

PowerVu[®] *Multiple Decryption Receiver*
Models D9228 and D9228-2

Please read this entire guide

Veillez lire entièrement ce guide

Bitte das gesamte Handbuch durchlesen

Sírvase leer completamente la presente guía

Si prega di leggere completamente questa guida

Important

Please read this entire guide before you install or operate this product. Give particular attention to all safety statements.

Important

Veillez lire entièrement ce guide avant d'installer ou d'utiliser ce produit. Prêtez une attention particulière à toutes les règles de sécurité.

Zu beachten

Bitte lesen Sie vor Aufstellen oder Inbetriebnahme des Gerätes dieses Handbuch in seiner Gesamtheit durch. Achten Sie dabei besonders auf die Sicherheitshinweise.

Importante

Sírvase leer la presente guía antes de instalar o emplear este producto. Preste especial atención a todos los avisos de seguridad.

Importante

Prima di installare o usare questo prodotto si prega di leggere completamente questa guida, facendo particolare attenzione a tutte le dichiarazioni di sicurezza.



Scientific
Atlanta

***PowerVu*[®] Multiple Decryption Receiver**
Models D9228 and D9228-2
Installation and Operation Guide

Notices

Trademark Acknowledgments

- PowerVu a trademark of Scientific-Atlanta, Inc.
- Scientific-Atlanta, Scientific-Atlanta Arcs logo and PowerVu are registered trademarks of Scientific-Atlanta, Inc.
- *All other trademarks shown are trademarks of their respective owners.*

Publication Disclaimer

Scientific-Atlanta, Inc., assumes no responsibility for errors or omissions that may appear in this publication. Scientific-Atlanta reserves the right to change this publication at any time without notice. This document is not to be construed as conferring by implication, estoppel, or otherwise any license or right under any copyright or patent, whether or not the use of any information in this document employs an invention claimed in any existing or later issued patent.

Copyright

©1999-2002 Scientific-Atlanta, Inc. All rights reserved. Printed in Canada.





Information in this publication is subject to change without notice. No part of this publication may be reproduced or transmitted in any form, by photocopy, microfilm, xerography, or any other means, or incorporated into any information retrieval system, electronic or mechanical, for any purpose, without the express permission of Scientific-Atlanta, Inc.

Safety precautions

Protect yourself from electric shock and your system from damage!

- This product complies with international safety and design standards. Observe all safety procedures that appear throughout this guide, and the safety symbols that are affixed to the product.
- If circumstances impair the safe operation of this product, stop operation and secure the product against further operation.

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

	This symbol indicates important operating or maintenance instructions.
	This symbol indicates a live terminal; the symbol points to the terminal device.
	This symbol indicates a protective earth terminal.
	This symbol indicates the presence of excessive or dangerous heat.

Power

- Important! You must earth this product if it is a Class I product.
- This product plugs into a power outlet. The power outlet must be near this product, and must be easily accessible.
- Connect this product only to the power source that is indicated on the back panel of this product.
- If this product does not have a mains power switch, the power cord serves this purpose.

continued on next page

Safety Precautions (continued)

Enclosure

- Do not allow moisture to enter this product.
- Do not open the enclosure of this product unless specifically instructed to do so.
- Do not push objects through openings in the enclosure of this product.

Cables

- Always disconnect all power cables servicing this product.
- Always pull on the plug or the connector to disconnect a cable. Never pull on the cable itself.
- Do not walk on, or place stress on cables or plugs.

Fuse

- Always use a fuse of the correct type and rating. The correct type and rating is indicated on the product.
- Always disconnect all power cables before you change a fuse.

Factory service





- Refer service only to factory-authorized service personnel.
-

Règles de sécurité

Protégez-vous des risques d'électrocution et protégez votre système contre les endommagements éventuels.

- Ce produit respecte les standards internationaux de sécurité et de conception. Veuillez observer toutes les procédures de sécurité qui apparaissent dans ce guide, ainsi que les symboles de sécurité qui figurent sur le produit.
- Si, du fait des circonstances, ce produit cesse de fonctionner normalement, cessez de l'utiliser et empêchez-en l'utilisation future.

Évitez le risque de blessures et de dommages aux produits! Ne procédez à aucune tâche tant que vous n'aurez pas entièrement assimilé les conditions indiquées par un symbole!

	Ce symbole figure dans la documentation accompagnant ce produit. Il indique d'importantes instructions de fonctionnement ou d'entretien.
	Ce symbole peut être attaché à ce produit. Il indique une borne sous tension; la direction indique la borne.
	Ce symbole peut être attaché à ce produit. Il indique une borne de terre de protection.
	Ce symbole peut être attaché à ce produit. Il indique une température excessive ou dangereuse.

Alimentation

- Important! Si ce produit fait partie de la classe I, vous devez le mettre à la terre.
- Ce produit se branche dans une prise murale. Cette dernière doit être placée à proximité du produit et doit être facilement accessible.
- Ne branchez ce produit qu'à la source d'alimentation indiquée sur son panneau arrière.
- Si ce produit n'a pas d'interrupteur d'alimentation générale, le cordon d'alimentation remplit ce rôle.

continued on next page

Règles de sécurité (suite)

Enceinte

- Ne laissez pas l'humidité pénétrer dans ce produit.
- N'ouvrez pas l'enceinte de ce produit, sauf instructions contraires.
- Ne forcez pas d'objets dans les ouvertures du boîtier.

Câbles

- Débranchez toujours tous les cordons d'alimentation avant de réparer ce produit.
- Tirez toujours sur la prise ou le connecteur pour débrancher un câble, Ne tirez jamais directement sur le câble.
- Ne marchez pas sur les câbles ou les prises et n'y exercez aucune pression.

Fusibles

- Utilisez toujours un fusible de type et de valeur corrects, indiqués sur le produit.
- Débranchez toujours tous les cordons d'alimentation avant de changer un fusible.

Réparations effectuées à l'usine





- Ne confiez les travaux de réparations qu'au personnel autorisé par l'usine.
-

Sicherheitsvorkehrungen

Schützen Sie sich gegen elektrischen Schlag, und Ihr Gerät gegen Beschädigung!

- Dieses Gerät entspricht internationalen Sicherheits-und Ausführungsnormen. Beachten Sie alle in diesem Handbuch enthaltenen Sicherheitshinweise sowie die am Gerät angebrachten Warnzeichen.
- Sollten örtliche Umstände den sicheren Betrieb dieses Gerätes beeinträchtigen, schalten Sie es ab und sichern es gegen weitere Benutzung.

Vermeiden Sie Verletzungen sowie Beschädigung des Gerätes! Wenn Sie zu einem der folgenden Warnzeichen gelangen, nicht weiterarbeiten, bis Sie seine Bedeutung voll verstanden haben!

	Dieses Symbol erscheint auf dem Gerät und/oder in der ihm beiliegenden Literatur. Es bedeutet wichtige, zu beachtende Betriebs- oder Wartungsanweisungen.
	Wenn dieses Zeichen am Gerät angebracht ist, warnt es vor einer spannungsführenden Stelle.
	Dieses Symbol erscheint auf dem Gerät und/oder in der ihm beiliegenden Literatur. Es bedeutet wichtige, zu beachtende Betriebs- oder Wartungsanweisungen.
	Wenn dieses Zeichen am Gerät angebracht ist, warnt es vor heißen Stellen, die zu Verbrennungen führen können.

Netzspannung

- Wichtig! Wenn dieses Gerät ein Produkt der Schutzklasse I ist, muß es geerdet werden
- Das Gerät ist an einer Steckdose anzuschließen. Diese muß sich leicht zugänglich in unmittelbarer Nähe des Gerätes befinden.
- Die Netzversorgung muß den auf der Rückwand des Gerätes angegebenen Werten entsprechen.
- Falls sich kein Hauptschalter am Gerät befindet, dient das Netzkabel diesem Zweck.

continued on next page

Sicherheitsvorkehrungen (fortsetzung)

Gehäuse

- Das Innere des Gerätes ist vor Feuchtigkeit zu schützen.
- Das Gehäuse ist nicht zu öffnen.
- Niemals einen Gegenstand durch die Gehäuseöffnungen einführen!

Kabel

- Vor jeglicher Wartung des Gerätes sind alle Kabel zu entfernen.
- Hierzu grundsätzlich am Stecker oder Verbindungsstück und niemals am Kabel selber ziehen.
- Nicht auf die Kabel oder Stecker treten oder diese einer Zugbelastung aussetzen.

Sicherung

- Grundsätzlich eine Sicherung der richtigen Ausführung und Leistung verwenden. Diese sind am Gerät angegeben.
- Vor Auswechseln der Sicherung stets alle Netzkabel entfernen.

Hersteller-Wartung





- Wartungsarbeiten sind nur durch vom Hersteller autorisierte Techniker vorzunehmen.
-

Precauciones de seguridad

¡Protéjase contra la electrocución y proteja su sistema contra los daños!

- Este producto cumple con los criterios internacionales de seguridad y diseño. Observe todas los procedimientos de seguridad que aparecen en esta guía, y los símbolos de seguridad adheridos a este producto.
- Si las circunstancias impiden la operación segura de este producto, suspenda la operación y asegure este producto para que no siga funcionando.

¡Evite lastimarse y evite dañar el producto! No avance más allá de cualquier símbolo hasta comprender completamente las condiciones indicadas!

	Encontrará este símbolo en el impreso que acompaña a este producto. Este símbolo indica instrucciones importantes de funcionamiento o mantenimiento.
	Es posible que este símbolo esté pegado al producto. Este símbolo indica un terminal vivo, la flecha apunta hacia el aparato terminal.
	Podría encontrar este símbolo pegado al producto. Este símbolo indica un terminal de protección de tierra.
	Podría encontrar este símbolo pegado al producto. Este símbolo indica calor excesivo o peligroso.

Power

- Importante! Es necesario poner el producto a tierra si es un producto de Clase I.
- Este producto se conecta a un enchufe. El enchufe necesita estar cerca del producto y ser fácilmente accesible.
- Conecte este producto únicamente a la fuente de suministro eléctrico indicada en el panel posterior del producto.
- Si el producto no tiene interruptor para la línea principal, utilice el cordón toma de corriente para este propósito.

continued on next page

Precauciones de seguridad (continuación)

Cubierta

- No permita que la humedad penetre en este producto.
- No abra la cubierta del producto a menos que se indique lo contrario.
- No introduzca objetos a través de las aberturas de la cubierta del producto.

Cables

- Desconecte siempre todos los cables eléctricos antes de revisar o reparar el producto.
- Tire siempre del enchufe o del conector para desconectar un cable. Nunca tire del cable mismo.
- No camine ni aplique presión sobre los cables o enchufes

Fusible

- Use siempre un fusible del tipo y clasificación correctos. El tipo y la clasificación correctos están indicados en el producto.
- Desconecte siempre todos los cables eléctricos antes de cambiar un fusible.

Revisión y reparación de fábrica





- Solo personal aprobado por la fábrica puede darle servicio al producto.
-

Precauzioni di sicurezza

Protegetevi da scosse elettriche e proteggete il vostro sistema da possibili danni!

- Questo prodotto soddisfa le norme internazionali per la sicurezza ed il design. Seguite tutte le procedure di sicurezza contenute in questa guida e i simboli di sicurezza applicati al prodotto.
- Se circostanze avverse compromettono la sicurezza d'uso di questo prodotto, interrompetene l'uso e assicuratevi che il prodotto non venga più utilizzato.

Evitare infortuni alla persona e danni al prodotto! Non procedere oltre a qualunque simbolo fino a quando non si siano comprese pienamente le condizioni indicate!

	Questo simbolo, che appare nella letteratura di accompagnamento del prodotto, indica importanti istruzioni d'uso e di manutenzione.
	Sul prodotto potete vedere questo simbolo che indica un dispositivo terminale sotto tensione; la freccia punta verso il dispositivo.
	Potrete trovare il presente simbolo applicato a questo prodotto. Questo simbolo indica un terminale protettivo di messa a terra.
	Potrete trovare il presente simbolo attaccato a questo prodotto. Questo simbolo indica un calore eccessivo o pericoloso.

Alimentazione

- Importante! Se questo prodotto è di Classe I, va messo a terra.
- Questo prodotto si inserisce in una presa di corrente. La presa di corrente deve essere in prossimità del prodotto, e deve essere facilmente accessibile.
- Collegare questo prodotto solamente alla fonte di alimentazione indicata sul pannello posteriore di questo prodotto.
- Se questo prodotto non è dotato di un interruttore principale, il cavo di alimentazione funge a questo scopo.

continued on next page

Precauzioni di sicurezza (continua)

Chiusura

- Proteggete da umidità questo prodotto.
- Non aprire la chiusura di questo prodotto a meno che non sia specificato diversamente.
- Non inserire oggetti attraverso le fessure della chiusura.

Cavi

- Staccare sempre tutti i cavi di alimentazione prima di svolgere l'assistenza tecnica al prodotto.
- Per scollegare un cavo tirate la spina o il connettore, non tirare mai il cavo stesso.
- Non calpestare o sottoporre a sollecitazioni i cavi o le prese.

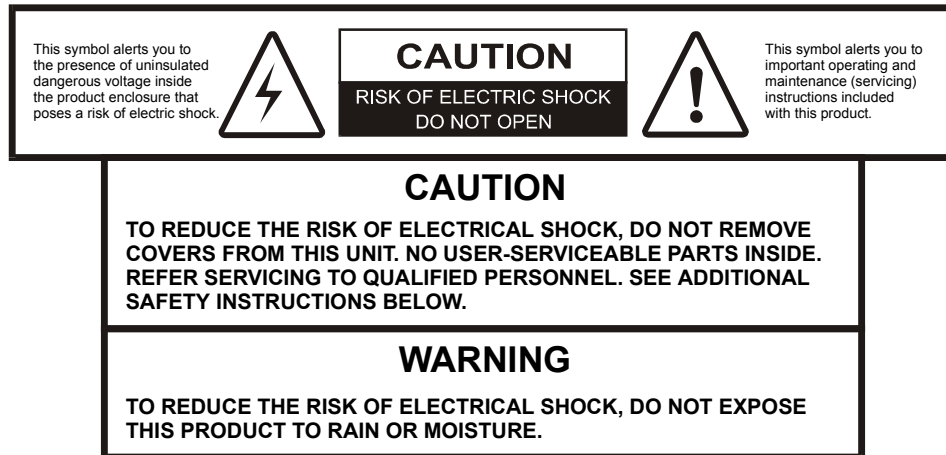
Fusibile

- Utilizzare sempre un fusibile che sia di tipo e potenza nominale corretta. Il tipo e la potenza nominale corretta sono indicati su questo prodotto.
- Staccare sempre tutti i cavi di alimentazione prima di sostituire un fusibile.

Riparazioni di fabbrica

- Per le riparazioni contattate solamente personale tecnico autorizzato dalla fabbrica.
-

Important Safeguards



1. **Read Instructions:** read all the safety and operating instructions before this product is operated.
2. **Retain Instructions:** retain the safety and operating instructions for future reference.
3. **Heed Warnings:** Observe all warnings on the product and in the operating instructions.
4. **Follow Instructions:** Follow all operating and use instructions.
5. **Cleaning:** Before cleaning, unplug this product from the wall power outlet. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6. **Attachments:** Do not use attachments not recommended by Scientific-Atlanta as they may cause hazards.
7. **Water and Moisture:** Do not use this product near water - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and so on.

PORTABLE CART WARNING



continued on next page

Important Safeguards (continued)

8. **Accessories:** Do not place this product on an unstable cart, stand, bracket, or table. The product may fall causing serious injury to a child or adult, and serious damage to the product. Use only with a cart, stand, bracket, or table recommended by Scientific-Atlanta. Any mounting of the product should follow the mounting instructions, and should use a mounting accessory recommended by Scientific-Atlanta. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
9. **Ventilation:** Slots and openings in the cabinet are provide for ventilation and ensure reliable operation of the product, and protect it from overheating. You must not block or cover these openings. Never place the product on a bed, sofa, rug, or other similar surface, which could block these ventilation openings. Do not place this product in a built-in installation such as a bookcase or rack unless proper ventilation is provided, or the instructions have been adhered to.
10. **Heat:** Locate this product away from heat sources such as radiators, heat registers, stoves or other products (including amplifiers) that radiate heat.
11. **Power Sources:** Operate this product only from the type of power source indicated on the marking label. If you are not sure of the type of power supply in your home or business, consult your appliance dealer or local power company. For products intended to operate from battery power, or other sources, refer to the operating instructions supplied with the product. For applications other than in North America, use a suitable attachment plug adapter to connect to the power source. To determine the appropriate attachment adapter type, refer to qualified technical personnel.
12. **Polarization:** This product may be equipped with a polarized alternating current line plug (that is, a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not attempt to defeat the safety purpose of the polarized plug.
13. **Power Cord Protection:** Route power-supply cords so that they are not likely to be walked on or pinched by items placed upon or against them. Pay particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

continued on next page

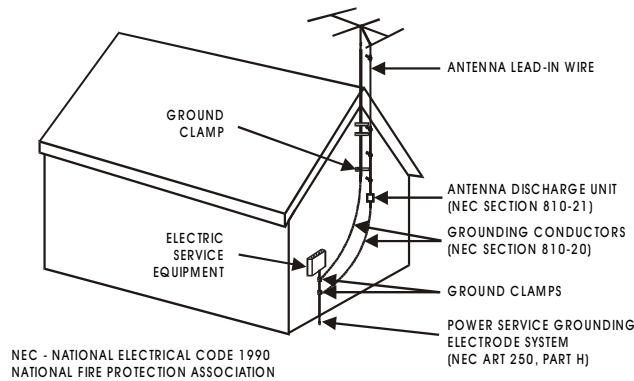
Important Safeguards (continued)

14. **Lightning:** For added protection for this product during a lightning storm or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the product due to lightning and power-line surges.
15. **Power Lines:** Do not locate an outside antenna system in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power or circuits. When installing an outside antenna system, take extreme care to keep from touching such power lines or circuits as contact with them might be fatal.
16. **Overloading:** Do not overload wall outlets, extension cords or integral convenience receptacles, as this can result in a risk of fire or electric shock.
17. **Object and Liquid Entry:** Never push objects of any kind into this product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.
18. **Servicing:** Do not attempt to service this product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. **Damage Requiring Service:** Unplug this product from the wall power outlet and refer servicing to qualified service personnel under the following conditions:
 - (a) When the power-supply cord or plug is damaged.
 - (b) If liquid has been spilled, or objects have fallen into the product.
 - (c) If the product has been exposed to rain or water.
 - (d) If the product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to its normal operation.
 - (e) If the product has been dropped or damaged in any way.
 - (f) The product exhibits a distinct change in performance.
20. **Replacement Parts:** When replacement parts are required, be sure the service technician uses replacement parts specified by Scientific-Atlanta, or parts having the same operating characteristics as the original parts. Unauthorized part substitutions made may result in fire, electric shock or other hazards.

continued on next page

Important Safeguards (continued)

21. **Safety Check:** Upon completion of any service or repairs made to this product, ask the service technician to perform safety checks to determine that the product is in safe operating condition.
22. **Outdoor Antenna Grounding:** If an outside antenna or cable system is connected to this product, ensure that the antenna or cable system is properly grounded to provide protection against voltage surges and built-up static charges. Appropriate sections of the National Electrical Code (NFPA 1990) provide information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode (see figure below).



