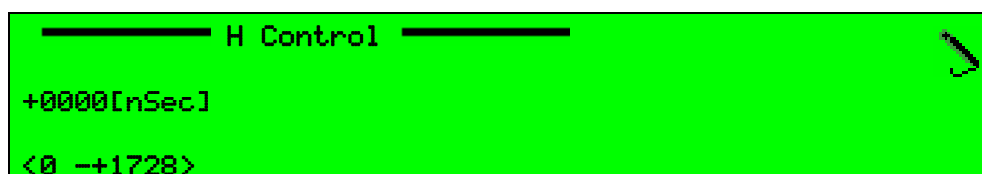
The Genlock menu consists of following sub-menus:

H CONTROL

This submenu allows setting the Horizontal GenLock synchronization delay. To access the H Control submenu go to:

Root → Configuration → Genlock → H Control

The following figure shows the front panel H Control edit screen:

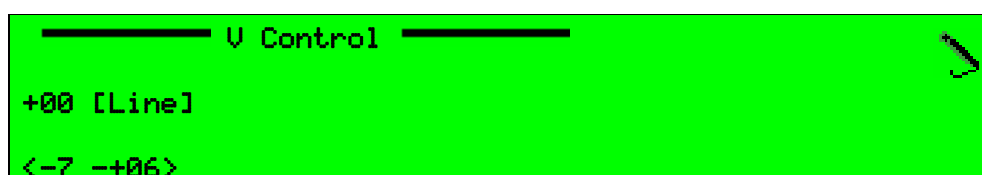


The Horizontal Control delay ranges from -7[nSec] to +1728[nSec].

V CONTROL

This submenu allows setting the Vertical GenLock Line. To access the V Control submenu go to: **Root → Configuration → Genlock → V Control**

The following figure shows the front panel V Control edit screen:

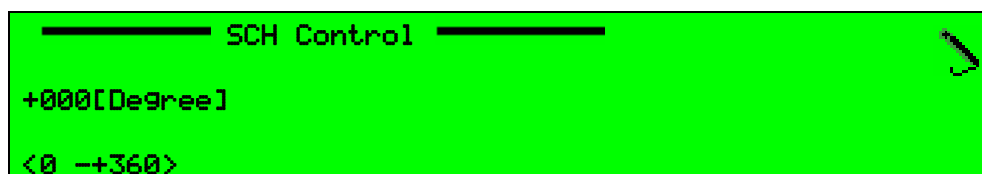


The Vertical Control delay ranges from -7[Line] to +6[Line].

SCH CONTROL

This submenu allows setting the GenLock phase. To access the SCH Control submenu go to: **Root → Configuration → Genlock → SCH Control**

The following figure shows the front panel SCH Control edit screen:



The Vertical Control delay ranges from 0 to 360 degrees.

4.2.10. Conditional Access Configuration Menu

This menu allows access to all IRD-2900 CA (Conditional Access) parameters. Figure 4-37 displays a tree diagram of the Conditional Access Configuration Menu.

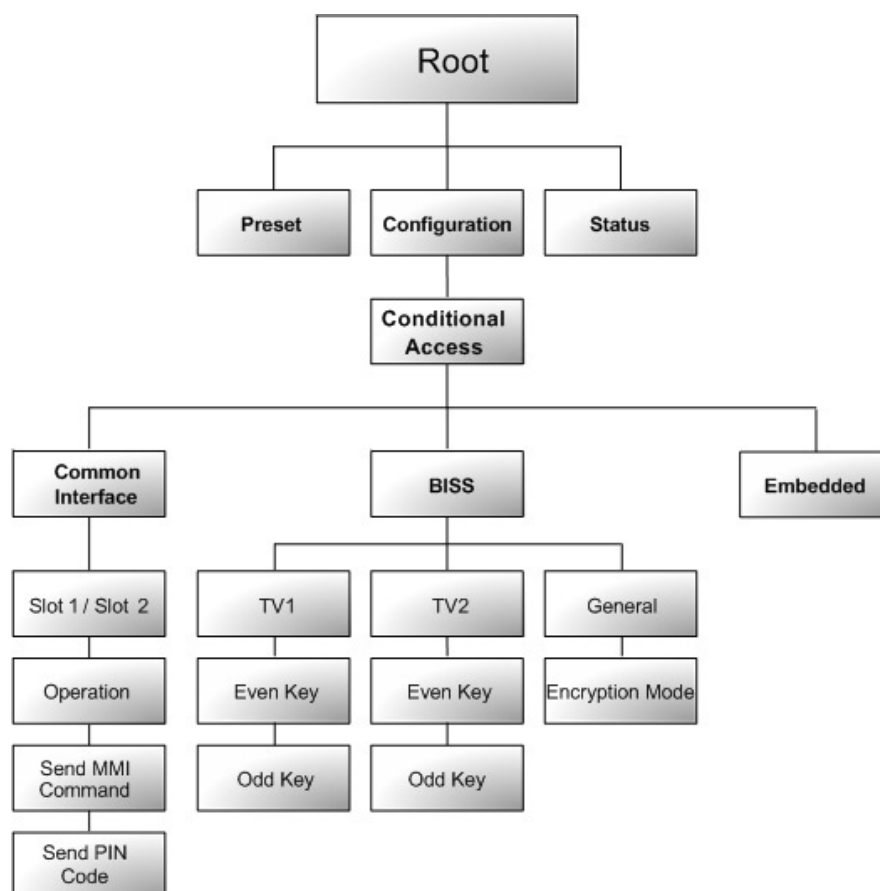


Figure 4-37: Conditional Access Configuration Menu

To access the Conditional Access Configuration menu in the front panel control interface go to **Configuration→ Conditional Access**.

The following screen displays the Conditional Access menu:



To access the Conditional Access configuration screen through the web-interface from the management bar, click on the **CA** tab.

Figure 4-38 shows the web-interface CA screen:

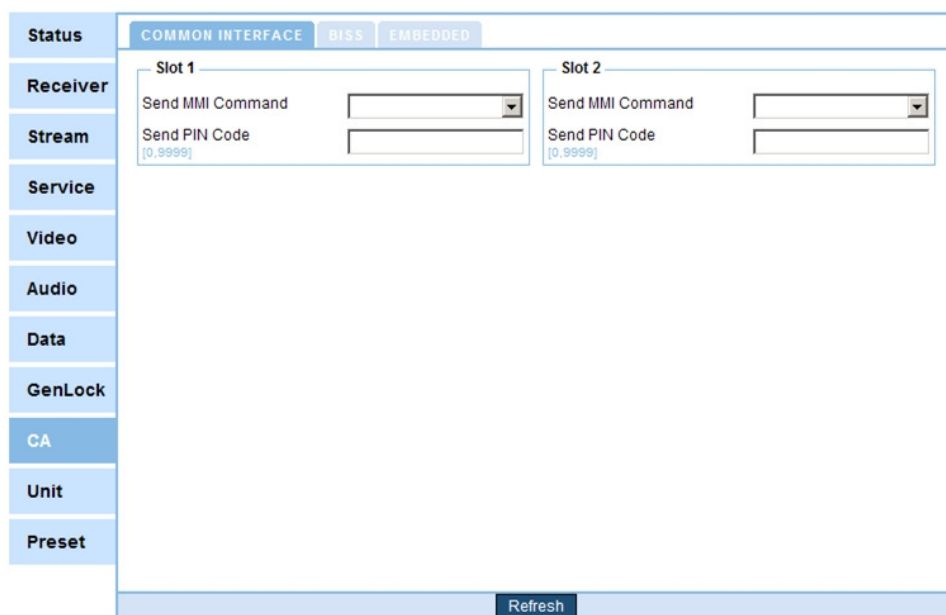
A screenshot of a web browser showing the Conditional Access (CA) configuration page. On the left is a vertical navigation menu with tabs: Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA (highlighted), Unit, and Preset. The main content area has three tabs at the top: COMMON INTERFACE, BISS, and EMBEDDED. Under the COMMON INTERFACE tab, there are two columns for "Slot 1" and "Slot 2". Each slot has two input fields: "Send MMI Command" (a dropdown menu) and "Send PIN Code" (a text box with "[0,9999]" below it). At the bottom right of the main area is a "Refresh" button.

Figure 4-38: Web Interface Conditional Access Screen

The Conditional Access Menu parameters are as follows:

- **Common Interface (CI)**
Enable setting up the configuration of the CAMS in the IRD-2900 using the DVB-CI standard. For details, see Section 4.2.10.1.
- **BISS Mode**
Enable setting up the BISS encryption mode. For details, see Section 4.2.10.2.

- **Embedded Mode**

Enable setting up the embedded encryption mode. For details, see Section 4.2.10.3.

4.2.10.1. Common Interface Configuration Menu

The Common Interface (CI) menu displays the current status of the IRD-2900 CI slots. To access the Common Interface menu in the front panel control interface go to **Configuration → Conditional Access → Common Interface**.

The following screen displays the Common Interface menu:



To access the Common Interface configuration screen through the web-interface go to **CA → Common Interface** tab.

Figure 4-39 shows the web-interface Common Interface screen:

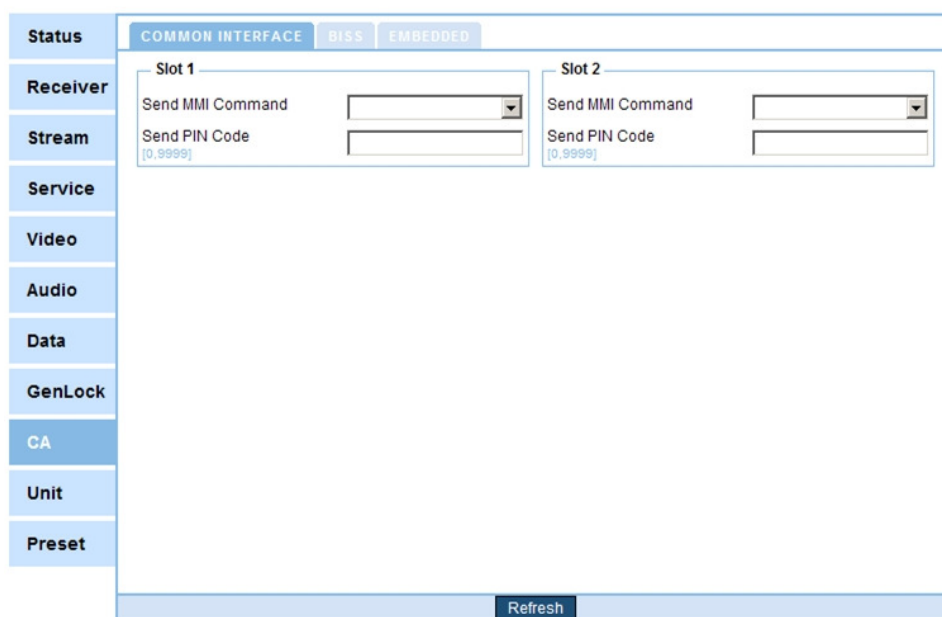
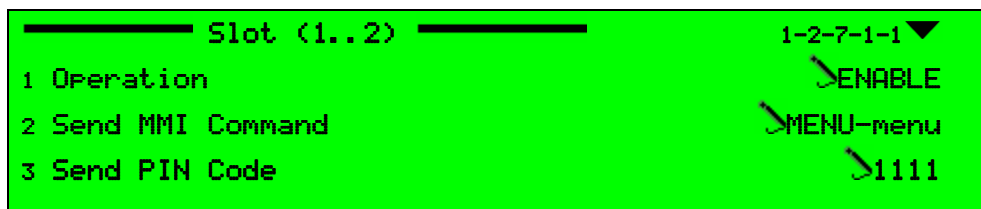


Figure 4-39: Web Interface Common Interface Screen

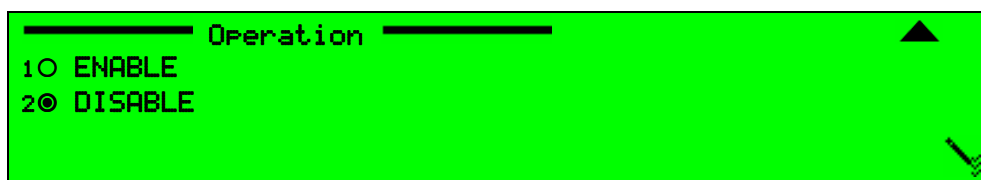
Once a CI Slot is selected from the front panel, an Edit Menu screen is displayed. The Slot 1 and Slot 2 Configuration edit menu provides access to the CI parameters for the respective IRD-2900 CI Slot:



The following paragraphs detail the Slot Configuration options.

OPERATION

The Operation parameter enables or disables the slot.



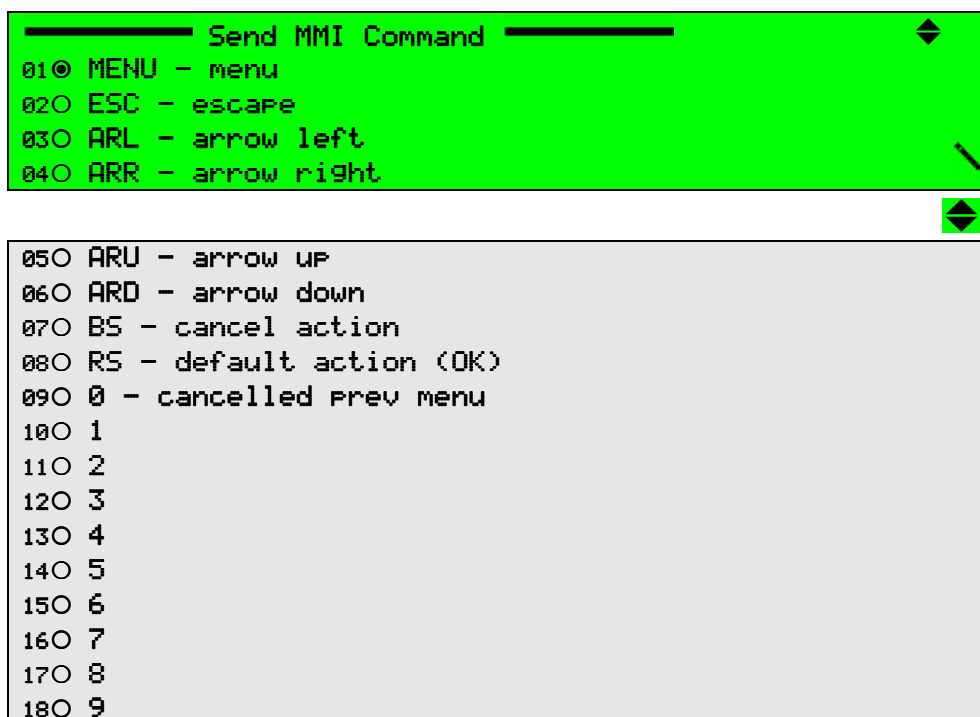
The available options are:

- **ENABLE**
- **DISABLE**

SEND MMI (MAN-MACHINE INTERFACE) COMMAND

The Send MMI Command sets and sends the MMI command to the CAM installed in the CI slot. This MMI contains a set of commands that can be sent to the CA application in the Conditional Access Module (CAM).

The CAM response is displayed either on the CLI or using OSD on the video monitoring port.

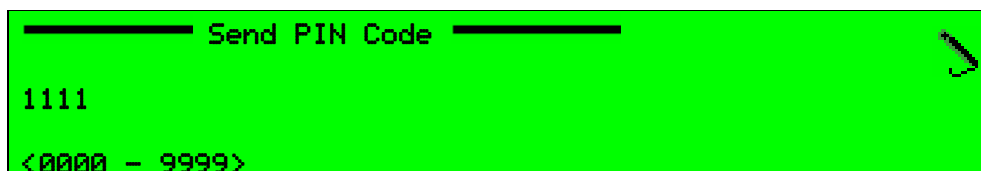


The available options are:

Menu (menu); ESC (escape); ARL (arrow left); ARR (arrow right); ARU (arrow up); ARD (arrow down); BS (cancel action), RS (default action), 0-9 digits

SEND PIN CODE

The Send PIN Code parameter allows setting and sending a PIN code to the CAM.



4.2.10.2. BISS Mode

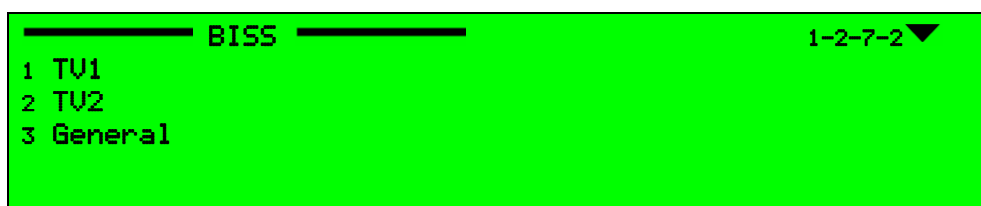
The IRD-2900 supports the following encryption modes:

- Even-Odd Encryption ('Scopus private' mode)
- BISS Mode 1
- BISS-E Clear Session Word
- BISS-E with Injected ID
- BISS-E with Buried ID

The previously mentioned BISS options operate according to the EBU-UER Tech 3292 manual.

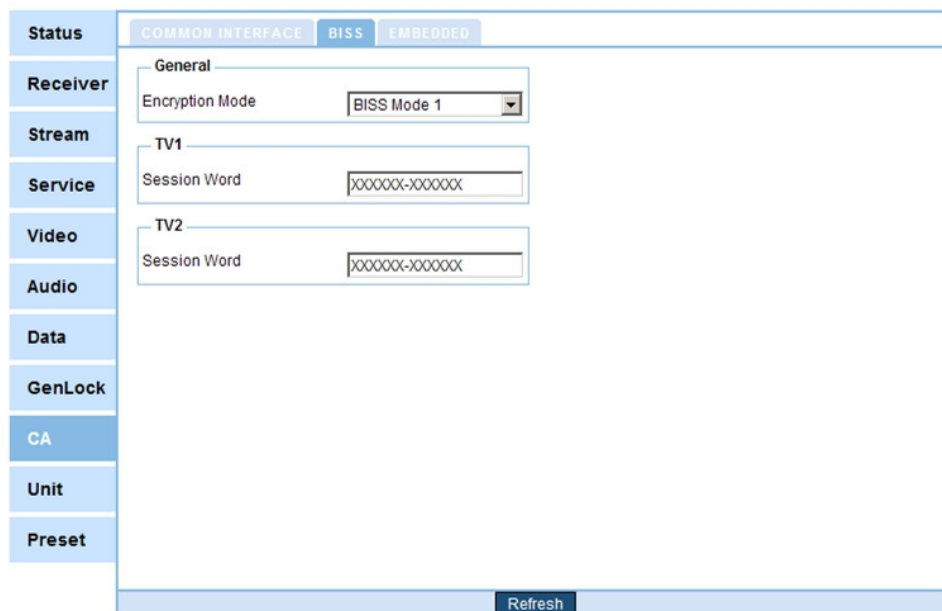
Even-Odd Encryption is a Scopus-developed encryption option that uses both an even and an odd key. This is another encryption option that is available for the operator.

The following screen displays the BISS menu navigation screen:



To access the BISS configuration screen through the web-interface go to **CA→BISS** tab.

Figure 4-40 shows the web-interface BISS screen:



The screenshot shows a web interface for BISS configuration. On the left is a vertical menu with items: Status, Receiver, Stream, Service, Video, Audio, Data, GenLock, CA, Unit, and Preset. The main area has three tabs: COMMON INTERFACE, BISS (selected), and EMBEDDED. Under the BISS tab, there is a 'General' section with an 'Encryption Mode' dropdown set to 'BISS Mode 1'. Below this are two sections, 'TV1' and 'TV2', each containing a 'Session Word' text field with a placeholder 'XXXXXX-XXXXXX'. A 'Refresh' button is located at the bottom right of the main content area.

Figure 4-40: Web Interface BISS Screen

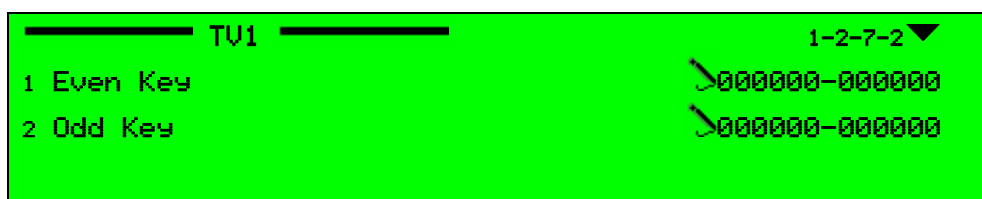
The **BISS** Menu parameters are:

- **TV(1..2)** - Enables the operator to set Encryption Keys values of the selected input
- **General** - Allows the operator to select between the different encryption modes

The following paragraphs detail the BISS parameters.

TV1

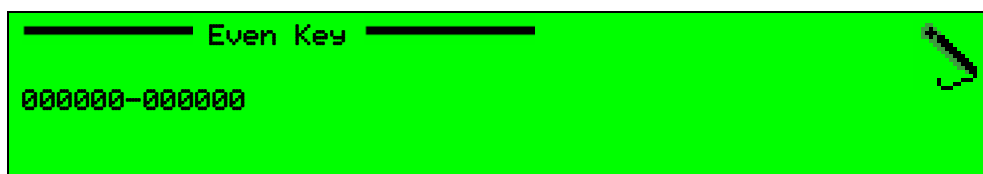
The following screen displays the TV1 Edit Menu Screen:



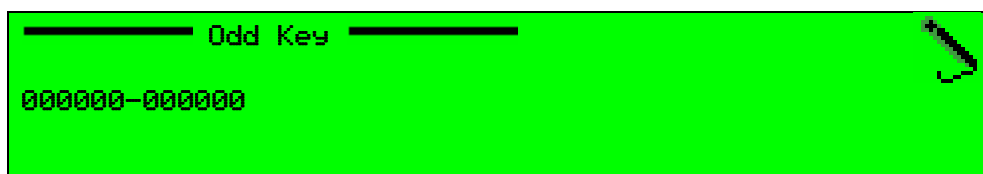
The screenshot shows a green background menu titled 'TV1' at the top left. At the top right is a status indicator '1-2-7-2' with a downward arrow. The menu contains two items: '1 Even Key' and '2 Odd Key'. To the right of each item is a key icon and a text field containing '000000-000000'.

The TV1 menu available parameters are:

- Even Key
- Allows operator to set the Even Key encryption value

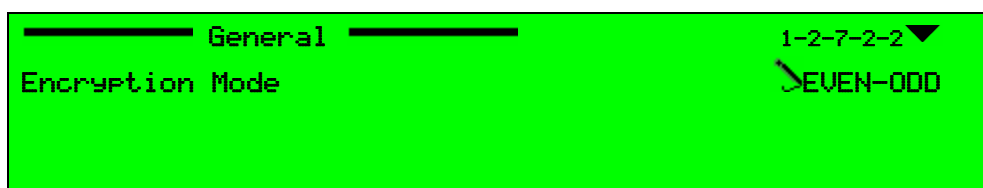


- odd Key
- Allows operator to set the Odd Key encryption value



GENERAL

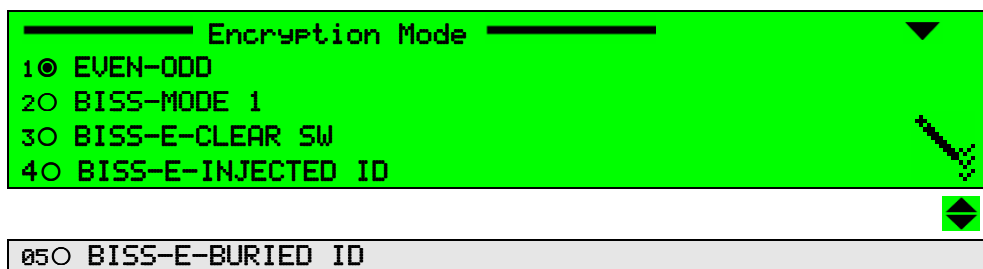
The following screen displays the General edit menu Screen:



The General Menu parameters are:

ENCRYPTION MODE

This screen allows the operator to select between the IRD's different encryption modes.



The available options are:

- EVEN-ODD
- BISS-MODE 1
- BISS-E-CLEAR SW
- BISS-E-INJECTED ID
- BISS-E-BURIED ID

4.2.10.3. Embedded Mode

This feature will be supported in the future software releases.

4.2.10.4. Automatic Cam Reset

Automatic Cam Reset mechanism handles scenarios where the CAM ceases to function correctly, resulting in no decryption of services and therefore video stop or freezing. Although frozen, the video output remains a valid signal.

The IRD-2900 heuristically detects the CAM error and reset the CAM module.

CAM ERROR DETECTION:

The IRD-2900 detects CAM errors by performing a video lock test that recognizes faulty video output signals which last longer then the configurable threshold time.

CAM RESET:

When an error is detected, the IRD automatically resets the CAM. Reset time may take 10 to 20 seconds.

CONFIGURING CAM TIMEOUT:

The CAM Timeout can be configured through CLI.

To configure the CAM Timeout through the CLI:

1. Go to **config/video/general/**
2. Set decoding timeout by using the following command:
<port(1/2)> < timeout (seconds), or 0 = disable>

The default CAM Timeout is 10 seconds.

To disable the Automatic CAM reset mechanism set the timeout value to 0.

NOTE

Scopus recommends setting the CAM Timeout value to five seconds or higher.

4.2.11. Unit Configuration Menu

The Unit Configuration menu allows setting general IRD-2900 parameters.

Figure 4-41 displays a tree diagram of the Unit configuration menu.

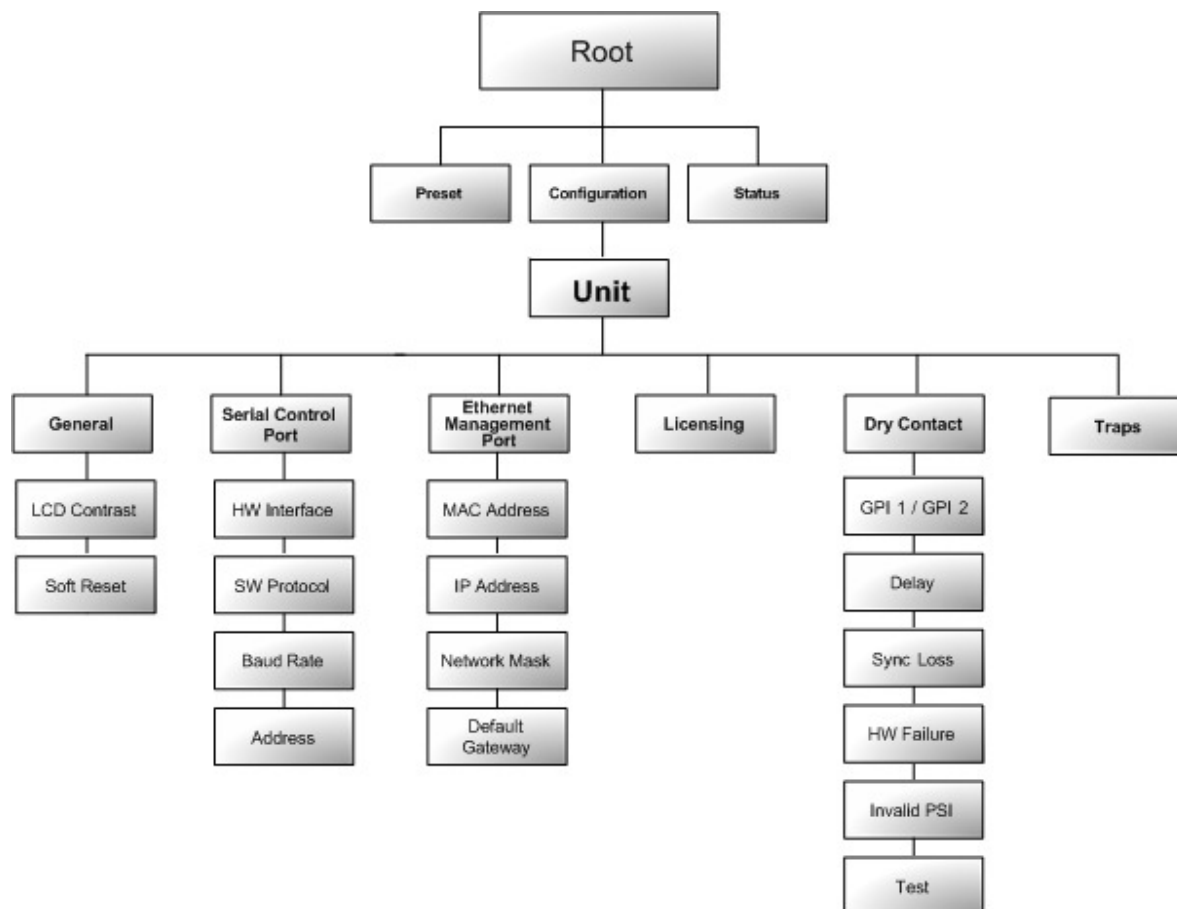


Figure 4-41: Unit Configuration Menu

To access the Unit configuration menu from the front panel, go to **Configuration→Unit**.

The following screen illustrates the Unit menu:



To access the Unit configuration screen from the web interface, click the **Unit** Tab. Figure 4-42 displays the web interface Unit screen.