TO CATV SYSTEM INSTALLER

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the National Electrical Code (NEC) that provides guidelines for proper grounding, and in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of entry as practical.

Important notice for Class I apparatus

Important

This notice is applicable only if this apparatus has a three-pin power plug (Class I).

Warning

This apparatus must be earthed.

Mains lead colors

The following is applicable to Class I apparatus supplied with a flexible cord having cores colored green-and-yellow, brown, and blue.

Important! The wires in this mains lead are colored in accordance with the following code.

Color	Mains lead wire
Green and yellow	Earth
Blue	Neutral
Brown	Live

Connecting the mains lead

As the colors of the wires in the mains lead of this apparatus may not correspond to the colored markings identifying the terminals in your plug, proceed as follows.

IF the wire is colored	Then connect it to ...
Blue	...the Neutral terminal Note: The Neutral terminal is typically marked N or colored black.
Brown	...the Live terminal Note: The Live terminal is typically marked L or colored red.
Green and yellow	...the Earth terminal Note: The Earth terminal is typically marked E (or marked with the safety earth symbol, or colored green and yellow.

Important notice for Class II apparatus

Important

This notice is applicable only if this apparatus has a two-pin power plug (Class II).



A-C mains lead connection (Important)

The wires in this mains lead are colored in accordance with the following code:

- Blue: Neutral
- Brown: Live

As the colors of the wires in the mains lead of this apparatus may not correspond with colored markings identifying the terminal in your apparatus, proceed as follows:

1. Connect the blue wire to the black terminal marked with the letter N.
2. Connect the brown wire to the red terminal marked with the letter L.



WARNING:

Do not connect the blue or brown wires to the earth terminal of a three-pin plug.

Note: The earth terminal is distinguished by its color (green, or green-yellow), or by being marked with the letter E, or marked with the safety earth symbol (⏏).

Warranty and Disclaimer

Statement

Scientific-Atlanta warrants good title to any hardware furnished by it. For software, we warrant that we have the right to grant any software license granted. We warrant during the Warranty Period as defined below that services will be performed in a good and workmanlike manner. We also warrant that during the Warranty Period, each item we deliver (other than separately licensed software and services) (an "Item") will be free from material defects in workmanship and materials and under ordinary use, conform in all material respects to its published specifications current at the time the Item was shipped.

Items may include refurbished goods, subassemblies or components, which we warrant as provided in this section.

Warranty Period

The Warranty Period begins on the date the Item is delivered and extends for 12 months for hardware and 90 days for software, parts and services. We will repair or replace, at our option, any product returned to us by the purchaser of such Item at the purchaser's expense during the Warranty Period, which fails to satisfy this Warranty, unless the failure was the result of shipping; improper installation, maintenance or use; abnormal conditions of operation; attempted modification or repair by the purchaser; or an act of God. We will reperform any services, which do not conform to this Warranty provided we have received notice of non-conformance within the Warranty Period.

Disclaimer

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING ANY WARRANTY OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NONINFRINGEMENT. PURCHASER'S SOLE REMEDY FOR ANY BREACH OF WARRANTY IS THE REPAIR OR REPLACEMENT, AT SCIENTIFIC-ATLANTA'S OPTION, OF THE FAILED ITEM. SCIENTIFIC-ATLANTA SPECIFICALLY DISCLAIMS ANY AND ALL WARRANTIES, EXPRESS OR IMPLIED, TO CUSTOMERS OF THE PURCHASER.

Year 2000 Statement

Certain Items may require upgrades to accept and correctly process dates before, on and after January 1, 2000 ("Year 2000 Ready"). In addition, we cannot warrant that any Items, even though themselves Year 2000 Ready will operate correctly when used in conjunction with hardware, software, data, applications or services of third parties or products previously purchased from us. We cannot be responsible for the interoperability of our equipment with hardware, software, data, applications or other services of third parties and advise the purchaser to contact all other third party suppliers and to perform its own testing adequately in advance.

continued on next page

Warranty and Disclaimer (continued)

Purchaser's Responsibility

The purchaser must pay packing, crating, and transportation costs to and from the factory.

At the purchaser's request, we will make reasonable efforts to provide warranty service at the purchaser's premises, provided the purchaser pays our then current rates for field services and the associated travel and living expenses.

Claims Under This Warranty

In case of a claim under this warranty, the purchaser should do the following:

1. Notify us by giving the Item model number, serial number and details of the difficulty.
2. On receipt of this information, the purchaser will be given service data or shipping instructions.
3. On receipt of shipping instructions, forward the Item prepaid.
4. If the Item or fault is not covered by warranty, an estimate of charges will be furnished before work begins.

Limitation of Liability

EXCEPT FOR CLAIMS FOR PERSONAL INJURY CAUSED BY ITEMS FURNISHED BY SCIENTIFIC-ATLANTA, SCIENTIFIC-ATLANTA SHALL NOT BE LIABLE TO THE PURCHASER OR ANY OTHER PERSON OR ENTITY FOR INDIRECT, SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE, OR EXEMPLARY DAMAGES ARISING OUT OF OR IN CONNECTION WITH THE TRANSACTION IN WHICH THE ITEMS OR SERVICES WERE FURNISHED OR ANY ACTS OR OMISSIONS ASSOCIATED THEREWITH OR RELATING TO THE SALE OR USE OF ANY ITEMS OR SERVICES FURNISHED, WHETHER SUCH CLAIM IS BASED ON BREACH OF WARRANTY, CONTRACT, TORT OR OTHER LEGAL THEORY AND REGARDLESS OF THE CAUSES OF SUCH LOSS OR DAMAGES OR WHETHER ANY OTHER REMEDY PROVIDED HEREIN FAILS. IN NO EVENT SHALL SCIENTIFIC-ATLANTA'S TOTAL LIABILITY UNDER A CONTRACT EXCEED AN AMOUNT EQUAL TO THE TOTAL AMOUNT PAID FOR ITEMS PURCHASED UNDER SUCH CONTRACT.

Contents

Chapter 1	Introducing the PowerVu <i>Plus</i> Model D9228 Multiple Decryption Receiver	
	Overview	1-1
	Features	1-2
	Front Panel.....	1-3
	Back Panel.....	1-4
	Typical Application.....	1-7
	Setup Flowchart	1-8
Chapter 2	Using Presets and Lock Levels	
	Overview	2-1
	Presets.....	2-2
	MDR Lock Levels.....	2-9
Chapter 3	Using the Menus	
	Overview	3-1
	Terms and Concepts.....	3-2
	On-Screen Help.....	3-3
	Menu Tree.....	3-4
	R10-Main Menu	3-5
	R21-Configuration Menu.....	3-7
	R22-Diagnostics Menu	3-12
	R23-Misc Setup Menu	3-13
	R24-Presets Setup Window	3-15
	R31/32-RF Setup Menu	3-16
	R33-Map Menu	3-19
	R34-Misc Diagnostics Menu.....	3-23
	R35-Download Menu	3-27
	R36-CA Diagnostics Menu	3-30
	R37-IP Network Setup Menu.....	3-32
Appendix A	Customer Support Information	
Appendix B	Technical Specifications	
Appendix C	Alt Mode Operation	
Appendix D	Preventative Maintenance	
Appendix E	Product Identification	
Appendix F	Possible Output Configurations	
Appendix G	Declarations of Conformity	

Chapter 1

Getting Started

Overview

Introduction

The PowerVu *Plus* Multiple Decryption Receiver (MDR) receives, demodulates, and decrypts multiple, PowerVu-encrypted MPEG-2/DVB digital programs delivered via satellite or DVB-ASI interface. You can also use the MDR to process transport streams without descrambling. If necessary, the received multiple program transport stream (MPTS) can be processed through PID dropping or PID remapping to suit various applications. Full or partially modified transport streams can be made available to four independent outputs (two DVB-ASI and two configurable as DHEI or SWIF). The individual program within the transport stream can be decoded locally and presented in analog format for local monitoring. A graphical on-screen display along with the front panel control provides simple setup and diagnosis.

In This Chapter

This chapter contains the following topics.

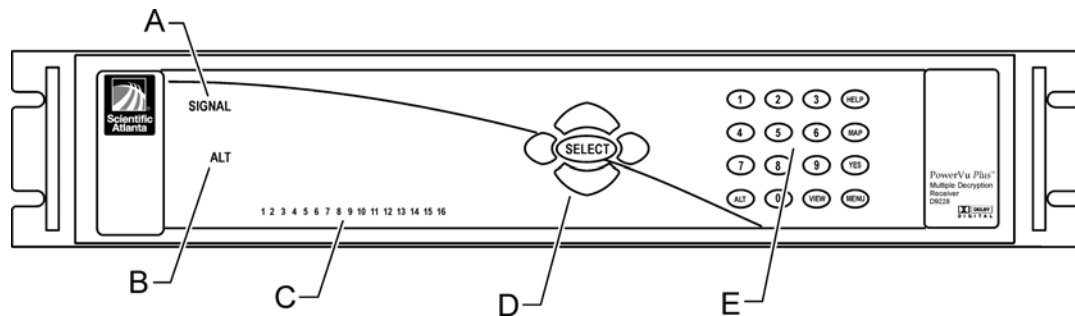
Topic	See Page
Overview	1-1
Features	1-2
Front Panel	1-3
Back Panel	1-4
Typical Application	1-7
Setup Flowchart	1-8



Features

The PowerVu *Plus* Multiple Decryption Receiver has the following features:

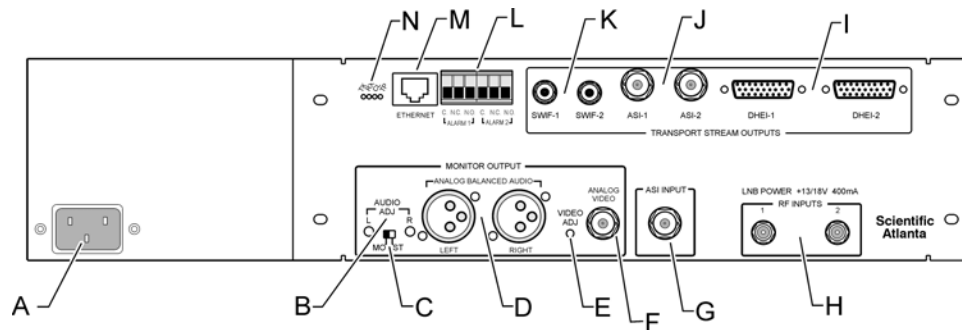
- Two L-Band inputs
 - Variable symbol rates from 1 to 45 Msymbols/s
 - DVB-ASI transport input
 - DES & DVB de-scrambling
 - Decrypt up to 16 programs with video and audio services
 - PID dropping/re-mapping
 - Four independent transport stream outputs:
 - Two dedicated DVB-ASI outputs
 - Two outputs independently selectable between SWIF and DHEI
 - Ethernet interface supporting Telnet and SNMP MIB v.2
 - Two programmable alarm/warning relay contact closure outputs (not available in CE version)
 - Easy control via on-screen-display and front panel control
 - Analog decoded outputs for monitoring: 4:2:0 video and MPEG-1 or Dolby® Digital (AC-3) audio
-

Front Panel



Ref	Description
A	SIGNAL LED: when flashing, indicates power is on but there is no valid MPEG signal. When illuminated continuously, indicates power is on and signal is being received.
B	ALT LED: if illuminated, indicates the MDR is in Alt mode. For a description of Alt mode, see Appendix C herein.
C	<p>16 ISE (Inboard Security Element) LEDs: these LEDs correspond to the 16 ISEs in the MDR.</p> <p>If extinguished, indicates the ISE is not assigned to an MPEG program.</p> <p>When illuminated continuously, indicates the ISE has been assigned to decrypt a program and the program has been decrypted successfully, or the program is being broadcast in the clear.</p> <p>If flashing, the ISE assigned to a scrambled program has not been authorized to decrypt it. Contact uplink personnel for authorization.</p>
D	Direction and Select keys: press the direction keys to highlight different parts of the on-screen menu. Press the Select key to enter and exit Edit mode, and to make certain screen selections.
E	<p>Numeric and special function keys: two of which are described below:</p> <p> Displays context-sensitive help information</p> <p> Allows operation via front panel only</p>

Back Panel



Ref	Type	Description
A	Detectable a-c socket	Due to different safety compliance requirements, this might be grounded or non-grounded.
B	Trim potentiometer	Audio L/R: provides $\pm 6\text{dB}$ adjustment on the balanced left and right audio channel output levels. Factory set to provide $+18\text{dBu}$ out at full range.
C	Slide switch	MO/ST (mono/stereo): provides (Balanced Audio) combined L+R channel monaural output when set to MO , and discrete Left and Right channel stereo output when set to ST .
D	XLR balanced	Analog balanced audio on XLR connectors: Pinouts are as follows: <div style="text-align: center;"> </div>
E	Trim potentiometer	Video adjust to adjusting video levels.
F	BNC connector	Analog video: provides composite video output for connection to a TV monitor.
G	BNC connector	ASI Input: provides DVB-ASI transport signal input.

continued on next page

Back Panel (continued)

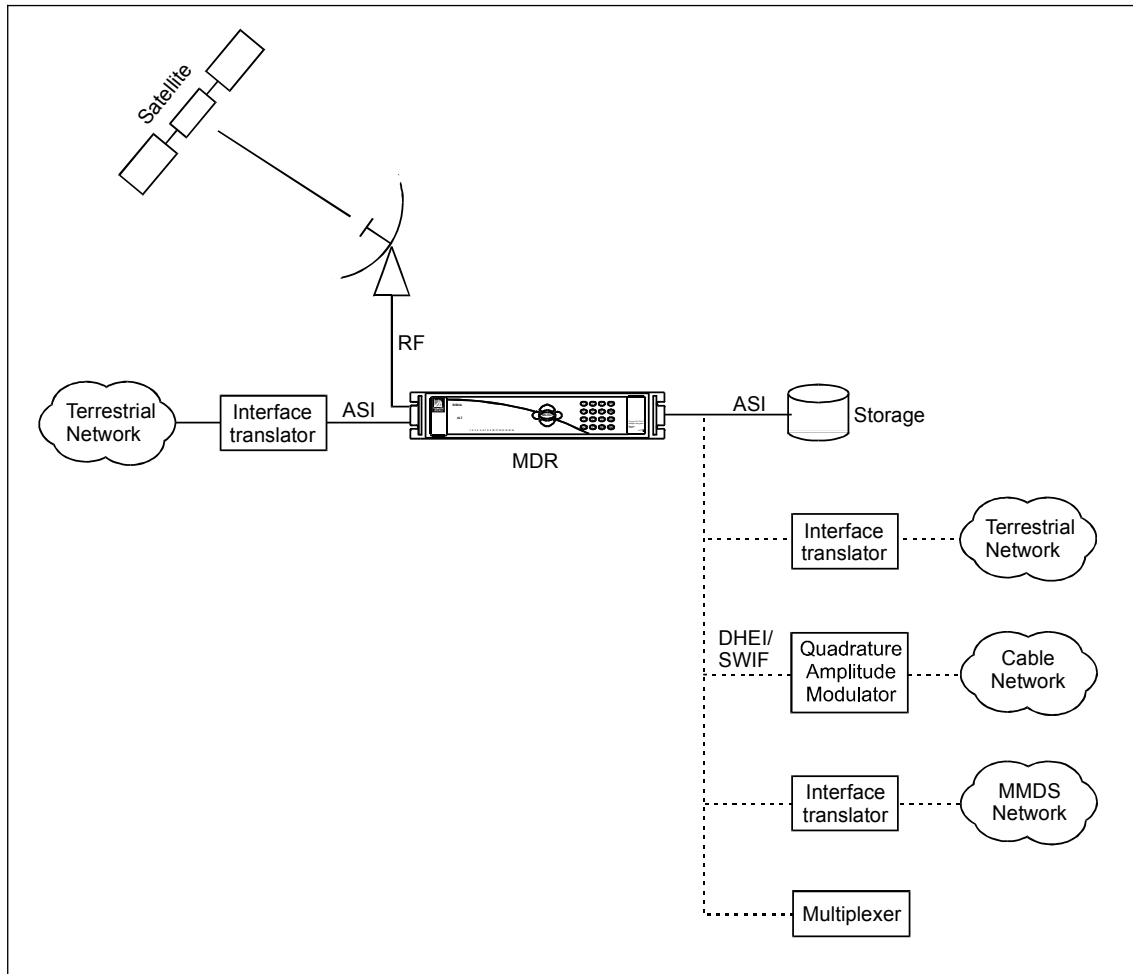
Ref	Type	Description																																																				
H	Type F connector	RF inputs: provide RF signal input, remote LNB power for use when no external LNB power source is available plus automatic 22 kHz tone signaling for dual-Ku band LNB operation.																																																				
I	26-pin high density connector	DHEI -1/2. DHEI output of MPEG-2 packets. DHEI Pinouts are as follows: <table><tr><td>Pin 1</td><td>GND</td><td>Pin 14</td><td>NC</td></tr><tr><td>Pin 2</td><td>NC</td><td>Pin 15</td><td>PDATB0-</td></tr><tr><td>Pin 3</td><td>NC</td><td>Pin 16</td><td>PSYNCB0-</td></tr><tr><td>Pin 4</td><td>NC</td><td>Pin 17</td><td>SIGNAL GND</td></tr><tr><td>Pin 5</td><td>NC</td><td>Pin 18</td><td>NC</td></tr><tr><td>Pin 6</td><td>NC</td><td>Pin 19</td><td>REFCLKB0+</td></tr><tr><td>Pin 7</td><td>NC</td><td>Pin 20</td><td>REFCLKB0-</td></tr><tr><td>Pin 8</td><td>NC</td><td>Pin 21</td><td>PCLKB0+</td></tr><tr><td>Pin 9</td><td>SIGNAL GND</td><td>Pin 22</td><td>PCLKB0-</td></tr><tr><td>Pin 10</td><td>NC</td><td>Pin 23</td><td>PDATB0+</td></tr><tr><td>Pin 11</td><td>NC</td><td>Pin 24</td><td>PSYNCB0+</td></tr><tr><td>Pin 12</td><td>NC</td><td>Pin 25</td><td>SENSEBOL</td></tr><tr><td>Pin 13</td><td>NC</td><td>Pin 26</td><td>NC</td></tr></table>	Pin 1	GND	Pin 14	NC	Pin 2	NC	Pin 15	PDATB0-	Pin 3	NC	Pin 16	PSYNCB0-	Pin 4	NC	Pin 17	SIGNAL GND	Pin 5	NC	Pin 18	NC	Pin 6	NC	Pin 19	REFCLKB0+	Pin 7	NC	Pin 20	REFCLKB0-	Pin 8	NC	Pin 21	PCLKB0+	Pin 9	SIGNAL GND	Pin 22	PCLKB0-	Pin 10	NC	Pin 23	PDATB0+	Pin 11	NC	Pin 24	PSYNCB0+	Pin 12	NC	Pin 25	SENSEBOL	Pin 13	NC	Pin 26	NC
Pin 1	GND	Pin 14	NC																																																			
Pin 2	NC	Pin 15	PDATB0-																																																			
Pin 3	NC	Pin 16	PSYNCB0-																																																			
Pin 4	NC	Pin 17	SIGNAL GND																																																			
Pin 5	NC	Pin 18	NC																																																			
Pin 6	NC	Pin 19	REFCLKB0+																																																			
Pin 7	NC	Pin 20	REFCLKB0-																																																			
Pin 8	NC	Pin 21	PCLKB0+																																																			
Pin 9	SIGNAL GND	Pin 22	PCLKB0-																																																			
Pin 10	NC	Pin 23	PDATB0+																																																			
Pin 11	NC	Pin 24	PSYNCB0+																																																			
Pin 12	NC	Pin 25	SENSEBOL																																																			
Pin 13	NC	Pin 26	NC																																																			
J	BNC connector	ASI-1/2: provide ASI output of MPEG-2 packets.																																																				
K	ST (fiber optic)	SWIF-1/2: used to output MPEG-2 packets.																																																				
L	Euro-Type (pluggable)	Not available in CE (International) version: Two separate terminal blocks (Alarm 1 and Alarm 2) provide alarm output signals for connecting to an external alarm device. You can program alarm activation criteria, depending upon your specific application, (for example, in the event of a receiver error condition due to signal loss, receiver de-authorization, and so on), where an alarm output signal can cause alarm detection equipment to switch over to a spare or auxiliary (standby) equipment.																																																				

continued on next page

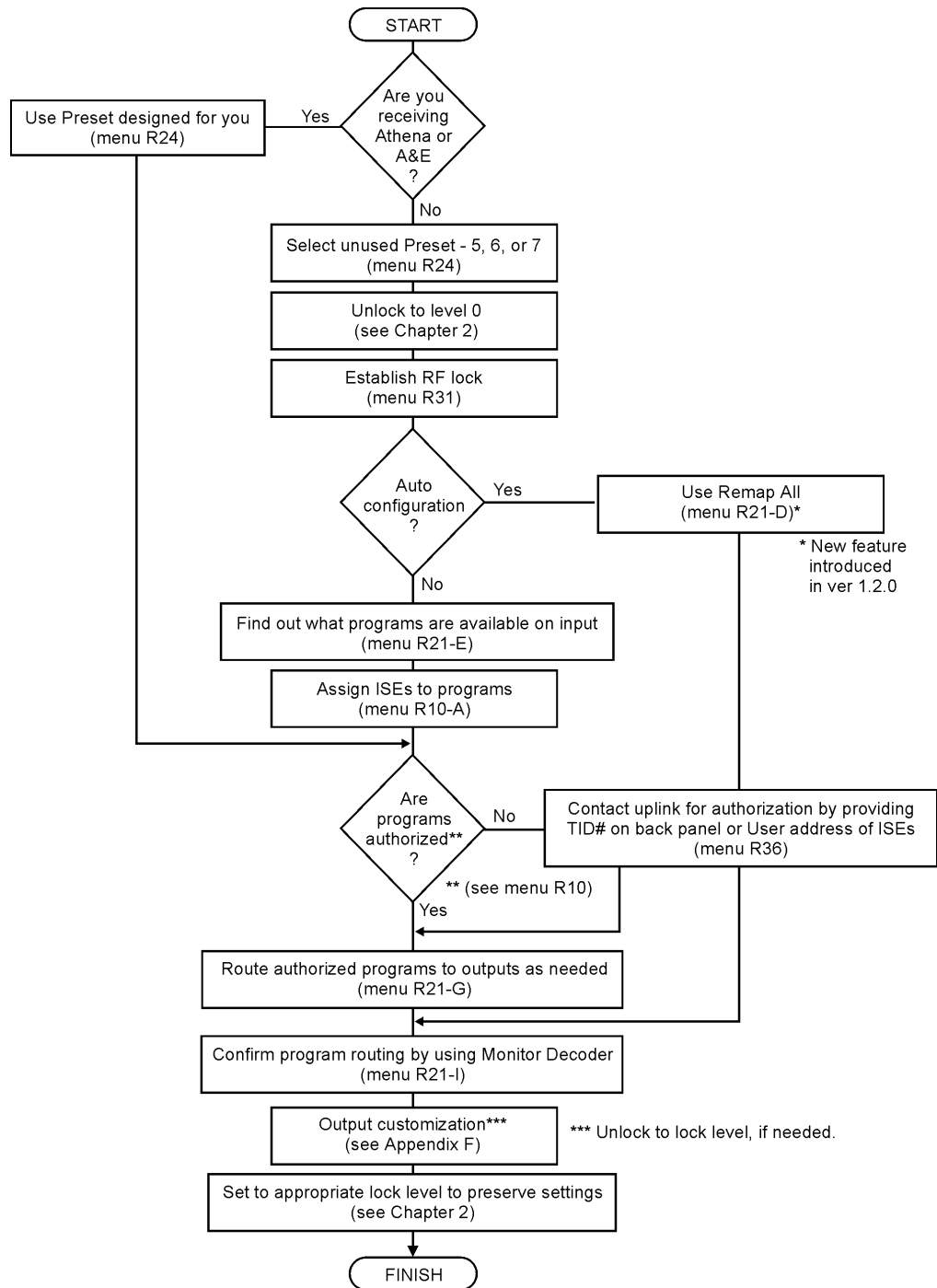
Back Panel (continued)

Ref	Type	Description
M	RJ-45 connector	10 Base T Ethernet connection.
N	LEDs	Ethernet status LEDs as follows: TX - Transmit status. Illuminates when transmitting. RX - Receive status. Illuminates when receiving. CL - Collision: illuminated when a data collision is detected. TP - Twisted pair integrity: illuminates when link integrity is OK.

Typical Application



Setup Flowchart



Chapter 2

Using Presets and Lock Levels

Overview

Introduction

This chapter describes presets and lock levels. A preset is a compilation of all settings on the MDR. By invoking a specifically designed preset, you can use the MDR immediately without having to set the various menus that comprise the MDR's configuration.

A lock level is a setting that can selectively restrict access to various MDR functionalities. For instance, at some lock levels you can change any configuration on any menu, whereas at other lock levels you are denied even front panel access.

In This Chapter

This chapter contains the following topics.

Topic	See Page
Overview	2-1
Presets	2-2
MDR Lock Levels	2-9

Presets

Factory-Installed, Athena/A&E Presets

To facilitate easy installation for cable headend operators, a number of Athena/A&E preset configurations have been loaded into the MDR at the factory. These include configurations for all relevant menus such as input selection, Inboard Security Element (ISE) assignment for program decryption, and routing of various (descrambled) programs to transport outputs.

1. Attach a video monitor to the Monitor Analog Video output of the MDR.
2. Attach the L-band input to RF input 1 on the rear panel of the MDR.
3. Apply a-c power to the MDR.
4. Press the **MENU** key on the front panel to access the **R10-Main Menu** screen.
5. Move the cursor to the Preset icon, then press **SELECT**.
6. Select the **Recal** button in the pop-up box.
7. Type in the number to recall the preset configuration (for example, 1 for Athena 1, 2 for Athena 2, ... 8 for A&E). The preset configuration will be loaded (it may take a few seconds to load the configuration from memory.)

All five factory configured presets (1,2, 3, 4, and 8) are set to Lock level 1 to protect them from accidental change. To unlock and change the configuration and RF parameters, refer to the next section in this chapter.

8. Once the preset is selected, you should achieve input signal lock. This will be evident by the SIGNAL LED being illuminated. If your MDR cannot lock to the input signal, go to the Diag(nostics) Menu and read the help associated with the red buttons to determine the problem.

Depending upon your application and requirements, you may need to further modify the configuration to suit your implementation. 64QAM channels can carry 27 Mbps whereas 256QAM can carry 38.8 Mbps. Due to bandwidth limitations, you may not want to route all programs to all outputs.

continued on next page

Presets (continued)

Preset 1: Athena 1

R10-Main Menu ISE Assignment

1	2	3	4
36	37	38	39
40	41	101	102
103	104	105	106
Config	Diag	Misc	Preset 1

R31/32 RF Setup Menu Configuration Settings

Frequency	04.06000	L-band Freq	1090.000
FEC Rate	7/8	Band	C
Symbol Rate	29.37	AFC Level	
LNB Power	OFF	Signal Level	
Polarization	H	BER	
LO Freq #1	5.150	Signal Lock	Lock+Sig
LO Freq #2	10.600	Transport ID	
Crossover	11.700		
Network ID	1	EXIT	

continued on next page

Presets (continued)

Preset 2: Athena 2

R10-Main Menu ISE Assignment

42	43	44	45
46	47	48	49
50	51	107	108
109	110	111	112
Config	Diag	Misc	Preset 2

R31/32 RF Setup Menu Configuration Settings

Frequency	04.1000	L-band Freq	1050.000
FEC Rate	7/8	Band	C
Symbol Rate	29.37	AFC Level	
LNB Power	OFF	Signal Level	
Polarization	H	BER	
LO Freq #1	5.150	Signal Lock	Lock+Sig
LO Freq #2	10.600	Transport ID	
Crossover	11.700		
Network ID	1	EXIT	

continued on next page

Presets (continued)

Preset 3: Athena 3

R10-Main Menu ISE Assignment

52	53	54	55
56	57	58	59
60	61	113	114
115	116	117	118
Config	Diag	Misc	Preset 3

R31/32 RF Setup Menu Configuration Settings

Frequency	04.1600	L-band Freq	990.000
FEC Rate	7/8	Band	C
Symbol Rate	29.37	AFC Level	
LNB Power	OFF	Signal Level	
Polarization	H	BER	
LO Freq #1	5.150	Signal Lock	Lock+Sig
LO Freq #2	10.600	Transport ID	
Crossover	11.700		
Network ID	1	EXIT	

continued on next page

Presets (continued)

Preset 4: Athena 4

R10-Main Menu ISE Assignment

1	2	3	4
45	46	47	48
49	50	119	120
121	122	123	124
Config	Diag	Misc	Preset 4

R31/32 RF Setup Menu Configuration Settings

Frequency	03.9400	L-band Freq	1210.000
FEC Rate	7/8	Band	C
Symbol Rate	29.37	AFC Level	
LNB Power	OFF	Signal Level	
Polarization	H	BER	
LO Freq #1	5.150	Signal Lock	Lock+Sig
LO Freq #2	10.600	Transport ID	
Crossover	11.700		
Network ID	1	EXIT	

continued on next page

Presets (continued)

Preset 8: A&E Multiplex

R10-Main Menu ISE Assignment

10	20	30	40
50	60	70	80
Unassigned	Unassigned	Unassigned	Unassigned
Unassigned	Unassigned	Unassigned	Unassigned
Config	Diag	Misc	Preset 8

R31/32 RF Setup Menu Configuration Settings

Frequency	03.9800	L-band Freq	1170.00
FEC Rate	$\frac{3}{4}$	Band	C
Symbol Rate	27.69	AFC Level	
LNB Power	OFF	Signal Level	
Polarization	H	BER	
LO Freq #1	5.150	Signal Lock	Lock+Sig
LO Freq #2	10.600	Transport ID	
Crossover	11.700		
Network ID	2	EXIT	

continued on next page

Setting up Your Own Preset

1. Select an unused preset, for example, Preset 5 on the **R10-Main Menu**.



CAUTION: Scientific-Atlanta does not recommend changing the factory-configured presets as they are set for particular applications. Always use an unused preset for your new configuration. All changes can only be made when the selected preset is set to Lock level 0. The next section describes changes.

2. Once a Preset lock level has been set to 0, select the Config icon in the **R10-Main Menu** and select the RF icon to set up RF input parameters. Note that you need to enter the Downlink Frequency. For a typical C-band LNB, Downlink frequency = 5.150 GHz – L-band frequency (for example, Downlink frequency = 4.160 GHz, L-band = 990 MHz).
3. Establish Signal Lock. If this fails, check cabling and make sure the correct parameters are entered.
4. Return to the R21-Configuration Menu, a solid pipe should now be established between the selected input (for example, RF-1 or RF-2) and the centre box.
5. Cycle through the available programs on the input transport stream and note all program numbers of the scrambled service you wish to receive.
6. Return to the R10-Main Menu; assign ISEs to scrambled programs so that services may be decrypted. The program names are also displayed. Note that unscrambled programs do not require ISE assignment.
7. The icon on the R10-Main Menu is green if the program is authorized.
8. Go to the R21-Configuration Menu, move the cursor to the ^ arrow above the centre program box.
9. Cycle through the programs, press MAP to route the program to all outputs. If you do not want to route a particular program to all outputs, move the cursor to any output (for example, DHEI/SWIF/ASI) and press MAP. The output routing will be toggled. A maximum of four active transport outputs are available at any time. Two of the outputs can be configured as either SWIF or DHEI. Press SELECT to toggle when the cursor is on the upper two outputs.

MDR Lock Levels

Lock levels are provided to protect the MDR from unauthorized use or accidental changes to the configuration. This applies to menu access and editing, and also front panel control (via ALT modes).

Lock Level	Function
0	All settings are unlocked. Front panel ALT modes and the OSD Menu are accessible.
1	Preset selection is allowed. Status monitoring, Diag(nostics) Menu, and Channel Changes of monitor port are allowed. Critical settings affecting inputs and transport outputs are disallowed.
2	Same functions are allowed as at lock level 1 except Preset selection is not allowed.
3	All front panel functions and menu access are locked out except the lock level select function (ALT2-3).
4	All settings are locked, including the lock level setting. Access is only possible via Ethernet or via uplink signal (that is, PowerVu Plus Network Centre).

How to Change the Lock level



CAUTION:

- (a) There are eight Presets on the MDR, and each Preset can be set independently to operate at any lock level.**
- (b) The MDR must be in Video mode to change the lock level associated with a Preset. If you are in Menu mode, press Menu to exit to the Video mode.**

1. Select the correct Preset on the R10-Main Menu and exit to Video mode.
2. Press ALT twice to enter the second level ALT mode. A2 is displayed on the front panel.
3. Press 3. The current lock level is displayed on the front panel, for example, LoC 1.
4. Use the down arrow button to change the desired lock level to LoC 0.
5. Press YES to save the new setting.
6. Press VIEW to exit ALT mode.

If the particular ALT function is disabled at the current Lock level, the front panel LED displays LoC X (X is the current Lock level).

continued on next page

MDR Lock Levels (continued)

When particular menu parameters/fields are not accessible, a pop-up window informs you that the function is not accessible at the current lock level (X); however, the EXIT button always functions.

Example: If the MDR is set at Lock level 1, ISE assignment is not allowed on the R10-Main Menu, but Config, Diag, Misc, and Preset buttons are functional.

R10-Main Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
ISE Assignment	YES			
Config	YES	YES	YES	
Diag	YES	YES	YES	
Misc	YES	YES	YES	
Preset (Recall)	YES	YES		
Preset (Save as)	YES			

R21-Configuration Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
Input Selection (RF-1, RF-2, ASI)	YES			
Access to already selected R31/32-RF Setup Menu	YES	YES		
Input Channel Up & Down	YES	YES	YES	
Access to Map menu	YES			
Delete program	YES			
Output Selection	YES			
SWIF/DHEI Toggle	YES			
Output Monitoring	YES	YES	YES	
Monitor Channel Up & Down	YES	YES	YES	
Audio Select	YES	YES	YES	
Exit	YES	YES	YES	YES
Remap All	YES			

continued on next page

MDR Lock Levels (continued)

R31/32-RF Setup Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
Edit all parameters	YES			
View all parameters	YES	YES		

R33-Map Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
All parameters	YES			

R22-Diagnostics Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
All parameters	YES	YES	YES	

R34-Misc Diagnostics Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
All parameters	YES	YES	YES	

R23-Misc Setup Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
Factory reset	YES			
All other parameters	YES	YES	YES	

continued on next page

MDR Lock Levels (continued)

R35-Download Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
All parameters	YES			

R36-CA Diagnostics Menu Lock Level Access

Menu Function	Accessible at Lock Level			
	0	1	2	3
Clear ADP count	YES	YES	YES	

Front Panel Keys (while not in menu) Lock Level Access

Key	Accessible at Lock Level			
	0	1	2	3
0-9	YES	YES	YES	
ALT	YES	YES	YES	YES
HELP	YES	YES	YES	
MAP	YES	YES	YES	
YES	YES	YES	YES	
MENU	YES	YES	YES	
VIEW	YES	YES	YES	
Select (audio channel)	YES	YES	YES	
1. Up & Down (channel change of monitor output) 2. Scroll through available options in ALT mode	YES	YES	YES	
Left & Right (select transport output to be monitored)	YES	YES	YES	

continued on next page

MDR Lock Levels (continued)

ALT Mode Lock Level Access

		Display at Lock Level				Edit at Lock Level			
		0	1	2	3	0	1	2	3
Input Select (RF-1, RF-2, ASI)	ALT1-0	YES	YES	YES		YES (A)			
C/Ku	ALT1-1	YES	YES	YES		NA			
FEC	ALT1-2	YES	YES	YES		YES (A)			
BER	ALT1-3	YES	YES	YES	YES	NA			
FRQ (Fine tuning)	ALT1-4	YES	YES	YES		YES (A)			
SYM	ALT1-5	YES	YES	YES		YES (B)			
SIG	ALT1-6	YES	YES	YES	YES	NA			
FRQ (Num Entry)	ALT1-7	YES	YES	YES		YES (B)			
POL	ALT1-8	YES	YES	YES		YES (A)			
AFC	ALT1-9	YES	YES	YES	YES	NA			

(A) Up/Down to scroll through available options.

(B) Press YES to enter numeric Edit mode.

		Display at Lock Level				Edit at Lock Level			
		0	1	2	3	0	1	2	3
Network ID	ALT2-0	YES	YES	YES		NA			
Transport ID	ALT2-1	YES	YES	YES		NA			
Select Preset	ALT2-2	YES	YES	YES		YES (B)	YES (B)		
Lock Level	ALT2-3	YES	YES	YES	YES	YES (A)	YES (A)	YES (A)	YES (A)
Display Error	ALT2-4	YES	YES	YES	YES	NA			
Power LNB On/Off	ALT2-5	YES	YES	YES		YES (A)			
L.O. Freq #1	ALT2-6	YES	YES	YES		YES (B)			
L.O. Freq #2	ALT2-7	YES	YES	YES		YES (B)			
Crossover	ALT2-8	YES	YES	YES		YES (B)			
Monitor Type	ALT2-9	YES	YES	YES		YES (A)	YES (A)	YES (A)	

(A) Up/Down to scroll through available options.