Status	GENERAL	CHANGE PASSWORD	CONTROL PASSWORDS	SERIAL	ETHERNET	LICENSING	ALARMS	GPI	TRAPS																								
Receiver	<table border="1"> <thead> <tr> <th>IP Address</th> <th>Port</th> <th>Description</th> <th>Community String</th> <th></th> <th></th> </tr> </thead> <tbody> <tr> <td>10.8.0.111</td> <td>1234</td> <td>NMS4000</td> <td>public</td> <td>Delete</td> <td>Apply</td> </tr> <tr> <td>10.9.0.123</td> <td>2000</td> <td>nms</td> <td>public</td> <td>Delete</td> <td>Apply</td> </tr> <tr> <td></td> <td></td> <td></td> <td></td> <td>Add</td> <td></td> </tr> </tbody> </table>									IP Address	Port	Description	Community String			10.8.0.111	1234	NMS4000	public	Delete	Apply	10.9.0.123	2000	nms	public	Delete	Apply					Add	
IP Address	Port	Description	Community String																														
10.8.0.111	1234	NMS4000	public	Delete	Apply																												
10.9.0.123	2000	nms	public	Delete	Apply																												
				Add																													
Stream																																	
Service																																	
Video																																	
Audio																																	
Data																																	
GenLock																																	
CA																																	
Unit	<table border="1"> <tbody> <tr> <td>Select Trap</td> <td>10.8.0.111:1234</td> </tr> <tr> <td>Mask For Trap</td> <td>10.8.0.111:1234</td> </tr> <tr> <td>GoingToReboot</td> <td>Off</td> </tr> <tr> <td>AlarmOn</td> <td>Off</td> </tr> <tr> <td>AlarmOff</td> <td>Off</td> </tr> <tr> <td>SettingsChanged</td> <td>Off</td> </tr> <tr> <td>ModuleInserted</td> <td>Off</td> </tr> <tr> <td>ModuleRemoved</td> <td>Off</td> </tr> </tbody> </table>									Select Trap	10.8.0.111:1234	Mask For Trap	10.8.0.111:1234	GoingToReboot	Off	AlarmOn	Off	AlarmOff	Off	SettingsChanged	Off	ModuleInserted	Off	ModuleRemoved	Off								
Select Trap	10.8.0.111:1234																																
Mask For Trap	10.8.0.111:1234																																
GoingToReboot	Off																																
AlarmOn	Off																																
AlarmOff	Off																																
SettingsChanged	Off																																
ModuleInserted	Off																																
ModuleRemoved	Off																																
Preset																																	
Refresh																																	

Figure 4-42: Web Interface - Unit Screen

The Unit configuration includes the following sub-menus:

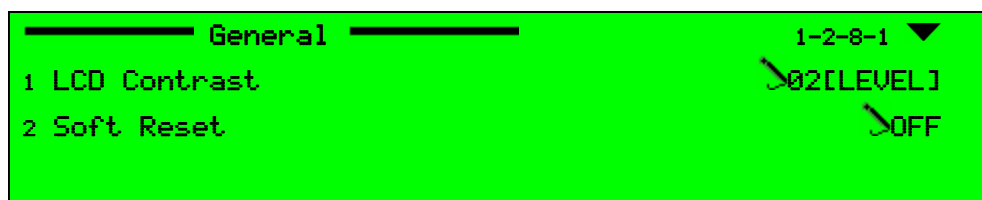
- **General** – For details see Section 4.2.11.1.
- **Change Password** – For details see Section 4.2.11.2.
- **Control Passwords** - For details see Section 4.2.11.3.
- **Serial Control Port** – For details see Section 4.2.11.4.
- **Ethernet Management Port** - For details see Section 4.2.11.5.

- **Licensing** - For details see Section 4.2.11.6.
- **Dry Contact** (Alarms and GPI) – For details see Section 4.2.11.7.
- **Trap Menu** - For details see Section 4.2.11.8.

4.2.11.1. General Configuration Menu

The General Menu adjusts the LCD contrast level and enables soft reset of the device. To access the General Menu in the front panel control interface go to **Configuration → Unit → General**.

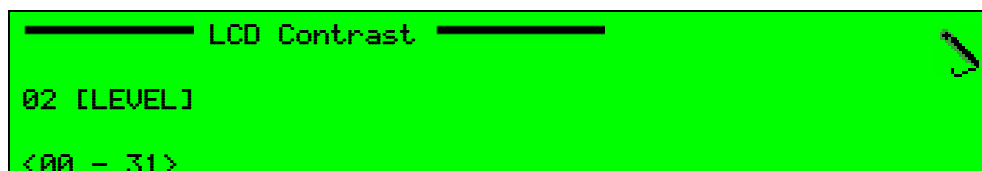
The following screen displays the General menu:



The following paragraphs describe the General menu parameters.

LCD CONTRAST

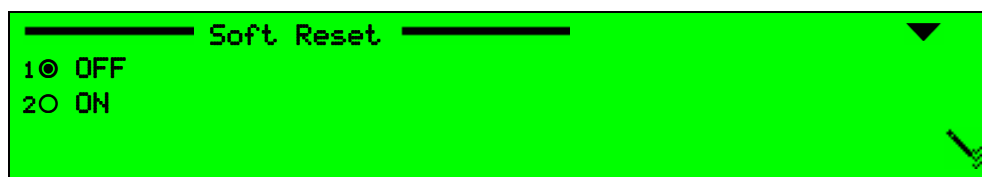
The LCD Contrast option sets the IRD-2900 LCD contrast.



Valid range is between 0 and 31, where 0 is brightest and 31 is darkest.

SOFT RESET

This parameter is used for performing a warm reset on the IRD-2900.



The available options are:

- **OFF**
- **ON** –Performs soft reset

Figure 4-43 shows the corresponding Unit General Web management screen.



Figure 4-43: Soft Reset Web-Interface Screen

4.2.11.2. Change Password

The Change Password menu screen allows changing the access password to the Web-Management and FTP interfaces.

To access the Change Password screen, go to **Unit→Change Password**.

Figure 4-44 displays the Change Password menu screen.

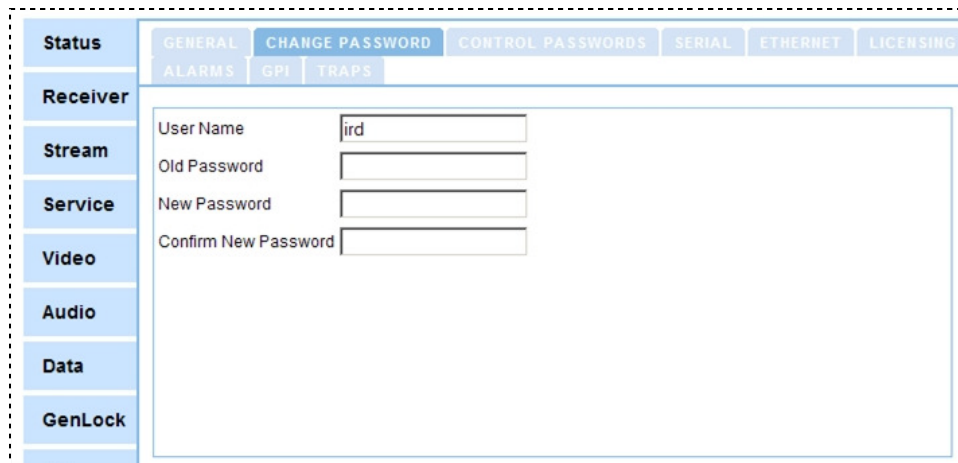


Figure 4-44: Change Password Screen

To change the password:

1. Fill the following fields:

- **User Name** – Enter the user name. The current User Name is displayed by defaults.
- **Current Password** – Enter the current password.
- **New Password** – Enter a new password.
- **Confirm New Password** – Re-enter the new password.

2. Click **Submit** to apply.

NOTE

This feature is available through the web-interface only.

4.2.11.3. Control Passwords

The Control Passwords screen allows enabling and disabling the WEB and FTP passwords. To access the Control Password screen, go to:

Unit→Control Passwords

Figure 4-45 displays the Control Passwords menu screen.



Figure 4-45: Control Password Screen

The Control Passwords screen includes two fields:

- **FTP Password** – Allows enabling or disabling the FTP password.
- **WEB Password** – Allows enabling or disabling the WEB password.

NOTE

This feature is available through the web-interface only.

4.2.11.4. Serial Control Port Configuration

The Serial Control Port menu allows the user setting the serial control port parameters.

To access the Serial Control Port Menu in the front panel control interface go to **Configuration→Unit→Serial Control Port**.

The following screen displays the Serial Control Port menu:



Figure 4-46 shows the corresponding Unit Serial web management screen.

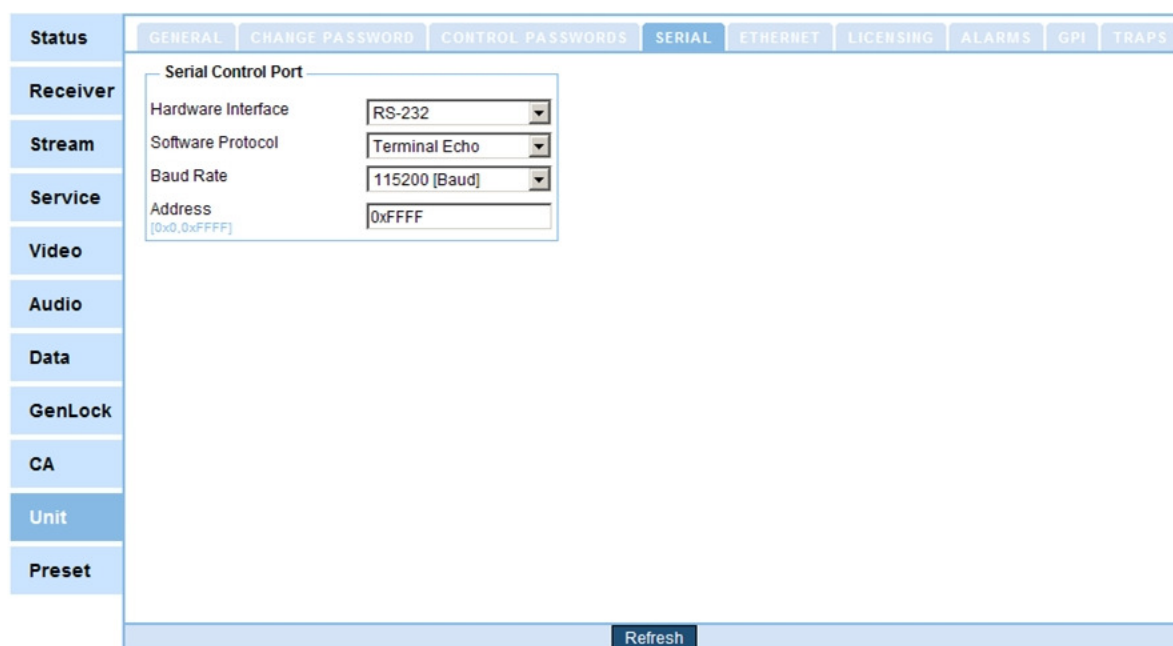
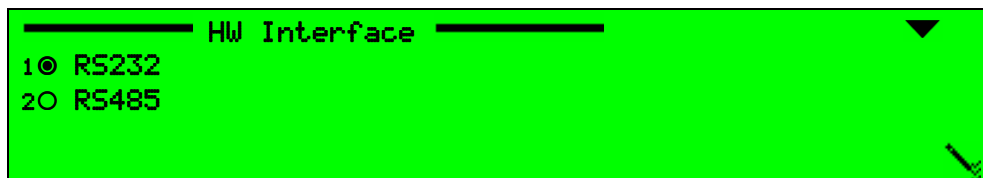


Figure 4-46: Unit Serial Screen

The following paragraphs detail the Unit Serial Control Port configuration options.

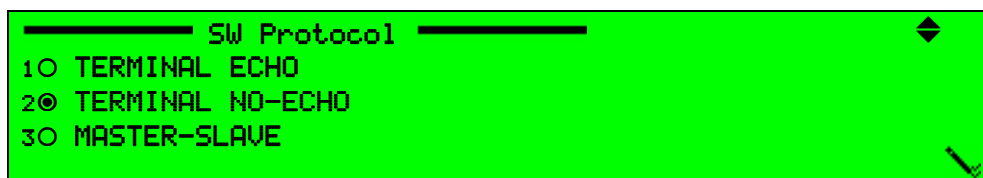
HW INTERFACE

A screenshot of a terminal window titled "HW Interface". It shows two options: "1⓪ RS232" and "2⓪ RS485". The second option is selected, indicated by a small circle next to it. The background is black with green text. There is a small cursor icon in the bottom right corner.

The available options are:

- **RS-232**
- **RS-485**

SW PROTOCOL

A screenshot of a terminal window titled "SW Protocol". It shows three options: "1⓪ TERMINAL ECHO", "2⓪ TERMINAL NO-ECHO", and "3⓪ MASTER-SLAVE". The second option is selected, indicated by a small circle next to it. The background is black with green text. There is a small cursor icon in the bottom right corner.

The available options are:

- **Terminal Echo**
- **Terminal No-Echo**
- **Master-Slave**

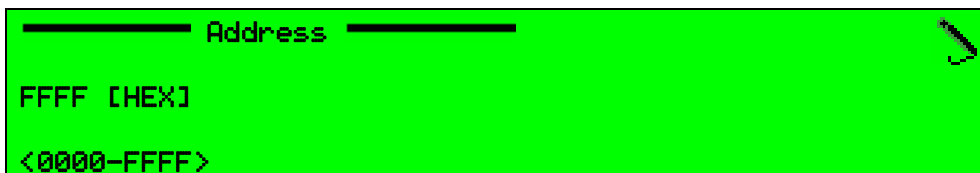
BAUD RATE

A screenshot of a terminal window titled "Baud Rate". It shows four options: "1⓪ 4800 [Baud]", "2⓪ 9600 [Baud]", "3⓪ 19200 [Baud]", and "4⓪ 38400 [Baud]". The third option is selected, indicated by a small circle next to it. The background is black with green text. There is a small cursor icon in the bottom right corner. Below this window, there is a small green diamond icon, and then another window showing two more options: "5⓪ 57600 [Baud]" and "6⓪ 115200 [Baud]".

The available options are:

4800, 9600, 19200, 38400, 57600, 115200 Baud

ADDRESS



Valid range is between 0 and FFFF (Hexadecimal).

4.2.11.5. Ethernet Management Port

The Ethernet menu allows setting the Ethernet management port parameters.

To access the Ethernet Management Port menu in the front panel control interface go to **Configuration → Unit → Ethernet**.

The following figure illustrates the Ethernet menu:

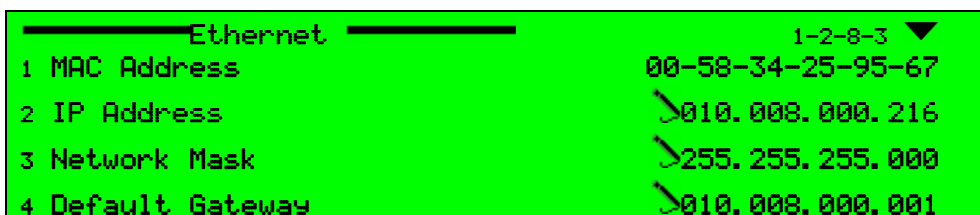


Figure 4-47 shows the corresponding Unit Ethernet web management screen.

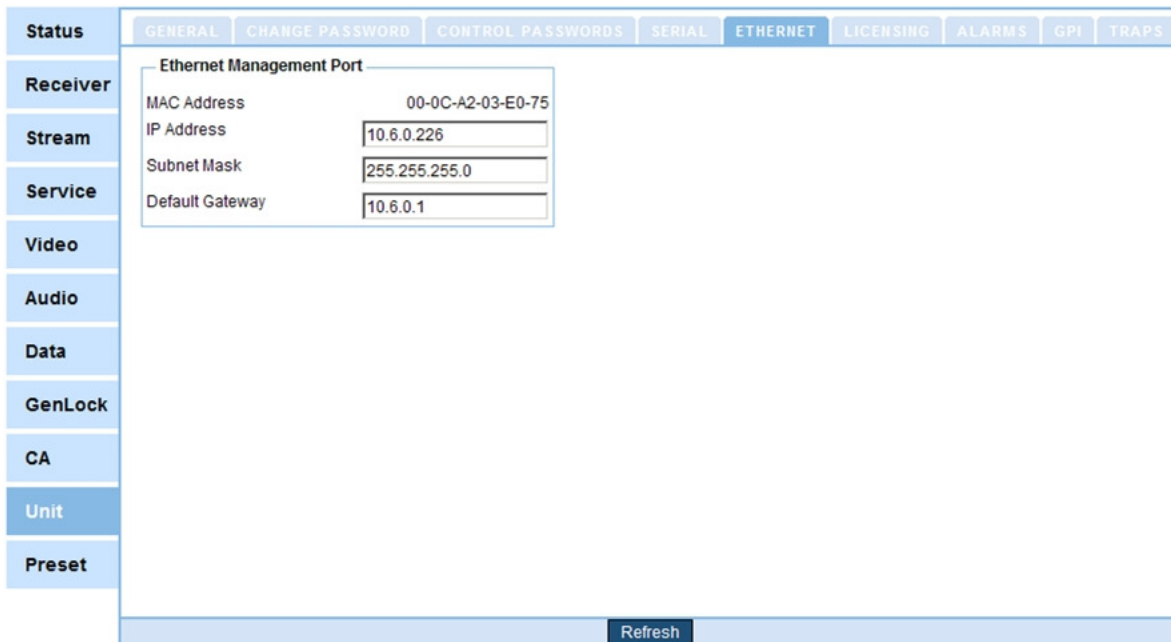


Figure 4-47: Unit Ethernet Screen

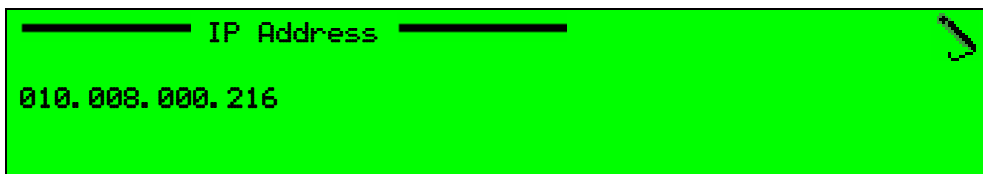
The following paragraphs describe the Ethernet Management Port Configuration parameters.

MAC ADDRESS

The MAC Address parameter displays the MAC address of the IRD-2900 management.

IP ADDRESS

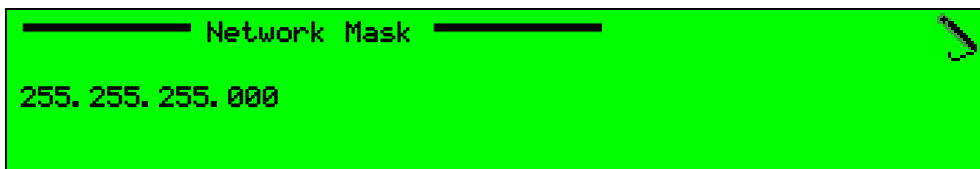
The IP Address parameter displays and allows setting the currently active IP Address of the management port



The value in each field must be a number between 0 and 255.

NETWORK MASK

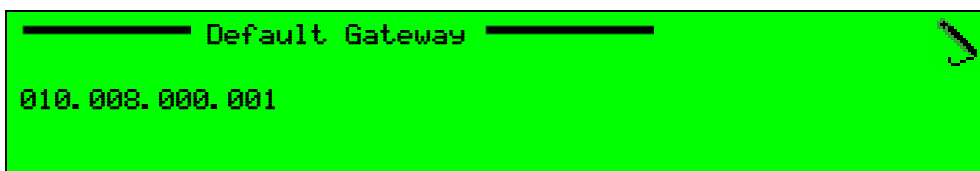
The Network Mask parameter allows setting the network sub-mask.



The value in each field must be a number between 0 and 255.

DEFAULT GATEWAY

The Default Gateway parameter allows setting the network default gateway address. This is the address of a local IP router on the same network as the IRD-2900, which is used to forward traffic beyond the local network.



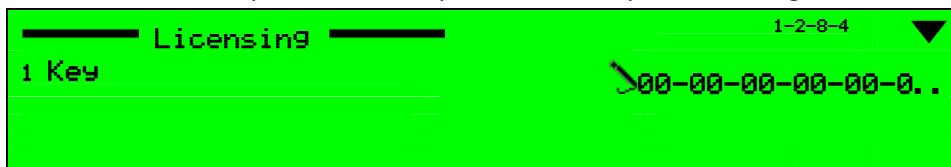
The value in each field must be a whole number between **0** and **255**.

4.2.11.6. Licensing Menu

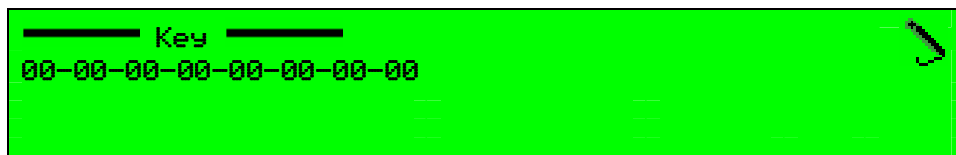
The Licensing Menu screen allows the user to enable software-licensed features by entering a serial number (key). The serial key can be entered thru the front panel or the web-management. The serial key composed of 16 characters issued by Scopus video networks.

ENTERING A SERIAL KEY THRU THE FRONT PANEL

To enter a serial key thru the front panel access Key the Licensing menu screen.



Use the **[UP]/[DOWN]** keys to change a characters value. User the **[LEFT]/[RIGHT]** keys to move to a different character.



A licensing list is available at status menu screen. For details see section 4.3.9.4

ENTERING A SERIAL KEY THRU THE WEB-MANAGEMENT

To enter a serial key thru the web-management access the Licensing tab at the Unit menu screen. Fill in the appropriate field with the serial key.

Figure 4-48 displays the corresponding Licensing Web management screen.

Status	GENERAL	CHANGE PASSWORD	CONTROL PASSWORDS	SERIAL	ETHERNET	LICENSING	ALARMS	GPI	TRAPS																								
Receiver	Key 00-00-00-00-00-00-00																																
Stream	Permissions <table border="1"> <tbody> <tr><td>Dolby Audio1 Decoding</td><td>Yes</td></tr> <tr><td>Dolby Audio2 Decoding</td><td>Yes</td></tr> <tr><td>Dolby Audio3 Decoding</td><td>Yes</td></tr> <tr><td>Dolby Audio4 Decoding</td><td>Yes</td></tr> <tr><td>Linear Audio1 Decoding</td><td>Yes</td></tr> <tr><td>Linear Audio2 Decoding</td><td>Yes</td></tr> <tr><td>Linear Audio3 Decoding</td><td>Yes</td></tr> <tr><td>Linear Audio4 Decoding</td><td>Yes</td></tr> </tbody> </table>									Dolby Audio1 Decoding	Yes	Dolby Audio2 Decoding	Yes	Dolby Audio3 Decoding	Yes	Dolby Audio4 Decoding	Yes	Linear Audio1 Decoding	Yes	Linear Audio2 Decoding	Yes	Linear Audio3 Decoding	Yes	Linear Audio4 Decoding	Yes								
Dolby Audio1 Decoding	Yes																																
Dolby Audio2 Decoding	Yes																																
Dolby Audio3 Decoding	Yes																																
Dolby Audio4 Decoding	Yes																																
Linear Audio1 Decoding	Yes																																
Linear Audio2 Decoding	Yes																																
Linear Audio3 Decoding	Yes																																
Linear Audio4 Decoding	Yes																																
Service	<table border="1"> <tbody> <tr><td>ASI Input</td><td>Yes</td></tr> <tr><td>ASI Output</td><td>Yes</td></tr> <tr><td>MPEGoIP/MPE Output</td><td>Yes</td></tr> <tr><td>GenLock</td><td>Yes</td></tr> <tr><td>Audio3</td><td>Yes</td></tr> <tr><td>Audio4</td><td>Yes</td></tr> <tr><td>HSD (RS422)</td><td>No</td></tr> <tr><td>LSD (RS232)</td><td>Yes</td></tr> <tr><td>IP-FE ProMPEG FEC</td><td>No</td></tr> <tr><td>IP-FE Second Input</td><td>No</td></tr> <tr><td>PID Filtering</td><td>Yes</td></tr> <tr><td>Advance CI</td><td>Yes</td></tr> </tbody> </table>									ASI Input	Yes	ASI Output	Yes	MPEGoIP/MPE Output	Yes	GenLock	Yes	Audio3	Yes	Audio4	Yes	HSD (RS422)	No	LSD (RS232)	Yes	IP-FE ProMPEG FEC	No	IP-FE Second Input	No	PID Filtering	Yes	Advance CI	Yes
ASI Input	Yes																																
ASI Output	Yes																																
MPEGoIP/MPE Output	Yes																																
GenLock	Yes																																
Audio3	Yes																																
Audio4	Yes																																
HSD (RS422)	No																																
LSD (RS232)	Yes																																
IP-FE ProMPEG FEC	No																																
IP-FE Second Input	No																																
PID Filtering	Yes																																
Advance CI	Yes																																
Video																																	
Audio																																	
Data																																	
GenLock																																	
CA																																	
Unit																																	
Preset																																	
Refresh																																	

Figure 4-48: IRD-2900 Licensing Screen

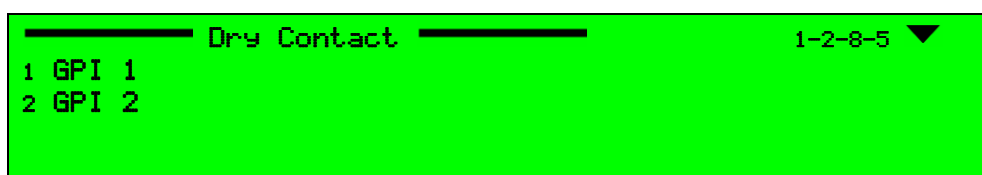
4.2.11.7. Dry Contact Menu

The Dry Contact menu screen allows configuring the GPI 1 or GPI 2. The GPI (General Purpose Interface) is a dry contact relay, used by the IRD-2900 for displaying warnings that appear in the device.

To access the Dry Contact through the front panel, go to:

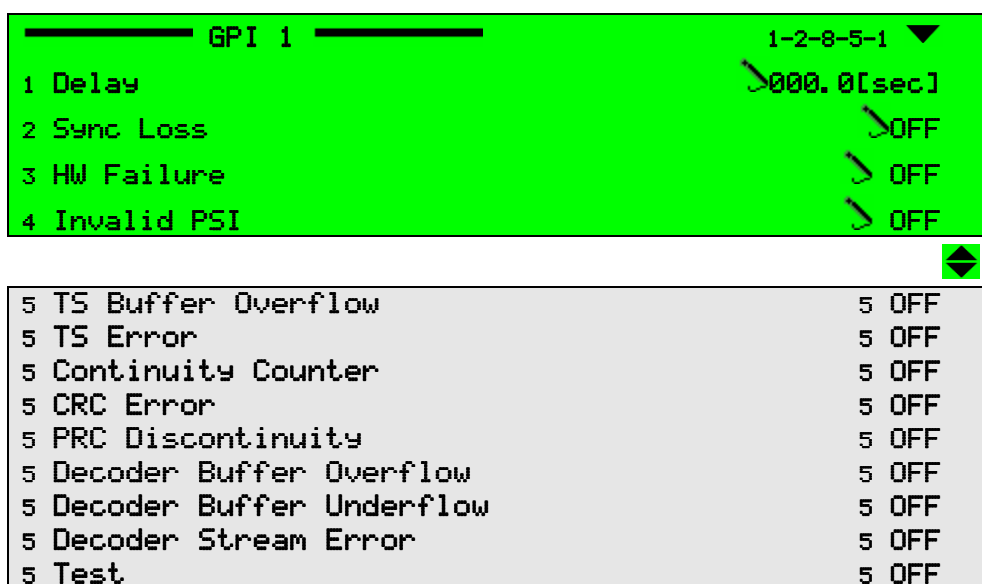
Root → Configuration → Unit → Dry Contact.

The following figure illustrates the Dry Contact menu:



The GPI 1 and GPI 2 configuration menus are identical.

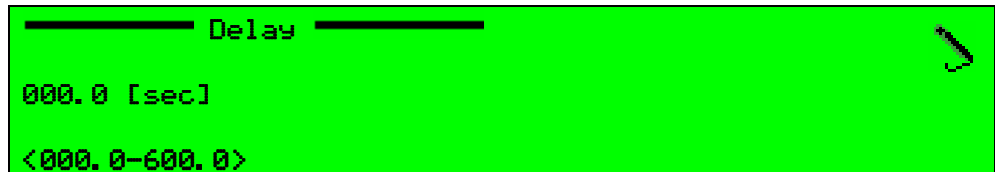
The following is the GPI 1 Edit Menu screen:



The following details the Dry Contact warnings:

DELAY

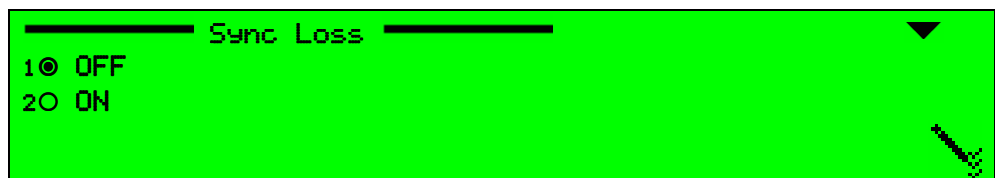
The Delay screen allows setting a delay time for the GPI warnings.



The Delay time ranges from 0 to 600 seconds.

SYNC LOSS

The Sync Loss menu defines whether or not a Sync Loss warning will cause a GPI warning indication.

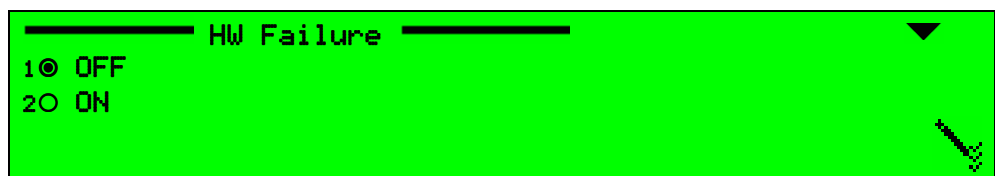


The available options are:

- **OFF** – Sync Loss GPI warning indication is turned off
- **ON** – Sync Loss GPI warning indication is turned on

HW FAILURE

The HW Failure menu defines whether or not a Hardware Failure warning will cause a GPI warning indication.

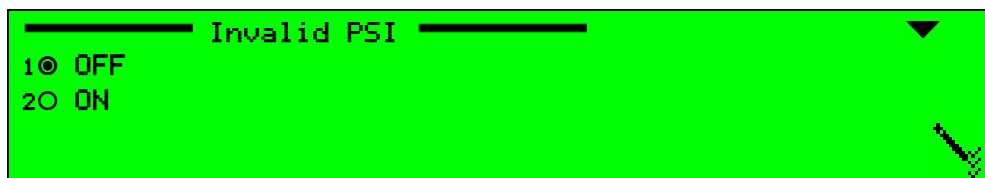


The available options are:

- **OFF** – Hardware Failure GPI warning indication is turned off
- **ON** – Hardware Failure GPI warning indication is turned on

INVALID PSI

The Invalid PSI menu defines whether or not an Invalid PSI warning will cause a GPI warning indication.