(B) Press YES to enter numeric Edit mode.

continued on next page

MDR Lock Levels (continued)

		Display at Lock Level				Edit at Lock Level			
		0	1	2	3	0	1	2	3
Toggle SWIF/DHEI #1	ALT3-0	YES	YES	YES		YES (A)			
Toggle SWIF/DHEI #2	ALT3-1	YES	YES	YES		YES (A)			
Alarm State #1	ALT3-2	YES	YES	YES	YES	NA			
Alarm State #2	ALT3-3	YES	YES	YES	YES	NA			
TBD	ALT3-4								
Fixed PID Download (lets you specify PID number for fixed PID download)	ALT3-5	YES				YES			
View/Select Application Version	ALT3-6	YES	YES	YES	YES	YES			
Change Download Mode (none – never download one – download once & reboot all – always download)	ALT3-7	YES				YES (A)			
TBD	ALT3-8								
Bit Rate Display	ALT3-9	YES	YES	YES	YES				

(A) Up/Down to scroll through available options.

Chapter 3

Using the Menus

Overview

Introduction

This chapter provides detailed information about using the MDR menus.

In This Chapter

This chapter contains the following topics.

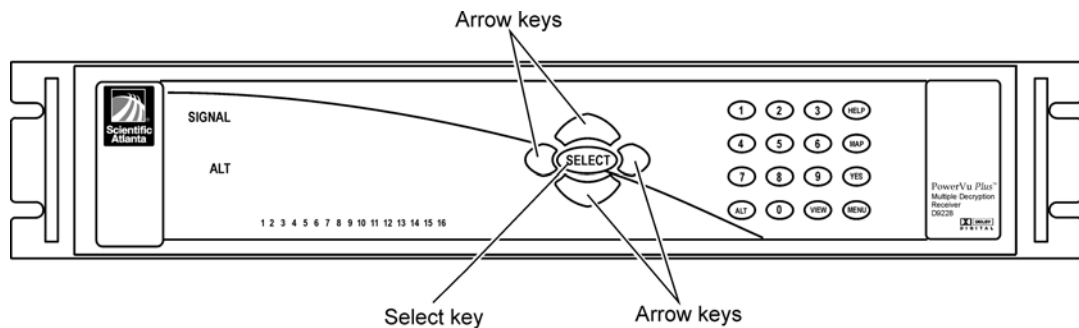
Topic	See Page
Overview	3-1
Terms and Concepts	3-2
On-Screen Help	3-3
Menu Tree	3-4
R10-Main Menu	3-5
R21-Configuration Menu	3-7
R22-Diagnostics Menu	3-12
R23-Misc Setup Menu	3-13
R24-Presets Setup Window	3-15
R31/32-RF Setup Menu	3-16
R33-Map Menu	3-19
R34-Misc Diagnostics Menu	3-23
R35-Download Menu	3-27
R36-CA Diagnostics Menu	3-30
R37-IP Network Setup Menu	3-32

Terms and Concepts

Highlighting

Highlighting refers to the positioning of the yellow box that surrounds a button or field on the screen. Think of this box as the cursor. Use the front panel arrow keys to move this yellow box to another position on the screen.

Immediately after power up, the highlighting box is located in the lower left corner of the screen surrounding the Config button.



Selecting

Selecting refers to the action of pressing the front panel SELECT key in order to edit the contents of a field or button, or to access a menu described by a button. Before you can select or edit an item, you must first highlight it.

Edit Mode

Edit mode refers to editing the contents of a button or field. When you first select an item (by pressing the front panel SELECT key), you enter Edit mode. To exit edit mode, simply press the SELECT key again.

How to Display

To access menus, you often need to select specific on-screen items. The convention used to describe this process is to first list the menu and then the item, as shown in the following example.

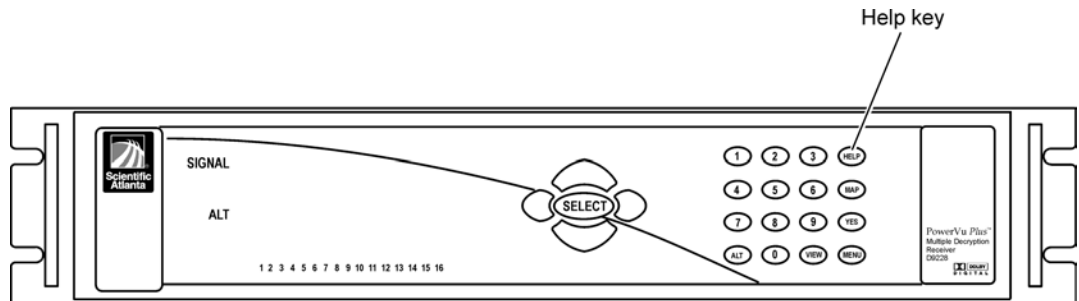
1. **R10-Main Menu** → Config button
2. **R21-Configuration Menu** → Program button

This example instructs you to first select the Config button on the **R10-Main Menu**, and then select the Program button on the **R21-Configuration Menu**.

On-Screen Help

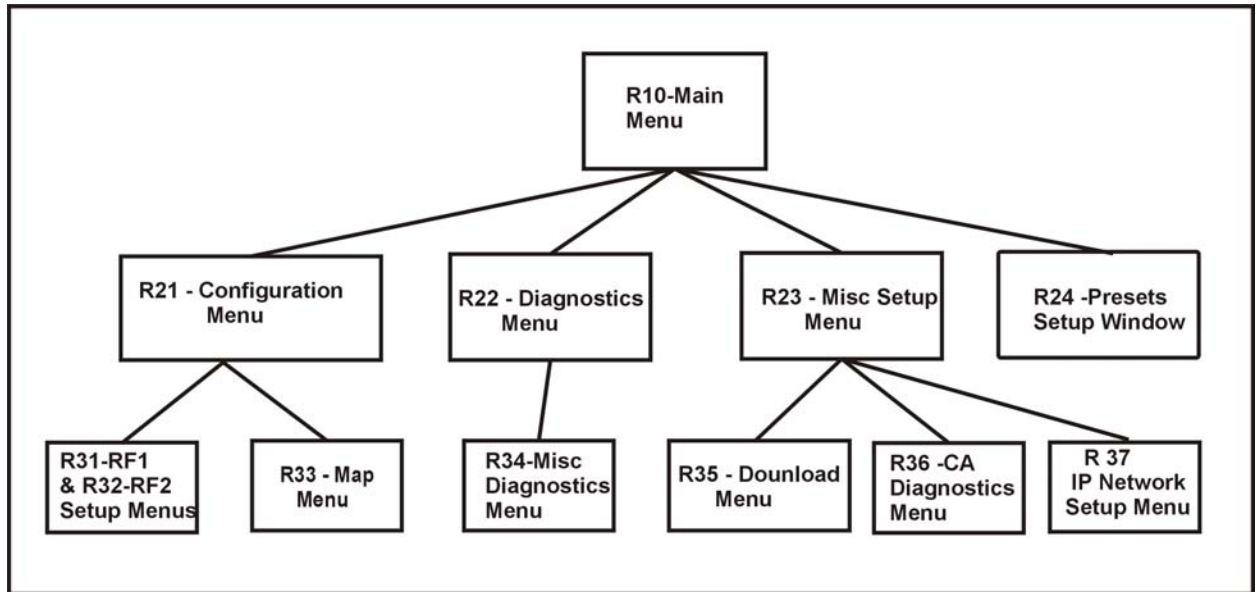
You can display on-screen help about any button or field by first highlighting the item and then pressing the front panel HELP key. In some cases, the help text is displayed in more than one Help window. To display the subsequent window, select the More button.

To exit a Help window, select the Exit button.



Menu Tree

The following illustration shows the menu hierarchy (that is, how the menus are interrelated).

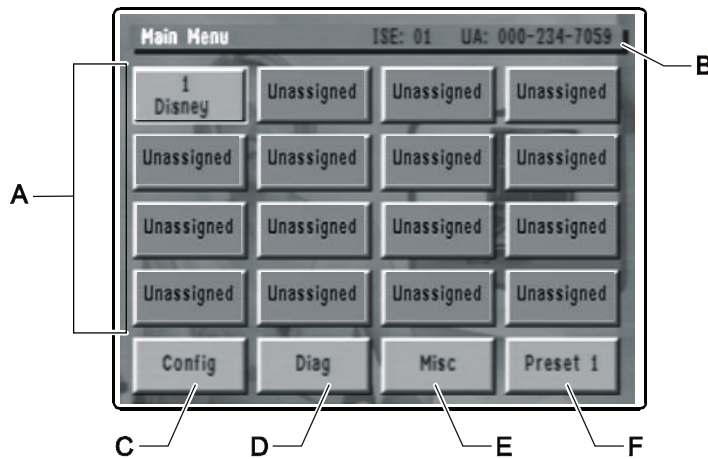


R10-Main Menu

Introduction

The **R10-Main Menu** lets you view and edit the program-to-ISE (Inboard Security Element) assignment and lets you select subsequent MDR menus. The menu also displays the authorization state of received programs. A successfully descrambled program can be displayed as the backdrop to the menu.

Description



Ref	Description
A	<p>These 16 buttons represent the 16 MDR ISEs. Before you can decrypt an encrypted program, you must assign the program to an ISE. Since there are 16 ISEs, the MDR can decrypt up to 16 programs simultaneously. Programs that are broadcast by the uplink without encryption (that is, in the clear) do not require to be assigned to an ISE.</p> <p>A red button means either (a) the program is not available on this input or (b) the selected ISE is not authorized to decrypt the program.</p> <p>A green button means the selected ISE is able to decrypt the scrambled program. The upper line of the button displays the number of the program being decrypted, and the lower line displays the name or description of the program as provided by the uplink.</p> <p>To assign a program to an ISE:</p> <ol style="list-style-type: none">1. Highlight the ISE. The ISE user address is displayed in the upper right-hand corner.

continued on next page

R10 - Main Menu (continued)

Ref	Description
A cont.	<ol style="list-style-type: none">2. Press the front panel SELECT key to enter Edit mode.3. Key in the program number.4. Press the front panel SELECT key to exit Edit mode. <p>To unassign a program from an ISE:</p> <ol style="list-style-type: none">1. Highlight the ISE.2. Press the front panel SELECT key to enter Edit mode.3. Key in 0.4. Press the front panel SELECT key to exit Edit mode. <p>Note: De-assigning a program from an ISE is not the same as deleting a program. See the note about deleting programs in the description of the R21-Configuration Menu.</p>
B	The unique user address of the currently highlighted ISE. This area may also be used to display the Preset name or the copyright notification, depending upon the cursor position.
C	Click this button to display the R21-Configuration Menu , used to configure the MDR inputs and outputs.
D	Click this button to display the R22-Diagnostics Menu .
E	Click this button to display the R23-Misc Setup Menu , used to configure the screen display characteristics. Additionally, via the R23-Misc Setup Menu , you can display the R35-Download Menu and the R36-CA Diagnostics Menu , and you can reset the MDR to factory default settings.
F	<p>Click this button to select which Preset to use. The MDR always functions on a Preset, which is a compilation of all configuration settings on the MDR. Using a Preset can facilitate quick setup and operation. Eight Presets are allowed. Switching to a different preset causes the MDR to clear the previous settings, retune the front end to the new Preset, and re-acquire all data.</p> <p>Note: Presets can be individually set to any lock level to restrict access to setting modifications. See Chapter 2 for detailed information.</p>

R21 - Configuration Menu

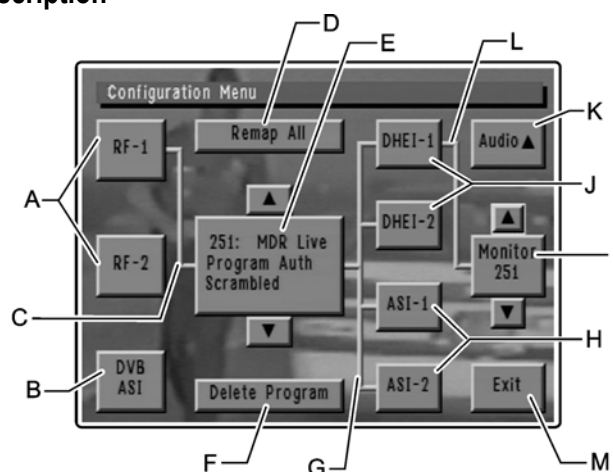
Introduction

The **R21-Configuration Menu** lets you configure inputs and outputs, and view any of the output signals.

How to display

1. **R10-Main Menu** → Config button

Description



Ref	Description
A	<p>RF-1 and RF-2 buttons represent the two RF inputs located on the back panel. If the uplink signal you want to use is connected to one of these inputs, highlight the corresponding input and then press the front panel MAP key. If the signal is connected to the ASI input, highlight the ASI input (Ref. B) and then press the front panel MAP key.</p> <p>Input RF-1 or RF-2 must first be set up via the R31/32-RF Setup Menu to receive from the desired signal source. To access the R31/32-RF Setup Menu:</p> <ol style="list-style-type: none"> 1. Highlight the RF input. 2. Press the front panel SELECT key. The R31/32-RF Setup Menu is displayed. 3. Set up the source signal by referring to R31/32-RF Setup Menu description later in this chapter. <p>Note: A selected input that is displayed in red means that no signal is being received on that input.</p>

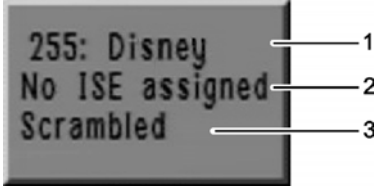
continued on next page

R21 - Configuration Menu (continued)

Ref	Description
B	<p>DVB ASI button represents the ASI input on the back panel. If the input stream you want is on the ASI input, highlight this button and press the front panel MAP key.</p> <p>Note: A selected input that is displayed in red means that no signal is being received on that input.</p>
C	<p>This pipe is automatically connected to whichever input signal you select (either RF-1, RF-2, or DVB-ASI). Only one input can be selected at any time.</p> <p>To select the input:</p> <ol style="list-style-type: none">1. Highlight the input (RF-1, RF-2, or DVB-ASI).2. Press the front panel MAP key. The input is routed to the program button (Ref. E). <p>Note: A broken pipe indicates that no valid signal is present on the selected input.</p>
D	<p>Remap All button: when you select this button, the MDR is automatically configured with the following settings:</p> <ul style="list-style-type: none">• The ISEs are assigned to the first 16 programs in the input.• All programs elementary streams are mapped to outputs.• All PSI/SI MPEG tables are mapped to outputs. <p>Note: Selecting the Remap All button causes all existing settings for programs and PSI/SI to be lost for the current Preset.</p> <p>After you use this button, go to the R33-Map Menu to remove any PIDs that should not be mapped to outputs.</p>

continued on next page

R21 - Configuration Menu (continued)

Ref	Description																																
E	<p>Program button displays program information about all programs carried by the currently active (and previously connected) signal, even those to which an ISE is not assigned and those that are not encrypted by the uplink. You can cycle through all the programs by highlighting the up or down arrow and pressing the front panel SELECT key.</p> <p>Additionally, clicking the program button displays the R33-Map Menu that lets you choose any of the program's elementary streams to be routed to the output.</p> <p>Displayed beneath each program number is the status of the program. Possible status messages and their descriptions follow.</p> <div></div> <ol style="list-style-type: none">1. Program number and name.2. Status of ISE. Can be one of: (2a) No ISE assigned; or (2b) Program Auth; or (2c) No Auth Key.3. Status of program. Can be one of: (3a) Scrambled; or (3b) Not scrambled; or (3c) Not available. <table><tr><th>Button color</th><th>Status</th><th>Is Program Viewable</th><th>Description</th></tr><tr><td>Yellow</td><td>don't care</td><td>No</td><td>Program references are not currently contained by internal MDR memory</td></tr><tr><td>Grey</td><td>2a, 3a</td><td>No</td><td>ISE must be assigned to descramble program</td></tr><tr><td>Grey</td><td>2c, 3a</td><td>No</td><td>ISE is not authorized for this program</td></tr><tr><td>Grey</td><td>2b, 3a</td><td>Yes</td><td>ISE is authorized for this scrambled program</td></tr><tr><td>Grey</td><td>2b/c, 3b</td><td>Yes</td><td>This program is not scrambled</td></tr><tr><td>Grey</td><td>2a/b/c, 3c</td><td>No</td><td>Program is no longer in input signal</td></tr><tr><td>Grey</td><td>2a, 3b</td><td>don't know</td><td>The MDR is missing PSI tables, or there is an irregularity in the input stream. Check with the R22-Diagnostics Menu.</td></tr></table>	Button color	Status	Is Program Viewable	Description	Yellow	don't care	No	Program references are not currently contained by internal MDR memory	Grey	2a, 3a	No	ISE must be assigned to descramble program	Grey	2c, 3a	No	ISE is not authorized for this program	Grey	2b, 3a	Yes	ISE is authorized for this scrambled program	Grey	2b/c, 3b	Yes	This program is not scrambled	Grey	2a/b/c, 3c	No	Program is no longer in input signal	Grey	2a, 3b	don't know	The MDR is missing PSI tables, or there is an irregularity in the input stream. Check with the R22-Diagnostics Menu .
Button color	Status	Is Program Viewable	Description																														
Yellow	don't care	No	Program references are not currently contained by internal MDR memory																														
Grey	2a, 3a	No	ISE must be assigned to descramble program																														
Grey	2c, 3a	No	ISE is not authorized for this program																														
Grey	2b, 3a	Yes	ISE is authorized for this scrambled program																														
Grey	2b/c, 3b	Yes	This program is not scrambled																														
Grey	2a/b/c, 3c	No	Program is no longer in input signal																														
Grey	2a, 3b	don't know	The MDR is missing PSI tables, or there is an irregularity in the input stream. Check with the R22-Diagnostics Menu .																														

continued on next page

R21 - Configuration Menu (continued)

Ref	Description
F	<p>Delete program button: if the program is no longer available on the currently active input, clicking this button deletes the program from the MDR's internal record. However, if the program is available on the currently active input, clicking this button deletes all associated program PIDs from the outputs.</p> <p>Note: Deleting a program in this way does not have the same effect as breaking an output pipe by the method described in Ref. G below.</p>
G	<p>This pipe is automatically connected to whichever outputs (Ref. J and H) you select to transmit the program currently displayed in the program button (Ref. E).</p> <p>If no outputs are mapped, the program is transmitted by the MDR even though an ISE is decrypting it. However, the program's output PIDs will not be erased from non-volatile memory.</p> <p>You can map the program to any or all of the four outputs, or you can break any of the output mapping pipes in one of the following two ways.</p> <p>To map or break individual output connections:</p> <ol style="list-style-type: none">1. Be sure the program you want is currently displayed in the program button (Ref. E).2. Highlight the output you want.3. Press the front panel MAP key to toggle between a connection and a break.4. Repeat this procedure for any other output. <p>To break or remap the program to all of the selected outputs:</p> <ol style="list-style-type: none">1. Be sure the program you want is currently displayed in the program button (Ref. E) and highlight it.2. Press the front panel MAP key to toggle between a connection and a break. <p>Note: Using this method, you can suspend outputting this program but maintain its configuration for re-connection later.</p>
H	<p>ASI-1 and ASI-2 buttons represent the two ASI outputs on the back panel of the MDR. A pipe connecting an output indicates it is part of the output map. See the description in Ref. G.</p>

continued on next page

R21 - Configuration Menu (continued)

Ref	Description
I	<p>Monitor button lets you select which program will be monitored on the selected output. Monitoring a program refers to locally decoding the program into analog video and audio. When you select a program, you automatically select its video stream. Choosing which audio stream will be monitored is described in Ref. K.</p> <p>To select the program to be monitored, highlight the up and down arrows and press the front panel SELECT key until the program number is displayed.</p>
J	<p>DHEI-1 and DHEI-2 buttons represent the two SWIF or DHEI outputs on the back panel of the MDR. To toggle between SWIF and DHEI, highlight the output and press the front panel SELECT key. A pipe connecting an output indicates it is part of the output map. See the description in Ref. G.</p>
K	<p>Audio button lets you select which audio stream of the selected program will be monitored. A program can contain many audio streams, along with the video stream. Radio programs, however, do not contain a video stream.</p> <p>Note: When a program does not contain a video stream, the background screen appears blank.</p> <p>To cycle through a program's audio streams:</p> <ol style="list-style-type: none">1. Highlight the audio button.2. Press the front panel SELECT key for the next audio stream. <p>Note: If you are using the R33-Map Menu, you will notice that the PIDs currently being monitored are displayed in blue text.</p>
L	<p>This pipe is automatically connected to the output selected for monitoring. Monitoring allows you to view and listen to the program that is being transmitted by the selected output. The video is displayed in the background. Data streams cannot be monitored.</p> <p>To select the output to be monitored:</p> <ol style="list-style-type: none">1. Highlight the output you want to monitor.2. Press the View key.
M	<p>Exit button: click this button to revert to the previous menu.</p>

R22 - Diagnostics Menu

Introduction

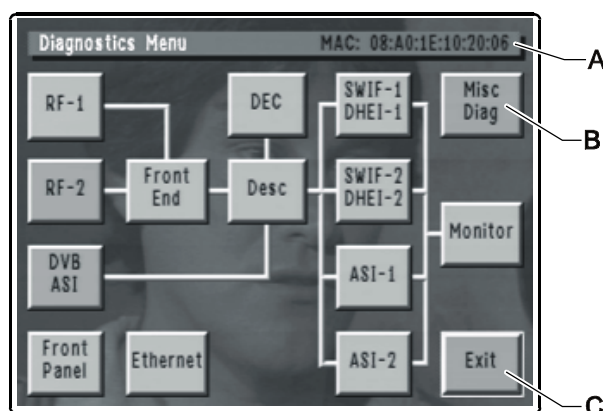
The **R22-Diagnostics Menu** provides an indication of the functional status of major hardware and software blocks. A problem is indicated if the button icon of the functional block is displayed in red. If so, you can display the associated error by highlighting the block and pressing the Select key.

Additionally, you can use this menu to display the **R34-Misc Diagnostics Menu**.

How to display

1. **R10-Main Menu** → Diag button

Description



Ref	Description
A	Media Access Control (MAC) address. The unique address assigned to the MDR unit upon manufacturing.
B	Misc Diag button: click this button to display the R34-Misc Diagnostics Menu .
C	Exit button: click this button to revert to the previous menu.

Note: Pressing the front panel Help or front panel SELECT key displays a help text window that provides descriptions of the possible causes of the error or warning.

R23 - Misc Setup Menu

Introduction

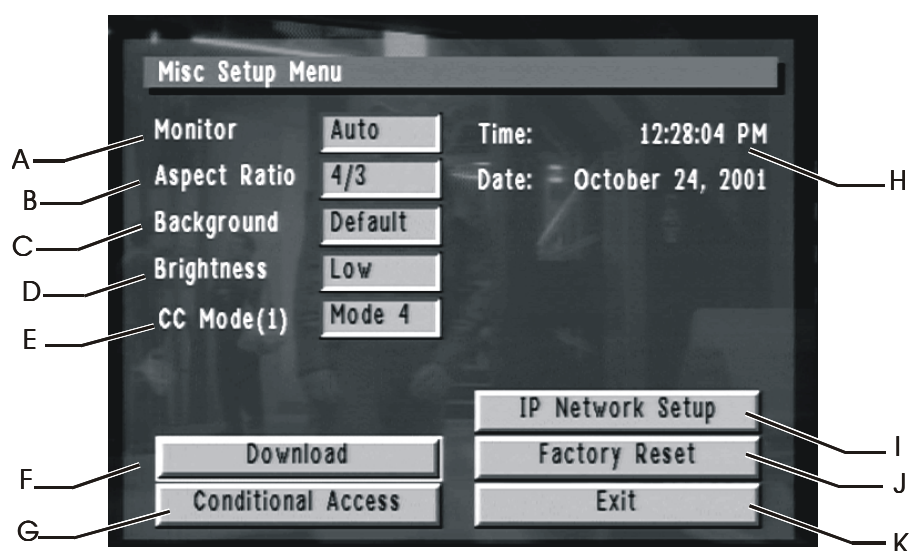
The **R23-Misc Setup Menu** lets you configure the MDR monitor output video characteristics and also lets you display the **R35-Download Menu**, display the **R36-CA Diagnostics Menu**, and perform a factory reset. A factory reset means that:

- Non-volatile memory will be erased
- All previous manually set configurations will be lost, and
- The MDR will use the default configuration settings.

How to display

- R10-Main Menu** → Misc button


Description



Ref	Description
A	Monitor: lets you to choose the video standard supported by your monitor.
B	Aspect Ratio: lets you choose the aspect ratio of your monitor.
C	Background: lets you choose the background color.
D	Brightness: lets you choose the brightness.

continued on next page

R23 - Misc Setup Menu (continued)

Ref	Description
E	<p>CC Mode: lets you choose to decode a different Closed Caption mode. The number in parentheses () is the mode available at the input. If multiple modes are available, you can select which one to decode. The stream might contain more than one mode but only a maximum of two will be displayed in the parentheses ().</p> <p>The field to the right contains a pull-down list of all modes, even though not all of them may be available in the stream. Only those that are available will be decoded.</p> <p>Mode descriptions:</p> <ul style="list-style-type: none">Mode 1 C-cube proprietaryMode 3 DVS 053Mode 4 SA DVS 053Mode 5 DVS 053 Rev. 6Mode 7 Motorola proprietary (EIA 608)
F	Download button: clicking this button displays the R35-Download Menu .
G	Conditional Access button: clicking this button displays the R36-CA Diagnostics Menu .
H	Current time and date , as provided by the uplink.
I	IP Network Setup button: clicking this button displays the R37-IP Network Setup Menu .
J	<p>Factory Reset button: clicking this button performs a factory reset.</p> <div style="border: 1px solid black; padding: 10px;"><p> CAUTION: Performing a factory reset will reset all configurations. Some MDR units have been preconfigured by the service provider prior to shipment to end-users. A factory reset will erase these settings as well.</p></div>
K	Exit button: click this button to revert to the previous menu.

R24 - Presets Setup Window

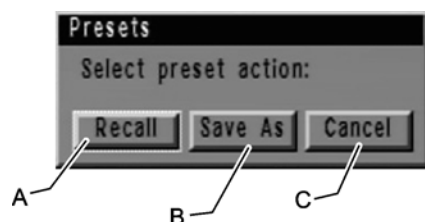
Introduction

The **R24-Presets Setup Window** lets you save and recall Presets. As Chapter 2 describes, Presets are compilations of all configuration settings on the MDR. Eight Presets exist, which means that you can have eight different configuration compilations. However, Presets 1, 2, 3, 4, and 8 are preconfigured at the factory for specific customer needs. You can use these factory Presets as is or edit them to suit your individual needs.

How to display

1. **R10-Main Menu** → Preset button

Description



Ref	Description
A	Recall button: click this button to key in a Preset number. The MDR automatically assumes the configurations settings of that Preset.
B	Save As button: click this button to key in a number of a Preset. All current Configuration settings are saved to that Preset and further changes will affect that Preset. To facilitate configuring multiple presets with similar settings, you can use this function to copy the settings in the current (active) Preset to another Preset. Note: All previous settings of the Preset you key in will be overwritten by the current MDR configuration settings. It may take several seconds for the action to complete.
C	Cancel button: cancels this window and returns you to R10-Main Menu control.

R31/32 - RF Setup Menu

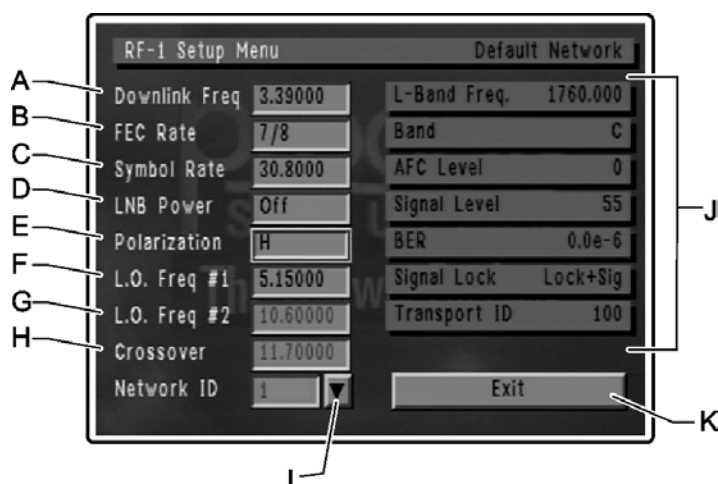
Introduction

The **R31/32-RF Setup Menu** lets you configure the MDR so that the settings on the RF inputs match the RF settings of the uplink signal.

How to display

1. **R10-Main Menu** → Config button
2. **R21-Configuration Menu** → RF button corresponding to the correct input

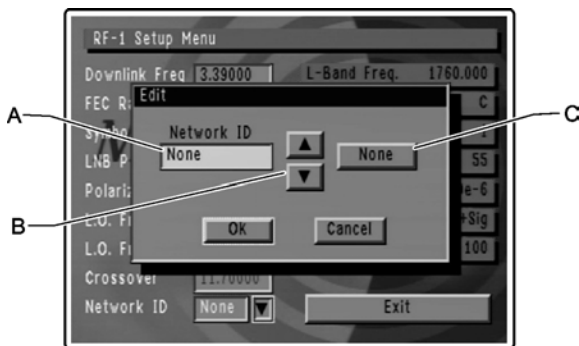
Description



Ref	Description
A	Downlink frequency in GHz
B	Forward error correction rate
C	Symbol rate in Msym/s. Used by the receiver for tuning the received signal.
D	LNB power (On or Off)
E	Signal polarization (H=18V, V=13V at RF input)
F	The satellite antenna LNB local oscillator #1 frequency
G	The satellite antenna LNB local oscillator #2 frequency

continued on next page

R31 / 32 - RF Setup Menu (continued)

Ref	Description
H	<p>Crossover: an internal threshold frequency used for determining whether 22 KHz should be applied for Dual LNB application.</p> <p>If: Frequency (Ref. A) < Crossover (Ref. H), L.O. Freq #1 (Ref. F) is used.</p> <p>If: Frequency (Ref. A) ≥ Crossover (Ref. H), L.O. Freq #2 (Ref. G) is used. 22kHz will be modulated on LNB power.</p>
I	<p>Click this button to display the following window where you can edit the Network ID.</p>  <p>A – If you know the network ID, enter it in this field.</p> <p>B – Click these up and down arrows to display all network IDs that are available on your system. Select the one you want.</p> <p>C – Click this button to set the network ID to None and tuning information in this NIT (Network Information Table) will be ignored.</p>
J	Status indicators.
K	Exit button: click this button to revert to the previous menu.

continued on next page

R31 / 32 - RF Setup Menu (continued)

Typical C-Band configuration

L.O. Freq #1 = 5.150 (GHz)

L-Band Freq = L.O. Freq #1 – Downlink freq.

Downlink Freq = L.O. Freq #1 – L-Band Freq.

Example: 4.100 GHz = 5.150 GHz – 1050 MHz

Typical single Ku-Band configuration

L.O. Freq #1 = 10.750 (GHz)

L-Band Freq = Downlink freq – L.O. Freq #1

Typical dual Ku-Band configuration

L.O. Freq #1 = 9.750 GHz

L.O. Freq #2 = 10.600 GHz

Crossover Freq = 11.700 GHz

L-Band Freq = Downlink Freq – L.O. Freq #1 (if Downlink < Crossover)

= Downlink Freq – L.O. Freq #2 (if Downlink ≥ Crossover)

R33 - Map Menu

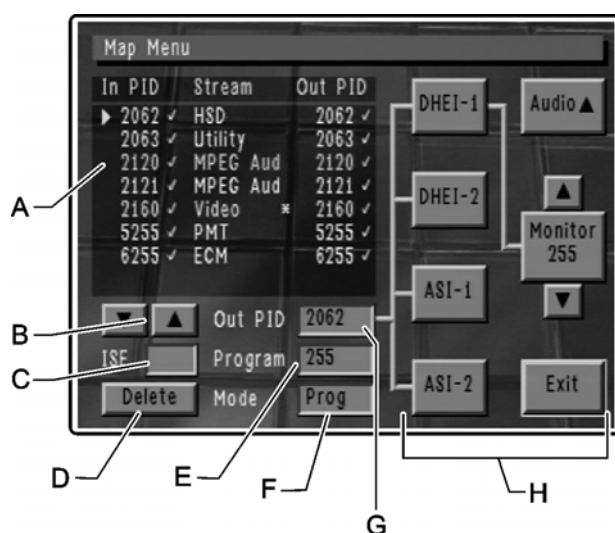
Introduction

The **R33-Map Menu** lets you configure the output PIDs on an individual basis, assign ISEs to programs, and view output signals.

How to display

1. **R10-Main Menu** → Config button
2. **R21-Configuration Menu** → Program button

Description



Ref	Description
A	<p>When mode selection (Ref. F) is set to Prog, this displays a list of all streams carried by the selected program, their input PIDs as defined by the uplink, and their current output PIDs.</p> <p>The MDR has memory that records the attributes of programs previously configured but no longer received on the input signal. This feature allows quick remapping when the program becomes available again. In order to distinguish streams that are currently being received, the MDR displays check marks beside input PIDs that are currently being received on the input signal.</p>

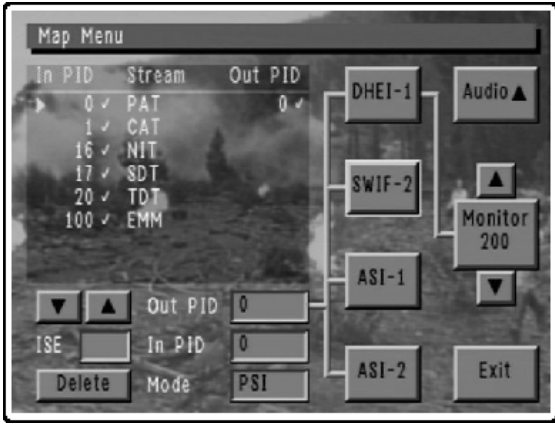
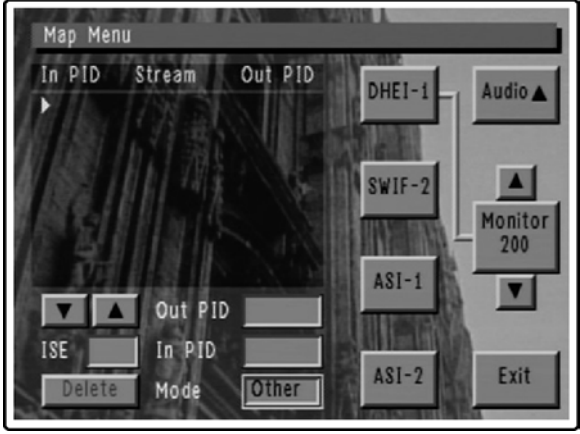
continued on next page

R33 - Map Menu (continued)

Ref	Description
A cont.	<p>A check mark beside an output PID means that the corresponding stream is mapped into the MDR, and that the MDR outputs the stream to the selected outputs.</p> <p>PIDs that are currently being monitored at an output are displayed in blue text. Since the maximum number of video streams a program can typically contain is limited to one, the video stream (if it exists) is always displayed in blue text.</p> <p>An asterisk (*) in the stream column indicates the PID that carries the Program Clock Reference (PCR). In the illustration herein, the Video PID 2160 also carries the PCR information.</p>
B	<p>These two buttons let you move the cursor up and down through the stream list (Ref. A). To move the cursor, highlight either the up or down arrow and press the front panel SELECT key.</p>
C	<p>Displays the number of the ISE that is assigned to the program (Ref. E). To assign a different ISE to the program:</p> <ol style="list-style-type: none">1. Highlight box C.2. Press the front panel SELECT key to enter Edit mode.3. Key in the new ISE number (1 – 16).4. Press the front panel SELECT key to exit Edit mode. The ISE is now assigned to the new program. This change is also reflected on the R10-Main Menu. <p>Note: Typically, you would use the R10-Main Menu to reassign ISEs. However, this facility is available on the R33-Map Menu as well.</p>
D	<p>Delete button: click this button to delete PID routing information from MDR memory, if the PID is no longer available on the currently active input.</p>
E	<p>Displays the program number. The stream list (Ref. A) displays all the constituent streams of the program displayed in this field.</p> <p>To display the stream list of a different program:</p> <ol style="list-style-type: none">1. Highlight box E.2. Press the front panel SELECT key to enter Edit mode.3. Key in the new program number.4. Press the front panel SELECT key to exit Edit mode. The stream list (Ref. A) for the program is displayed. Additionally, the ISE assigned to the program is displayed in the ISE field (Ref. C).


continued on next page

R33 - Map Menu (continued)

Ref	Description
F	<p>Mode button: lets you select which type of streams should be displayed in the stream list (Ref. A). There are three types to choose from:</p> <p>Prog – Streams that are part of an MPEG program.</p> <p>PSI – Program Specific Information type.</p>  <p>Other – User-specific PIDs. Typically, these are PIDs that are not referenced by the PSI tables.</p> 

continued on next page

R33 - Map Menu (continued)

Ref	Description
G	<p>Lets you change the output PID number of the stream currently highlighted in the stream list (Ref. A). To change the PID number:</p> <ol style="list-style-type: none">1. Position the cursor on the stream you want to change.2. Press the front panel SELECT key to enter Edit mode.3. Key in the new PID number.4. Press the front panel SELECT key to exit Edit mode. <div> CAUTION:<ul style="list-style-type: none">• Be sure you do NOT assign an output PID that is already in use by any stream of any program.• Although the user interface does not impose restrictions on changing PID numbers, certain PID numbers may cause the transport output to be non-compliant according to certain standards. You are urged to ensure that there is no collision on input and output PIDs.</div>
H	<p>The functionality of these buttons is described in the R21-Configuration Menu section.</p>