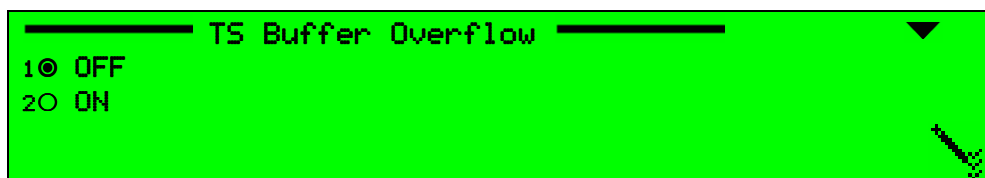


The available options are:

- **OFF** - Invalid PSI GPI warning indication is turned off
- **ON** - Invalid PSI GPI warning indication is turned on

TS BUFFER OVERFLOW

The **TS Buffer Overflow** menu defines whether or not to activate a GPI warning indication in case of the TS counter reaches the threshold for transport stream overflow.

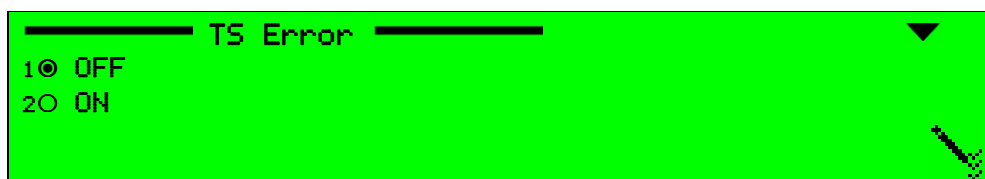


The available options are:

- **OFF** - TS Buffer Overflow GPI warning indication is turned off
- **ON** - TS Buffer Overflow GPI warning indication is turned on

TS ERROR

The **TS Error** menu defines whether or not to activate a GPI warning indication in case of the TS counter reaches the threshold for transport stream error.

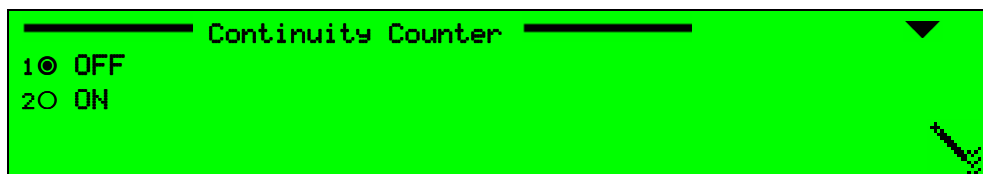


The available options are:

- **OFF** - TS Error GPI warning indication is turned off
- **ON** - TS Error PSI GPI warning indication is turned on

CONTINUITY COUNTER

The Continuity Counter menu defines whether or not to activate a GPI warning indication in case of the TS counter reaches the threshold for transport stream continuity error.

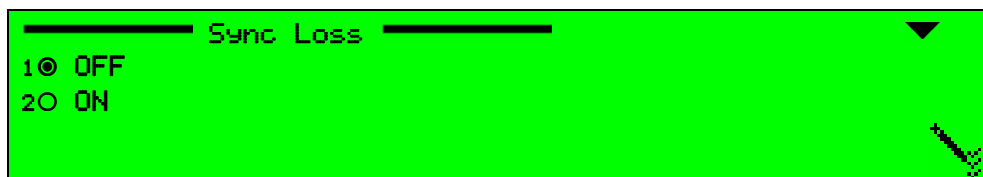


The available options are:

- **OFF** - Continuity Counter PSI GPI warning indication is turned off
- **ON** - Continuity Counter PSI GPI warning indication is turned on

CRC ERROR

The CRC Error menu defines whether or not to activate a GPI warning indication in case of the TS counter reaches the threshold for CRC error.

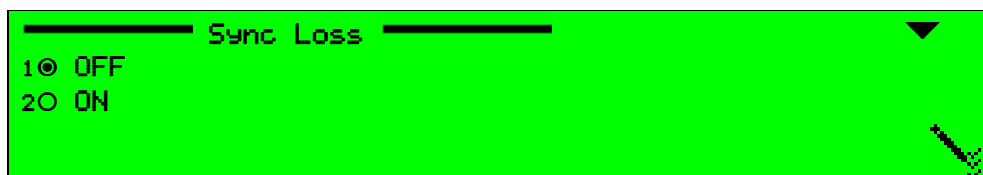


The available options are:

- **OFF** - CRC Error GPI warning indication is turned off
- **ON** - CRC Error GPI warning indication is turned on

PRC DISCONTINUITY

The PRC Discontinuity menu defines whether or not to activate a GPI warning indication in case of the TS counter reaches the threshold for PRC Discontinuity error.

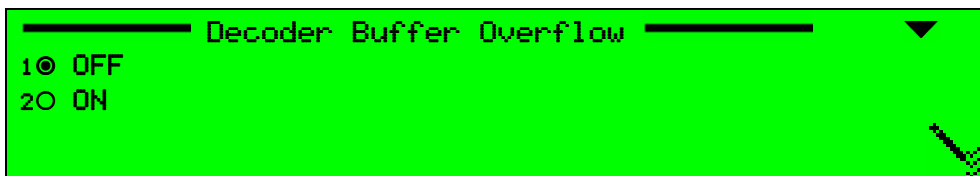


The available options are:

- **OFF** - PRC Discontinuity GPI warning indication is turned off
- **ON** - PRC Discontinuity GPI warning indication is turned on

DECODER BUFFER OVERFLOW

The Decoder Buffer Overflow menu defines whether or not to activate a GPI warning indication in case of the unit counter reaches the threshold for decoder overflow.

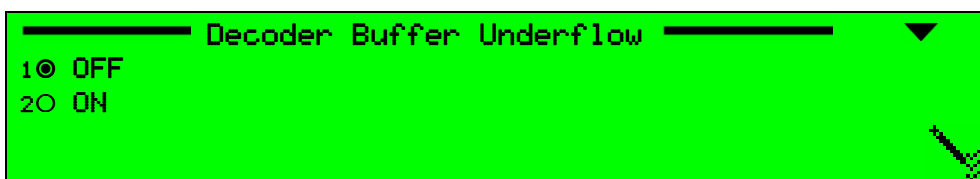


The available options are:

- **OFF** - Decoder Buffer Overflow GPI warning indication is turned off
- **ON** - Decoder Buffer Overflow GPI warning indication is turned on

DECODER BUFFER UNDERFLOW

The Decoder Buffer Underflow menu defines whether or not to activate a GPI warning indication in case of the unit counter reaches the threshold for decoder underflow.

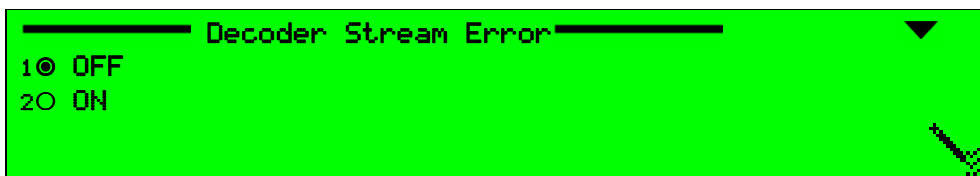


The available options are:

- **OFF** - Decoder Buffer Underflow GPI warning indication is turned off
- **ON** - Decoder Buffer Underflow GPI warning indication is turned on

DECODER STREAM ERROR

The Decoder Stream Error menu defines whether or not to activate a GPI warning indication in case of the unit counter reaches the threshold for decoder stream error.



The available options are:

- **OFF** - Decoder Stream Error GPI warning indication is turned off
- **ON** - Decoder Stream Error GPI warning indication is turned on

TEST

The **Test** menu allows operator to manually enable or disable the relevant GPI.



The available options are:

- **OFF** - Disables this GPI.
- **ON** - Enables this GPI.

DRY CONTACT THROUGH THE WEB-INTERFACE

The dry contact in the web interface is divided to two different menus:

- **Alarms** – Allows enabling and disabling the alarms.
- **GPI** – Allows setting the GPI delay time and tests.

To access the Dry Contact (Alarms) configurations through the web-interface, go to: **Unit→Alarms**. Figure 4-49 displays the Alarms web-interface screen:

Status Receiver Stream Service Video Audio Data GenLock CA Unit Preset	GENERAL CHANGE PASSWORD CONTROL PASSWORDS SERIAL ETHERNET LICENSING ALARMS GPI TRAPS																																																																				
	<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Alarms</th> <th style="text-align: center; border-bottom: 1px solid black;">GPI1</th> <th style="text-align: center; border-bottom: 1px solid black;">GPI2</th> <th style="text-align: center; border-bottom: 1px solid black;">Alarm Mask</th> </tr> </thead> <tbody> <tr><td>Sync Loss</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>HW Failure</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>Invalid PSI</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>TS Buffer Overflow</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>TS Error</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>Continuity Counter</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>CRC Error</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>PCR Discontinuity</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>Decoder Buffer Overflow</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>Decoder Buffer Underflow</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>Decoder Stream Error</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>CBR Bitrate Too Low</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">On</td></tr> <tr><td>Satellite BER Too High</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td></tr> <tr><td>Satellite Eb/N0 Too High</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td></tr> <tr><td>Decoding stopped</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td><td style="text-align: center;">Off</td></tr> </tbody> </table> Refresh						Alarms	GPI1	GPI2	Alarm Mask	Sync Loss	Off	Off	On	HW Failure	Off	Off	On	Invalid PSI	Off	Off	On	TS Buffer Overflow	Off	Off	On	TS Error	Off	Off	On	Continuity Counter	Off	Off	On	CRC Error	Off	Off	On	PCR Discontinuity	Off	Off	On	Decoder Buffer Overflow	Off	Off	On	Decoder Buffer Underflow	Off	Off	On	Decoder Stream Error	Off	Off	On	CBR Bitrate Too Low	Off	Off	On	Satellite BER Too High	Off	Off	Off	Satellite Eb/N0 Too High	Off	Off	Off	Decoding stopped	Off	Off
Alarms	GPI1	GPI2	Alarm Mask																																																																		
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Invalid PSI	Off	Off	On																																																																		
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TS Error	Off	Off	On																																																																		
Continuity Counter	Off	Off	On																																																																		
CRC Error	Off	Off	On																																																																		
PCR Discontinuity	Off	Off	On																																																																		
Decoder Buffer Overflow	Off	Off	On																																																																		
Decoder Buffer Underflow	Off	Off	On																																																																		
Decoder Stream Error	Off	Off	On																																																																		
CBR Bitrate Too Low	Off	Off	On																																																																		
Satellite BER Too High	Off	Off	Off																																																																		
Satellite Eb/N0 Too High	Off	Off	Off																																																																		
Decoding stopped	Off	Off	Off																																																																		

Figure 4-49: Alarms Web-Interface Screen

GPI1, GPI2, and the SNMP alarm can be enable or disable for every alarm. However once the Alarm Mask is disable then also GPI1 and GPI2 are disabled.

To access the Dry Contact (General) configurations through the web-interface, go to: **Unit**→**GPI**. Figure 4-55 displays the GPI web-interface screen:

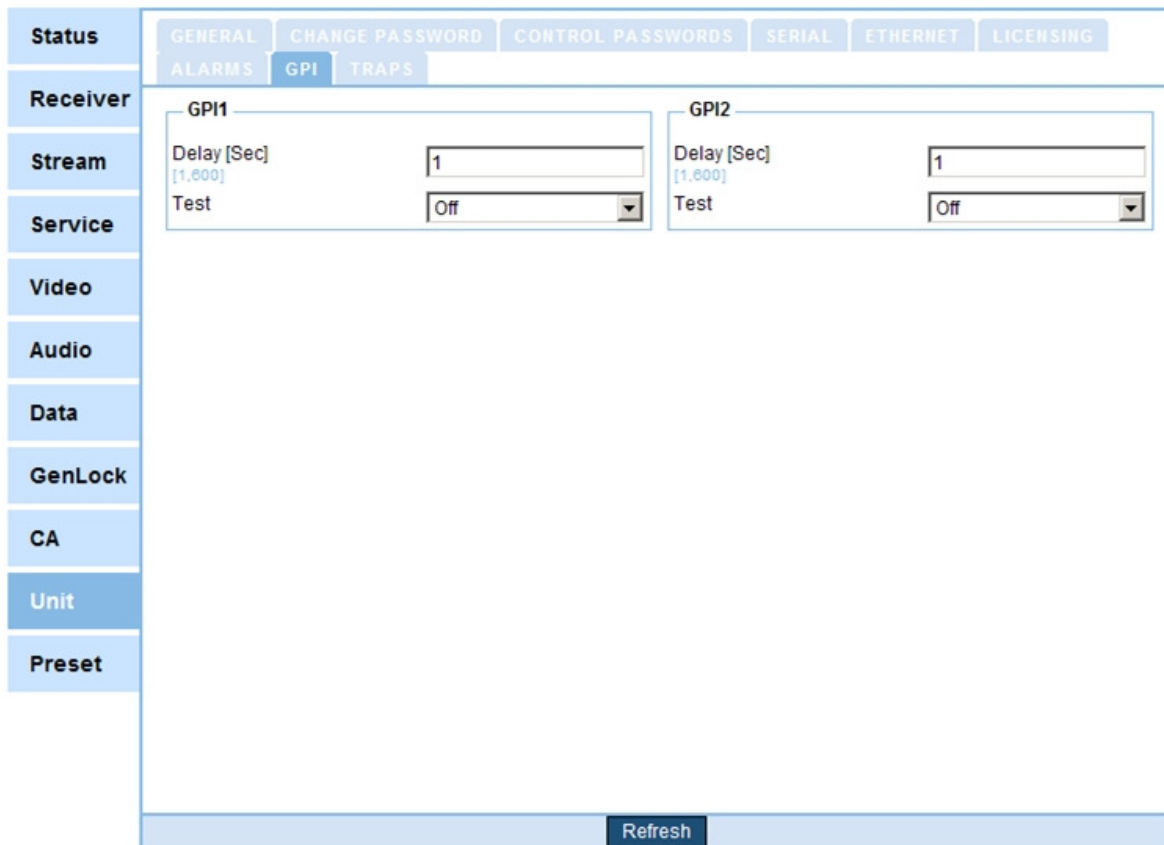


Figure 4-50: GPI Web-Interface Screen

4.2.11.8. Traps Menu

Traps are notifications sent by the device without user intervention. The Traps Menu allows setting up to 5 trap destinations.

NOTE

*Trap configuration is available through the web-interface and CLI.
This manual details the web-interface trap configurations only.*

To access the Traps menu through the web-interface, go to: **Unit**→**Traps**.

Figure 4-51 shows the web-interface Traps screen:

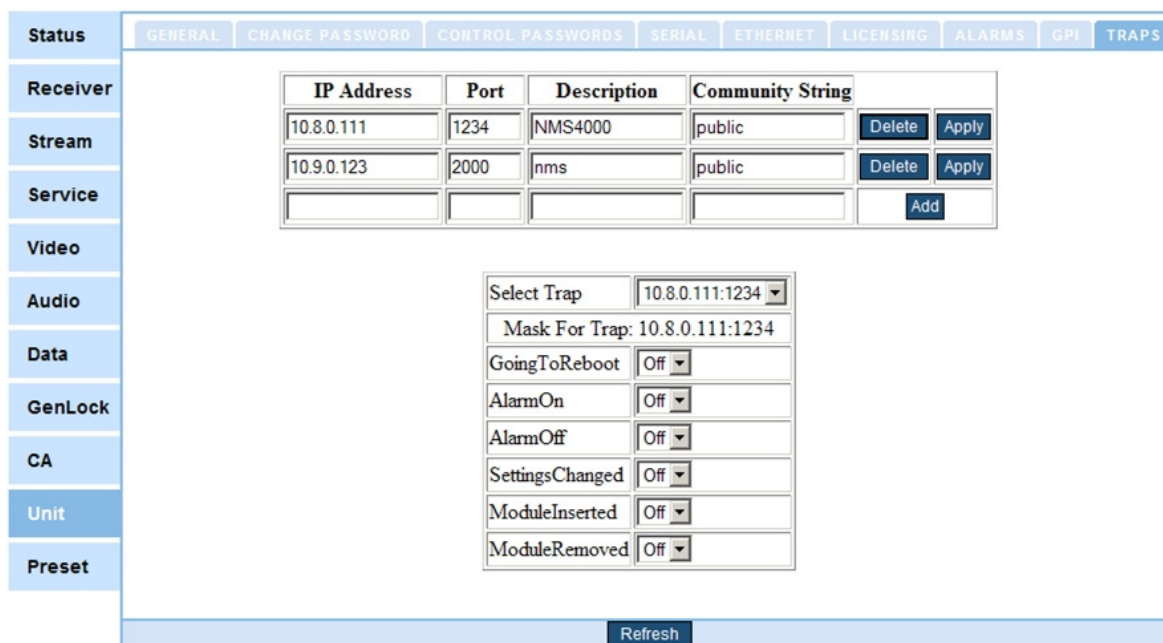


Figure 4-51: Web Interface – Traps Screen

The Traps screen displays two tables:

- **Trap Destination Table**, which includes the following columns:
 - **IP Address** – Sets the IP address of the trap destination.
 - **Port** – Sets the UDP port number of the tarp destination.
 - **Description** – Optional parameter. Displays a string describing the trap destination.
 - **Community String** – Optional parameter. Displays a string describing the community of the trap. This string is included in the trap message.
- **Traps Masking Table** –The Traps Masking Table allows setting preferences for each trap shown in the trap destination table. Traps Masking Table includes the following parameters:
 - **Select Traps** - allows selecting one of the shown in the trap destination table.
 - **Mask For Trap** – Shows the alarm's IP address and it's port.
 - **Configuration Parameters:** Allows enabling or disabling each of the following MIB parameters: *GoingToReboot*, *AlarmOn*, *AlarmOff*,

SettingChangess, ModuleInserted, and ModuleRemoved. For details refer to the IRD-2900 MIB User Guidelines.

The following describe managing the Trap Destination:

To add a new Trap Destination:

1. Access the Traps tab. From the web-interface, go to: **Unit→Traps**.
2. In the Trap Table, type valid values for the IP Address, Port, Description (optional) and Community String (optional) parameters. For example see Figure 4-52.

IP Address	Port	Description	Community String	
10.6.0.119	162	Trap_01	Public	Add

Figure 4-52: Add New Trap Destination

3. Click **ADD**.

To drop a Trap Destination:

1. Access the Traps tab. From the web-interface, go to: **Unit→Traps**.
2. Click the **Delete** button located right to the trap entry. For example see Figure 4-53.

IP Address	Port	Description	Community String	
10.6.0.119	162	Trap01	Public	Delete Apply
				Add

Figure 4-53: Delete Trap Destination

To modify a Trap Destination:

1. Access the Traps tab. From the web-interface, go to: **Unit→Traps**.
2. Change the Trap entry parameters.
2. Click the **Apply** button located right to the trap entry. For example see Figure 4-54.

IP Address	Port	Description	Community String	
10.6.0.119	162	Trap01	Public	Delete Apply
				Add

Figure 4-54: Modify Trap Destination

4.3. STATUS

The IRD-2900 allows the user to monitor different parameters statuses thru the front panel or the web-management.

To access the IRD-2900 Status menu, select Status from the Root menu (navigate vertically by using the **[Up]/[Down]** arrow keys and confirm by pressing **[Enter]**).



The IRD-2900 Status menu is displayed in the following menu navigation screen (eight options):

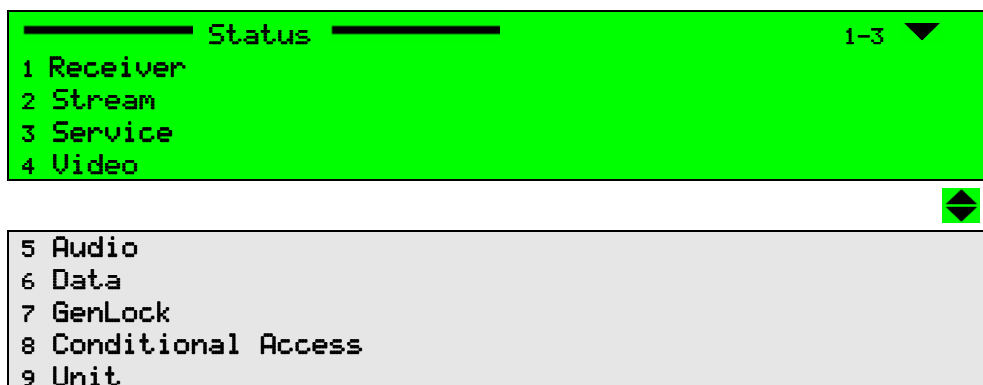


Figure 4-55 displays the corresponding Web management screen.

Status	DVB-S2-Di										
Receiver	Signal Quality [%]	C/N [dB]	Eb/N0 [dB]	Link Margin [dB]	BER	Frequency Tune [GHz]	Frequency Offset [KHz]	FEC Rate	Spectral Inversion		
	41	+15.50	??.??	+04.5	0.0e+0	0.950000	+00020	Automatic	Normal		
Stream	Stream Information										
	Transport Stream Rate [Mbps]	Transport Stream ID			Original Network ID	Network Name	Stream Date and Time				
Service	Stream Quality										
	Sync 0x47 Loss	Continuity Counter	T.S. FIFO Overflow		T.S. Error Indicator		ASI Input	RS422 Input			
Video	1	1887	1		8730		188 Detected	Not Detected			
	Service Info										
Audio	TV	Service Name	Service Id	Service Type			Service Mode	Active in PAT			
	1	MPEG2	1	Digital television service			FTA	Yes			
Data	Video										
	Video	Format [Lines]	Frame Rate [Hz]	Chroma	Resolution	Aspect Ratio	Field Sequence	Coding Type	Bit rate [Bps]	VBV [Bits]	Errors
GenLock	1	625	25	4:2:0	720*576	4:3	NORMAL	IBP	05000000	17635	
	VBI										
CA	VBI	Video Fullness [%]	E.S. Fullness [%]		E.S. Top Num Lines [line]			E.S. Bottom Num Lines [line]			
	1	32	0		0			0			
Unit	Audio										
	Audio	ID	Layer	Bit Rate		Sample Rate		Mode	Decoding Errors		
Preset	1	MPEG1	LAYER 2	192000		48		STEREO	2727		
	Audio										Decoding Errors
	2	No Audio									0
	Audio										Decoding Errors
	3	No Audio									0
	Audio										Decoding Errors
	4	No Audio									0
	Audio										0
Unit Identity											
Configuration ID			Serial Number		Decoder Board			Front-End Board			
IRD-2981			00201307		SPN-29 REV-E			DVB-S2-DI REV-A			
Unit Versions											
Boot Application			Main Application		Main Application Date and Time						
01.00			1.79.3		Oct 7 2007 12:37:38						
Unit Monitoring											
Temperature [°C]					Management Link Status						
+36					Up/100Base-T/Full						
IP Data Port											
Link Status											
Down											
Refresh											

Figure 4-55: IRD-2900 Status Screen

4.3.1. Receiver Status

The Receiver Status screen displays the main Receiver parameter current values. The following paragraphs detail the Status screen of each available receiver module type (DVB-S, DVB-S2, and IP).

To enter the Receiver Status menu in the front panel, go to **Status→Receiver** (independently of receiver module type).

4.3.1.1. DVB-S Receiver Status

To access the DVB-S Receiver status screen in the front panel control interface go to **Status→Receiver**.

NOTE

The **LNB L.O. Frequency** parameter is activated when the Ku and C-Band is selected.

The following screen displays the DVB-S Receiver Status menu:



Figure 4-56 displays the corresponding Web management screen.

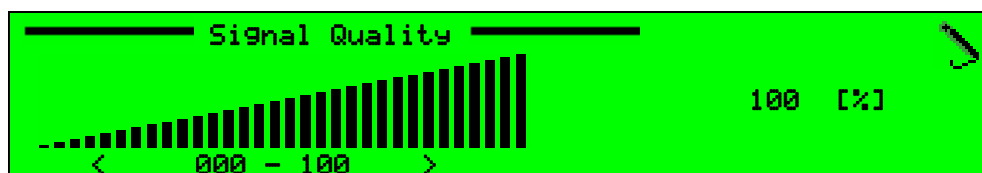
DVB-S							
Signal Quality [%]	Eb/N0 [dB]	Link Margin [dB]	BER	Frequency Tune [GHz]	Frequency Offset [KHz]	FEC Rate	Spectral Inversion
54	17.87	+11.8	0.0e-7	1.068000	+02133	5/6	Inverted

Figure 4-56: IRD-2900 DVBS Status Screen

The available options are:

- **Signal Quality** – Qualitative indicator of the received signal C/N relative to the maximum C/N that can be measured without forcing the receiver to saturation.

The signal quality is calculated by: $SQ[\%] = C/N [dB] / 36 * 100$



Values range from **0** to **100%**

- **C/N** – Shows the Carrier to Noise ratio.
- **Eb/N0** – Received signal Eb/N0 measurement
- **Link Margin** – Estimated C/N of the received signal relative to the C/N in EN 300-421 for a given FEC rate

- **BER** – Uncorrected FEC bits errors. BER is measured over 10^7 symbols.
- **Frequency Tune** – The value is dependent on the mode selected in **Root → Configuration → Receiver → Freq Drift Compensation** (see Section 4.2.2 and 7)
 - When Frequency Drift Compensation is set **On**, the value of the frequency tune displays the frequency of the incoming signal after frequency offset is set **Off**.
 - When Frequency Drift Compensation is set **Off**, the value of the frequency tune displays the actual frequency.

NOTE

Displayed frequencies are L-Band frequencies.

- **Frequency Offset** - Displays the offset from the frequency as was set in **Configuration → Receiver → Frequency** (see Section 4.2.2).
 - When Frequency Drift Compensation is set to On, the frequency offset displays the value 0.
 - When Frequency Drift Compensation is set to Off, frequency offset displays the value of the offset from the tuned frequency in KHz.
- **FEC Rate** – When FEC Rate mode is set to automatic (see FEC Rate parameter in section 4.2.2), the value displayed is selected by the IRD-2900. The FEC rate can also be configured manually to a specific rate by the operator.
- **Spectral Inversion** – When the Spectral Inversion mode is set to automatic (see Section 4.2.2), the value displayed is IRD-2900 selected.

When you set the Spectral Inversion manually, the user selects the value.

4.3.1.2. DVB-S2 Receiver Status

To access the DVB-S2 Receiver status screen in front panel control interface go to **Status → Receiver**.

The following screen displays the DVB-S2 Receiver status menu:

Receiver		1-3-1 ▼
1 Signal Quality		94[%]
2 C/N		-8.00[dBm]
3 Link Margin		21.10[dB]
4 MPEG PER		0.0e-7



5 Frequency Tune	1.000000 [GHz]
6 Frequency Offset	+00011[KHz]
7 Modulation	DVBS2-N-QPSK
8 FEC Rate	8/9
9 Roll-off	35%
10 Spectral Inversion	NORMAL

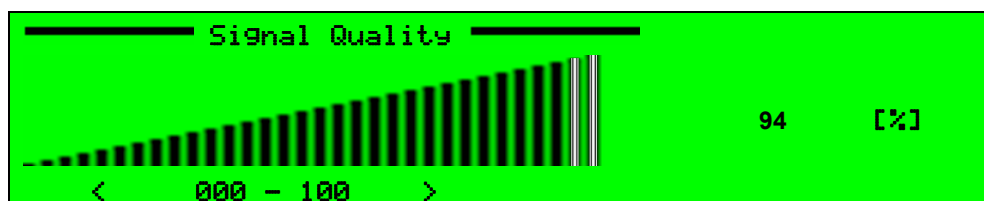
Figure 4-57 displays the corresponding Web management screen.

DVB-S2							
Signal Quality [%]	Eb/N0 [dB]	Link Margin [dB]	BER	Frequency Tune [GHz]	Frequency Offset [KHz]	FEC Rate	Spectral Inversion
41	13.10	-1.2	0.0e-7	1.070000	+00172	5/6	Inverted

Figure 4-57: IRD-2900 DVBS2 Status Screen

The Receiver status screen contains the following parameters:

- **Signal Quality** – Qualitative indicator of the received signal C/N relative to the maximum C/N that can be measured without forcing the receiver to saturation. The signal quality is calculated by: $SQ[\%] = C/N [dB] / 36 * 100$



Signal Quality values range from 0 to 100%

- **C/N** – Shows the Carrier to Noise ratio.
- **Link Margin** – Shows actual signal reception strength.
- **MPEG PER** – Show packet error rate.
- **Frequency Tune** – This parameter points out the optimal frequency checked by the IRD-2900 for obtaining the highest quality of the received signal.
- **Frequency Offset** – displays the deviation between the frequency inserted by the operator and the frequency that was indicated by the *Frequency Tune*.
- **Modulation** – displays the configured modulation method
- **FEC Rate** – reports the selected FEC rate
- **Roll Off** – the configured Roll-Off factor value
- **Spectral Inversion** – When the Spectral Inversion mode is set to automatic (see Section 4.2.2), the value displayed is the one selected by the device. Otherwise, this parameter displays the Spectral Inversion method that was selected manually.

NOTE

All displayed frequencies are in L-Band.

4.3.1.3. IP Receiver Status

The IP Receiver status menu enables monitoring the main IP receiver parameters. It displays both static information (such as MPEGoIP port MAC Address) and live data (e.g. type of data encapsulation received, current bit rate, whether or not IP parameters are valid, etc.).

To access the IP Receiver status menu in the front panel interface go to **Status→Receiver**

The IP Receiver status menu as displayed on the IRD-2900 front panel screen:

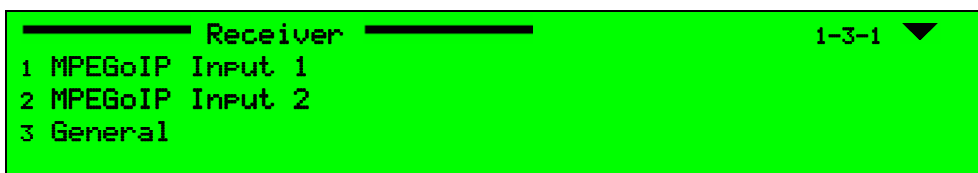


Figure 4-58 displays the corresponding Web management screen.

IP Front-End General						
HW Revision	SW Version	Configuration	Active Port	Encapsulation	MPEG Packet Size	Current Rx Bitrate [MHz]
66	28/05/06 99.05	Ok	2	UDP	188	32.000149

Figure 4-58: IRD-2900 DVB IP Status Screen

The available options are:

- **MPEGoIP Input 1** – for monitoring receiver data arriving through the *MPEGoIP IN1* interface
- **MPEGoIP Input 2** - for monitoring receiver data arriving through the *MPEGoIP IN2* interface
- **General** – for viewing general parameters values, such as software and hardware version number, IP configuration consistency, type of detected encapsulation, bit-rate of currently received data, etc.

The following paragraphs detail the IP Receiver Status sub menus.

MPEGoIP INPUT 1

The following figure illustrates the MPEGoIP Input 1 menu as displayed on the IRD-2900 front panel screen:

MPEGoIP Input 1		1-3-1-1 ▼
1 MAC Address	00-78-34-25-9B-68	
2 Physical Link Status	Up/100Base-T/Full	

The MPEGoIP Input 1 Status parameters are:

- **MAC Address** – MPEGoIP IN1 port MAC address. The MAC address is a unique, read-only address.
- **Physical Link Status** – current link status. The available options are:
 - **Down** – Physical link is down
 - **Up** – Physical link is up and connection is established
 - **10Base-T**, 100Base-T – IP Port data input rate
 - **Full** – receiving in full duplex
 - **Half** – receiving in half duplex

NOTE

MPEGoIP Input 2 Status parameters are identical to those of **MPEGoIP Input 1** Status and provide information on MPEGoIP IN2 data.

GENERAL

The IP receiver General status menu as displayed on the IRD-2900 front panel screen:

General		1-3-1-3 ▼
1 HW Revision		53
2 SW Version dd/mm/yy mj.mn	18/08/05 01.05	
3 Configuration		OK
4 Active Input		1
◆		
5 Encapsulation		UDP
6 MPEG Packet Size		188
7 Rx Bitrate Current	33.792093 [MHz]	

The General menu parameters are:

- **HW Revision** – FPGA hardware Revision
- **SW Version** – software date and software version
- **Configuration** – displays “OK” if receiver configuration is valid, or “Mismatch” if it has inconsistencies
- **Active Input** - the actual
- **Receive Mode** – displays “UDP” or “RTP” according to the type of received data
- **MPEG Packet Size** – size of received packets (in bytes). Can be either 188 or 204 bytes
- **Rx Bitrate Current** – current rate of received data (in MHz)

4.3.2. Stream Status Menu

The Stream status menu provides an extended menu of status monitoring options on the input stream.

To access the Stream status menu in the front panel control interface go to **Status→Stream**.

The following screen displays the Stream status menu:

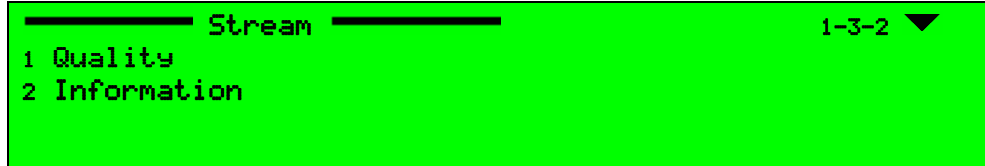


Figure 4-59 displays the corresponding Web management screen.

Stream Quality					
Sync Ox47 Loss	Continuity Counter	T.S. FIFO Overflow	T.S. Error Indicator	ASI Input	RS422 Input
0	30	0	63	Not Detected	Not Detected

Figure 4-59: IRD-2900 Stream Status Screen

4.3.2.1. Quality

The **Quality** Menu displays information about the quality of the Input Stream.

To access the Quality Menu in the front panel control interface go to **Status→Stream→Quality**.

The following screen displays the Quality menu:

Quality		1-3-2-1 ▼
1 Sync-0x47 Loss		000007
2 Continuity Counter		000006
3 T.S Fifo Overflow		000000
4 T.S Error Indicator		000007



5 ASI Input	NOT DETECT
6 RS-422 Input	NOT DETECT

The Quality Menu parameters are:

- **Sync-0x47 Loss** – Counts the number of sync loss events
- **Continuity Counter** – Counts the number of a continuity of error events
- **TS FIFO overflow** – Counts the number of FIFO buffer events
- **TS Error Indicator** – Counts the number of MPEG packets that were received by the IRD-2900 and had the TS error indicator bit set
- **ASI Input**-. Has three modes:
 - **NOT DETECTED** – No input
 - **188 DETECTED** – MPEG packets without FEC
 - **204 DETECTED** – MPEG packets with FEC
- **RS-422 Input** – Has three modes:
 - **NOT DETECTED** – No input.
 - **188 DETECTED** – MPEG packets without FEC.
 - **204 DETECTED** – MPEG packets with FEC.

4.3.2.2. Information

The Information Menu displays information about the transport stream and network.

To access the Information Menu in the front panel control interface go to **Status→Stream→Information**.

The following screen displays the Information menu:

Information		1-3-2-2 ▼
1 Transport Stream Rate	045.792 [Mbps]	
2 Transport Stream ID	0005	
3 Original Network ID	0888	
4 Network Name	CCTV	
◆		
5 Stream Date	05-Oct-2004	
6 Stream Time	14:23:19	

The **Information Menu** parameters are as follows:

- **Transport Stream Rate** – Displays the Transport Stream rate
- **Transport Stream ID** – Displays the identification code of the current transport stream ID in Hexadecimal values
- **Original Network ID** –Displays the identification code of the current network in Hexadecimal values
- **Network Name** – Displays the provider name of the current network
- **Stream Time** – Displays the time (HH:MM:SS) of the current incoming stream
- **Stream Date** – displays the date (DD-MMMM-YYYY) of the current incoming stream

4.3.3. Service Status

The Service Info is a section in the Status web-interface screen. It provides information of service's status and parameters.

Figure 4-60 displays the Service Status Web management screen.

Service Info					
TV	Service Name	Service Id	Service Type	Service Mode	Active in PAT
1	AIR FORCE 1	40	Digital television service	FTA	Yes

Figure 4-60: IRD-2900 Service Status Screen

The following parameters are displayed:

- **TV** – This parameter indicates the active decoder as TV1 (or TV1/TV2 in case of a dual decoder unit).
- **Service Name** – This parameter displays the service's name.
- **Service Type** – This parameter indicates the service type: TV, Radio, TLTX, NVOD, MOSAIC, PAL, SECAM, MAC, FM, NTSC, and Data.
- **Service ID** – This parameter displays the service identification symbol [Hex].
- **Service Mode** - Indicates if the service is encrypted (**CAS**) or free to air (**FTA**).
- **Active in PAT** – this parameter indicates whether the service is included in the PAT table or not.

4.3.4. Video Status Menu

The Video status menu displays the status of Video and VBI parameters.

OSD parameter status will be available in future software versions.

The Video status menu provides an extended menu of status monitoring options on Video and VBI data.

To access the Video status menu in the front panel control interface go to **Status→Video**.

The following screen displays the **Video** Status menu:



Figure 4-61 displays the corresponding Web management screen.

Video										
Video	Format [Lines]	Frame Rate [Hz]	Chroma	Resolution	Aspect Ratio	Field Sequence	Coding Type	Bit rate [Bps]	VBV [Bits]	Errors
1	525	29.97	4:2:0	352*480	4:3	NORMAL	IBP	04314800		44

Figure 4-61: IRD-2900 Video Status Screen

The Video status menu parameters are as follows:

- **Video 1** – This group displays information about the video for Decoder #1 (see Section 4.2.6.1).
- **VBI 1** - This group displays information about the VBI for Decoder #1.
See Section 4.2.6.2
- **Video 2** (if applicable) - This group displays information about the video for Decoder #2, See Section 4.2.6.1.
- **VBI 2** (if applicable) - This group displays information about the VBI for Decoder #2, See Section 4.2.6.2.

4.3.4.1. Video 1 (and Video 2)

The Video 1 Menus (and Video 2 in dual decoder IRDs) display video parameter Statuses.

To access the Video 1 menu in the front panel control interface go to **Status→Video→Video 1**.

The following screen displays the Video 1 menu:

Video 1		1-3-4-1 ▼
1 Standard Format		625 [Ln]
2 Frame Rate		25 [Hz]
3 Chroma Format		4:2:0
4 Resolution		H:720 * V:608
		◀▶
5 Aspect Ratio		4:3
6 Field Sequence		NORMAL
7 Picture Coding Type		P-B
8 Bit Rate		11080800 [Bps]
9 VBV Buffer Size		04096000 [Bit]
10 Decoding Errors		000000

NOTE

The "Decoding Errors" parameter indicates the video stream health.

The available information is:

- **Standard Format** – Indicates the number of lines in the incoming video. In this example, 625 lines indicate PAL video format.
- **Frame Rate** – Displays the frame rate of the incoming video stream
- **Chroma Format** – Displays the Chroma format currently used for the incoming video stream
- **Resolution** – Displays the horizontal and vertical video resolutions for the incoming video stream (for example, the number of pixels per horizontal and vertical screen lines)
- **Aspect Ratio** – Displays the aspect ratio for the incoming video stream
- **Field Sequence** – Displays the type of field sequence found in the decoded service. There are two available values: *Normal*, and *3:2 Pulldown*

- **Picture Coding Type** – displays the types of picture coding that were found in the decoded service. Available picture coding types are: *I-B-P*, *I-P*, *P-B* and *P Only*.
- **Bit Rate** – Displays the bit rate, in bits/sec, for the incoming video stream
- **VBV Buffer Size** – Displays the VBV buffer size
- **Decoding Errors** – Displays the total number of decoding errors

4.3.4.2. VBI 1 (and VBI 2)

The VBI 1 Menu (and VBI 2 in dual decoder IRD's) display VBI parameters Status.

To access the **VBI 1** Menu in the front panel control interface go to **Status→Video→Vbi 1**.

The following screen displays the **VBI 1** menu:

Vbi (1..2)		1-3-4-2 ▼
1 Video	Fullness	020 [%]
2 E.S	Fullness	012 [%]
3 E.S Top	Num Lines	05 [Ln]
4 E.S Bottom	Num Lines	05 [Ln]

The available information is:

- **Video Fullness** – Fullness level of the buffer containing VBIs derived from the video stream
- **E.S Fullness** – Fullness of the buffer containing VBIs derived from the elementary stream
- **E.S Top Num Lines** – Counts the number of E.S VBI lines in a field
- **E.S Bottom Num Lines** – Counts the number of E.S VBI lines in a field

4.3.5. Audio Status Menu

The Audio Status Menu displays information on the audio channels.

To access the Audio Status Menu in the front panel control interface go to **Status→Audio**.

The following screen displays the Audio Status menu:



4.3.5.1. Audio (1..4)

Select Audio 1 through 4.

The Audio (1..4) Menu displays information on the audio decoding process.

When Musicam mode is activated, the following screen is displayed:

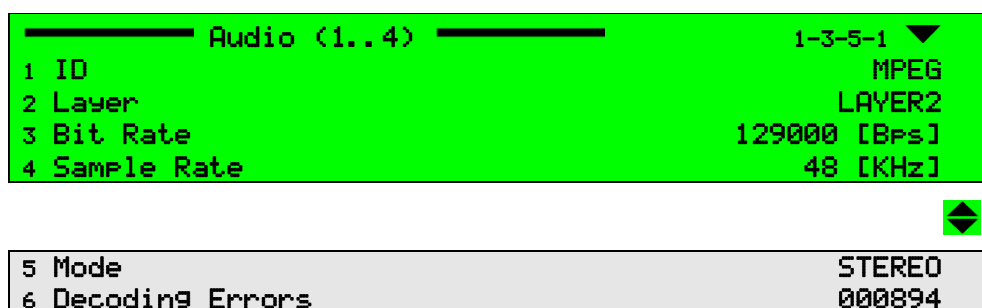


Figure 4-62 displays the corresponding Web management screen.

Audio						
Audio	ID	Layer	Bit Rate	Sample Rate	Mode	Decoding Errors
1	MPEG1	LAYER 2	096000	48	STEREO	85
Audio	ID	Layer	Bit Rate	Sample Rate	Mode	Decoding Errors
2	MPEG1	LAYER 2	064000	48	STEREO	969
Audio						Decoding Errors
3	No Audio					0
Audio						Decoding Errors
4	No Audio					0

Figure 4-62: IRD-2900 Audio Status Screen

NOTE

The "**Decoding Errors**" parameter indicates the video stream health.

When Dolby-AC3 mode is activated, the following screen is displayed:

Audio (1..4)		1-3-5-1 ▼
1 ID		DOLBY AC3
2 Bit Rate		128000[bps]
3 Sample Rate		48[KHz]
4 AC Mode		2/0 L,R STEREO
		◀▶
5 BS Mode		COMPLETE MAIN
6 Decoding Errors		003914

When Linear PCM mode is activated, the screen below is displayed:

Audio (1..4)		1-3-5-1 ▼
1 ID		LINEAR
2 Sample Rate		48 [KHz]
3 Bits per Sample		20 BITS
4 Channel ID		2
		◀▶
5 Output Mode		2/0 L,R
6 Decoding Errors		0003

NOTE

The Channel ID parameter value is according to the channel number of the AC3 header.

4.3.6. Data Status Menu

The Data Status Menu displays information about the data input stream.

To access the Data Status Menu in the front panel control interface go to **Status→Data**.

The following screen displays the Data Status menu:

The High Speed Data Port option is supported only in the IRD-2960 and IRD-2990 models. In these models, the following is the corresponding front panel screen:



IP-Out-Port is supported in all IRD-2900 models, except for the IRD-2960 and IRD-2990 models. For these models, the Data Status menu is displayed as follows:



The Data Status menu parameters are as follows:

- **Low Speed Data Port** – See Section 4.3.6.1.
- **High Speed Data Port** – See Section 4.3.6.2.
- **IP Out Port** – See Section 4.3.6.3.

4.3.6.1. Low Speed Data Port

This feature will be supported in the future software releases.

4.3.6.2. High Speed Data Port

This feature will be supported in the future software releases.

4.3.6.3. IP-Out-Port Status Menu

The IP-Out-Port status menu provides IP and Port related parameter statuses.

To access the IP-Out-Port status menu in the front panel control interface go to **Status→Data→IP Output Port**.

The following screen displays the Output Port Status menu:

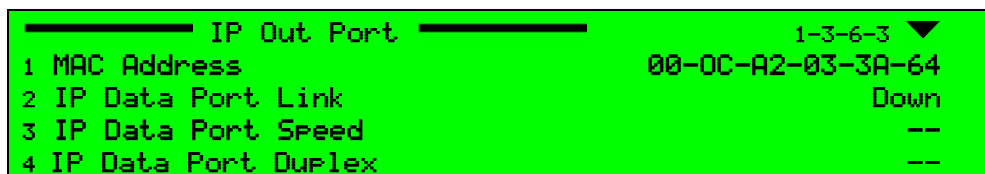


Figure 4-63 displays the corresponding Web management screen.



Figure 4-63: IRD-2900 IP Data Port Status Screen

The available options are:

- **MAC Address** – Displays the IP MAC address.
- **IP Data Port Link** – Displays the status of the IP out link.

The link statuses:

- **Down** – Link is down
- **Up** – Link is up and connection established

- **IP Data Port Speed** – 10 Base-T, 100 Base-T
- **IP Data Port Duplex** –
 - Full: Full duplex
 - Half: Half duplex

When the IP Data Port link status is down or when the IP Data Port is disconnected, the horizontal bars [--] are displayed

4.3.7. GenLock Status

This feature will be supported in future software releases.

4.3.8. Conditional Access Status Menu

The Conditional Access status menu allows viewing conditional access parameters statuses.

To access the Conditional Access Status Menu in the front panel control interface go to **Status→Conditional Access**

The following screen displays the Conditional Access Status menu:



CAUTION

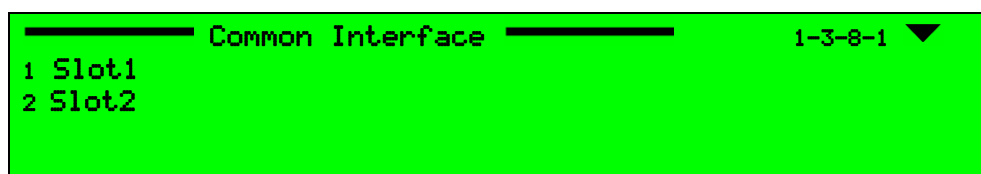
The Conditional Access Status menu must be handled by qualified users who are familiar with the DVB-C2 standard and protocols.

COMMON INTERFACE

The Common Interface Menu displays information on the CAMs inserted to the IRD-2900 CI Slot. The status menu for Slot 1 and Slot 2 is identical unless one of the CI Slots is not equipped with a CAM.

To access the Common Interface Menu in the front panel control interface go to **Status→Conditional Access→Common Interface**.

The following screen displays the Common Interface Status menu:



SLOT (1..2)

The Slot (1..2) Menu displays information on a CAM in Slot (1..2).

To access the Slot 1 Menu in the front panel control interface go to **Status→Conditional Access→Common Interface→Slot 1**.

The following screen displays the Slot 1 Status menu:

Slot (1..2)		1-3-8-1-1 ▼
1 Card Type	DVB CI Module	
2 Applic Manufacture	2200	
3 Manufacture Code	2200	
4 Main Menu	CodiCrypt	
		
5 Available Sessions		
6 Supported CA SysID		

The available options are:

- **Card Type** – Displays card type
- **Applic Manufacture** – Displays application manufacturer value
- **Manufacture Code** – Displays the manufacturer code, defined by the CAM manufacturer.
- **Main Menu** – Displays CA vendor name
- **Available Sessions** – Displays currently available sessions.

The following screen displays the Available Sessions Table menu:

Session	Resource ID	Resource ▼
1 0001	00010041	MANAGER
2 0002	00020041	AI
3 0003	00030041	CAS
4 0004	00240041	DATA-TIME
◀▶		
5 0005	00400041	MMI

- **Supported CA SysID** - Displays supported CA SysID.

The following screen displays the Supported CA SysID Table menu:

System ID	CA Specifier
01 2200	SCOPUS
02 2201	SCOPUS
03 2202	SCOPUS
04 2203	SCOPUS

05 2204	SCOPUS
06 2205	SCOPUS
07 2206	SCOPUS
08 2207	SCOPUS
09 2208	SCOPUS
10 2209	SCOPUS
11 220A	SCOPUS
12 220B	SCOPUS
13 220C	SCOPUS
14 220D	SCOPUS
15 220E	SCOPUS
16 220F	SCOPUS

NOTE

*To see Available Sessions and supported CA SysID values, select an item and press **[Enter]**.*

B. BISS

This feature will be supported in future software releases.

C. EMBEDDED

This feature will be supported in future software releases.

4.3.9. Unit Status Menu

This menu displays the Unit Menu parameters status.

To access the Unit menu in the front panel control interface go to **Status→Unit**.

The following screen displays the Unit Status menu:



Figure 4-64 displays the corresponding Web management screen.

Unit Identity			
Configuration ID	Serial Number	Decoder Board	Front-End Board
IRD-2980	00000332	SPN-29 REV-D	DVB-S2 REV-A
Unit Versions			
Boot Application	Main Application	Main Application Date and Time	
00.80	1.60.1	Sep 20 2006 16:41:18	
Unit Monitoring			
Temperature [°C]		Management Link Status	
+41		Up/100Base-T/Full	

Figure 4-64: IRD-2900 Unit Status Screen

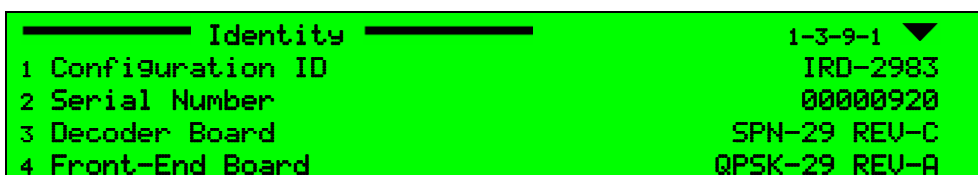
4.3.9.1. Identity

The Identity Menu displays information regarding the IRD-2900 hardware.

To access the Identity Menu in the front panel control interface go to

Status→Unit→Identity

The following screen displays the Identity Status menu:



The available options are:

- **Configuration ID** – Displays the IRD-2900 software configuration model as recognized by the software. Note that the configuration ID may not be identical to the IRD-2900 model number as printed on the front panel.
- **Serial Number** – Displays the IRD-2900 serial number

- **Decoder Board** – Displays the hardware revision of the IRD-2900 main board
- **Front-End Board** – Displays the hardware revision of the IRD-2900 Front-End

Figure 4-65 displays the corresponding Web management screen.

Unit Identity			
Configuration ID	Serial Number	Decoder Board	Front-End Board
IRD-2981	00201307	SPN-29 REV-E	DVB-S2-DI REV-A

Figure 4-65: Unit – Identity (Status Screen)

4.3.9.2. Versions

The Version Menu displays information on the IRD-2900 software versions.

To access the Versions Menu in the front panel control interface go to **Status→Unit→Versions**.

The following screen displays the Versions Status menu:

Versions		1-3-9-2 ▼
1 Boot Application		00.03
2 Main Application		00.07
3 Main Application Date		Dec 19 2004
4 Main Application Time		15:50:26

The available options are:

- **Boot Application** – Displays the boot application software version
- **Main Application** – Displays the main application software version
- **Main Application Date** – Displays the date when the main application was created
- **Main Application Time** – Displays the time when the main application was created

Figure 4-66 displays the corresponding Web management screen.

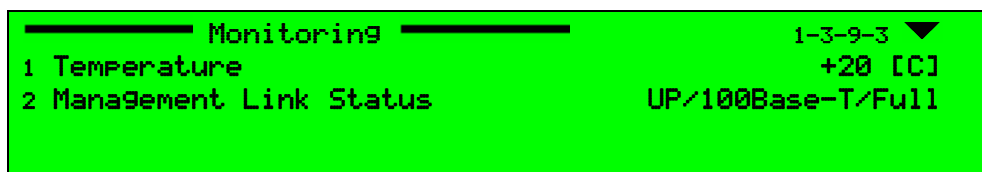
Unit Versions		
Boot Application	Main Application	Main Application Date and Time
01.00	1.79.3	Oct 7 2007 12:37:38

Figure 4-66: Unit – Versions (Status Screen)

4.3.9.3. Monitoring

The Monitoring Menu displays temperature and management port statuses.
To access the Monitoring Menu in the front panel control interface go to **Status→Unit→Monitoring**.

The following screen displays the Monitoring Status menu:



The available options are:

- **Temperature** – Displays the internal temperature of the IRD-2900 as measured by the temperature sensor
- **Management Link Status** – Displays the status of the Management Port link.

Figure 4-67 displays the corresponding Web interface screen.



Figure 4-67: Unit – Monitoring (Status Screen)

4.3.9.4. Licensing

The Licensing screen displays all features and their operational status.

Licensing

1-3-9-4

01 ASI Input

YES

02 ASI Output

YES

03 MPEGoIP/MPE Output

YES

04 Audio 3

YES

05 Audio 4

YES

06 LSD (RS-232)

YES

07 DOLBY Audio1 Decoding

YES

08 DOLBY Audio2 Decoding

YES

09 DOLBY Audio3 Decoding

YES

10 DOLBY Audio4 Decoding

YES

11 Linear Audio 1 Decoding

YES

12 Linear Audio 2 Decoding

YES

13 Linear Audio 3 Decoding

YES

14 Linear Audio 4 Decoding

YES

15 PID Filtering

YES

16 Advanced CI (MPEG4,CID)

YES

17 DVBS2 Advanced Modulation

YES

18 DVBS2 Dual TS

YES

Figure 4-68 displays the corresponding Web management screen.

	GENERAL			CHANGE PASSWORD		CONTROL PASSWORDS		SERIAL		ETHERNET		LICENSING																												
	ALARMS			GPI		TRAPS																																		
Receiver																																								
Stream	Key Key 00-00-00-00-00-00-00																																							
Service	Permissions <table border="1"> <tr><td>ASI Input</td><td>Yes</td></tr> <tr><td>ASI Output</td><td>Yes</td></tr> <tr><td>MPEGoIP/MPE Output</td><td>Yes</td></tr> <tr><td>GenLock</td><td>Yes</td></tr> <tr><td>Audio3</td><td>Yes</td></tr> <tr><td>Audio4</td><td>Yes</td></tr> <tr><td>HSD (RS422)</td><td>No</td></tr> <tr><td>LSD (RS232)</td><td>Yes</td></tr> <tr><td>IP-FE ProMPEG FEC</td><td>No</td></tr> <tr><td>IP-FE Second Input</td><td>No</td></tr> <tr><td>PID Filtering</td><td>Yes</td></tr> <tr><td>Advance CI</td><td>Yes</td></tr> <tr><td>DVBS2 Advance Modulation</td><td>Yes</td></tr> <tr><td>DVBS2 Dual TS</td><td>Yes</td></tr> </table>												ASI Input	Yes	ASI Output	Yes	MPEGoIP/MPE Output	Yes	GenLock	Yes	Audio3	Yes	Audio4	Yes	HSD (RS422)	No	LSD (RS232)	Yes	IP-FE ProMPEG FEC	No	IP-FE Second Input	No	PID Filtering	Yes	Advance CI	Yes	DVBS2 Advance Modulation	Yes	DVBS2 Dual TS	Yes
ASI Input	Yes																																							
ASI Output	Yes																																							
MPEGoIP/MPE Output	Yes																																							
GenLock	Yes																																							
Audio3	Yes																																							
Audio4	Yes																																							
HSD (RS422)	No																																							
LSD (RS232)	Yes																																							
IP-FE ProMPEG FEC	No																																							
IP-FE Second Input	No																																							
PID Filtering	Yes																																							
Advance CI	Yes																																							
DVBS2 Advance Modulation	Yes																																							
DVBS2 Dual TS	Yes																																							
Video																																								
Audio																																								
Data																																								
GenLock																																								
CA																																								
Unit																																								
Preset																																								
Refresh																																								

Figure 4-68: Web-Management: Licensing

Appendix A

SOFTWARE DOWNLOAD

A.1 DOWNLOADING SOFTWARE USING FTP

A.1.1 Introduction

A.1.1.1 IRD-2900 SETUP IP

Configure the IRD-2900 IP Management Port according to local network specifications. The IRD-2900 IP Management is configured from the front-panel by accessing **Configuration → Unit → Ethernet Management Port**.

The IP Management must set the following parameters: IP Address, Network Mask, and Gateway.

A.1.1.2 PC FTP Application

There are many PC Software Applications that support FTP.

In this document, software download procedure is performed using the built-in MS Windows FTP utility.

NOTE

*Viewing the IRD-2900 version is available through the front-panel by selecting **Status → Unit → Versions → Main Application**.*

A.1.2 Installation

A.1.2.1 Loading Through FTP

To open an FTP session, perform the following:

1. Click **Start**. The **Start Menu** is displayed.
From the **Start Menu** click **Run**. The **Run** dialog box is displayed.

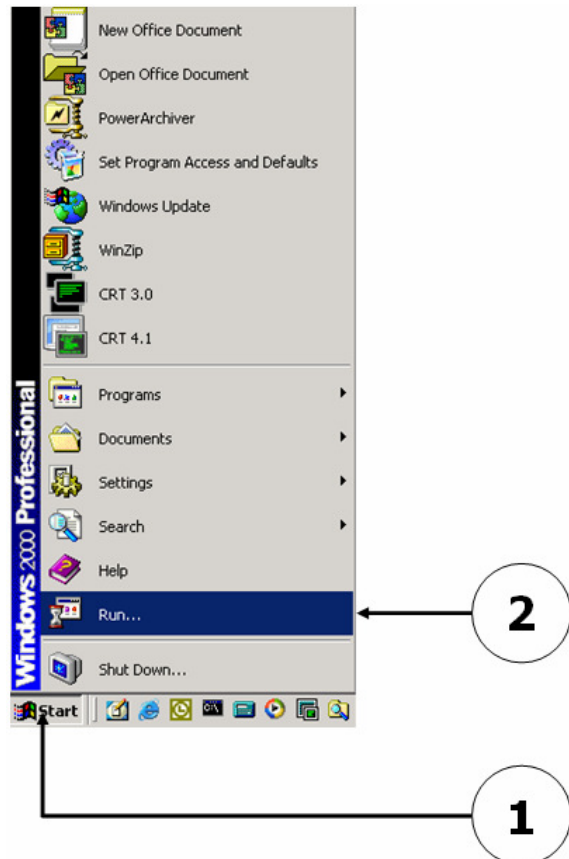


Figure A-1: Start Menu – Select Run

3. Type "cmd" in the combo-box and click **OK**. The terminal window is displayed.

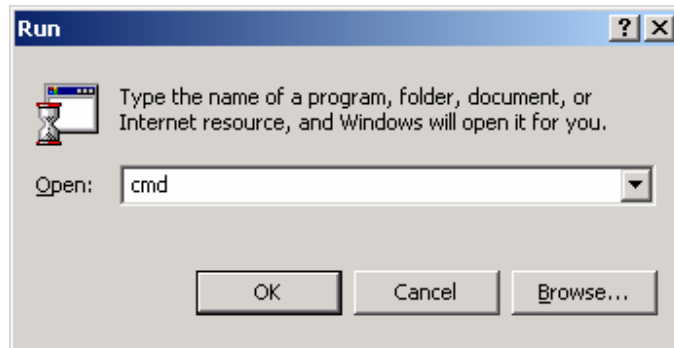


Figure A-2: Run Dialog Box

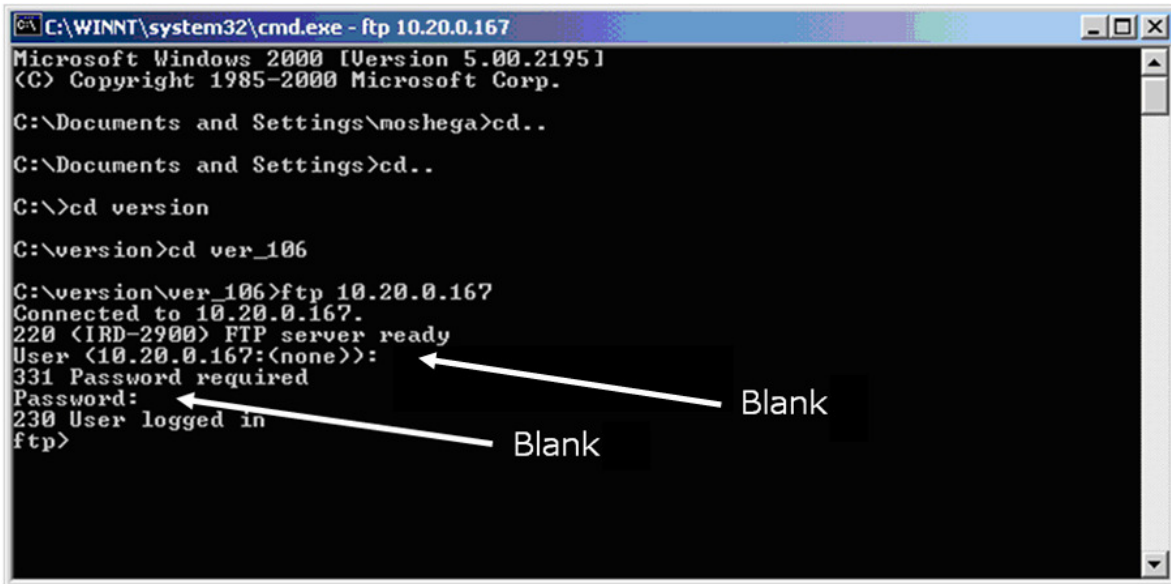
4. Type "**ftp <IRD-2900 Management IP address>**" and press **[Enter]**.
FTP session is displayed. See the following example.