R34 - Misc Diagnostics Menu

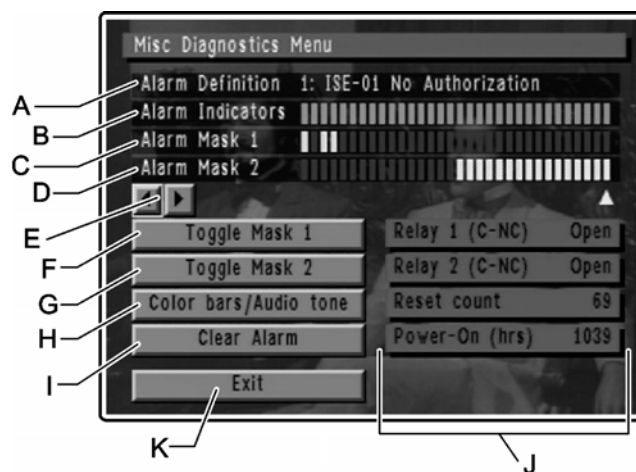
Introduction

The **R34-Misc Diagnostics Menu** lets you configure the two alarm relays on the back panel. In addition, the menu displays statistics, displays a screen test pattern, and generates an audible test tone

How to display

1. **R10-Main Menu** → Diag button
2. **R22-Diagnostics Menu** → Misc Diag button

Description



Ref	Description												
A	<p>The alarm definition: there are 32 predefined alarm conditions that you can configure so that the two relays on the back panel (Alarm 1 and Alarm 2) react when alarm conditions occur.</p> <table><tr><th>Alarm Bit</th><th>Name</th></tr><tr><td>1</td><td>ISE#1 Authorization</td></tr><tr><td>2</td><td>ISE#2 Authorization</td></tr><tr><td>3</td><td>ISE#3 Authorization</td></tr><tr><td>4</td><td>ISE#4 Authorization</td></tr><tr><td>5</td><td>ISE#5 Authorization</td></tr></table>	Alarm Bit	Name	1	ISE#1 Authorization	2	ISE#2 Authorization	3	ISE#3 Authorization	4	ISE#4 Authorization	5	ISE#5 Authorization
Alarm Bit	Name												
1	ISE#1 Authorization												
2	ISE#2 Authorization												
3	ISE#3 Authorization												
4	ISE#4 Authorization												
5	ISE#5 Authorization												

continued on next page

R34 - Misc Diagnostics Menu (continued)

Ref	Description
	<ul style="list-style-type: none">6 ISE#6 Authorization7 ISE#7 Authorization8 ISE#8 Authorization9 ISE#9 Authorization10 ISE#10 Authorization11 ISE#11 Authorization12 ISE#12 Authorization13 ISE#13 Authorization14 ISE#14 Authorization15 ISE#15 Authorization16 ISE#16 Authorization17 The MSM Walrus was reset (Debug Only)18 The DSC Walrus was reset (Debug Only)19 There is an error in the MSM (Debug Only)20 There is an error in the DSC (Debug Only)21 DSC Dual Port RAM Error (Debug Only)22 MSM Dual Port RAM Error (Debug Only)23 Transport Error in FPGAs (Debug Only)24 Ethernet Error (Debug Only)25 PSI Error (Debug Only)26 NVM Write Error (Debug Only)27 Over-the-air Download Failure (Debug Only)28 ISE/UART H/W Error (Debug Only)29 Loss of Data Stream Sync (Debug Only)30 Bit Error Rate to high (<1 dB above threshold)31 No Lock on RF Carrier32 Any error in MDR <p>To display the alarm definitions, highlight the left and right arrow buttons (Ref. E) and press the front panel SELECT key.</p>
B	<p>Alarm indicators: these 32 bars correspond to the 32 possible alarm conditions (see A above). When an alarm occurs, the color of its corresponding bar changes to red. An amber-colored bar means that an alarm occurred previously but is now clear.</p>

continued on next page

R34 - Misc Diagnostics Menu (continued)

Ref	Description
C	<p>Alarm mask 1: displays the current trigger criteria for Alarm 1 relay on the back panel. There are 32 bars in this field, each corresponding to one of the 32 predefined alarm conditions.</p> <p>Under no-alarm conditions, terminals C and NC on the relay Alarm 1 are electrically open. However, if you enable an alarm condition (Ref. F) for this relay and the alarm occurs, terminals C and NC on the relay close and C and NO become electrically open. When you enable an alarm condition, its corresponding bar is displayed in yellow in this field.</p> <p>Note: C-NC is electrically closed when a-c power to the MDR is removed. This occurrence can be used to trigger an alarm-monitoring device.</p>
D	<p>Alarm mask 2: displays the current settings for Alarm 2 relay on the back panel. There are 32 bars in this field, each corresponding to one of the 32 predefined alarm conditions.</p> <p>Under no-alarm conditions, terminals C and NC on the relay Alarm 2 are electrically open. However, if you enable an alarm condition (Ref. G) for this relay and the alarm occurs, terminals C and NC on the relay close and C and NO become electrically open. When you enable an alarm condition, its corresponding bar is displayed in yellow in this field.</p> <p>Note: C-NC is electrically closed when a-c power to the MDR is removed. This occurrence can be used to trigger an alarm-monitoring device.</p>
E	<p>Left and right arrows: click these buttons to move the pointer to a different alarm position.</p>
F	<p>Toggle mask 1 button: click this button to toggle alarm conditions in the Alarm Mask 1 field (Ref. C) between enabled and disabled states. The toggle applies to the alarm currently pointed to.</p> <p>You can enable or disable as many alarm conditions as you like. If an enabled alarm occurs, Alarm 1 relay reacts (Ref. C).</p>

continued on next page

R34 - Misc Diagnostics Menu (continued)

Ref	Description
G	<p>Toggle mask 2: click this button to toggle alarm conditions in the Alarm Mask 2 field (Ref. D) between enabled and disabled states. The toggle applies to the alarm currently pointed to.</p> <p>You can enable or disable as many alarm conditions as you like. If an enabled alarm occurs, Alarm 2 relay will react (Ref. D).</p>
H	<p>Color bars/Audio tone button: click this button to display color bars and generate audible tones that you can use to verify connection to your external monitor. To return to the menu, press any key.</p>
I	<p>Clear Alarm button: click this button to reset any previously triggered alarm condition, which is no longer present.</p>
J	<p>This area displays the following statistics about your MDR:</p> <ul style="list-style-type: none">Relay 1 (C-NC) – the current status of the connection between terminals C and NC on Alarm 1 relay on the back panel – closed or open.Relay 2 (C-NC) – the current status of the connection between terminals C and NC on Alarm 2 relay on the back panel – closed or open.Reset count – how many times the MDR has been reset since it was shipped from the factory.Power-On (hrs) – how many hours the MDR has been operating, including on-time at the factory.
K	<p>Exit button: click this button to revert to the previous menu.</p>

R35 - Download Menu

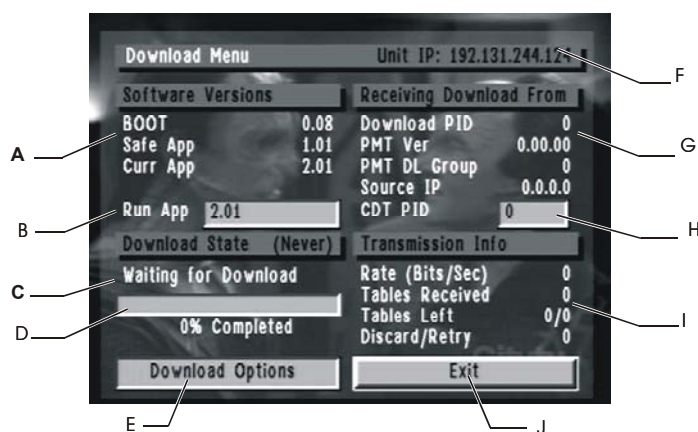
Introduction

The **R35-Download Menu** lets you control the process of downloading a newer version of the MDR software. Additionally, you can use the menu to select which version of software you want to run. You can download software either from a satellite or via an Ethernet cable attached to a host PC. Under normal circumstances, you will not have to access this menu.

How to display

1. **R10-Main Menu** → Misc button
2. **R23-Misc Setup Menu** → Download button

Description



Ref	Description
A	<p>Displays the following statistics about software versions:</p> <p>BOOT - the version number of the current boot code. Boot code cannot be erased.</p> <p>Safe App - the version number of the application software that was shipped with the MDR. This software cannot be erased. This is called the <i>safe</i> application because under certain circumstances, you might need to run this software instead of a later version.</p> <p>Curr App - the version number of the application software currently running. The MDR can store several versions of application software.</p>

continued on next page

R35 - Download Menu (continued)

Ref	Description												
B	<p>Displays a list of version numbers of all application software currently stored in the MDR.</p> <p>To select which software to run:</p> <ol style="list-style-type: none">1. Highlight the field.2. Press the front panel SELECT key to enter Edit mode.3. Use the up and down arrow keys to select the version.4. Press the front panel SELECT key to exit Edit mode. The MDR reboots and runs the selected software.												
C	<p>Displays one of the following status messages:</p> <table><tr><td><i>Waiting for download</i></td><td>MDR is not currently downloading software</td></tr><tr><td><i>Saving CDTs to RAM</i></td><td>MDR is saving the new application to RAM</td></tr><tr><td><i>Writing CDTs to flash</i></td><td>MDR is writing the new application to Flash</td></tr><tr><td><i>Swapping Application</i></td><td>MDR is swapping to the new application and will reboot</td></tr><tr><td><i>Waiting for CDT/DL</i></td><td>Download has timed out. MDR is waiting for CDTs or a new DL sequence.</td></tr><tr><td><i>Updating App Table</i></td><td>MDR is updating the application table with new software version. MDR will not reboot.</td></tr></table>	<i>Waiting for download</i>	MDR is not currently downloading software	<i>Saving CDTs to RAM</i>	MDR is saving the new application to RAM	<i>Writing CDTs to flash</i>	MDR is writing the new application to Flash	<i>Swapping Application</i>	MDR is swapping to the new application and will reboot	<i>Waiting for CDT/DL</i>	Download has timed out. MDR is waiting for CDTs or a new DL sequence.	<i>Updating App Table</i>	MDR is updating the application table with new software version. MDR will not reboot.
<i>Waiting for download</i>	MDR is not currently downloading software												
<i>Saving CDTs to RAM</i>	MDR is saving the new application to RAM												
<i>Writing CDTs to flash</i>	MDR is writing the new application to Flash												
<i>Swapping Application</i>	MDR is swapping to the new application and will reboot												
<i>Waiting for CDT/DL</i>	Download has timed out. MDR is waiting for CDTs or a new DL sequence.												
<i>Updating App Table</i>	MDR is updating the application table with new software version. MDR will not reboot.												
D	<p>Indicates the progress of a download. A download from a satellite takes longer than a download from a PC.</p>												
E	<p>Download Options button: click this button to display the following options. Select an option and the download will begin.</p> <p>Fixed PID Dnld & ReBoot – Will accept the download on the specified PID (Ref. H) and reset the MDR to run the new software.</p> <p>Dnld Once & ReBoot – Will accept the download and reset the MDR to run the new software.</p> <p>Always Download – Will accept the download when available on the input but will continue to run the currently active application. No interruption to normal operation.</p> <p>Never Download – Will not accept any download (except download forced by uplink).</p> <p>Stop Download – Abort any download in progress.</p> <p>Exit – Exit the selection box.</p>												

continued on next page

R35 - Download Menu (continued)

F	Displays the IP address of your MDR.
G	<p>Displays the following statistics about a download:</p> <p>Download PID - Program Map Table PID. Tells you the PMT where the code download PID number is referenced.</p> <p>PMT Ver - Displays version of the code being downloaded as indicated in the PMT code download descriptor.</p> <p>PMT DL Group (Program Map Table Download Group) This field displays the download group contained in the PMT. Often MDRs are divided into groups. This allows only selected groups to receive downloads.</p> <p>Source IP - IP address of the last TFTP server used during an MDR rear panel download.</p>
H	CDT PID (Code Download Table PID): displays CDT PID or lets you enter the CDT PID to be used for the fixed PID download.
I	<p>Displays the following statistics about the transmission during a download:</p> <p>Rate (Bits/Sec) - The speed of the transmission</p> <p>Tables Received - How many tables have been received so far in the transmission</p> <p>Tables Left - How many tables are yet to be transmitted</p> <p>Discard/Retry - How many tables had to be discarded so far in the transmission</p> <p>Note: If the download is via cable from a PC, these statistics will display rapidly due to the relatively fast PC download rate.</p>
J	Exit button: click this button to revert to the previous menu.

R36 - CA Diagnostics Menu

Introduction

The **R36-CA Diagnostics Menu** (Conditional Access) displays information about ISEs that your MDR contains.

How to display

1. **R10-Main Menu** → Misc button
2. **R23-Misc Setup Menu** → Conditional Access button

Description

#	User Address	EncADP	NotEnc	Prog	S	E	A
1	000-234-7059	0/0	0/0	1	Y	Y	Y
2	000-234-7108	0/0	0/0	5	Y	Y	Y
3	000-234-7133	0/0	0/0		-	-	-
4	000-234-7220	0/0	0/0		-	-	-
5	000-234-7283	0/0	0/0		-	-	-
6	000-234-7811	0/0	0/0	6	Y	Y	Y
7	000-234-7896	0/0	0/0		-	-	-
8	000-234-7922	0/0	0/0		-	-	-
9	000-234-8479	0/0	0/0	23	Y	Y	Y
10	000-235-0765	0/0	0/0	4	Y	Y	Y

Buttons: Clear, More, Exit

Ref	Description
A	The ISE number; there are 16 on the MDR
B	The ISE user address
C	The ISE unencrypted and encrypted ADP counters. Each counter represents good ADPs/total ADPs. Only ISE 1 receives unencrypted ADPs.
D	The number of the program to which the ISE is assigned.
E	The (S)scrambling-(E)encryption-(A)authorization column. Y = yes. N = no. If neither Y nor N is displayed, no ISE is assigned to the program.

continued on next page

R36 - CA Diagnostics Menu (continued)

Ref	Description
F	Clear button: click this button to clear the ADP counters.
G	More button: click this button to toggle between screen 1 and 2 that together display the status for all 16 ISEs.
H	Exit button: click this button to revert to the previous menu.

R37-IP Network Setup Menu

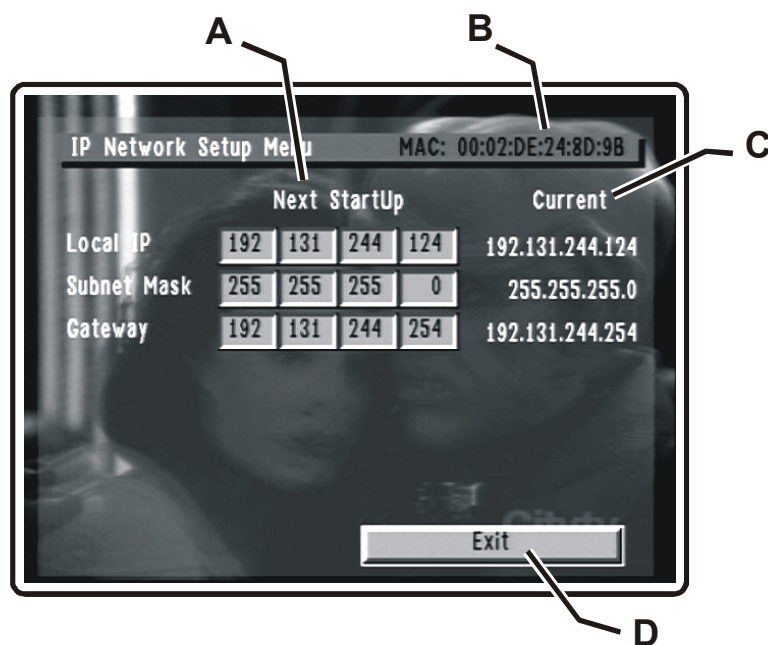
Introduction

The **R37-IP Network Setup Menu** lets you set the Local IP, Subnet Mask and Gateway to use upon the next startup or reset of the MDR.

How to display

1. **R10-Main Menu** → Misc button
2. **R23-Misc Setup Menu** → IP Network Setup button

Description:



Ref	Description
A	The Local IP, Subnet Mask and Gateway to be used on the next startup.
B	Media Access Control (MAC) address. The unique address assigned to the MDR unit upon manufacturing.
C	The unit's current Local IP, Subnet Mask and Gateway.
D	The Exit button which takes the user back to the R23-Misc Setup Menu .

Appendix A

Customer Support Information

Hotlines

Scientific-Atlanta provides customers with 24-hour hotline support from anywhere in the world. If you require technical assistance or product training support, or if you have any questions concerning your Scientific-Atlanta product, contact the appropriate Customer Support Center from those listed below.

If you call from...	Support Location	Regular Hours	After Hours	Fax
USA or Canada	USA: Atlanta, Georgia Canada: Toronto, Ontario	<u>Toll-free:</u> 1-888-949-4786	<u>Toll-free:</u> 1-888-949-4786	1-770-903-5567
South America	Buenos Aires, Argentina	+54-1-342-0321	1-770-236-4786	+54-1-325-5900
Europe, Middle East or Africa	London, England	<u>Toll-free</u> (within Europe): 1-800-220-145 <u>Direct:</u> Return material /tracking: +44-1923-271460 Decoder support: +44-1923-271467 Uplink/software support: +44-1923-271420	1-770-236-4786	+44-1923-269018
Asia or Australia	Sydney, Australia	<u>Toll-free:</u> 1-800-500-518 <u>Direct:</u> +61-2-9975-3678	1-770-236-4786	+61-2-9451-4432

Media Networks customers who call a Customer Support Center are asked specific questions in order to identify their needs. In this way, each call can be directed to the customer support representative most experienced with your Scientific-Atlanta product. Customer Support Centers also provide the following pre- and post-sales support services for Scientific-Atlanta products.

continued on next page

Customer Support Information (continued)

Support Details

Training support

On and off-site training plus technical support services are available for both equipment operators and system administrators.

Warranty and post-warranty support

Warranty and post-warranty support services are available to assist customers returning Scientific-Atlanta products for service or repair. For complete product warranty information, see the beginning pages of this guide.

Customer responsibility

When returning equipment, the customer is solely responsible for equipment packaging and transportation costs both to and from the factory.

At the customer's request, Scientific-Atlanta will make reasonable efforts to provide warranty service at the customer's premises, provided that the customer pays current field service rates plus direct travel and accommodation expenses.

In case of a fault

If an equipment fault develops, perform following steps.

1. Notify Scientific-Atlanta of the problem immediately. Provide the model number and serial number of the equipment plus details of the problem. On receipt of this information, service information and shipping instructions will be provided.
2. On receipt of instructions, return the product by prepaid freight. If the product or fault is not covered under warranty, Scientific-Atlanta will provide an estimate of repair charges in advance of any work performed.

continued on next page

Customer Support Information (continued)

Product Return

To return any Scientific-Atlanta product for repair or replacement, perform the following procedure. To be eligible for credit, a Return Material Authorization (RMA) number must accompany each product returned to Scientific-Atlanta. You can only obtain this number from your local Scientific-Atlanta Customer Support Center in advance of product return. Be sure to include this number in all correspondence.