Figure A-3: Open FTP Session

LOG ON

1. Log on to the IRD-2900 with the user name and password, both are empty for the IRD.
2. Reply with **[Enter]** for both user and password requests.



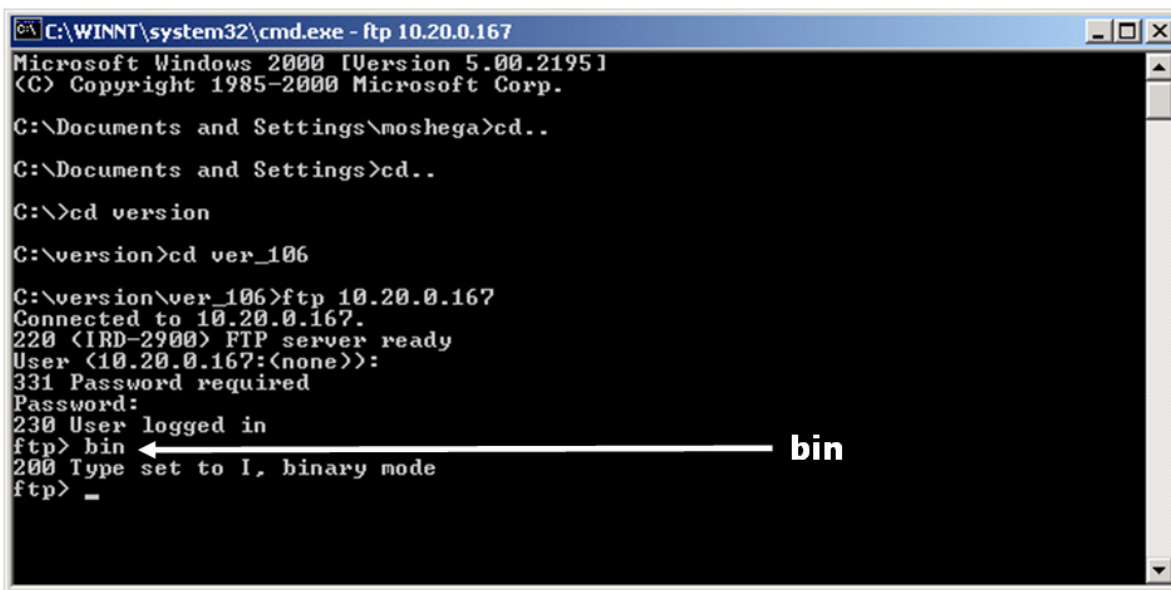
```

C:\WINNT\system32\cmd.exe - ftp 10.20.0.167
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

C:\Documents and Settings\moshega>cd..
C:\Documents and Settings>cd..
C:\>cd version
C:\version>cd ver_106
C:\version\ver_106>ftp 10.20.0.167
Connected to 10.20.0.167.
220 (IRD-2900) FTP server ready
User (10.20.0.167:(none)):
331 Password required
Password:
230 User logged in
ftp>
  
```

Figure A-4: Login to FTP

- After connecting to the IRD-2900 through FTP, type "bin" and Click **[Enter]**.



```

C:\WINNT\system32\cmd.exe - ftp 10.20.0.167
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

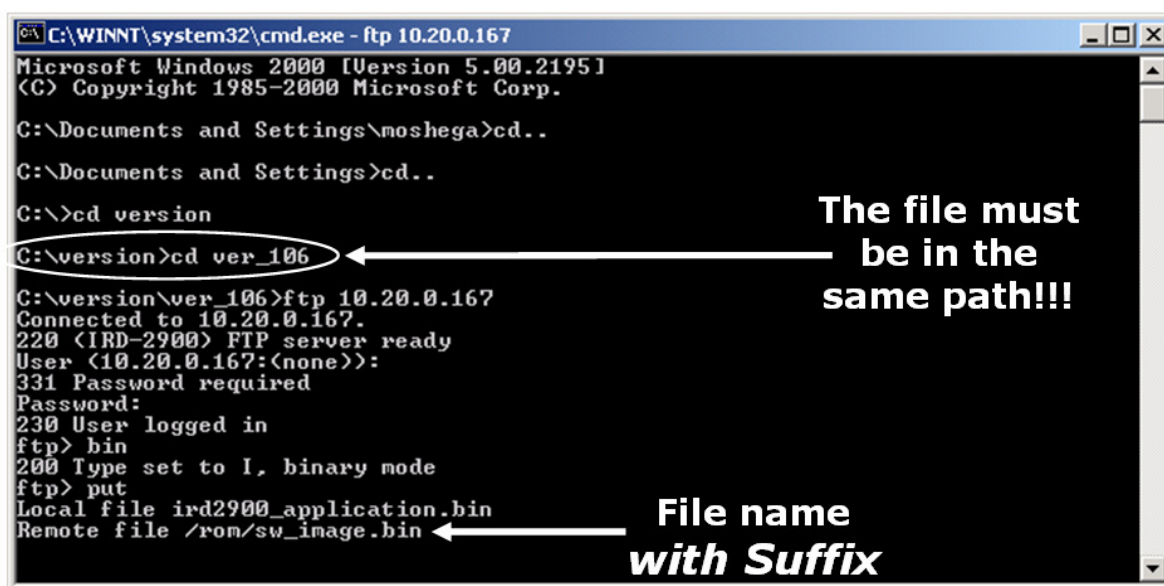
C:\Documents and Settings\moshega>cd..
C:\Documents and Settings>cd..
C:\>cd version
C:\version>cd ver_106
C:\version\ver_106>ftp 10.20.0.167
Connected to 10.20.0.167.
220 (IRD-2900) FTP server ready
User (10.20.0.167:(none)):
331 Password required
Password:
230 User logged in
ftp> bin
200 Type set to I, binary mode
ftp> _
  
```

Figure A-5: Access Bin Folder

LOADING THE FILE

To load a source file from a local PC to the IRD-2900:

1. Type **put** and click **[Enter]**
2. After **Local File**, type the file name with the suffix (**Notice** - the software file name and path in the PC should be known).
3. After Remote File, type `'/rom/sw_image.bin'`.



```
C:\WINNT\system32\cmd.exe - ftp 10.20.0.167
Microsoft Windows 2000 [Version 5.00.2195]
(C) Copyright 1985-2000 Microsoft Corp.

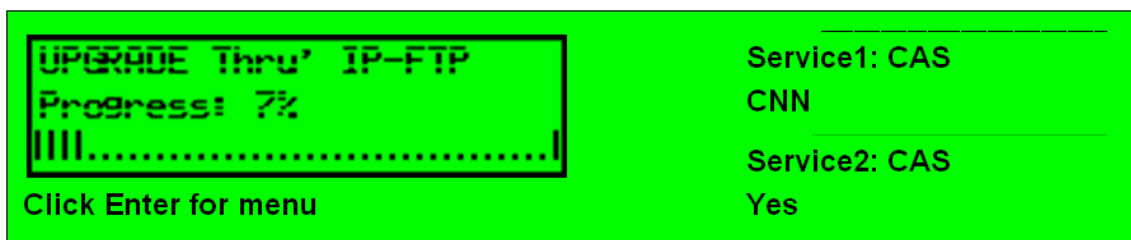
C:\Documents and Settings\moshega>cd..
C:\Documents and Settings>cd..
C:\>cd version
C:\version>cd ver_106
C:\version\ver_106>ftp 10.20.0.167
Connected to 10.20.0.167.
220 (IRD-2900) FTP server ready
User (10.20.0.167:(none)):
331 Password required
Password:
230 User logged in
ftp> bin
200 Type set to I, binary mode
ftp> put
Local file ird2900_application.bin
Remote file /rom/sw_image.bin
```

The file must be in the same path!!!

File name with Suffix

Figure A-6: Loading the File

After confirmation, the IRD-2900 progress is displayed in a loading screen on the IRD-2900 front-panel. In the left frame window the loading progress is indicated by a percentage and blinking progress bar. Following is the IRD-2900 loading screen:



 WARNING

IF THE IRD-2900 IS, FOR ANY REASON, SHUT DOWN DURING SOFTWARE DOWNLOAD, THE PROGRAM MUST BE REINSTALLED THROUGH BOOT SOFTWARE DOWNLOAD. REINSTALLATION IS AVAILABLE THROUGH RS-232. SEE SECTION A.2.6.2.

A.2 LOADING SOFTWARE TO THE IRD-2900 THROUGH THE SERIAL PORT

A.2.1 PC Connection to the Serial Port

The IRD-2900 can be controlled from a standard PC through a serial RS-232 or RS-485 cable. Table A-1 and Table A-2 detail the pin-to-pin and signal assignments of the RS-232 and RS-485 cables, respectively.

Table A-1: RS-232 Control Cable Pin-to-Pin

9 PIN D-TYPE CONNECTOR (PC)	9 PIN D-TYPE CONNECTOR (IRD)	SIGNAL DESCRIPTION
2	3	Pc-RxD
3	2	Pc-RxD
5	5	GND

Table A-2: RS-485 Control Cable Pin-to-Pin Designations

PC RS-485 9 PIN D-TYPE CONNECTOR		IRD-2900 RS-485 9 PIN D-TYPE CONNECTOR	
PIN	DESIGNATIONS	PIN	DESIGNATIONS
1	RB	1	TX+
6	RA	6	TX-
8	TB	8	RX+
9	TA	0	RX-

A.2.2 PC Serial-COM (Terminal) Software

There are many Terminal Applications that support Serial-COM.

In this document Software download procedure is performed on the built-in MS Windows hyperterminal.

A.2.3 Opening Hyperterminal from MS Windows

1. Access HyperTerminal application, by selecting
Start → Program → Accessories → Communication → HyperTerminal

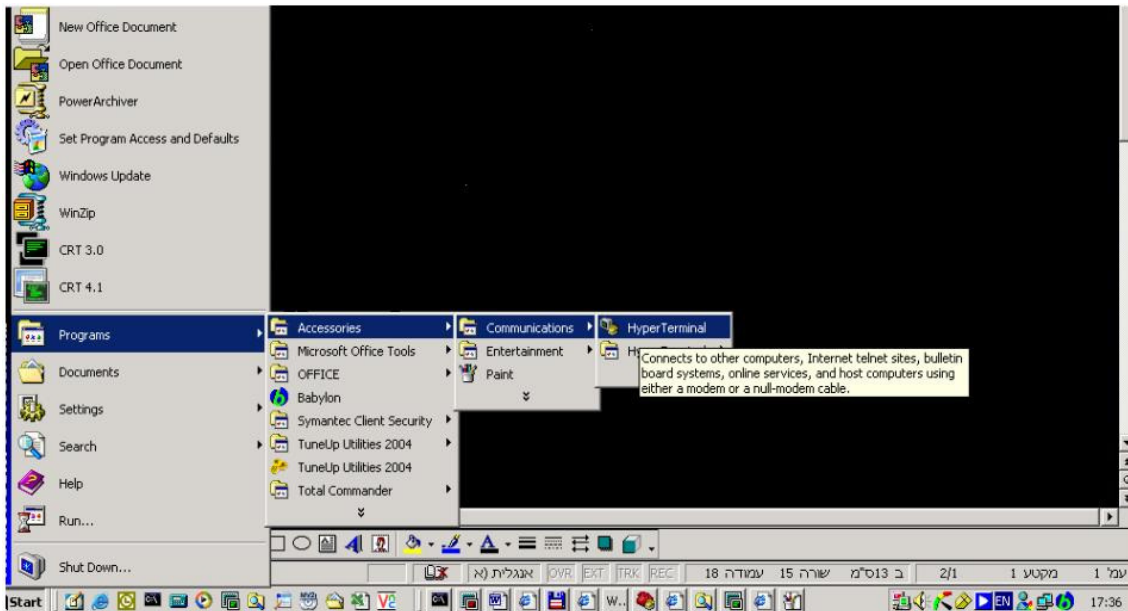


Figure A-7: Start Menu – Open HyperTerminal

A.2.4 Defining the Communication

When the HyperTerminal starts, the following window is displayed.

Enter a connection, for example IRD29000 and lick **OK**.

Select a connection (Icon).

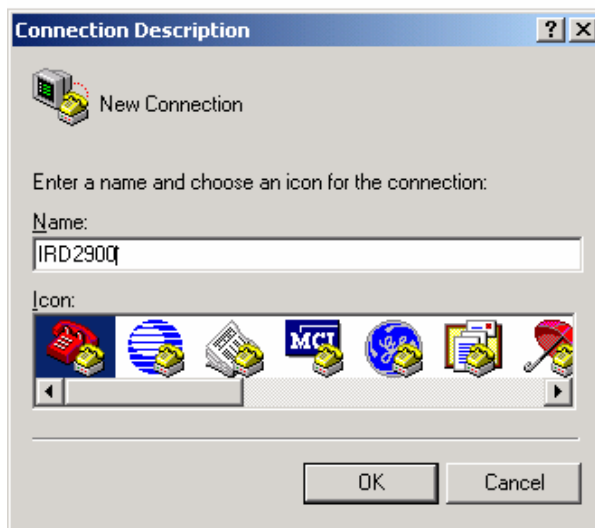


Figure A-8: HyperTerminal – Enter Connection

3. Select a PC COM port that is the specific PC COM to which the IRD-2900 is connected.



Figure A-9: Select PC COM Port

4. Select the Baud Rate. This must be identical to the IRD-2900 baud rate parameter. See **Configuration → Unit → Serial Control Port → Baud Rate**.
5. Select Flow Control – None.

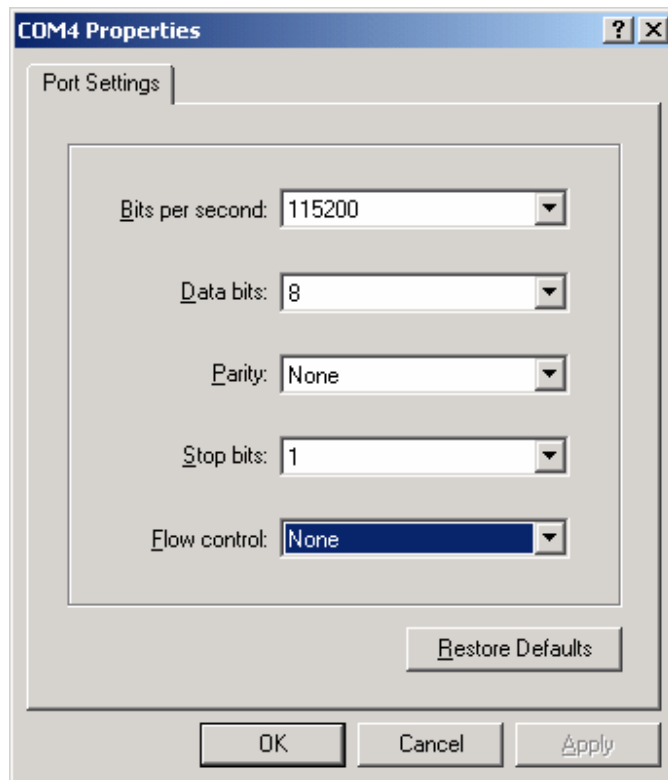


Figure A-10: Port Settings Tab

A.2.5 Checking PC Terminal Communication with the IRD

After setting the PC - HyperTerminal, the Terminal is opened and the user can check the connection to the IRD on the HyperTerminal.

Press **[Enter]**. If the word **"Root"** appears on the terminal window, the user is connected with the IRD. **/root>** indicates the main path to the IRD.

The user can also type **"help"** to see the IRD-2900 help commands.

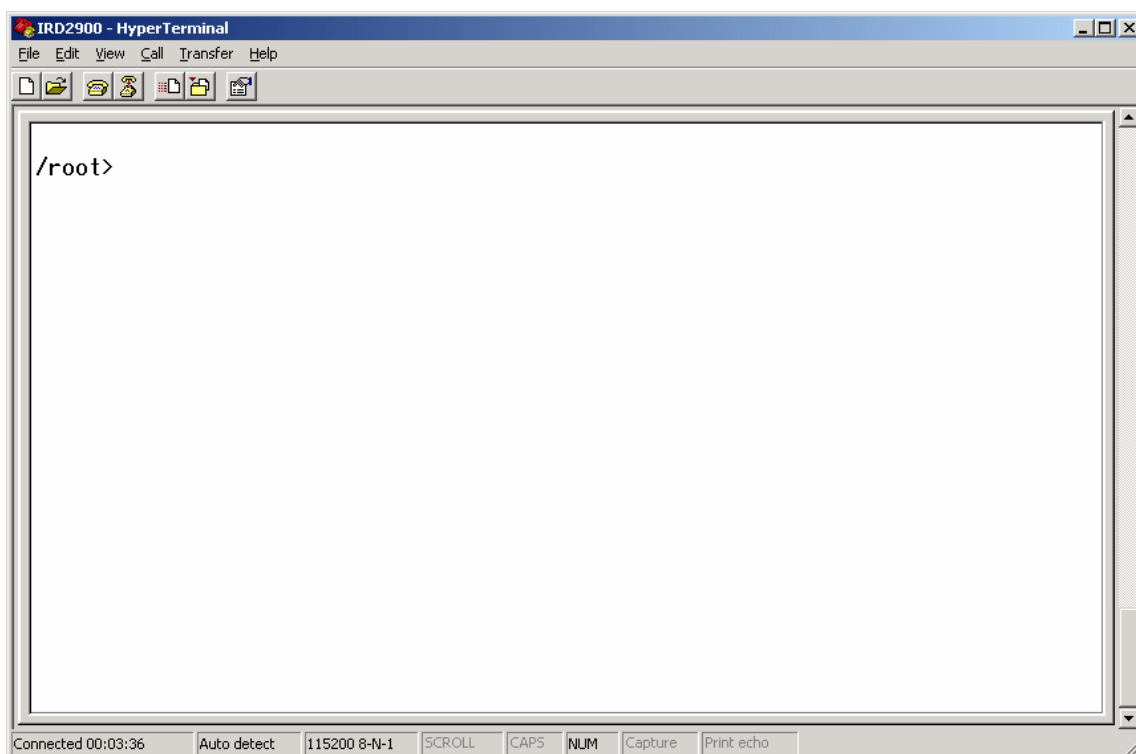


Figure A-11: HyperTerminal Window

The user can check the current IRD-2900 version with command **"status/unit/sw_info"** or select the **Status→Unit→Versions→Main Application** on the front panel.

A.2.6 Installation:

A.2.6.1 Loading new Software Sequence

1. After the PC-to-IRD-2900 Communication is checked, in the Root directory type **"config/unit/upgrade_sw"** and confirm by typing **"yes"**.

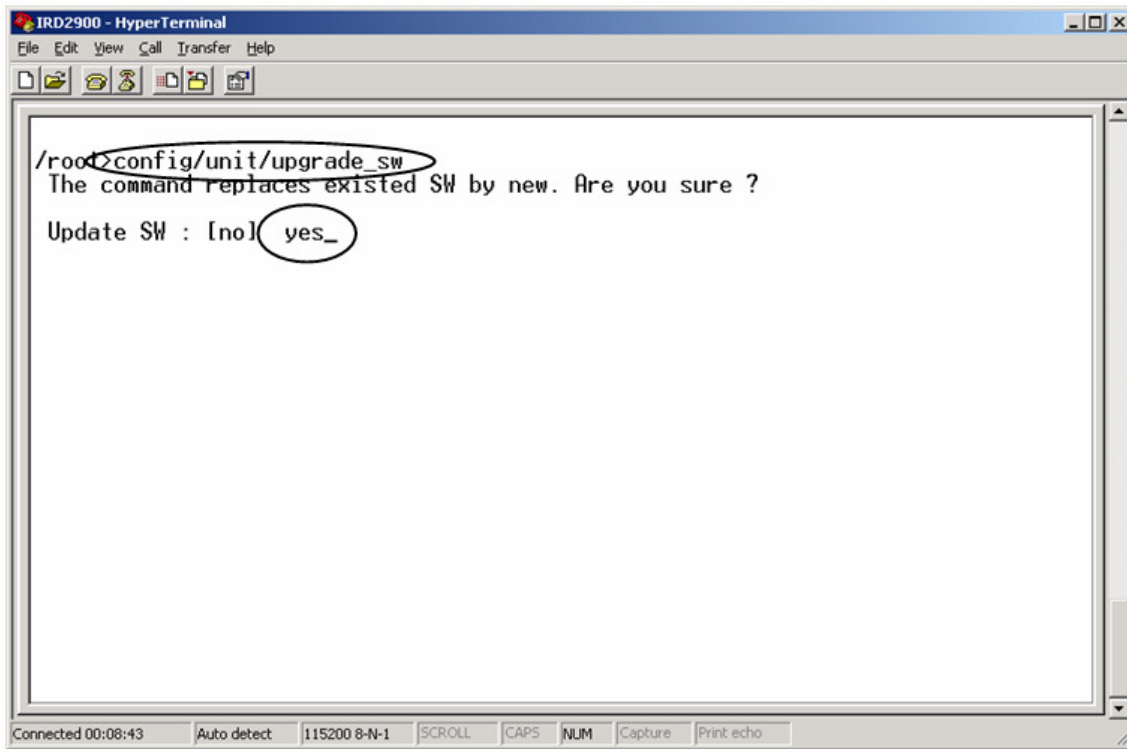
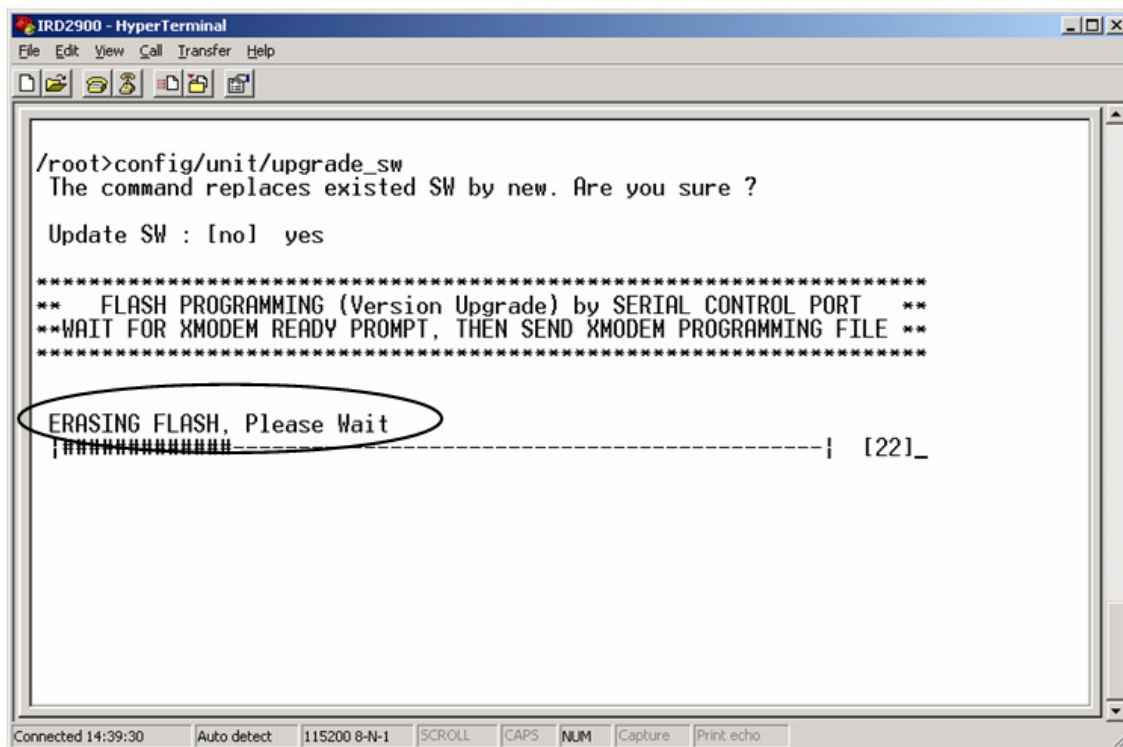


Figure A-12: Update Software Version Command

The IRD-2900 erases the previous software version when updating. This process can take approximately 30 seconds (see the following example).



```

IRD2900 - HyperTerminal
File Edit View Call Transfer Help

/root>config/unit/upgrade_sw
The command replaces existed SW by new. Are you sure ?

Update SW : [no] yes

*****
**  FLASH PROGRAMMING (Version Upgrade) by SERIAL CONTROL PORT  **
**WAIT FOR XMODEM READY PROMPT, THEN SEND XMODEM PROGRAMMING FILE **
*****

ERASING FLASH, Please Wait
|#####-----| [22]_

Connected 14:39:30 Auto detect 115200 8-N-1 SCROLL CAPS NUM Capture Print echo
    
```

Figure A-13: Erasing Flash Process

After the previous software is erased, message **"Ready For Receive"** is displayed.

2. In the HyperTerminal, select ***Transfer → send file***.

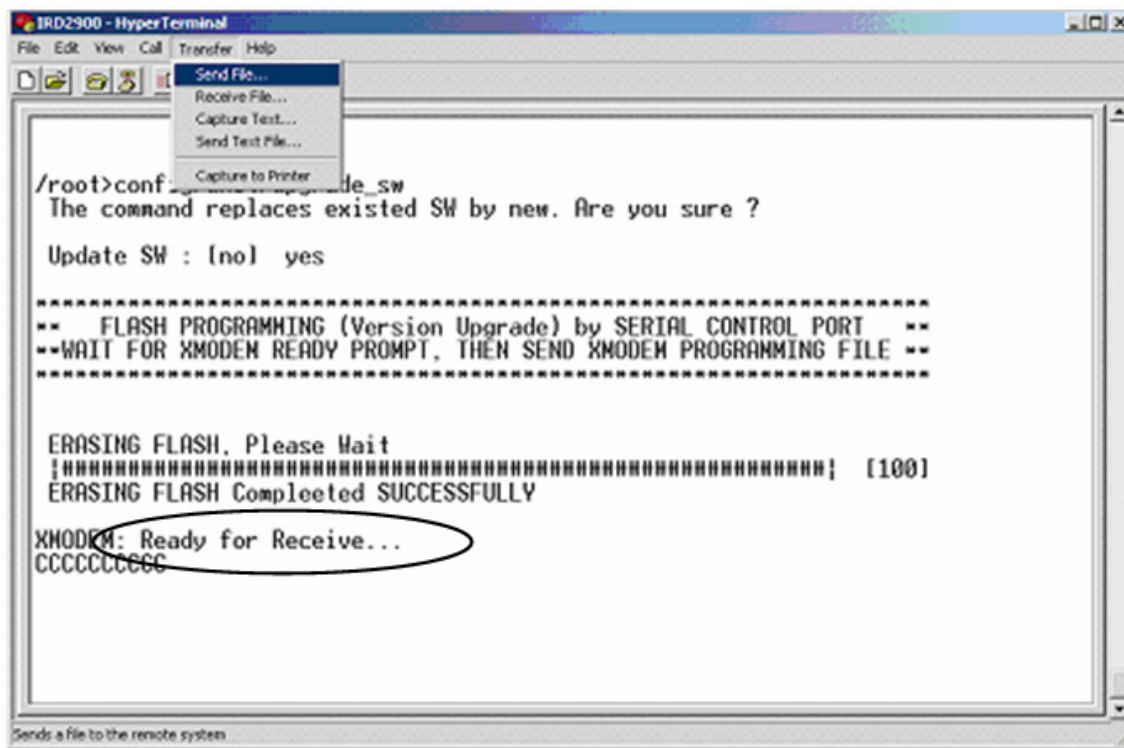


Figure A-14: Ready to Receive New Software

- Specify to which used protocol to send the software file. It can be "Xmodem" or "1K Xmodem" protocol.

NOTE

"1K Xmodem" is faster than "XModem".

- Specify the path of the software file on your PC, for example:

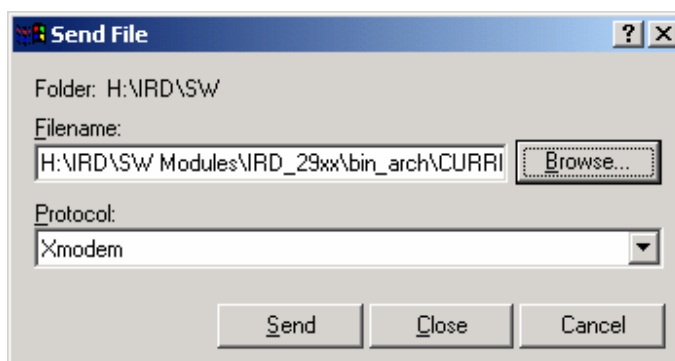


Figure A-15: Send File Dialog Box

5. Click **Send**. The loading starts. This may take a few minutes.

The status is displayed in the following window below or on the IRD-2900 front panel main menu.

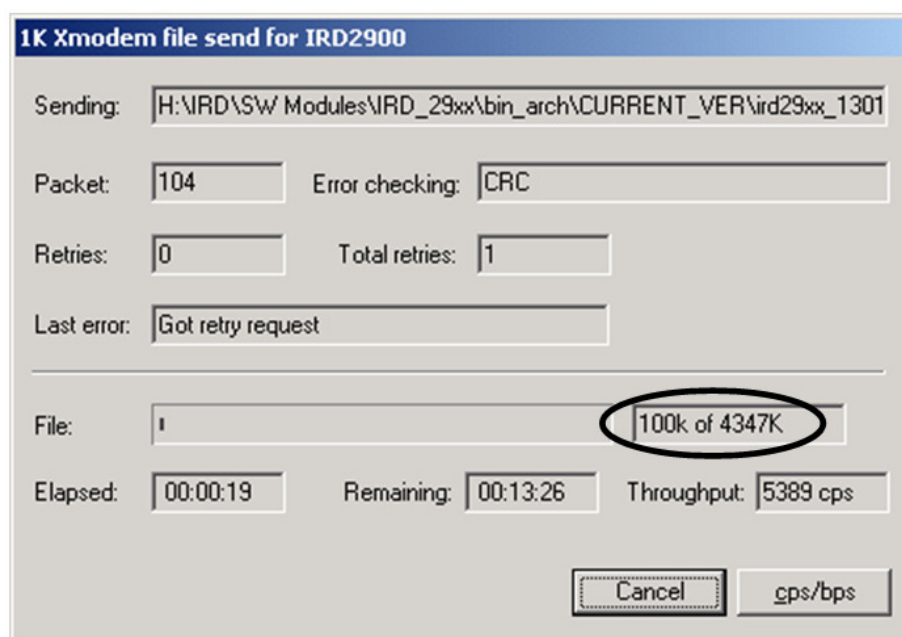


Figure A-16: Sending Status Dialog Box

When the process is complete, a confirmation is displayed, indicating that the file was loaded. Then the IRD-2900 performs reboot.

6. Wait until the IRD-2900 is finished rebooting the new software.
7. On the front panel, verify that the new version is installed.

A.2.6.2 Loading Software Version through IRD-2900 BOOT Application

When the IRD-2900 is shut down during software download, the IRD-2900 start up sequence is set with the boot application. Perform the following:

1. Stop the previous Hyper Terminal sending process and restart standard communication with the IRD.
2. When the IRD-2900 starts the BOOT application, the following hyperterminal window is displayed.

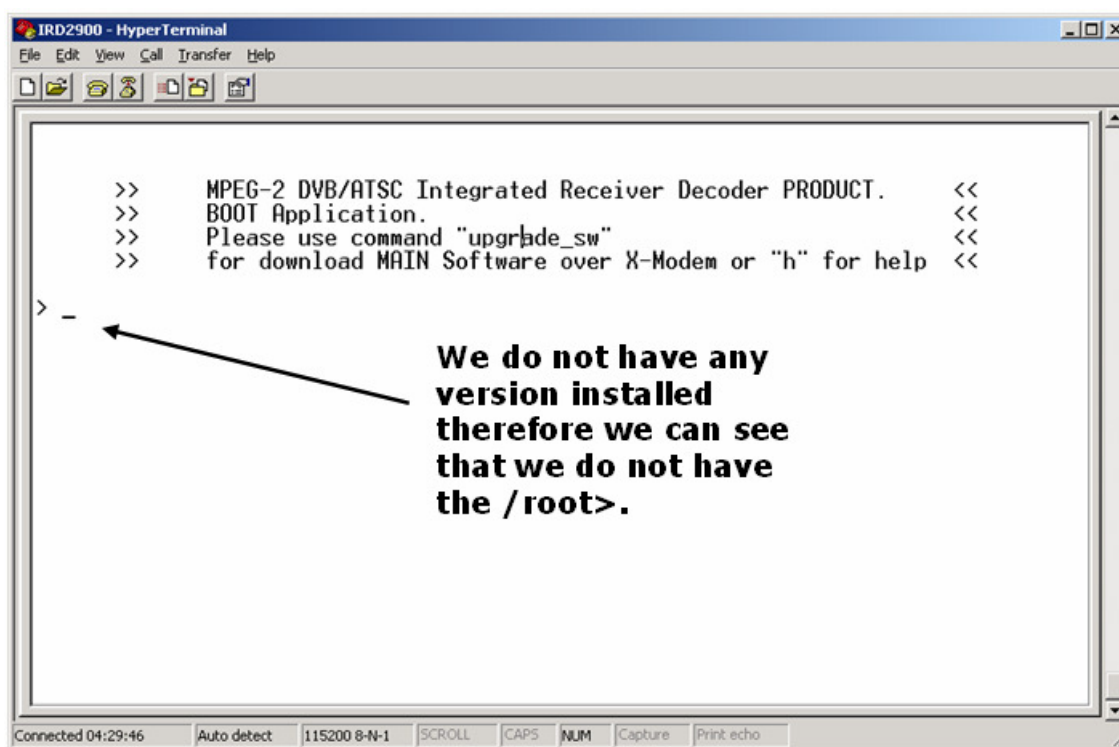


Figure A-17: IRD Boot Application Starts

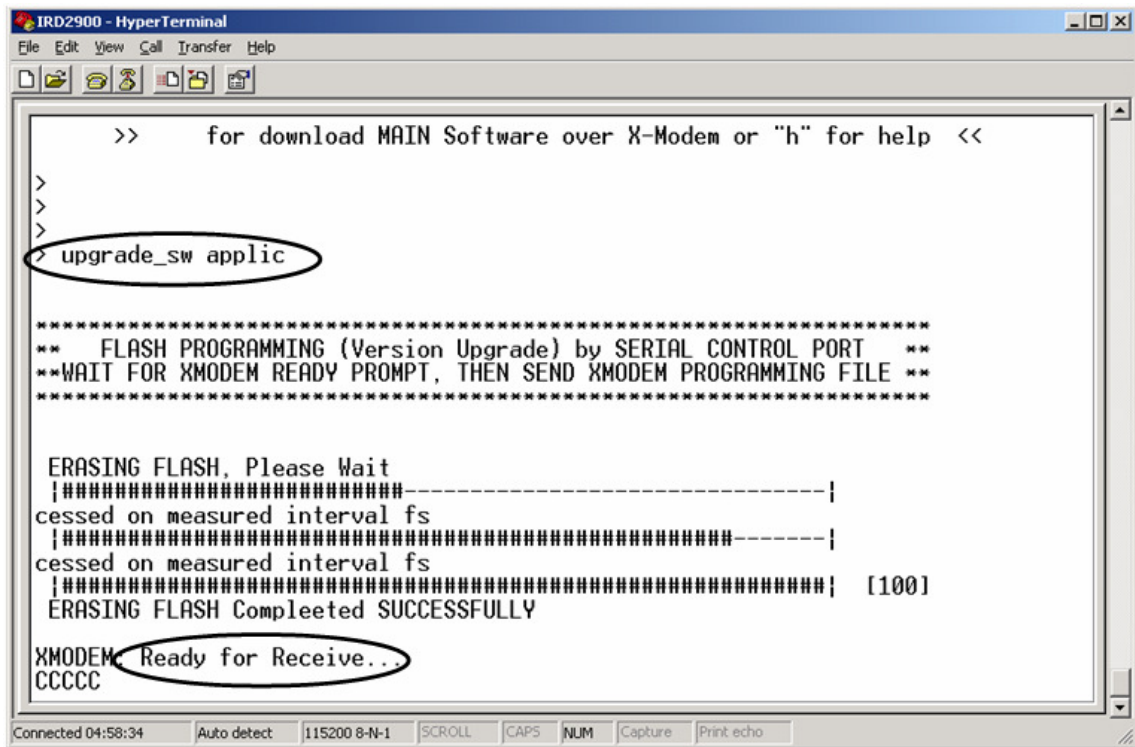
The following screen displays the IRD-2900 Boot Software download menu:

MPEG-2 DVB/ATSC I.R.D - BOOT APPLICATION
UPGRADE Thru' SERIAL - Progress = 14%

|||||||.....!

After download is complete, the IRD-2900 restarts the standard operation with the new software version.

3. To use the Boot Application, type **"upgrade_sw applic"**. The IRD-2900 starts "erasing flash" and after few minutes (after Erasing Flash Completed Successfully) the **"Ready for Receive..."** message is displayed. Continue loading the new version according to the standard procedure.



```

IRD2900 - HyperTerminal
File Edit View Call Transfer Help

>> for download MAIN Software over X-Modem or "h" for help <<
>
>
> upgrade_sw applic

*****
** FLASH PROGRAMMING (Version Upgrade) by SERIAL CONTROL PORT **
**WAIT FOR XMODEM READY PROMPT, THEN SEND XMODEM PROGRAMMING FILE **
*****

ERASING FLASH, Please Wait
|*****|
cessed on measured interval fs
|*****|
cessed on measured interval fs
|*****| [100]
ERASING FLASH Completed SUCCESSFULLY

XMODEM Ready for Receive..
CCCCC

Connected 04:58:34 Auto detect 115200 8-N-1 SCROLL CAPS NUM Capture Print echo
  
```

Figure A-18: Complete Software Loading

Appendix B

IP-FRONT END SOFTWARE UPGRADE PROCEDURE

This appendix details the software upgrade procedure in an IP front end IRD-2900 device. This procedure is different than in other front end devices.

To perform the IP Front End software upgrade, perform the following steps:

1. The watchdog feature must first be disabled in the IRD-2900 for correct SW upgrade. To disable the watchdog feature, perform the following steps:
 - In the IRD-2900 front panel, go to **Configuration → Stream → Source** and select **Serial RS422**
 - In the command prompt (Start → Run) on the PC enter '**telnet <device IP address> 1023**'. Note: To obtain the <device IP address> in the IRD-2900 front panel, go to **Configuration → Receiver → MPEGoIP Input 1 (or 2) → Physical Link** and copy the number from the IP Address parameter.
 - In the Telnet prompt, press Enter.
 - In the Telnet prompt, type '**dwd**'.
 - Power off the IRD-2900
 - After a few seconds, power on the IRD-2900. The watchdog function is now off.
2. For each new SW upgrade obtain a self extracting software upgrade file.
3. Create a new directory under drive C:\ and name it NEW_VER.
4. Copy the self extracting file into the NEW_VER directory.
5. Go to **Start → Run** and enter '**cmd**'.
6. In the command prompt window enter '**cd \NEW_VER**'.
7. Type the name of the SW upgrade self-extracting EXE file and press Enter
8. Answer any questions that may be displayed on the command prompt window with 'Y' followed by **Enter**
9. After the self extracting file has finished the self extraction, run the file called 'update.bat' from this same directory, then enter the IRD-2900 IP address. Obtain the IP address by accessing **Configuration → Receiver → MPEGoIP Input 1 (or 2) → Physical Link** in the front panel. Then copy the address from the IP Address parameter. For example '**update 10.100.1.26**'.

10. In the Telnet prompt window, type 'telnet <unit IP Address> 1023' (use the same IP Address as in step 9).
11. Type '**exit**' and then Enter.
12. Type ' **burn "vxw"** ' and then Enter.
13. Type ' **"burn ird"** ' and then Enter.
14. Power off the IRD-2900.
15. After a few seconds, power on the IRD-2900.
16. On the IRD-2900 front panel, go to **Configuration → Stream → Source** and select **FRONT END (IP)**
17. Verify the correct upgrading of the new SW version by going in the IRD-2900 front panel to **Status → Receiver → General** and checking the *SW Version* dd/mm/yy mj.mn parameter value

NOTE

If power failure occurs during upgrade, repeat the upgrade from step 1

Appendix C

ASPECT RATIO CONFIGURATION PROCESS

C.1 GENERAL

This Appendix details IRD-2900 configuring for the fitting of Aspect Ratio (A/R) of the incoming Video to the A/R of the destination monitor.

C.2 ASPECT RATIO CONVERSION MACHINE

The IRD-2900 provides the ability, using interpolation, to produce different image formats, enabling the display of the incoming Video on either a 4:3 or a 16:9 monitor.

16:9 Video Streams can be fitted for display on 4:3 monitors, and vice versa, in more than one format, as summarized in Table C-1 and Table C-2.

A/R fitting is referred to as **Conversion**. The IRD-2900 contains an "Aspect Ratio Conversion Machine" responsible for all image conversions.

Figure C-1 displays a simplified illustration of this machine.

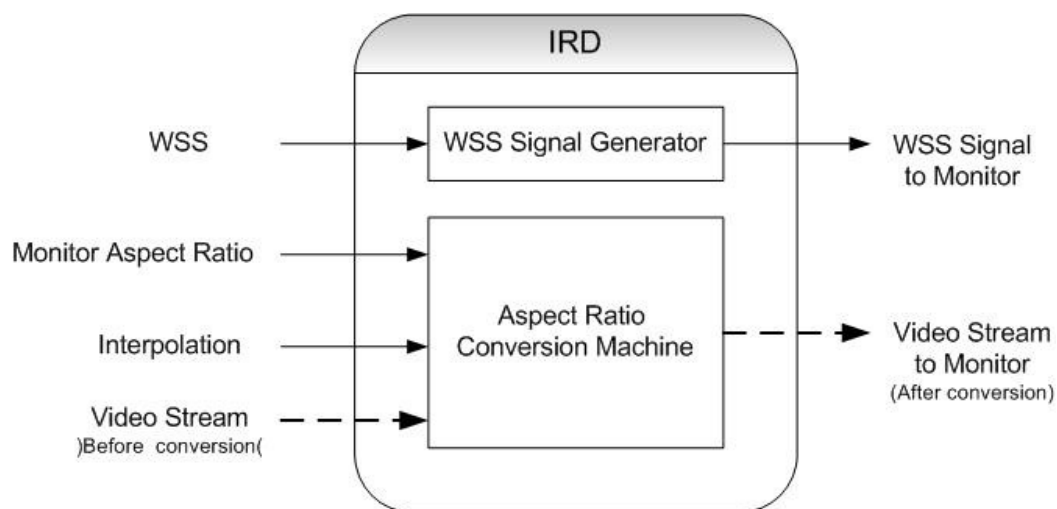


Figure C-1: Aspect Ratio Conversion Machine

When fitting the received Video signal A/R to the monitor A/R, the following three IRD-2900 parameters values must be set to achieve the required conversion:

- WSS
- Monitor Aspect Ratio
- Interpolation

WSS (WIDE SCREEN SIGNALING)

The purpose of the WSS signal is to inform the destination monitor of the received Video A/R. The IRD-2900 extracts the WSS information from an operator-selected source, generates a new WSS signal (see 'WSS Signal Generator' in Figure C-1), and outputs it to the monitor.

The WSS menu in the IRD-2900 contains two items:

- **Source** – from which the IRD-2900 extracts the WSS information. The available options are: **DISABLE**, **TV MONITOR**, **E.S. (EN-301-775)**, and **VIDEO** (see WSS explanation in Section 4.2.6.2 for further details).
- **Line1** – Video line into which the IRD-2900 inserts the generated WSS signal (see WSS explanation in Section 4.2.6.2 for further details).

MONITOR ASPECT RATIO

This parameter informs the Conversion Machine of the destination monitor's A/R. This is one of two parameter values which the Conversion Machine needs for its operation (see Figure C-1).

The available options are: **VIDEO SOURCE, 16:9, 16:9 BOX,** and **4:3** (see *Monitor Aspect Ratio* explanation in Section 4.2.6.1 for further details).

INTERPOLATION

This parameter sets the method of interpolation which the Conversion Machine will use when converting the Video Stream.

C.3 TABLE OF CONVERSIONS

After setting the values of **WSS**, **Monitor Aspect Ratio**, and **Interpolation**, the IRD-2900 receives all required A/R information for re-creating the image. Table C-1 and Table C-2 details the format of the image after conversion in all IRD-2900 available settings combinations, and depending upon the incoming signal's A/R.

The resulting image is affected by the combination of four variables displayed in the A/R Conversion Table:

- The actual Video Stream A/R (**Stream** column)
- Destination Monitor A/R (**Monitor** Column)
- Interpolation value, set in the Conversion Machine (**Interpolation** Column)
- Monitor Aspect Ratio value, set in the Conversion Machine (**WSS** Column)

The following Video Bar figures are used in the table to demonstrate the image format changes.

Figure C-2 illustrates a **normal 4:3** Video image

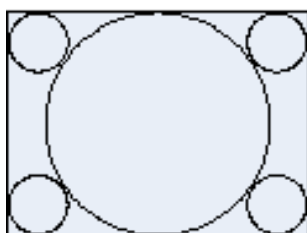


Figure C-2: Normal 4:3 Aspect Ratio

Figure C-3 illustrates a **normal 16:9** Video image

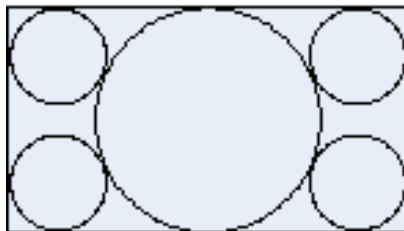
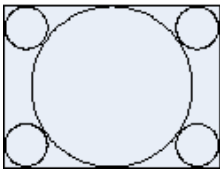


Figure C-3: Normal 16:9 Aspect Ratio

Table C-1: Table of Conversions - 4:3 Stream Option

STREAM	4:3
MONITOR	16:9 or 4:3
INTERPOLATION	Pan Scan or Letter Box
WSS	TV Monitor or Video Stream
OUTPUT DESCRIPTION	Conversion is not available. Always displays Normal picture on 4:3 TV and short and fat on the 16:9 TV WSS – 4:3 Full Format 0001.0000.000.000 Can be output if WSS is set as Video Stream
OUTPUT DISPLAY	4:3  16:9

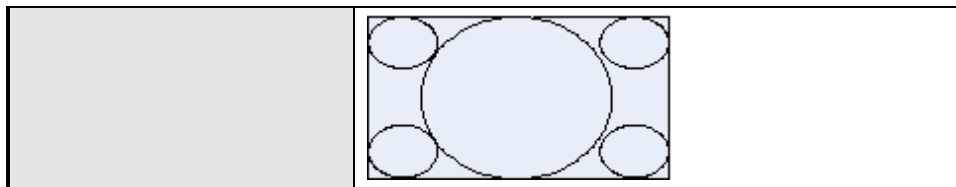
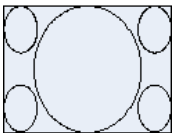
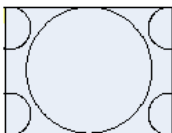
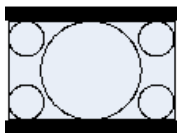
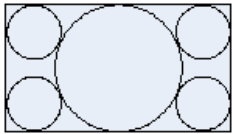
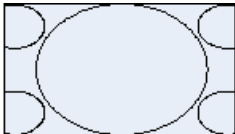
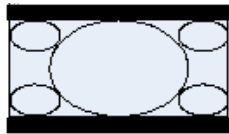


Table C-2: Table of Conversions - 16:9 Options

STREAM	16:9	16:9	16:9
MONITOR	16:9	4:3	4:3
INTERPOLATION	Pan Scan	Pan Scan	Letter Box
WSS	TV Monitor or Video Stream	TV Monitor or Video Stream	TV Monitor or Video Stream

OUTPUT DESCRIPTION	- No conversion - Always displays Normal picture on 16:9 and tall and thin on the 4:3 TV WSS – 16:9 Full Format 1110.0000.00.000 Can be output if WSS is set as Video Stream	- Conversion horizontally up-samples the central portion of the picture to fill the 720 WSS – 4:3 Full Format 0001.0000.000.000 Can be output if WSS is set as Monitor. 16:9 Full Format 1110.0000.000.000 can be output if WSS is set as Video Stream	- Conversion vertically down-stamps the picture and applies black bar to the top and bottom of the screen WSS – 4:3 Full Format 0001.0000.000.000 can be output if WSS is set as Monitor 16:9 Letter Box 1101.0000.000.000 can be output is WSS is set as Video Stream NOTE <i>With 16:9 L/B signalling as auto sense, 16:9 monitor can convert the picture to Normal 16:9</i>
--------------------	--	---	---

OUTPUT DISPLAY	4:3 	4:3 	4:3 
	16:9 	16:9 	16:9 

Appendix D

CONFIGURATION FILE

D.1 INTRODUCTION

This Appendix summarizes the content of the IRD-2900 configuration file. The configuration file is mostly used for configuration backup and for redundancy application. The configuration file is uploaded and downloaded through the FTP.

D.2 PARAMETERS

The IRD-2900 Configuration file holds parameters regarding the following:

- **Stream Configurations** – see section D.2.1.
- **Service Configurations** – see section D.2.2.
- **Video Configurations** – see section D.2.3.
- **Audio Configurations** – see section D.2.4.
- **Data Configurations** – see section D.2.5.
- **DVB S Receiver Configurations** – see section D.2.6.
- **IP Receiver Configurations** – see section D.2.7.

D.2.1 Stream Configurations

The IRD-2900 Configuration file holds the following Stream parameters:

- **Stream Type**
- **Stream Rate Range**
- **ASI Mode**
- **ASI Output Type**
- **IP Output Type**
- **27MHz Synchronization**

D.2.2 Service Configurations

The IRD-2900 Configuration file holds the following Service parameters:

- **TV1 Select**
- **TV2 Select**
- **Stand alone select**
- **Preferred languages**
 - Audio 1-4
 - VBI 1-2
 - Subtitling 1-2
- **PID Select**
 - PCR 1-2
 - Video 1-2
 - Audio 1-4
 - VBI 1-2
 - Subtitling 1-2
 - LS Data RS232
 - HS Data RS422
- **Mapping port to service**
 - PCR 1-2
 - Video 1-2
 - Audio 1-4
 - VBI 1-2
 - Subtitling 1-2
 - LS Data RS232
 - HS Data RS422
 - General Configuraion
 - Service strategy
 - Service CAS open

D.2.3 Video Configurations

The IRD-2900 Configuration file holds the following Video parameters:

- **Video 1/ Video 2**
 - Format
 - Interpolation
 - Monitor aspect ratio
 - Lip-Sync mode
 - STC-PCR delay
 - Blanking mode
- **VBI 1/ VBI 2**
 - CC
 - AMOL
 - VITS
 - VITC
 - WSS
 - TTX
 - VPS
 - SMC
- **OSD 1/ OSD 2**
 - Monitor output
 - Broadcast output
 - X position offset
 - Y position offset
 - DVB Subtitlte mode
 - TXT subtitle mode

D.2.4 Audio Configurations

The IRD-2900 Configuration file holds the following Audio parameters:

- **Audio number**
- **Decoder Mode**
- **AC3 downmix mode**
- **AC3 operational**
- **Pass Through sample rate**
- **Volume**
- **Analog output**
- **Analog mixer**
- **Digital mixer**

D.2.5 Data Configurations

The IRD-2900 Configuration file holds the following Data parameters:

- **Operational mode**
- **Protocol**
- **Destination IP address**
- **UDP source port**
- **UDP destination port**
- **Number of packets**

D.2.6 DVB S Receiver Configurations

The IRD-2900 Configuration file holds the following DVB-S Receiver parameters:

- **Frequency**
- **Symbol rate**
- **FEC rate**
- **Spectral inversion**
- **LNB power supply**
- **LNB 22 KHz**
- **Frequency drift compensation**
- **LNB L.O. Type**
- **Frequency Range**
- **Frequency Band Scan**

D.2.7 IP Receiver Configuration

The IRD-2900 Configuration file holds the following IP Receiver parameters:

- **MPEGoIP1/ MPEGoIP2**
 - Logical source
 - IP address type
 - IP multicast address
 - UDP destination port
 - FEC Colum port
- **General**
 - Selected active Port
 - Redundancy enable/disable
 - Redundancy Delay
 - De-Jitter Delay
 - FEC enable/disable

Appendix E

WARNING MESSAGES

E.1 GENERAL

This Appendix details all error notifications available for the IRD-2900. Errors can be caused by either hardware or software malfunctions. An error is indicated by the **Warning Leds** located right to the front panel screen, followed by an **Error Message** on the front panel screen.

E.2 WARNING LEDS

The IRD-2900 provided with two warning LEDs located right to the front panel screen. These LEDs indicate errors when detected.

Figure E-1 shows the warning LEDs as located on the front panel.

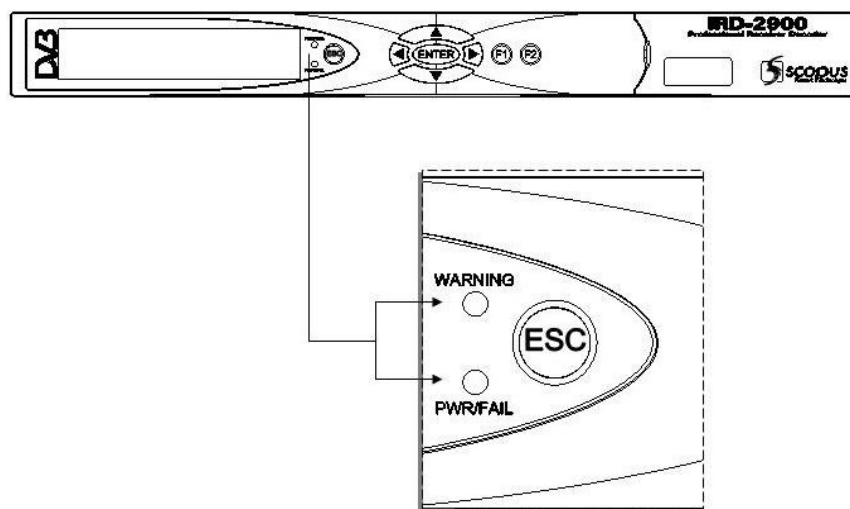


Figure E-1: Front panel warning LEDs

The available LEDs are:

- **WARNING** – indicates any detected error by an **orange** light.

- **PWR/FAIL** – indicates hardware errors by a **red** light.

When the IRD-2900 is properly functioning, both LEDs light **green**.

E.3 WARNING MESSAGES

Warning messages appears on the front panel screen when an error is detected. The warning message briefly describes the level of the malfunction.

The following are Satellite front-end warnings:

- **Signal Not Received**
- **Demodulator Not Sync**
- **Viterbi Not Sync**
- **Deinterleaver Not Sync**
- **Front End Not Locked**

The following are IP front-end warnings:

- **IP Config' Error**

The following are Satellite/IP bit-stream warnings:

- **No Sync-0x47 Detected**
- **PSI Not Detected**

Appendix F

INSTALLATION (DEUTSCH)

Dieser Abschnitt behandelt im einzelnen die Sicherheits-Vorsichtsmaßnahmen beim Installieren der Serie IRD-2900 (Integrierter Empfänger-DEcoder- 2900).

F.1 SICHERHEITS- VORSICHTSMAßNAHMEN

Um Verletzungen und Schaden für die Ausrüstung zu vermeiden, beachten Sie folgende Sicherheits- Vorsichtsmaßnahmen:

- Bewegen oder versenden Sie die Ausrüstung nur, wenn sie in ihrer Original-Verpackung und in Transport - Containern richtig verpackt ist.
- Nur von Scopus geschultes Personal darf den Dienst und die Wartung übernehmen.
- Zur Vermeidung von Blitzschaden erden Sie das Gerät entsprechend den örtlichen Verordnungen.
- Erlauben Sie keinem unqualifizierten Personal, das Gerät zu bedienen.

F.1.1 Bereich mit beschränktem Zugang

Die Gleichstrom-Ausrüstung soll nur in einem Bereich mit beschränktem Zugang installiert werden, siehe die "Maschinenlärminformations-Verordnung - 3. GPSGV, der höchste Schalldruckpegel beträgt 70 dB(A) oder weniger gemäss EN ISO 7779"

F.2 INSTALLATIONS-ANWEISUNGEN

Dieser Abschnitt erläutert die mechanische Installation des Gestells und des IRD-2900 -Geräts.

F.2.1 Vorbereitung des Aufstellungsplatzes

Beim Installieren des IRD-2900 in einem Standardgestell von 19 Zoll überprüfen Sie, dass das Gestell vollständig für die Installation vorbereitet ist. Zum Ermöglichen eines leichten Zugangs während der Installation und Wartung lassen Sie genügend Raum hinter dem Gestell übrig.

Das IRD-2900 ist in 1.5 m Entfernung von einer leicht zugänglichen Wechselstrom-Steckdose zu installieren, die die erforderliche Versorgungsspannung zur Verfügung stellen kann, wie es ausführlich im Abschnitt 2.5.1 dargestellt ist.

Die Verwendung einer ununterbrochenen Stromversorgung und einer automatischen Spannungsregulierung wird sehr empfohlen, um einen ununterbrochenen Betrieb zu sichern.

Sichern Sie, dass ein qualifizierter Elektriker die Hauptstromversorgung entsprechend den Verfügungen der örtlichen Energiebehörde installiert hat. Die gesamte Stromversorgung ist mit einem Erdanschluss entsprechend den örtlichen Bestimmungen verdrahtet sein



WARNUNG

ZUR VERMEIDUNG VON STROMSCHLAG SICHERN SIE, DASS DAS GESTELL RICHTIG GEERDET IST, BERVOR SIE DAS IRD-2900-GERÄT EINSCHALTEN. BEIM ENTFERNEN DES GERÄTS ENTFERNEN SIE DEN ERDANSCHLUSS NUR, NACHDEM DAS GERÄT AUSGESCHALTET UND AUSGESTECKT IST.

F.2.2 Mechanische Installation des Gestells

Wegen seines beträchtlichen Gewichts muss das Gerät auf ein Paar Gestell-Gleitschienen platziert werden, die speziell für Scopus- Erzeugnisse konstruiert sind (siehe Figure 2-1).



VORSICHT

DIE GLEITSCHIENEN SIND AM DER VORGESEHEHEN PLATZ DES GERÄTS INNERHALB DES GESTELLS ZU INSTALLIEREN, DA SIE DAS GEWICHT DES GERÄTS TRAGEN SOLLEN. VERLASSEN SIE SICH NICHT, DASS DIE MONTAGETRÄGER DES GERÄTS UND DIE ANDEREN MONTIERTEN GERÄTE DAS GEWICHT DES GERÄTS UNTERSTÜTZEN. DADURCH KÖNNEN DAS GESTELL, DAS GERÄT UND ANDERE MONTIERTE VORRICHTUNGEN BESCHÄDIGT WERDEN.