1. Telephone your regional Customer Support Center or fax Scientific-Atlanta and request a Return Material Authorization for product return.
2. Tag or label the product with the following information
 - Your name and full return address
 - Telephone contact number
 - RMA number
 - Sales order (if available)
 - Purchase order (if available)
 - Date the product was received
 - Brief description of problems
3. Repackage the product using the original carton and packing materials, if possible. If the original packaging is not available, repackage the product using a suitable corrugated cardboard carton (or similar shipping container). Be sure to wrap the product in sufficient protective packaging to prevent damage to the equipment during shipment.
4. Print or attach the following information on the outside of the carton or shipping container.
 - The full shipping address
 - Your name, your business name and full return address
 - Contact telephone number
 - RMA number
5. Ship the product prepaid and insured to the Scientific-Atlanta Customer Support Center (or other repair location) as directed. If you are unsure about where to ship the product, contact your local Scientific-Atlanta Customer Support Center, Scientific-Atlanta dealer or distributor.

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

Appendix B

Technical Specifications

Note: Specifications are subject to change without notice.

System - MPEG-2/DVB Compatible

Inner FEC	Variable (1/2,2/3,3/4,5/6,7/8)
Outer FEC	Reed Solomon, T=8
MPEG-2 Transport	ISO

Tuner

Number of RF inputs	Two
Connectors	F-type female, 75 ohm
Input Level	-30 dBm to -65 dBm per carrier
Frequency Range	950 MHz to 2150 MHz
Symbol Rate	1 - 45 Msymbols/s
RF Input Separation	> 40 dB
LNB Power	13/18 V @ 400 mA
Maximum transport bitrate	49.7 Mbits/sec
22 kHz Band Switch	22kHz +/- 2 kHz

DVB-ASI Input

Connector	BNC 75 Ohm
Maximum transport bitrate	52.3 Mbits/second
Supported Packet Length	188 bytes

Ethernet Interface

Connector	RJ45
Specification	Full-duplex 10-base T

Alarm Outputs

Number	Two
Specification	Form C contact closure

SWIF Transport Stream Outputs

Number	Two
Average Optical Output Power	-13.3 to -20 dBm

continued on next page

Technical Specifications (continued)

DHEI Transport Stream Outputs

Number	Two
Interface	HD-22, Duplex DHEI physical interface (output only)
Data Format	188 byte packets

DVB-ASI Transport Stream Outputs

Number	Two
Connector	BNC 75-ohm
Data Format	188 byte packets

Analog Monitor Video Output

Number	One
Connector	BNC 75-ohm
Decompression	MPEG 1 or MPEG-2 4:2:0
Video Standard	525/625 Auto-switchable
Level	140 IRE \pm 10% (NTSC) 1.0 V p-p \pm 10% (PAL)
Maximum Video Rate	15 Mb/s
Video Resolutions	720 x 576/480 704 x 576/480 544 x 576/480, 528 x 576/480 480 x 576/480 352 x 576/480
Chroma/Luma Delay	\pm 75 ns
Differential Gain	5% maximum
Differential Phase	5 degrees maximum
Line Time Distortion	3% maximum
Field Time Distortion	3% maximum
Linearity	5% maximum
S/N	55 dB

continued on next page

Technical Specifications (continued)

Analog Monitor Audio Output

Number	one stereo pair
Connector	XLR
Decompression	Dolby Digital (AC-3) or MPEG-1 layer II
Peak Output level	+18 dBu into high impedance (Factory set for unity gain, adjustable -6dB)
Audio Sampling Rates	32 kHz, 44.1 kHz, 48 kHz
THD	0.3% maximum @ 1 kHz
Dynamic Range	75 dB (CCIR Arm Weighting) minimum
Cross Talk	60 dB minimum @ 1 kHz
Frequency Response	-2 dB maximum from 20 Hz to 20 kHz

Environmental

Operation Temperature	0° C to 50° C (32°F - 122°F)
Storage Temperature	-40° C to 60° C (-40°F to 140°F)
Relative Humidity	5% to 95% non-condensing

Physical

Dimension	3.5 in. H x 19.0 in. W x 16 in. D (8.9 cm H x 48.3 cm W x 40.6 cm D)
Weight	22 lbs. (10 kg) approx.

Power Requirements

Voltage Range	100V to 240 VAC nominal \pm 10%
Line Frequency	47 Hz to 63 Hz
Current Consumption	1.4 amperes

Ordering Information

803-360	Multiple Decryption Receiver (grounded)
803-361	Multiple Decryption Receiver (non-grounded, CE version)

Appendix C

Alt Mode Operation

Introduction

Alt Mode lets you view and configure many of the MDR settings without using a video monitor. Alt Mode refers to the alternate functions assigned to the front panel numeric keys. In Alt Mode, each of these keys has three different functions called Alt Mode 1, Alt Mode 2, and Alt Mode 3.

Operation

To enter Alt Mode, press the front panel Alt key. If the ALT LED does not illuminate, press the Alt key again. Pressing the Alt key a second time is necessary because the menu was on, and pressing the Alt key the first time caused the menu to exit.

After you enter Alt Mode, you can cycle through the three Alt Mode functions by pressing the Alt key. When Alt Mode is active, the front panel ALT led is illuminated and the front panel displays which Alt Mode function is currently selected (A1, A2, or A3).

When you have selected the Alt Mode function you need, press the appropriate front panel numeric key to perform the function you want.

Editing a numeric value

If you want to modify a numeric value in the Alt mode display, first enter edit mode, then make the change to the number, and finally save the changes.

If the key has an edit mode, press the front panel Yes key to enter edit mode.

While you are making changes to the numeric value, you can move between digits by using the left and right arrow keys.

Note: Editing a numeric value requires that each digit position be occupied by a number. Therefore, you must enter all trailing zeros.

To save the edited field, press the Yes key.

Cycling through options

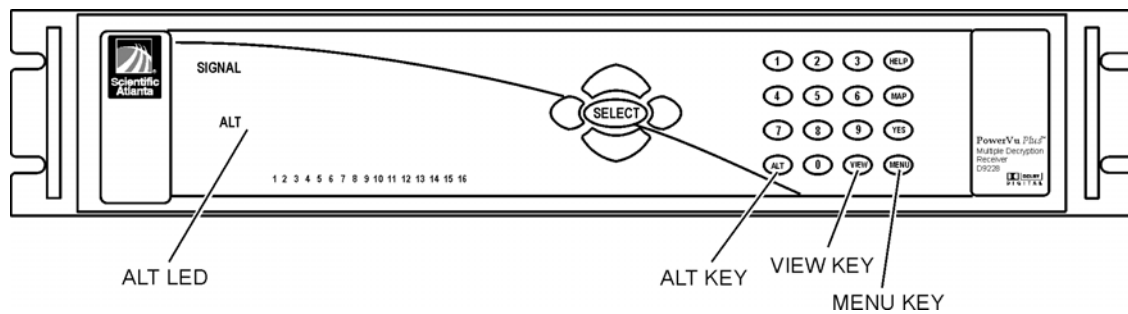
Often the displayed Alt mode field comprises one of several predetermined options. You can cycle through these options by using the up and down arrow keys. To save the chosen option, press the Yes key.

Exiting

To exit Alt Mode, press the View key.

continued on next page

Alt Mode Operation (continued)



Key	Alt Mode 1 Function	Alt Mode 2 Function	Alt Mode 3 Function
0	Input (LNB#1, LNB#2, ASI)	Network ID (display/edit)	Toggle SWIF/DHEI #1
1	C/Ku (display)	Transport Stream ID (display)	Toggle SWIF/DHEI #2
2	FEC (display)	Select Preset	Alarm State #1
3	BER : (display)	Lock Level	Alarm State #2
4	FRQ (display)	Display Error	Unforced download
5	SYM : display/Edit symbol rate	Power LNB Y/N	Fixed PID download
6	SIG Level (display)	Lo Freq #1	Software version
7	FRQ (Edit mode)	Lo Freq #2	Change download mode
8	POL : display/Edit polarization	Crossover	Reserved for future use
9	AFC : Error Rate (display)	Monitor Type	Reserved for future use

continued on next page

Alt Mode Operation (continued)

ALT Mode 1

Key	Function	Description
0	Input (RF#1, RF#2, ASI)	Displays the current input source. You can switch between the three input sources by using the up and down arrow keys. You can also alter this setting in the Configuration Menu.
1	C/Ku (display)	Displays whether the MDR is tuned to C band or Ku band. It is also displayed in the RF-1 or RF-2 Setup Menu.
2	FEC (display)	Displays the FEC rate. You can switch the FEC rate by using the up and own arrow keys. You can also edit the FEC rate in the LNB-1 or LNB-2 Setup Menu.
3	BER : (display)	Displays the bit error rate (BER). It is also displayed in the LNB-1 or LNB-2 Setup Menu.
4	FRQ (fine tuning)	Displays the currently tuned frequency. Increment or decrement the frequency in 1MHZ steps using the up or down arrow keys. Press YES again to save. You can also edit the frequency in the LNB-1 or LNB-2 Setup Menu.
5	SYM : display/Edit symbol rate	Displays the current symbol rate. You can edit the symbol rate with the numeric keypad. To edit, press YES. Enter the desired symbol rate with the numeric keypad. Press YES again to save. You can also edit the symbol rate in the LNB-1 or LNB-2 Setup Menu.
6	SIG Level (display)	Displays the signal level. This is also displayed in the LNB-1 or LNB-2 Setup Menu.
7	FRQ	Displays the tuned frequency. Edit the frequency by pressing YES, enter the new frequency on the numeric keypad, then press YES again to save. You can also edit the frequency in the LNB-1 or LNB-2 Setup Menu.
8	POL : display/Edit polarization	Displays the set polarity (horizontal or vertical). Use the arrow keys to alter the polarity. You can also edit the polarity in the LNB-1 or LNB-2 Setup Menu.
9	AFC : Error Rate (display)	Displays the AFC error rate. The error rate is also available in the LNB-1 or LNB-2 Setup Menu

continued on next page

Alt Mode Operation (continued)

ALT Mode 2

Key	Function	Description
0	Network ID	Displays the Network ID. The network ID is also available in the LNB-1 or LNB-2 Setup Menu.
1	Transport Stream ID (display)	Displays the transport stream ID. This information is also displayed in the LNB-1 or LNB-2 Setup Menu.
2	Select Preset	Allows you to switch Presets.
3	Lock Level	Allows you to switch lock levels.
4	Display Error	Displays current diagnostic errors.
5	Power LNB Y/N	Displays which LNB configuration was selected (on, on with compensation, off), and can be changed using the up and down arrow keys. You can also edit this in the LNB-1 or LNB-2 Setup Menu.
6	L.O. Freq #1	Displays local oscillator frequency 1. To edit this frequency, press YES, enter the desired frequency, then press YES again to save. You can also edit this in the LNB-1 or LNB-2 Setup Menu.
7	L.O. Freq #2	Displays local oscillator frequency 2. To edit this frequency, press YES, enter the desired frequency, then press YES again to save. You can also edit this in the LNB-1 or LNB-2 Setup Menu.
8	Crossover	Displays the crossover frequency. To edit this frequency, press YES, enter the desired frequency, then press YES again to save. You can also edit this in the LNB-1 or LNB-2 Setup Menu.
9	Monitor Type	Displays which video format the monitor video is configured for (NTSC, PAL N, PAL M, and so on). Use the arrow keys to change the setting. You can also edit this in the Misc Setup Menu.

continued on next page

Alt Mode Operation (continued)

ALT Mode 3

Key	Function	Description
0	Toggle SWIF/DHEI #1	Lets you configure output 1 to either SWIF or DHEI. Use the arrow keys to switch the output configuration. You can also edit the configuration of output 1 in the Configuration Menu.
1	Toggle SWIF/DHEI #2	Lets you configure output 2 to either SWIF or DHEI. Use the arrow keys to switch the output configuration. You can also edit the configuration of output 2 in the Configuration Menu.
2	Alarm State #1	Displays the state of alarm /relay 1. The state of the relay is also displayed in the Misc Diagnostics Menu.
3	Alarm State #2	Displays the state of alarm /relay 2. The state of the relay is also displayed in the Misc Diagnostics Menu.
4	Unforced download	Prompts an unforced download to occur. The LED display then displays the download progress until the download ends, or you press VIEW to escape. If a download is already in progress, the word INPROG is displayed on the LED. The LED afterwards displays the progress of the ongoing download until it ends, or you press VIEW. This download does not automatically reset the MDR. You can also initiate or monitor downloads from the Download Menu.
5	Fixed PID download	Lets you edit the download PID, and initiate the download. The LED display first displays the word PID, and then the current download PID. To edit the PID, press YES, enter the desired PID, then press YES again to save. The LED then monitors the download progress. To escape, press VIEW. If a download is already in progress, INPROG is displayed on the LED. The LED continues to monitor the progress of the ongoing download, until it ends or you press VIEW. You can also initiate or monitor downloads from the Download Menu.
6	Select application	Displays the current application version. Use the Up/Down arrow keys to select the new version to run. Press the YES key to cause the system to reboot into the new version.

continued on next page

Alt Mode Operation (continued)

Key	Function	Description
7	Change download mode	Select (unforced) download mode using the Up/Down arrow keys. Options are: none, one, all. Setting this to one starts a download, if a download is present.
8	To be determined	Reserved for future use
9	Bit rate display	<p>This can be set to display the bit rate of:</p> <ul style="list-style-type: none">• current video PID being monitored• the entire incoming transport stream• each individual transport output (ASI-1, ASI-2, SWIF-1/DHEI-1, SWIF-2/DHEI-2)• any specific PID within the transport. <p>Procedure:</p> <p>Tune the MDR to a signal.</p> <p>Channel change to the specific program for its bit rate information</p> <p>While in the Video mode (i.e. On-screen Menu is not selected), Press the ALT key three times.</p> <p>The display should show “A3”, indicating ALT mode 3</p> <p>Press the 9 key</p> <p>The display will show “oP bPS”</p> <p>From here you can select the following options by using the UP ARROW cursor and DOWN ARROW cursor. (<i>see table below</i>). Alternately one may also enter a specific PID # (in decimal).</p> <p>Press the “SELECT” key to select option</p> <p>The front panel will now display the bit rate and it will be constantly updated.</p> <p>Press any key to return to normal mode. The display will show the current program number.</p> <p>Repeat the steps for any additional bit rate information</p>

		<p><u>OP bPS</u></p> <p>The bit rate for the current video PID being displayed. The Video PID # is first displayed and after a short delay its bit rate is displayed.</p> <p><u>ALL</u></p> <p>The bit rate for the entire incoming transport stream</p> <p><u>ASI-1</u></p> <p>The bit rate for the first ASI output</p> <p><u>ASI-2</u></p> <p>The bit rate for the second ASI output</p> <p><u>SWIF-1 (DHEI-1)</u></p> <p>The bit rate for the first SWIF/DHEI output, depending whether SWIF or DHEI is selected.</p> <p><u>SWIF-2 (DHEI-2)</u></p> <p>The bit rate for the second SWIF/DHEI output, depending whether SWIF or DHEI is selected.</p> <p><u>PID #</u></p> <p>The input bit rate for (specified) PID number. (in decimal)</p>
--	--	---

Appendix D

Preventive Maintenance

Normal operation of the MDR requires periodic maintenance.

The MDR has no internal, user-serviceable parts. Refer servicing of this product to qualified personnel only.

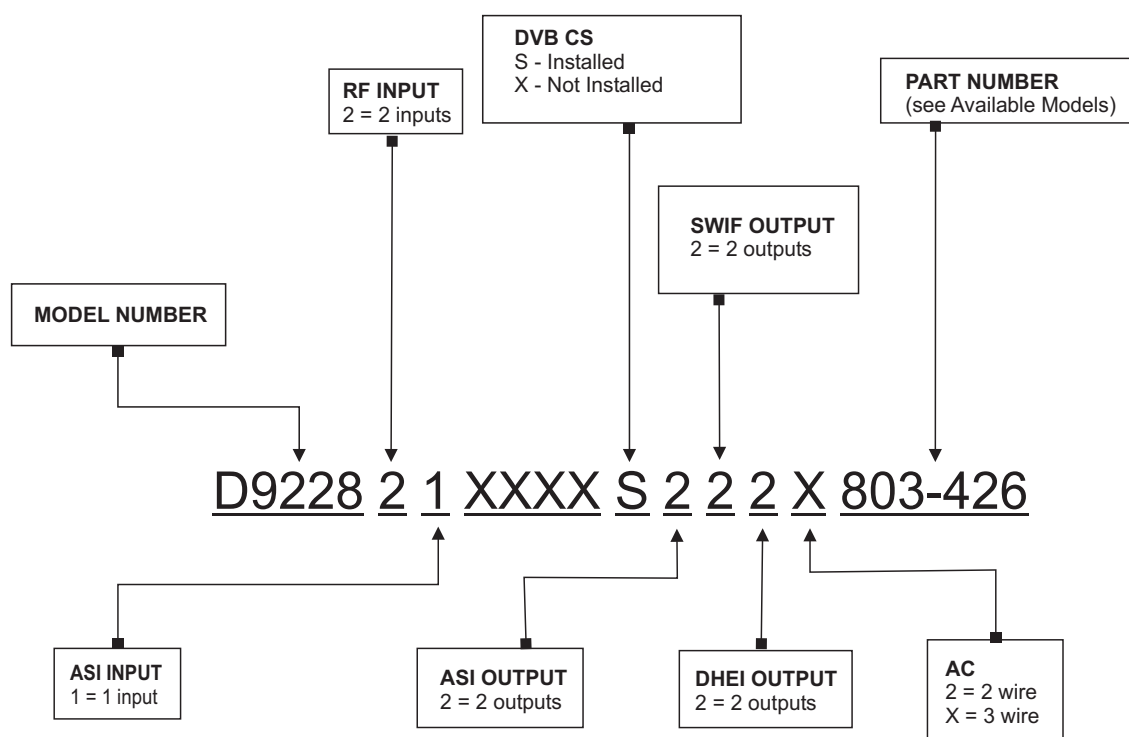
The MDR can operate unattended for extended periods of time. However, we recommend periodic visual inspection to ensure continued and safe operation. Perform a quarterly visual inspection according to the following table.

Inspect...	To ensure that...
Chassis	<ul style="list-style-type: none">• There is no mechanical damage or evidence of overheating• All chassis air vents are unobstructed and free of dust and debris (clean/ dust or vacuum when necessary)• Receiver is not operated in environments where airflow is restricted, or where ambient temperatures are outside the specified range
External cables and connections	<ul style="list-style-type: none">• All cables are properly mated, and that all connectors and retainers are correctly installed and tightened• Cables and connectors are not stressed or subject to abrasion or contact with sharp surfaces

Appendix E

Product Identification

The label affixed to the receiver rear panel contains a 16-digit product identification code number that identifies your receiver, including factory options. Use this information to help identify your receiver. For more information about product ordering, contact your local Scientific-Atlanta Customer Support Center, Scientific-Atlanta dealer or distributor.