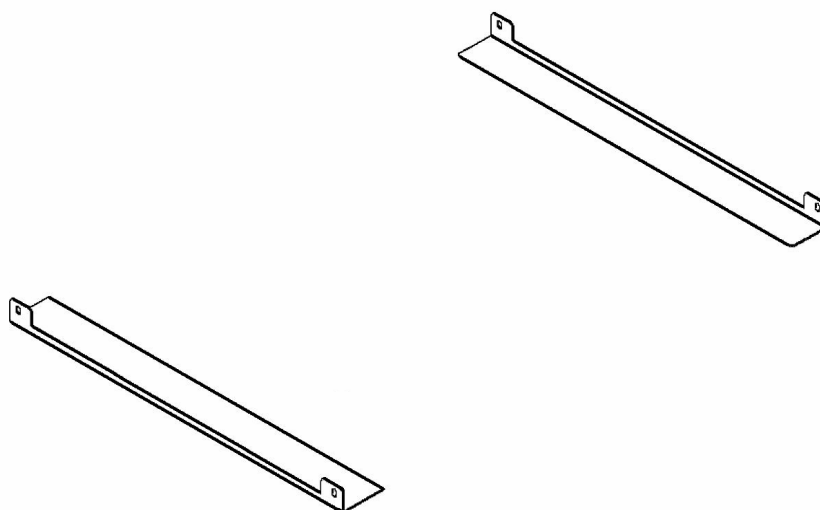


Abbildung 1-2: Paar Scopus- Gleitschienen

Der Aufbau der Gleitschiene ist speziell konstruiert, um eine ordentliche Lüftung von Scopus- Erzeugnissen zu sichern, wie dies mit dem Lüftungsschema aller auf Gestellen montierten Scopus- Geräte übereinstimmt.



VORSICHT

DIE ANWENDUNG VON GLEITSCHIENEN, DIE NICHT SPEZIELL FÜR AUF GESTELLEN MONTIERTE SCOPUS- GERÄTE KONSTRUIERT SIND, KANN ZUM ÜBERHITZEN UND SCHADEN VON EINEM ODER MEHREREN MONTIERTEN GERÄTEN FÜHREN.

Figure 2-5 illustriert die genauen Maße der speziellen Gleitschiene von Scopus.

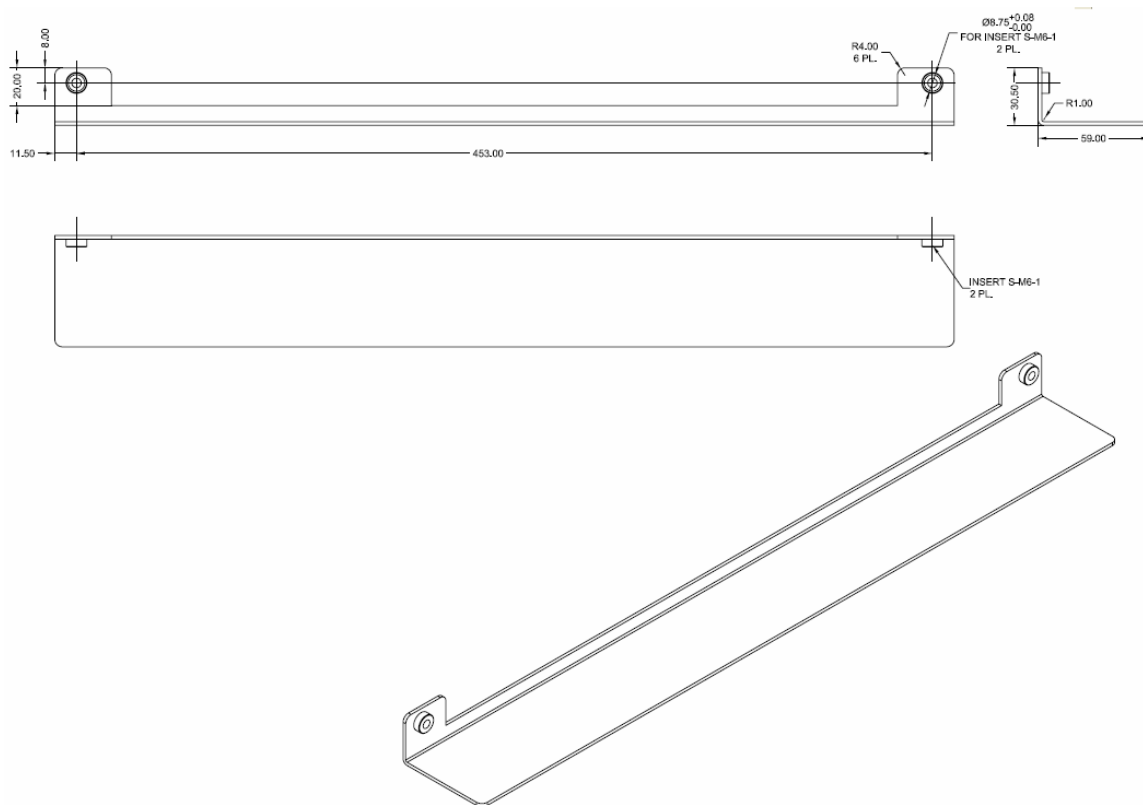


Abbildung 1-3: Maßspezifikationen der Scopus- Gleitschienen

Befestigen Sie das Paar Gleitschienen auf die Seitenschienen des Gestells am vorgesehenen Platz des Geräts mit Hilfe von vier M6-Schrauben(je zwei an jeder Seite des Gestells) , bevor Sie weitermachen.

Nach dem straffen Befestigen der unterstützenden Gleitschienen auf dem Gestell führen Sie die folgenden Schritte zum Installieren des Geräts innerhalb des Gestells durch:

1. Legen Sie das Gerät auf die Gleitschienen auf seinen vorgesehenen Platz innerhalb des Gestells. Abbildung 1-3 ist eine durchsichtige Illustration, die das Platzieren des Geräts auf den Gleitschienen zeigt.

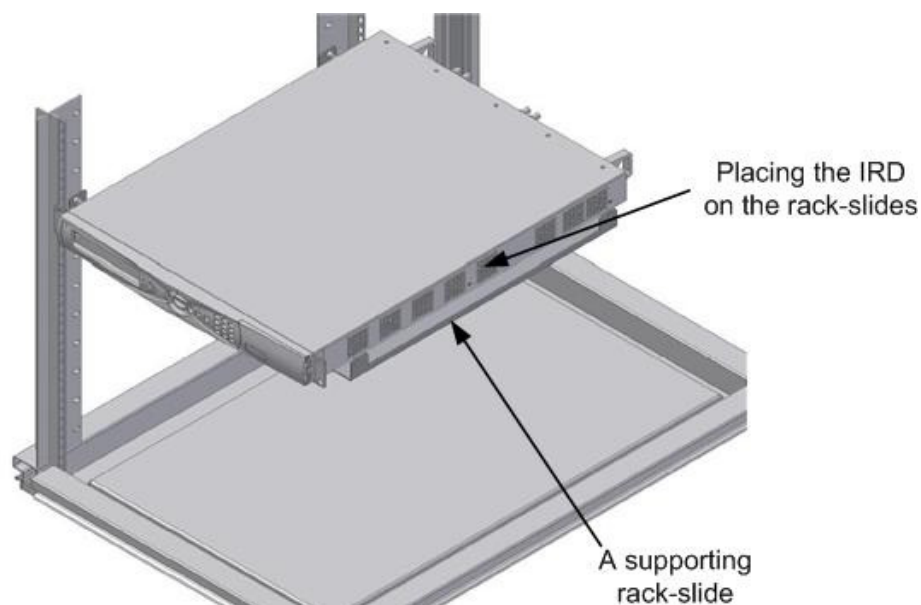


Abbildung 1-4: Auflegen des Geräts auf die Gleitschienen

2. Das Gerät wird mit zwei Montageträgern geliefert (siehe Figure 2-4). Die Montageträger werden an das Chassis des Geräts an beiden Seiten angeklemt, bevor sie die Fabrik verlassen. Richten Sie die Löcher der Montageträger auf die entsprechenden Löcher auf den Seitenschienen des Gestells aus.

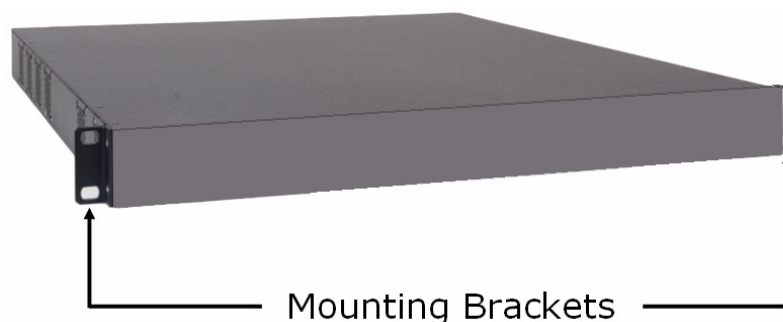


Abbildung 1-5: Angeklemmte Montageträger

3. Befestigen Sie die Montageträger auf den Gleitschienen mit Hilfe von vier Schrauben (zwei auf jeder Seite). Das Gerät ist jetzt sicher innerhalb des Gestells installiert.

Figure 2-5 illustriert eine Gesamtansicht des Geräts, wenn es innerhalb des 19 Zoll-Gestells installiert ist.

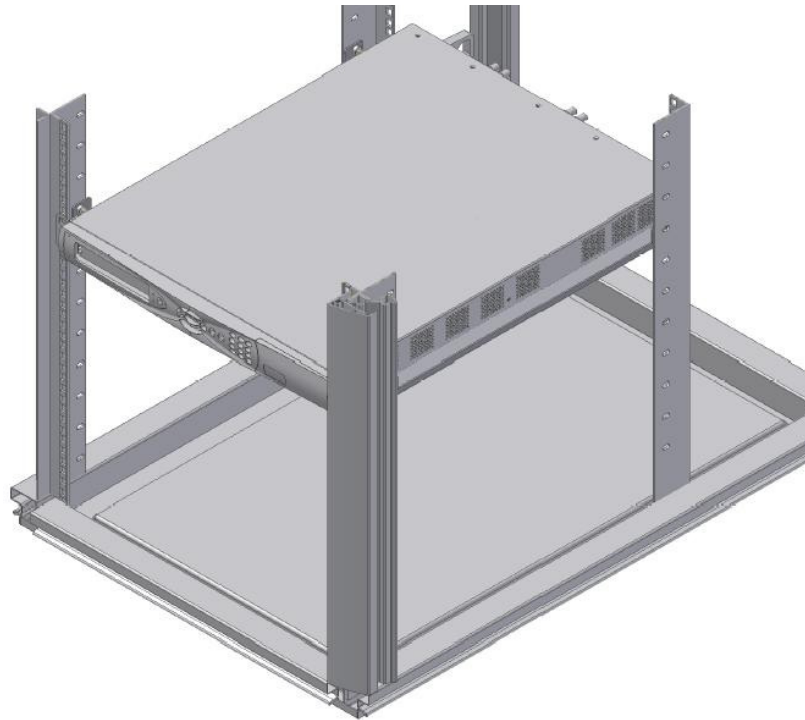


Abbildung 1-6: Auf einem Paar Gleitschienen montiertes Gerät

Ein einzelnes Paar Gleitschienen kann bis zu 50 kg tragen. Dadurch wird eine Einsparung von Gestellfläche ermöglicht, indem man eine Anzahl von auf dem Gestell montierte Geräte aufeinander platziert (achten Sie darauf, das angegebene Höchstgewicht nicht zu überschreiten).

 WARNUNG

STELLEN SIE HÖCHSTENS 50 KG GEWICHT AUF EIN EINZELNES PAAR GLEITSCHIENEN, SONST KANN DAS ZUM EINSTURZ DER GLEITSCHIENEN, ZU ERNSTEN VERLETZUNGEN DES PERSONALS UND ZUR BESCHÄDIGUNG DER AUSRÜSTUNG FÜHREN.

Figure 2-6 illustriert mehrfache Geräte, wenn sie auf einem einzigen Paar Gleitschienen montiert sind.

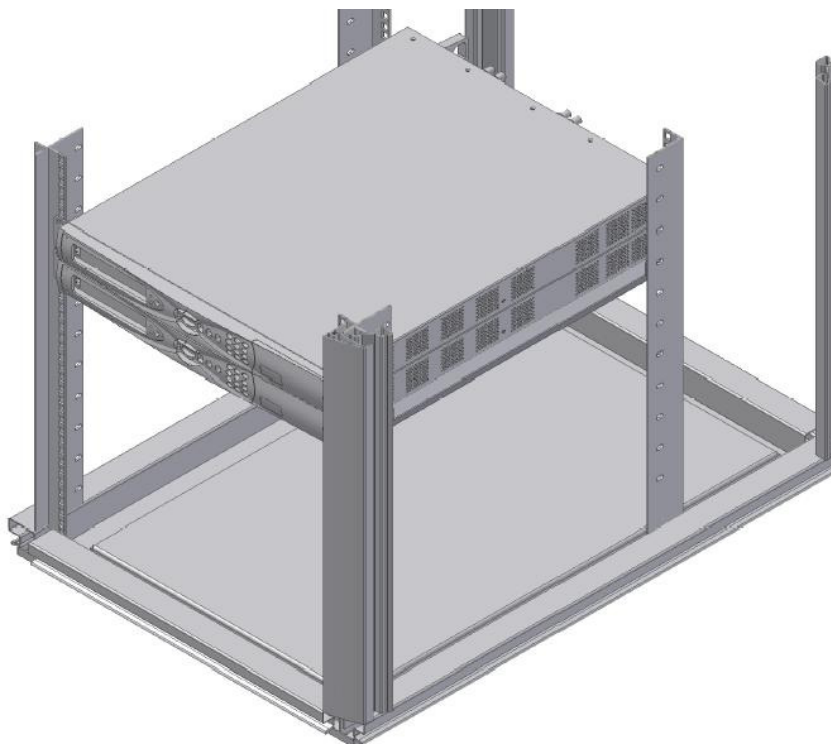


Abbildung 1-7: Mehrfache auf einem einzigen Paar Gleitschienen montierte Geräte

F.2.3 Einfügen des DVB-CI -Moduls (PCMCIA)

 **VORSICHT**

NICHT DAS DVB-CI MODUL ODER DIE INTELLIGENTE KARTE ENTNEHMEN ODER EINFÜGEN, WÄHREND DAS IRD-2900 SICH AUFLÄDT ODER INITIALISIERT.

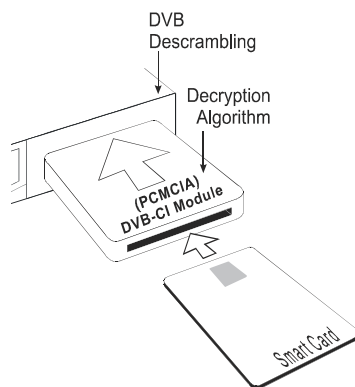


Abbildung 1-8: DVB-CI - Modul

Figure 2-7 illustriert das IRD-2900 mit dem DVB-CI-Modul (PCMCIA -Karte) und die Intelligente Karte, die benutzt wird, um das ankommende Signal zu dekodieren. Das IRD-2900 wird mit zwei PCMCIA - Schlitzen für bis zu zwei DVB-CI -Module bereitgestellt. Das PCMCIA ist fest in einen der zwei bereitgestellten Schlitze einzuschieben, um den Kontakt zu sichern. Jedes DVB-CI -Modul hat Platz für eine Intelligente Karte, die eingefügt wird, wobei das Zeichen UP (oben) nach oben und nach vorn zeigt.

Wenn die Karte installiert ist, wird sie automatisch durch das IRD-2900 entdeckt und aktiviert, wenn die drei folgenden Bedingungen gültig sind:

- Die installierte Karte muss mit EN50221 kompatibel sein
- Dienste bei **TV1/TV2** ausgewählt worden sind (wegen weiteren Informationen siehe Abschnitt 4.2.5.1)
- Verwendung einer gültigen Karten-Lizenzerteilung

F.3 KABEL -ANSCHLUSS

Das IRD-2900 stellt alle Anschlüsse auf seiner hinteren Tafel zur Verfügung. Die hintere Tafel besteht aus Audio-Ausgängen, Video-Ausgängen, Daten-Ausgängen und Kontroll-Schnittstellen (siehe Table 2-1 wegen Kabelanschluss-Spezifikationen).

Figure 2-8 illustriert die Tafel auf der Rückseite des IRD-2992, um die Typen von Steckverbindungen zu zeigen.

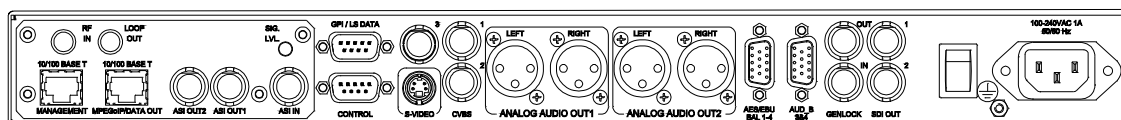


Abbildung 1-9: IRD-2992- Tafel auf der Rückseite

Tabelle 1-3: Hintere Tafel des IRD-2900 – Steckverbindungen und Kabel

SCHNITTSTELLE	STECKVERBINDUNG -TYP	KABEL- TYP
<i>L-Band Front-end RF IN</i>	75 Ω F-Type	RG-6
<i>L-Band Front-end Loop-Through Connector</i>	75 Ω F-Type	RG-6
<i>MPEGoIP Input</i>	RJ-45	FTP Cat 5
<i>Management</i>	RJ-45	FTP Cat 5
<i>MPEGoIP/DATA Output</i>	RJ-45	FTP Cat 5
<i>Analog Audio Out1 left</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Analog Audio Out1 right</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Analog Audio Out2 left</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Analog Audio Out2 right</i>	600 Ω XLR (balanced)	Shielded audio cable
<i>Video Out, S-Video Y/C</i>	75 Ω DIN connector	Super video cable
<i>Composite Video Out, CVBS1</i>	75 Ω BNC	RG-59 RG11 A/U (empfohlen)
<i>Composite Video Out, CVBS2</i>	75 Ω BNC	RG-59 RG11 A/U (empfohlen)
<i>Composite Video Out, CVBS3</i>		RG-59 RG11 A/U (empfohlen)
<i>Data Output (RS-232/RS-422)</i>	9 PIN D-Type	Serial Cable
<i>Control (RS-232/RS-485)</i>	9 PIN D-Type	Serial Cable
<i>Audio Balanced 3 & 4</i>	600 Ω D-sub 15p to 4XLR	Breakout Cable 204346 (Scopus material)
<i>AES/EBU 1-4 Unbalanced</i>	75 Ω 4xBNC or 75 Ω D-sub 15p	BNC Cable

Tabelle 1-3: Hintere Tafel des IRD-2900 – Steckverbindungen und Kabel

SCHNITTSTELLE	STECKVERBINDUNG -TYP	KABEL- TYP
ASI in/out1/out2	75 Ω BNC	RG-59 RG11 A/U (empfohlen)
Genlock In	75 Ω BNC	RG-59 RG11 A/U (empfohlen)
Genlock Out	75 Ω BNC	RG-59 RG11 A/U (empfohlen)
SDI out 1 &2	75 Ω BNC	RG-59

Durch die IRD-2900- Serie wird die Terminalkontrolle von einem standardmäßigen PC aus durch ein Serienverbindungsstück vom Typ RS-232/RS-485 unterstützt.

Figure 2-9 illustriert die Kontroll-Schnittstelle und die Stift-Nummerierung der 9 Stift-Stecker der Niedergeschwindigkeitsdaten-Stecker /GPI .

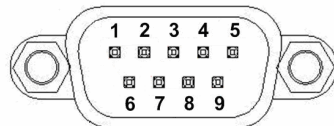


Abbildung 1-10: Nummerierung des 9 Stift-Verbindungssteckers

Table 2-2 listet auf die Konfiguration und die Funktion eines jeden Stiftes vom RS-232/RS-485 Kontroll-Schnittstellen-Verbindungsstücks .

Tabelle 1-4: Konfiguration und Funktion eines jeden Stiftes des RS-232/RS-485 - Verbindungsstücks

STIFT	FUNKTION	STIFT	FUNKTION
1	RS-232 CD/RS-485 TX (+)	6	RS-232 DSR/RS-485 TX (-)
2	RS-232 RxD	7	RS-232 RTS
3	RS-232 TxD	8	RS-232 CTS/RS-485 RX (+)
4	RS-232 DTR	9	RS-232 Ring/RS-485 RX (-)
5	Common		

Table 2-3 listet auf die Konfiguration und die Funktion eines jeden Stiftes der RS-232 Niedriggeschwindigkeitsdaten- und der Graphikprozedur-Schnittstelle. Dieses Verbindungsstück wird gleichzeitig für den Ausgang sowohl von Graphikprozedur-Schnittstellen, als auch von Niedriggeschwindigkeitsdaten verwendet.

Tabelle 1-5: Konfigurationen und Funktion eines jeden Stiftes der RS-232- Niedriggeschwindigkeitsdaten und der Graphikprozedur-Schnittstelle

STIFT	FUNKTION	STIFT	FUNKTION
1	GPI1 NC	6	GPI1 Common
2	RxD	7	GPI1 NO
3	TxD	8	GPI2 NC
4	GPI2 Common	9	GPI2 NO
5	Common		

Table 2-4 listet auf die Konfiguration und die Funktion eines jeden Stiftes der RS-422-Hochgeschwindigkeitsdaten und der Schnittstelle.

Tabelle 1-6: RS-422 Konfigurationen und Funktion eines jeden Stiftes der Hochgeschwindigkeitsdaten

STIFT	FUNKTION	STIFT	FUNKTION
3	Aktivieren (-)	6	Aktivieren (+)
4	Daten (-)	7	Taktgeber (-)
5	Daten (+)	8	Taktgeber (+)

Table 2-5 listet die Konfiguration und die Funktion der Schnittstelle des Audio 3-4 Aufschlüsselungskabels auf.

Tabelle 1-7: Konfiguration und Funktion eines jeden Stiftes des Audio 3-4 –Aufschlüsselungskabels (Scopus P/N 204346)

STIFT	FUNKTION	STIFT	FUNKTION
1	Audio 4 XLR Right (+)	8	Audio 4 XLR Left Common
2	Audio 4 XLR Left (+)	10	Audio 3 XLR Left Common
3	Audio 3 XLR Right Common	11	Audio 4 XLR Right (-)
4	Audio 3 XLR Right (+)	12	Audio 4 XLR Left (-)
5	Audio 3 XLR Left (+)	14	Audio 3 XLR Right (-)
7	Audio 4 XLR Right Common	15	Audio 3 XLR Left (-)

Table 2-6 listet auf die Konfiguration und die Funktion eines jeden Stiftes des vorgesteuerten AES/ABU Aufschlüsselungskabels.

Tabelle 1-8: Konfiguration und die Funktion eines jeden Stiftes des vorgesteuerten Aufschlüsselungskabels (Scopus P/N 204345)

STIFT	FUNKTION	STIFT	FUNKTION
-------	----------	-------	----------

Tabelle 1-8: Konfiguration und die Funktion eines jeden Stiftes des vorgesteuerten Aufschlüsselungskabels (Scopus P/N 204345)

STIFT	FUNKTION	STIFT	FUNKTION
1	AES/EBU 4 (+)	8	AES/EBU 3 Common
2	AES/EBU 3 (+)	10	AES/EBU 1 Common
3	AES/EBU 2 Common	11	AES/EBU 4 (-)
4	AES/EBU 2 (+)	12	AES/EBU 3 (-)
	AES/EBU 1 (+)	14	AES/EBU 2 (-)
7	AES/EBU 4 Common	15	AES/EBU 1 (-)

F.4 INITIALISIERUNG UND KONFIGURATION

Vor dem Aufladen des IRD-2900 sichern Sie, dass die ganze Verkabelung richtig ist. Sichern Sie, dass die Baugruppe mit der Hauptstromversorgung verbunden und richtig geerdet ist.

F.4.1 Anschluss an die Energieversorgung

Das IRD-2900 bekommt seine Energieversorgung durch eine Baugruppe für Wechselstromversorgung oder durch eine wahlweise externe Gleichstromquelle. Im folgenden sind die Anschlüsse für Wechselstrom und Gleichstrom beschrieben.

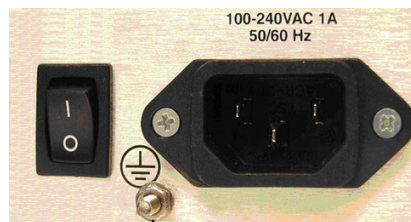
F.4.1.1 Wechselstromversorgung

Die Erdung wird zur Verfügung gestellt, wenn das Wechselstromkabel mit dem Wechselstromstecker des Geräts verbunden ist. Das IRD-2900 wird mit beiden Wechselstrom-Steckverbindungen versandt, wie in Abbildung 1-10 gezeigt ist. Vor dem Aufladen eines auf Gestell montierten IRD-2900 ist die Erdungs-Schraubenwinde des Geräts mit dem Gestellgehäuse zu verbinden, das ordnungsgemäß geerdet werden muss (siehe Figure 2-10).

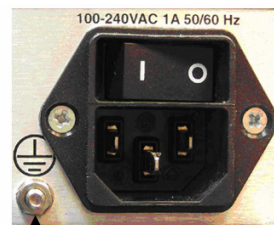
Wechselstrom- Energieversorgung Konfiguration Wechselstrom- Energieversorgung Konfiguration

1

2



Grounding
Jackscrew



Grounding
Jackscrew

Abbildung 1-11: Energieversorgungs-Konfigurationen und Gestellmontage-Erdungs-Schraubenwinde (jackscrew)

F.4.1.2 Gleichstromversorgung

Die Gleichstromverbindung ist ein Options-Merkmal des IRD-2900. Wenn das Gerät mit einer -48V -Gleichstromversorgung ausgerüstet ist, schließen Sie die externe 48V -Gleichstromquelle an, indem Sie folgendes durchführen (wir verweisen auf Figure 2-11):

1. Verbinden Sie den (+) 48V -Gleichstromdraht mit dem **(+)** Kontakt auf dem Stromklemmbrett.
2. Verbinden Sie einen (-) 48V Gleichstromdraht mit dem **(-)** Kontakt auf dem Stromklemmbrett.
3. Verbinden Sie den Erdungspunktdraht mit dem **(GND)** Kontakt auf dem Stromklemmbrett.

Wenn das IRD auf einem Gestell montiert ist, muss die Schraubenwinde (siehe Figure 2-11) mit dem Gestellgehäuse verbunden werden, das seinerseits ordnungsgemäß geerdet werden muss.

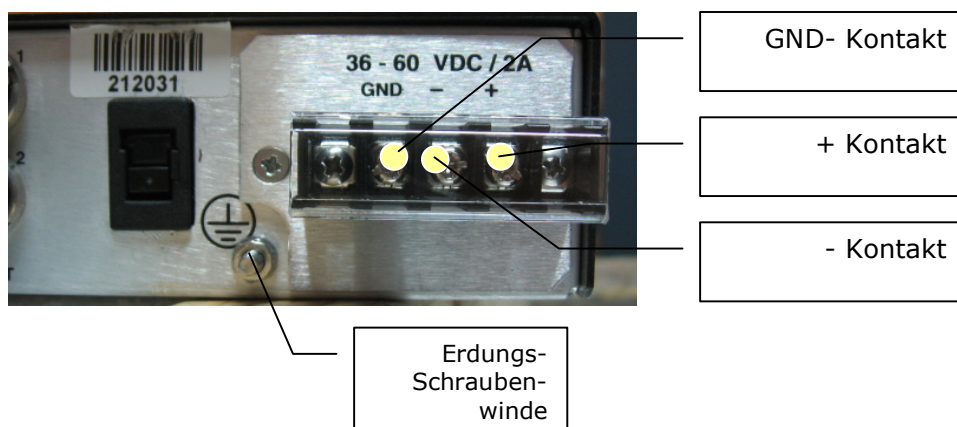


Abbildung 1-12: Gleichstrom-Energieversorgung und Gestellmontage-Erdungsschraubenwinde (Jackscrew)

F.4.2 Aufladen

Wenn Sie das IRD-2900 aufladen und der Empfänger nicht abgestimmt ist, erwarten Sie die folgenden Warnungen :

- **Front-End-Warnung** – Demodulator nicht synchron
- **Bitstrom- Warnung** – Keine Synchronisierung – 0x47 entdeckt
- **Bitstrom – Warnung** - PSI nicht entdeckt

Im Fall, dass die Warnungs- LED des IRD-2900 orangefarben beleuchtet ist, muss der Maschinist folgendes durchführen:

- Das IRD-2900-Gerät abstimmen oder konfigurieren
- Einen Dienst aus dem Eingangsstrom auswählen

Wenn das IRD-2900 richtig konfiguriert ist, wird "All(es) OK" angezeigt und beide LEDs sind grün beleuchtet.

ZU BEACHTEN

Vor der Initialisierung sehen Sie im Kapitel 4-Betrieb und Management nach, wie man die Menüs verwendet und durch die Menüs navigiert, sowie nach Information über die Konfigurationsparameter.

F.4.3 Abstimmung

Der IRD-2900 –Empfänger muss konfiguriert werden, um einen Transportstrom zu empfangen. Wegen Einzelheiten über ein IRD-2900 – Gerät mit einem DVB-S-Empfängermodul siehe Abschnitt 4.2.2. Wegen Einzelheiten über ein IRD-2900- Gerät mit einem MPEG über IP-Front-End-Modul, siehe Abschnitt 4.2.2.4.

F.4.4 Durchführen der Nutzbarkeitsprüfung

Nach dem Installieren, Initialisieren oder Konfigurieren des IRD müssen Instandhaltungs-Prüfungen durchgeführt werden, um zu sichern, dass dieses Gerät nutzbar ist. Ein Video-Monitor muss an das IRD-2900 angeschlossen werden, um die systematischen Anweisungen der Checkliste zum Durchführen einer Nutzbarkeitsprüfung durchzuführen .

Tabelle 1-9: IRD-2900 –Nutzbarkeits-Prüfung

SCHRITT	PRÜFUNG
1	Auf der LCD-Anzeige lautet die LCD -Statusmessung "STATUS OK".
2	Auf der vorderen Tafel des IRD-2900 leuchten die zwei LEDs grün.
3	Der ausgewählte Dienst wird auf der LCD-Anzeige angezeigt.
4	Ein Video-Bild wird auf dem Monitor angezeigt.
5	Audio-Kanäle links und rechts.

Appendix G

INSTALLATION (FRANÇAISE)

Cette section détaille les mesures de sécurité ainsi que la liste d'inventaire à vérifier lors de l'installation d'IRD-2900 Series.