Available Models

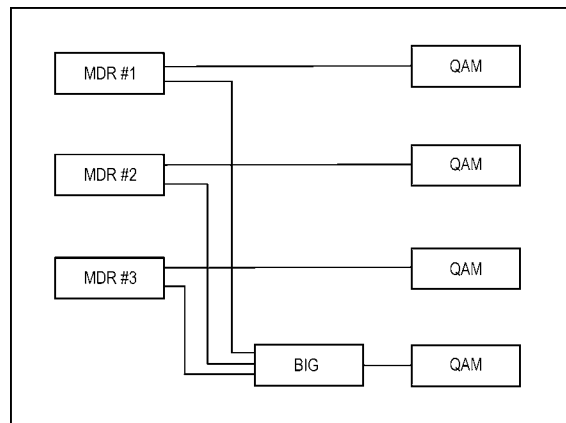
803-426	2 ASI and 2(SWIF/DHEI) DES/DVB
803-421	2 ASI and 2(SWIF/DHEI) DES/DVB 2-wire, non-grounded

Appendix F

Possible Output Configurations

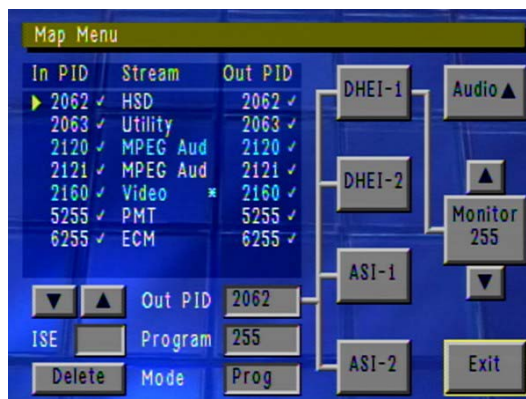
Connecting to S-A QAM Modulator or Broadband Integrated Gateway

Depending upon the QAM Modulator, you may want to use the SWIF or ASI interface to connect the MDR to a QAM Modulator. Alternatively, you can use a BIG (Broadband Integrated Gateway) to combine the MDR output with digital programs from other sources to create a QAM channel.



Typically, no changes are necessary to the factory-configured presets to operate in this type of installation. If you need to make changes to the preset configurations, you must change the lock level to 0. (See Chapter 2.)

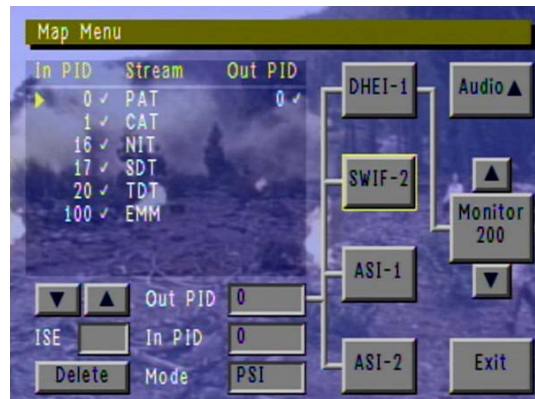
1. On the R21-Configuration menu, move the cursor to the Center Box and press SELECT. The R33-Map Menu is displayed where you can see the incoming and outgoing PID numbers. When in Prog Mode, you will see all the PIDs associated with a particular program. You do not need to make any changes to these PIDs. However, editing the out PID field re-maps the associated PID.



continued on next page

Possible Output Configurations (continued)

2. Change the mode to PSI.



You may see stream types such as PAT, CAT, NIT, SDT, TDT, EMM, and so on, depending upon the uplink setting. Move the pointer up and down to different streams. Make sure the PAT (PID 0) is routed to the transport outputs. Use the ▲, ▼, and SELECT keys to point to the appropriate PID. Use the MAP key to modify the output routing. The other PSI PIDs do not need to be routed to the outputs.

continued on next page

Possible Output Configurations (continued)

Connecting to Terayon CherryPicker Re-multiplexer

We encourage you to use the DVB-ASI interface instead of DHEI for MDR/CherryPicker interconnection due to the limited bandwidth and cabling requirements associated with DHEI interface.

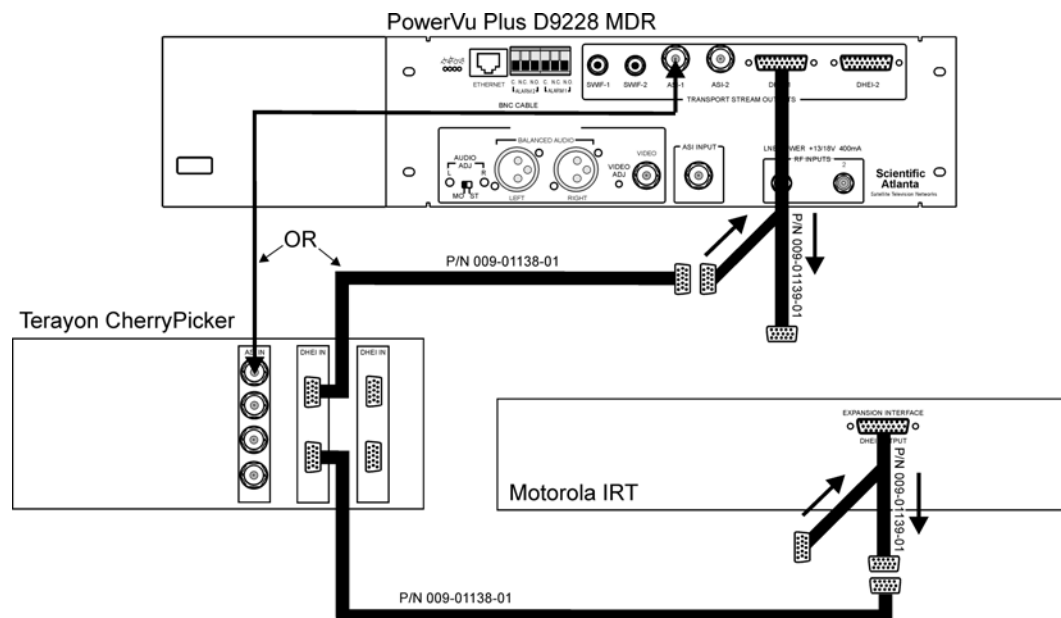
In the event where you choose CherryPicker equipped with DHEI inputs only, or no spare ASI input is available, note that Terayon supplies a number of DHEI cables with the CherryPicker. One is a double-headed Y-cable (part number 009-01139-01). Depending upon whether it is an IRT or MDR, you must use a different fork of the Y-cable to connect to the CherryPicker because the DHEI pinouts for the MDR are different from the pinouts for the IRT. See the diagram below for cable connections and part numbers.



CAUTION:

On the configuration menu, if the DHEI icon is red, it means that the output has exceeded the 27 Mbps limit of the interface. You must reduce the number of programs routed to this output. (See menu R21-G.)

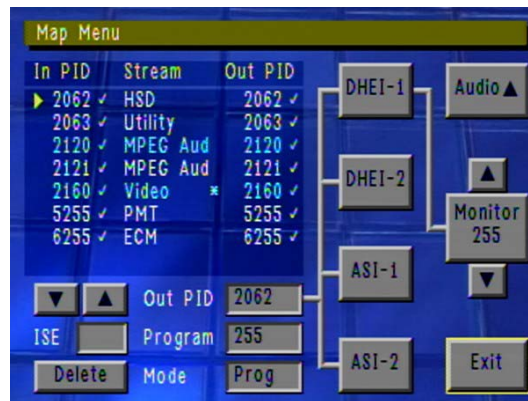
If a lock level protects the current Preset, then it must be reset to lock level 0, before any modifications to program routing will be allowed (see Chapter 2).



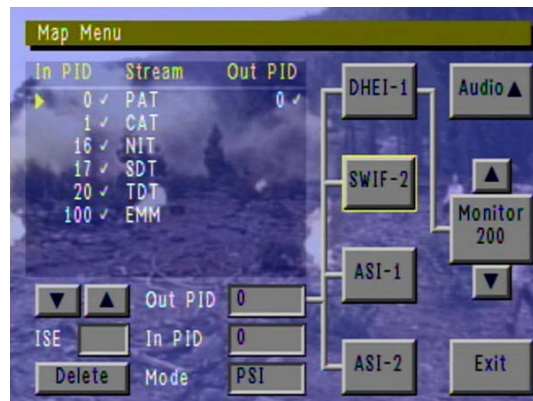
continued on next page

Possible Output Configurations (continued)

1. On the R21-Configuration menu, move the cursor to the Center Box and press SELECT. The R33-Map Menu is displayed where you can see the incoming and outgoing PID numbers. When in Prog Mode, you can see all the PIDs associated with a particular program. You do not need to make any changes to these PIDs.



2. Change the mode to PSI.



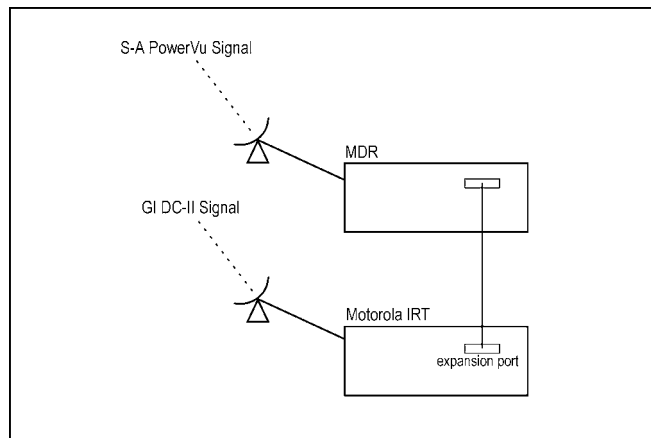
You may see stream types such as PAT, CAT, NIT, SDT, TDT, EMM, and so on, depending upon the uplink setting. Move the pointer up and down to different streams. Make sure the PAT (PID 0) is routed to the transport outputs. Use the ▲, ▼, and SELECT keys to point to the appropriate PID. Use the MAP key to modify the output routing. The other PSI PIDs do not need to be routed to the outputs.

continued on next page

Possible Output Configurations (continued)

Connecting to Motorola IRT

Use this procedure if you want to select a number of programs from the MDR to form a 64QAM channel on an IRT directly.



Setting up the MDR for PID-overlay Mode

On the R21-Configuration Menu, select DHEI as outputs (R21-J). If the DHEI icon is red, it means that the output exceeds the 27 Mbps limit and you must reduce the number of programs routed to this particular output (R21-G).

To work with IRT using PID overlay mode, you must remap both video and audio PIDs according to the PID number convention used in Motorola equipment (see R33-Map Menu). Video PID numbers start at 16 and increment in steps of 64. Audio PID numbers start at 17.

PID Number Convention

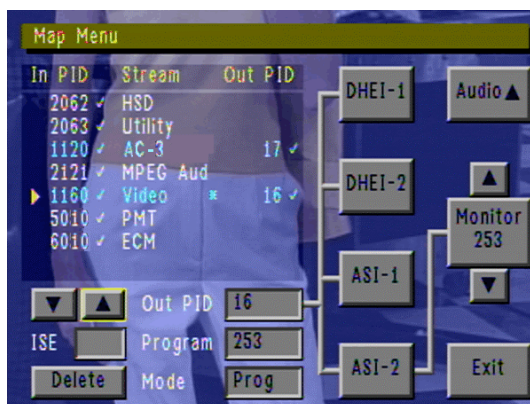
MPEG Program	Video PID (decimal)	Audio PID (decimal)
1	16	17
2	80	81
3	144	145
4	208	209
5	272	273
6	336	337
7	400	401
8	464	465
9	528	529
10	592	593
11	656	657
12	720	721

continued on next page

Possible Output Configurations (continued)

1. On the R21-Configuration menu, move the cursor to the ^ arrow above the center box R21-E, cycle through to the program requiring PID remapping, then press SELECT to enter the MAP Menu (R33).
2. Make sure the Mode Selection is Prog, so that PIDs associated with a particular program can be re-mapped. Cursor to Video PID and type in an Out PID in accordance with the PID Number Convention table above.
Cursor to the Audio PID and perform PID remapping in a similar fashion. Make sure all other PIDs (for example, PMT, ECM, and so on) are not routed to outputs. Only Video and Audio PIDs need to be routed.

Map Menu



Program 1

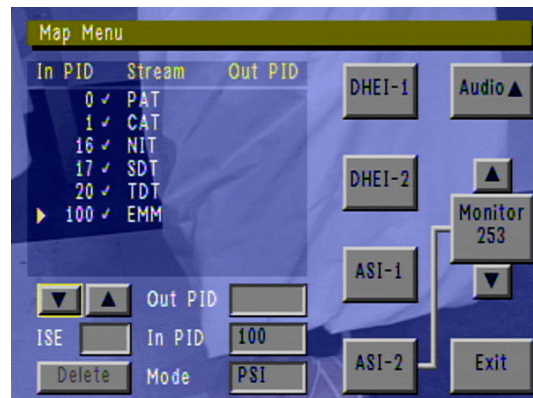
In PID	Stream	Out PID	Routed to Outputs
1120	AC-3 Audio	17	Yes
1160	Video	16	Yes
5010	PMT		No
6010	ECM		No

3. Change the mode to PSI. You may see stream types such as PAT, CAT, NIT, SDT, TDT, EMM, and so on. Make sure none of these PIDs is routed to the output, as shown in the following illustration.

continued on next page

Possible Output Configurations (continued)

Map Menu



Setting up the IRT for PID-overlay mode

1. Tune the IRT to HITS 3 .
2. Create 12 services on the DAC so that the MPEG numbers are consecutive.
3. Create a channel map associated with the new digital services.
4. Reboot the IRT and wait until active commands > 0.
5. Connect the DHEI cable from the MDR DHEI output to the IRT Expansion Output. You can use a straight-through DHEI cable to interconnect these units. Different cable lengths are available: S-A Part number 774-487 (120" length); GI Part number 415415-00X-00 where X=1,2,3 for 20", 40", and 80" respectively.
6. Enable the Output expansion port of the IRT. On the IRT front panel, go to DHEI Control, Configure: Input Port (Not Selected), Output Port (Selected).
7. The Video and Audio PIDs from the MDR are now PID-overlapped onto programs described by the HITS feed.
8. Encrypt the digital services on the DAC.
9. Authorize the set-top for those services.

Appendix G Conformity



Declaration of Conformity



MARKING

The Product PowerVu™ Multiple Decryption Receiver
Reference or Model Number D9228 - 2
Rating 100-240 VAC 1,4 A 50/60 Hz

Has been designed and manufactured in accordance with the following Harmonised Standards:

Number and Date of Issue	Title of Standard
EN 50083-1 / 1994	- Cabled distribution systems for television, sound, and interactive multimedia signals – Part 1. Safety Requirements
IEC 60065: 1998	- Safety requirements for mains operated electronic and related apparatus for household and similar general use
EN 50083-2 / 1995	- Cabled distribution systems for television, sound, and interactive multimedia signals - Part 2. Electromagnetic compatibility for equipment
EN 55022 / 1998	- Limits and Methods of Measurement of Radio Interference Characteristics of Information Technology Devices
EN 50024 / 1998	- Information technology equipment - Immunity characteristics - Limits and methods of measurement
EN 61000-3-2	- Electromagnetic Compatibility - Part 3: Limits Section 2: Limits for Harmonic Current Emissions (Equipment Input Current less than 16A per phase)

According to the provisions of the Low Voltage Directive 73/23/EEC and the Electromagnetic Compatibility Directive 89/336/EEC amended per Directive 93/68/EEC

Toronto, Canada, October, 2000
(Issue place and Date)

Scientific Atlanta Canada Inc (Media Networks Division)
(Company name)

120 Middlefield Road, Scarborough Ontario Canada M1S 4M6
(Company Address)

A handwritten signature in black ink, appearing to read "Al Dingle", written over a horizontal line.

For the manufacturer: Al Dingle, Manager, Product Engineering Group
(Signature, Name and Title)

USA and Canadian emissions notices

FCC Declaration of Conformity and Notices

Manufacturer's Name: Scientific-Atlanta Canada, Inc.
Media Networks

Corporate Headquarters: Scientific-Atlanta, Inc.
One Technology Parkway South, Norcross, GA 30092-2967

Contact: Customer Service 1-888-949-4786, select 3 (technical support),
option 3 (network operator support)

This equipment has been tested at a NIST NVLAP accredited Test Laboratory and found to comply with the limits for Class B digital devices according to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when operated in a residential installation. This product generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions supplied in this manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception (which can be determined by turning the equipment off and on), the user is encouraged to try to correct the interference by one or more of the following measures:

- ☐ Reorient or relocate the television receiving antenna
- ☐ Increase the separation between the equipment and the receiver
- ☐ Connect the equipment to an AC outlet on a circuit different from that to which the receiver is connected
- ☐ Contact your dealer/reseller or an experienced radio/TV technician for help.

The user may find the booklet "Interference handbook" prepared by the FCC helpful. This booklet is available from the FCC web site <http://www.fcc.gov/cib/Publications/tvibook.html>, or in printed form from the US Government Printing Office, Washington, DC 20402, stock No. 004-000-00450-7.

Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference that may cause undesired operation.

Industry Canada notice

This Class B digital apparatus meets the requirements of the Canadian Interference Causing Equipment Regulations.

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Unauthorized modifications

The manufacturer is not responsible for any radio or TV interference resulting from unauthorized modification of this equipment. It is the responsibility of the user to correct such interference at his expense.

Cables

Shielded cables should be used to interconnect this product with any peripheral equipment (e.g. video monitors, data terminals, etc.) to ensure compliance with Class B limits. Failure to do so may result in radio or TV interference.



United States: 4317-B Park Drive, Norcross, GA 30093; Tel: +1 (770) 236-3817; Fax: +1 (770) 236-4786

Canada: 120 Middlefield Road, Scarborough, Ontario, M1S 4M6, Canada; Tel.:1-416-299-6888; Fax: 1-416-299-7145

United Kingdom: Home Park Estate, Kings Langley, Herts WD4 8LZ, United Kingdom; Tel: +44-1923-266133; Fax: +44-1923-269018

Australia: Unit 2, 2 Aquatic Drive, French's Forest, PO Box 292, NSW 2086, Australia; Tel: +61-2-9-452-3388; Fax: +61-2-9-451-4432

Germany: Westerbachstrasse 28-32, 61476 Kronberg, Germany; Tel: +49 (0)6173-9280; Fax: +49 (0)6173-9281-50

Italy: Via Fosso Centroni 4, Angolo Via Anagnina, 00040 Roma, Italy; Tel: 39-67-984-0030; Fax: 39-67-984-0034

Argentina: Argentina, S.A., 1149 Piso 11, Capital Federal 1011, Argentina; Tel: 54-11-4325-2800; Fax: 54-11-4325-5900

Singapore: Scientific-Atlanta Pte. Ltd., 400 Orchard Road, #22-05 Orchard Towers, Singapore 238875; Tel: 65-733-4314; Fax: 65-733-2706

Beijing: Lucky Tower, Block B, Suite 1110-1112, 1116-1117, No. 3 Dong San Huan Bei Lu, Beijing, China 100027; Tel: 8610-6461-5761; Fax: 8610-6461-5754

© 1999-2002 Scientific-Atlanta, Inc.

All rights reserved.

Printed in Canada.

Part Number 707-161 Rev. 3

February 2002