G.1 MESURES DE SECURITE

Afin d'éviter toute blessure et prévenir des dégâts engendrés à l'équipement, veuillez respecter les mesures de sécurité suivantes :

- Ne pas bouger ou expédier l'équipement s'il n'est pas correctement emballé dans son emballage d'origine et dans des conteneurs d'expédition.
- Seul le personnel formé par et de Scopus peut effectuer le service et la maintenance.
- Afin d'éviter des dégâts causés par la foudre, reliez l'unité à la terre en suivant les règles locales

G.2 LISTE D'INVENTAIRE

 ATTENTION

S'IL MANQUE QUELQUE CHOSE OU QUE QUELQUE CHOSE EST ENDOMMAGÉ, NE CONTINUEZ PAS L'INSTALLATION. CONSULTEZ LA MARCHE A SUIVRE SE TROUVANT SUR LE DEVANT DE CE MANUEL AFIN DE RECEVOIR DES INFORMATIONS TECHNIQUES DE LA PART DE SCOPUS.

Avant d'installer l'appareil, assurez-vous que tout l'équipement soit arrivé et vérifiez qu'il ne comporte pas de défauts, d'après la liste suivante:
Avant d'installer l'appareil, assurez-vous que tout l'équipement soit arrivé et vérifiez qu'il ne comporte pas de défauts, d'après la liste suivante:

ELEMENT	QUANTITÉ
Décodeur professionnel avec receveur intégré IRD-2900	1
Câble d'alimentation	1

ELEMENT	QUANTITÉ
Manuel d'utilisation, décodeur professionnel avec receveur intégré IRD-2900	1
Câble fibre optique si applicable	1/2

G.3 INSTRUCTIONS D'INSTALLATION

Cette section explique l'installation mécanique du rack (casier) et de l'appareil IRD-2900.

G.3.1 Préparation de l'emplacement

Lorsque vous installez l'IRD-2900 dans un rack standard de 19 pouces (48 cm), vérifiez que le rack soit entièrement prêt à l'installation. Afin de faciliter un accès pratique durant l'installation et la maintenance, laissez un espace suffisant derrière le rack.

L'IRD-2900 doit être installé dans 1.5m (5 feet) à partir d'une prise de courant AC fixée à la masse facilement accessible, capable de fournir le voltage nécessaire comme mentionné dans la section 2.5.1.

L'utilisation d'un UPS (Générateur de Puissance Ininterrompable) et d'un AVR (réglage automatisé du voltage) est très recommandée afin de garantir un fonctionnement ininterrompu.

Assurez-vous qu'un électricien qualifié ait installé l'alimentation électrique en accord avec les règlements des autorités locales d'alimentation en électricité. Toute alimentation en électricité doit être reliée à la terre en accord avec les règlements locaux.



AVERTISSEMENT

AFIN D'EVITER UNE ELECTROCUTION, ASSUREZ-VOUS QUE LE RACK SOIT CORRECTEMENT MIS A LA TERRE AVANT D'ALLUMER L'APPAREIL IRD-2900. LORSQUE VOUS ENLEVEZ L'UNITE, ENLEVEZ AUSSI LA CONNEXION A LA TERRE, UNIQUEMENT APRES AVOIR ETEIND ET DEBRANCHE L'UNITE.

G.3.2 Installation mécanique du rack

Suite à son poids important, l'appareil doit être placé sur une paire de racks glissières (rack-slides), particulièrement conçus pour les produits de Scopus (voir image Image G-1).

 ATTENTION

LES RACK-SLIDES DOIVENT ETRE INSTALLES DANS L'EMPLACEMENT DESIGNÉ DE L'APPAREIL DANS LA PARTIE INTERNE DU RACK, PUISQU'ILS SONT DESTINES A PORTER LE POIDS DE L'APPAREIL. NE PAS COMPTER UNIQUEMENT SUR LES FIXATIONS DE MONTAGE DE L'APPAREIL AFIN DE SUPPORTER LE POIDS DE L'APPAREIL. CECI POURRAIT ENDOMMAGER LE RACK, L'APPAREIL ET TOUT AUTRE APPAREIL FIXE.

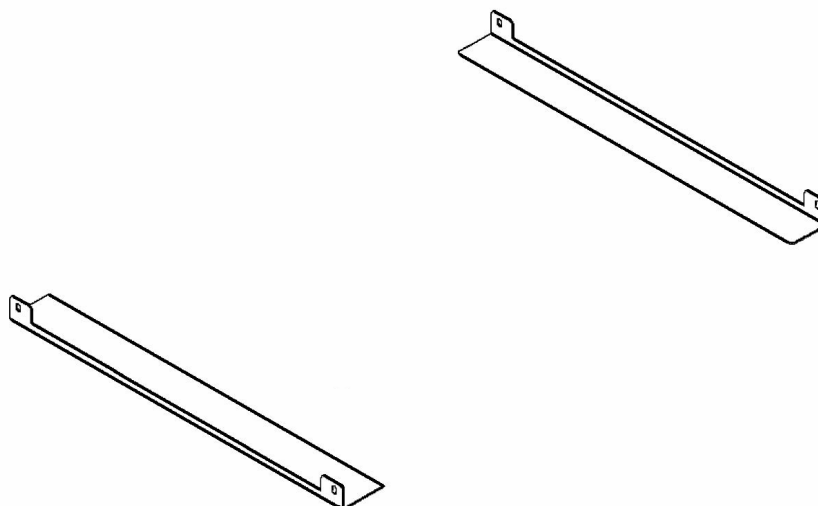


Image G-1: Paire de Rack Slides de Scopus

La structure des glissières est particulièrement désignée afin de garantir une ventilation correcte des produits Scopus, comme il est possible de l'observer à partir du schéma de ventilation de tous les appareils fixés sur racks de Scopus.

⚠ ATTENTION

UTILISER DES RACK-SLIDES N'ÉTANT PAS PARTICULIÈREMENT CONÇUS POUR LES APPAREILS FIXES SUR RACK DE SCOPUS, PEUT ENTRAÎNER UNE SURCHAUFFE ET DES DÉGÂTS À UN OU PLUSIEURS APPAREILS FIXES.

L'Figure G-2, illustre les dimensions exactes des rack-slides particulières de Scopus.

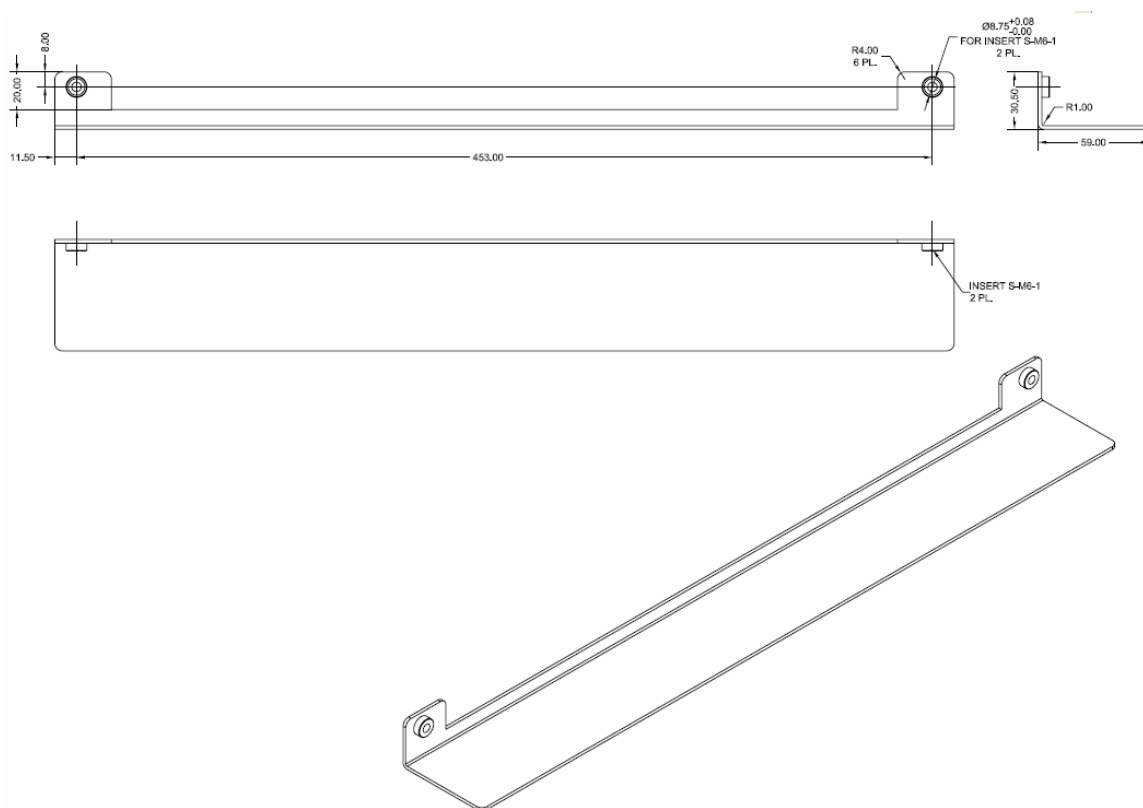


Figure G-2: Spécifications de dimensions des rack-slides de Scopus

Attachez la paire de rack-slides aux rails latéraux du rack, à l'emplacement désigné de l'appareil, avec quatre vis M6 (deux de chaque côté du rack) avant de continuer.

Après avoir resserré entièrement les rack-slides de soutien du rack, effectuez les étapes suivantes afin d'installer l'appareil dans le rack:

1. Posez l'appareil sur les rack-slides sur son emplacement désigné à l'intérieur de la partie du rack. L'Figure G-3 est une illustration claire, expliquant le positionnement de l'appareil sur les rack-slides.

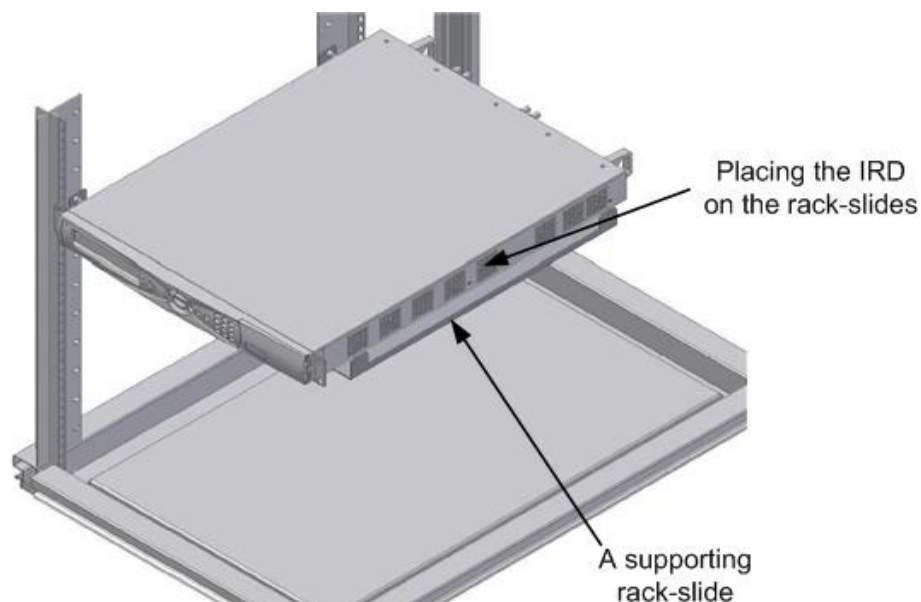


Figure G-3:poser l'appareil sur les Rack-Slides

2. L'appareil est fourni avec deux crochets d'assemblage (voir Figure G-4). Les crochets d'assemblage sont attachés sur les deux cotés du châssis de l'appareil, avant de sortir de l'usine. Alignez les trous des crochets d'assemblage avec les trous appropriés dans les rails latéraux des racks.

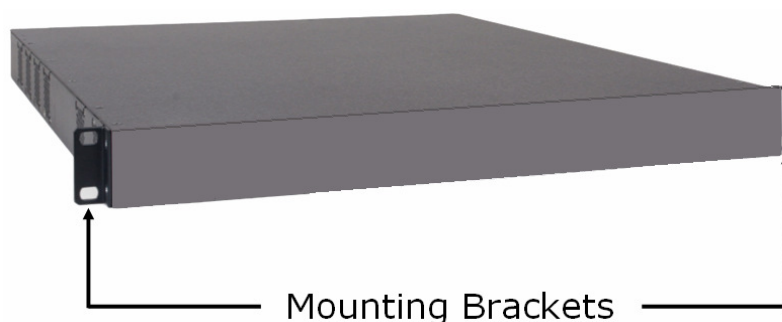


Figure G-4:Crochets d'assemblage attachés

3. Attachez les crochets d'assemblage aux rails latéraux avec quatre vis (deux de chaque côté). L'appareil est maintenant installé en toute sécurité à l'intérieur du rack.

Figure G-5 donne une vue générale de l'appareil, une fois installé dans le rack de 19 pouces (48 cm).

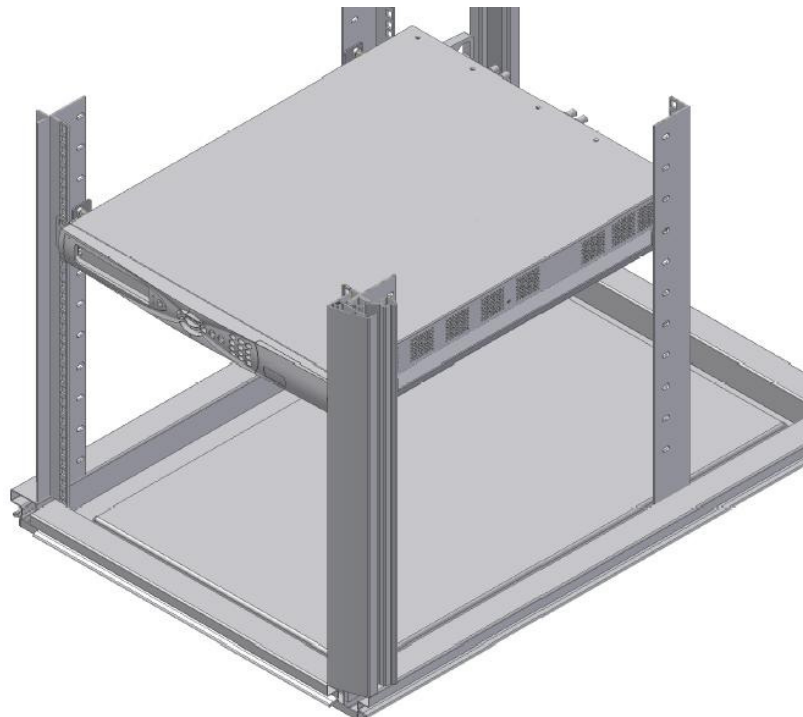


Figure G-5: Appareil monté sur une paire de Rack-Slides

Une seule paire de rack-slides peut porter jusqu'à 50Kg (110 lbs). Ceci permet d'économiser la place d'un rack en plaçant un certain nombre d'appareil sur rack de Scopus, les uns au dessus des autres (faites attention de ne pas dépasser le poids maximal).



AVERTISSEMENT

NE PAS POSER PLUS DE 50KG (110LBS) SUR UNE SEULE PAIRE DE RACK-SLIDES. CECI POURRAIT ENTRAINER L'EFFONDREMENT DES RACK-SLIDES, DES BLESSURES GRAVES AINSI QU'UN DOMMAGE A L'EQUIPEMENT.

Figure G-6 montre les différents appareils une fois montés sur rack, sur une seule paire de rack-slides.

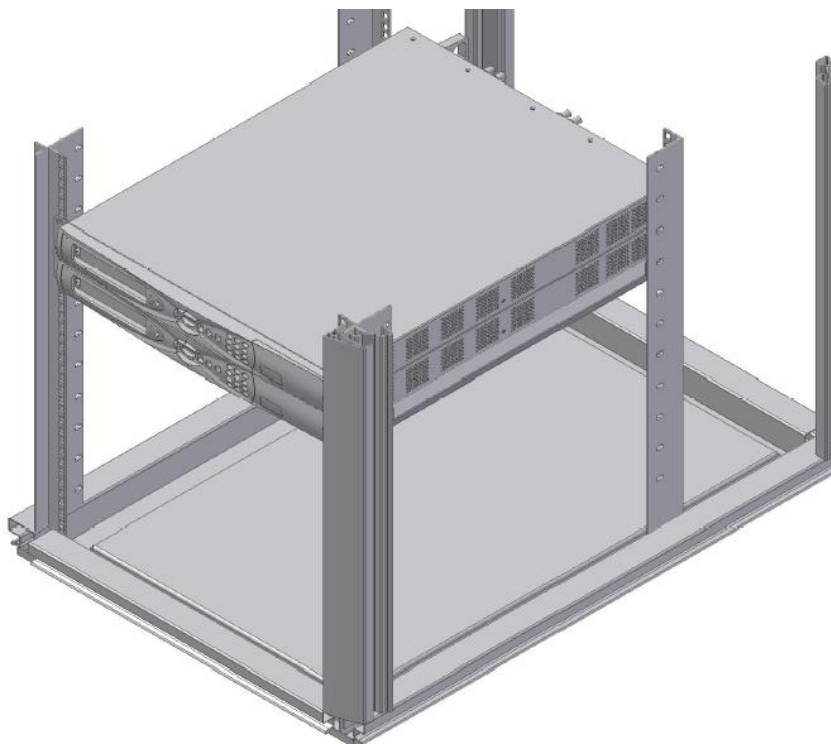


Figure G-6: Plusieurs appareils montés sur une simple paire de Rack-Slides

G.3.3 Insertion du module DVB-CI (PCMCIA)

⚠ ATTENTION

NE PAS OTER OU INSERER LE MODULE DVB-CI OU LA SMART CARD ALORS QUE LE IRD-2900 S'ALLUME OU DEMARRE.

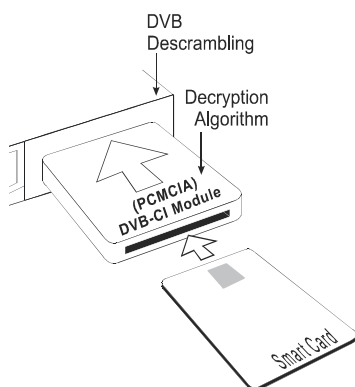


Figure G-7: DVB-CI Module

Figure 2-7 montre l'IRD-2900 avec le module DVB-CI (carte PCMCIA) et la Smart Card utilisés afin de décoder un signal entrant. L'IRD-2900 est fourni avec deux connecteurs PCMCIA pour deux modules DVB-CI. Le PCMCIA doit être fermement inséré dans l'un des deux connecteurs fournis afin de garantir le contact. Chaque module DVB-CI s'adapte à une Smart Card, insérée avec la marque UP indiquant vers le haut et vers l'avant.

Une fois installée, la carte est automatiquement détectée par l'IRD-2900 et est autorisée si les trois conditions suivantes sont remplies :

- La carte installée doit être compatible avec EN50221
- Les services ont été sélectionnés à **TV1/TV2** (pour plus d'informations veuillez vous conférer à la section 4.2.5.1)
- Utilisation d'une carte autorisée valide

G.4 CONNEXION PAR CABLE

L'IRD-2900 propose toutes les connexions sur son panneau arrière.

Le panneau arrière comprend des sorties audio, des sorties vidéo, des sorties de données et des interfaces de contrôle (voir Tableau G-1 pour les spécifications des connexions des câbles).

IRD-2900 Series
Professional Integrated Receiver Decoders



L'Image G-8 illustre le panneau arrière d'IRD-2992 afin de montrer les différents types de connecteurs.

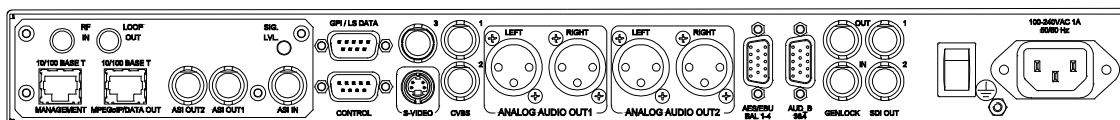


Image G-8: Panneau arrière d'IRD-2992

Tableau G-1: Panneau arrière d'IRD-2900 – Connecteurs et câbles

INTERFACE	TYPE DE CONNECTEUR	TYPE DE CABLE
<i>L-Band Front-end RF IN</i>	75 Ω F-Type	RG-6
<i>L-Band Front-end Loop-Through Connector</i>	75 Ω F-Type	RG-6
<i>MPEGoIP Input</i>	RJ-45	FTP Cat 5
<i>Management</i>	RJ-45	FTP Cat 5
<i>MPEGoIP/DATA Output</i>	RJ-45	FTP Cat 5
<i>Analog Audio Out1 left</i>	600 Ω XLR (équilibré)	Câble audio protégé
<i>Analog Audio Out1 right</i>	600 Ω XLR (équilibré)	Câble audio protégé
<i>Analog Audio Out2 left</i>	600 Ω XLR (équilibré)	Câble audio protégé
<i>Analog Audio Out2 right</i>	600 Ω XLR (équilibré)	Câble audio protégé
<i>Video Out, S-Video Y/C</i>	75 Ω DIN connecteur	Super Câble vidéo
<i>Composite Video Out, CVBS1</i>	75 Ω BNC	RG-59 RG11 A/U (recommandé)
<i>Composite Video Out, CVBS2</i>	75 Ω BNC	RG-59 RG11 A/U (recommandé)
<i>Composite Video Out, CVBS3</i>	75 Ω BNC	RG-59 RG11 A/U (recommandé)
<i>Data Output (RS-232/RS-422)</i>	9 PIN D-Type	Câble série
<i>Control (RS-232/RS-485)</i>	9 PIN D-Type	Câble série

Tableau G-1: Panneau arrière d'IRD-2900 – Connecteurs et câbles

INTERFACE	TYPE DE CONNECTEUR	TYPE DE CABLE
<i>Audio Balanced 3 & 4</i>	600 Ω D-sub 15p to 4XLR	Câble fibre-optique 204346 (matériel Scopus)
<i>AES/EBU 1-4 Unbalanced</i>	75 Ω 4xBNC or 75 Ω D-sub 15p	BNC Câble
<i>ASI in/out1/out2</i>	75 Ω BNC	RG-59 RG11 A/U (recommandé)
<i>Genlock In</i>	75 Ω BNC	RG-59 RG11 A/U (recommandé)
<i>Genlock Out</i>	75 Ω BNC	RG-59 RG11 A/U (recommandé)
<i>SDI out 1 & 2</i>	75 Ω BNC	RG-59

Les séries IRD-2900 assistent le contrôle final à partir d'un PC standard par un connecteur de série RS-232/RS-485.

L'Figure G-9 illustre l'interface de contrôle et les données de faible vitesse/ connecteurs male GPI 9-pin de numérotation des pins.

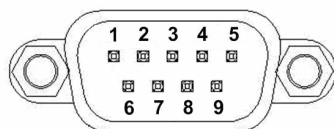


Figure G-9: 9-Pin connecteur male de numérotation des pins

Le **Tableau G-2** établit la liste des pin-out des connecteurs d'interface de contrôle RS-232/RS-485.

Tableau G-2: RS-232/RS-485 Control Connector Pin-Out

PIN	FONCTION	PIN	FONCTION
1	RS-232 CD/RS-485 TX (+)	6	RS-232 DSR/RS-485 TX (-)
2	RS-232 RxD	7	RS-232 RTS
3	RS-232 TxD	8	RS-232 CTS/RS-485 RX (+)
4	RS-232 DTR	9	RS-232 Ring/RS-485 RX (-)
5	Ordinaire		

Le **Tableau G-3** établit la liste des données de faible vitesse de RS-232 et l'interface pin-out GPI. Ce connecteur est utilisé au même moment aussi bien pour GPI que pour la sortie de données à faible vitesse.

Tableau G-3: RS-232 données a faible vitesse et GPI Pin-Out

PIN	FONCTION	PIN	FONCTION
1	GPI1 NC	6	GPI1 ordinaire
2	RxD	7	GPI1 NO
3	TxD	8	GPI2 NC
4	GPI2 ordinaire	9	GPI2 NO
5	ordinaire		

Le Tableau G-4 établit la liste des RS-422 données de vitesse élevée et Interface pin-out.

Tableau G-4: RS-422 Données de vitesse élevée Pin-Out

PIN	FONCTION	PIN	FONCTION
3	Autorisé (-)	6	Autorisé (+)
4	Données (-)	7	Données (-)
5	Données (+)	8	Horloge (+)

Le Tableau G-5 établit la liste de l'interface pin-out du câble à fibre optique Audio 3-4.

Tableau G-5: Pin-Out câble à fibre optique Audio 3-4 (Scopus P/N 204346)

PIN	FONCTION	PIN	FONCTION
1	Audio 4 XLR Right (+)	8	Audio 4 XLR Left Common
2	Audio 4 XLR Left (+)	10	Audio 3 XLR Left Common
3	Audio 3 XLR Right Common	11	Audio 4 XLR Right (-)
4	Audio 3 XLR Right (+)	12	Audio 4 XLR Left (-)
5	Audio 3 XLR Left (+)	14	Audio 3 XLR Right (-)
7	Audio 4 XLR Right Common	15	Audio 3 XLR Left (-)

Le Tableau G-6 établit la liste des c AES/ABU.

Tableau G-6: AES/EBU pin-out de câbles à fibres optiques équilibrés (Scopus P/N 204345)

PIN	FUNCTION	PIN	FUNCTION
1	AES/EBU 4 (+)	8	AES/EBU 3 ordinaire
2	AES/EBU 3 (+)	10	AES/EBU 1 ordinaire

**Tableau G-6: AES/EBU pin-out de câbles à fibres optiques équilibrés
(Scopus P/N 204345)**

PIN	FUNCTION	PIN	FUNCTION
3	AES/EBU 2 ordinaire	11	AES/EBU 4 (-)
4	AES/EBU 2 (+)	12	AES/EBU 3 (-)
	AES/EBU 1 (+)	14	AES/EBU 2 (-)
7	AES/EBU 4 ordinaire	15	AES/EBU 1 (-)

G.5 INITIALISATION ET CONFIGURATION

Avant de mettre en marche l'IRD-2900, assurez-vous que tous les câbles soient corrects. Assurez-vous que l'unité soit connectée à l'alimentation principale et correctement reliée à la masse.

G.5.1 Connection à l'alimentation électrique

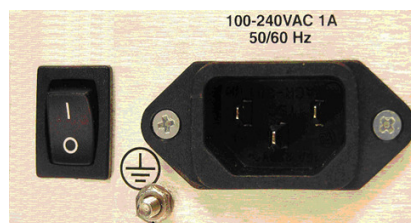
L'IRD-2900 est alimenté par une unité d'alimentation électrique AC ou par une source d'électricité externe DC. Les éléments suivants décrivent les connexions électriques AC et DC.

G.5.1.1 Alimentation électrique AC

La mise à la terre est fournie lorsque le câble d'alimentation AC est connecté au connecteur de l'appareil AC. L'IRD-2900 est livré avec la configuration du connecteur AC, comme mentionné dans Figure G-10.

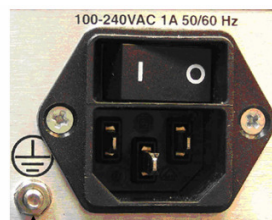
Avant de démarrer l'IRD-2900 monté sur rack, la vis de contact à la masse de l'appareil doit être connectée au boîtier du rack, devant être correctement relié à la masse (voir Figure G-10).

Configuration 1 – alimentation électrique AC



Grounding
Jackscrew

Configuration 2 – alimentation électrique AC



Grounding
Jackscrew

Figure G-10: Configuration d'alimentation électrique et vis de contact a la masse de montage sur rack.

G.5.1.2 Alimentation électrique DC

L'alimentation électrique DC est une caractéristique optionnelle pour IRD-2900. Si l'unité convient a une alimentation électrique -48V DC, connectez la source externe 48V DC en accomplissant les étapes suivantes (voir Figure G-11):

1. Connectez un fil source (+) 48V DC au contact **(+)** sur le tableau final d'alimentation.
2. Connectez un fil source (-) 48V DC au contact **(-)** sur le tableau final d'alimentation.
3. Connectez le fil du point a la masse au contact **(GND)** sur le tableau final d'alimentation.

Lorsque l'IRD est monté sur rack, la vis de contact (voir Figure G-11) doit être connectée au boîtier de rack, qui en retour, doit être correctement relié à la masse.



Figure G-11: Alimémentation électricité DC et vis de contact à la masse

G.5.2 Démarrer

Si vous démarrez l'IRD-2900 et que le receveur n'est pas réglé, attendez-vous à voir les avertissements suivants:

- **Avertissement Frontal** – Démodulateur non synchronisé
- **Avertissement en continu** – Non synchronisé – 0x47 détecté
- **Avertissement en continu** – PSI Non détecté

Dans le cas où la lumière d'avertissement de l'IRD-2900 allumée est orange, l'opérateur doit effectuer les actions suivantes:

- Réglez ou configurez l'appareil IRD-2900
- Sélectionnez un service à partir du flux de l'alimentation

Lorsque l'IRD-2900 est correctement configuré, la mention "All OK" est affichée et les deux lumières allumées sont vertes.

NOTE

Avant l'initialisation, passez en revue Chapter 4-Operation and Management, afin de savoir la façon d'utiliser et de naviguer à travers les menus et pour des informations concernant la configuration des paramètres.

G.5.3 Réglage

Le receveur IRD-2900 doit être configuré afin de recevoir un courant. Pour plus d'informations concernant un appareil IRD-2900 avec un module receveur DVB-S, voir la section 4.2.2. Pour des informations concernant un appareil IRD-2900 avec un module frontal MPEG-over-IP, voir la section 4.2.2.4

G.5.4 Effectuer une vérification de fonctionnement

Après avoir installé, initialisé ou configuré l'IRD, des vérifications de maintenance doivent être effectuées afin d'assurer le bon fonctionnement de l'unité. Un moniteur vidéo doit être connecté à l'IRD-2900 afin de vérifier les instructions systématiques des listes de vérification pour la vérification du bon fonctionnement.

Tableau G-7: IRD-2900 vérification de fonctionnement

ETAPE	VERIFIER
1	Sur l'affichage LCD, le message LCD note "STATUS OK".
2	Sur le panneau frontal de l'IRD-2900 les deux lumières vertes sont allumées.
3	Le service sélectionné est affiché sur l'écran LCD.
4	Une image vidéo est affichée sur le moniteur.
5	Des chaines audio gauche et droite.