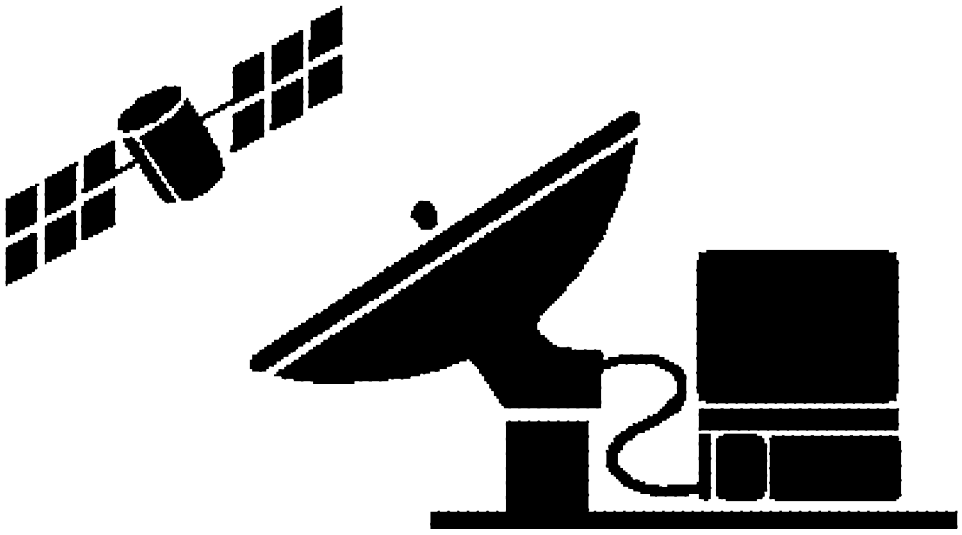
Installation and Operation Guide

Scientific Atlanta

Model 9660 and 9660 Professional Receivers



Please read this entire guide

Veuillez lire entièrement ce guide
Bitte das ganze Handbuch durchlesen
Sírvase leer completamente la presente guía
Si prega di leggere completamente questa guida

Important
Important
Wichtig
Importante
Importante

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

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

Bitte lesen Sie das ganze Handbuch durch bevor Sie dieses Produkt installieren oder in Betrieb nehmen. Achten Sie dabei besonders auf die Vorsichtsmaßregeln.

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

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

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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 this product.
- If circumstances impair the safe operation of this product, stop operation and secure this product against further operation.

Warnings and cautions

Avoid personal injury and product damage! Do not proceed beyond any warning or caution symbol until you fully understand and meet the conditions that are indicated!

-  You will find this symbol throughout this guide.

  This symbol indicates a **Warning** or a **Caution**. Failure to follow the guidelines that accompany this symbol can result in personal injury or damage to this product.

-  This symbol is affixed to this product.

  This symbol indicates that uninsulated electrical voltage inside this product can cause electric shock. Where this symbol is present, it is dangerous to make contact with any inside part of this product.

-  This symbol is affixed to this product.

  This symbol indicates that the level of heat inside this product can burn you. Where this symbol is present, it is dangerous to make contact with that part of the product.

-  This symbol is affixed to this product.

  This symbol indicates a point of earth at the location of the symbol.

Continued on next page

Safety Precautions, Continued

Power

- **Important!** This product must be earthed.
- This product is pluggable. The socket-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.
- If this product **does not** have a mains power switch, the power cord serves this purpose.

Product enclosure

- Do not allow liquids to get inside of this product.
- Do not attempt to open the enclosure of this product unless you are instructed to do so.
- Do not push objects through openings in the enclosure of this product.

Cables

- Always disconnect the power cable before you service 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 that has the correct type and rating. The correct type and rating is indicated on the back panel of this product.
- Always disconnect the power cable before you change a fuse.

Servicing

Refer service only to qualified service personnel who are familiar with safety procedures, and who are aware of the potential hazards that are involved in servicing this product.

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.

Avertissements et précautions

Evitez les dommages corporels. Evitez l'endommagement du produit! Ne procédez pas au-delà d'un symbole d'avertissement et de précaution avant d'avoir complètement compris les conditions indiquées et de les avoir remplies.

-  Vous rencontrerez fréquemment ce symbole dans ce guide.

  Il indique un **Avertissement** ou une **Précaution à prendre**. Des dommages corporels ou un endommagement du produit peuvent se produire si vous ne respectez pas les indications qui suivent ce symbole.

-  Ce symbole est apposé sur le produit.

  Il indique qu'un courant électrique non isolé circulant à l'intérieur de ce produit peut causer un choc électrique. Partout où ce symbole est présent, il est dangereux de toucher les parties intérieures du produit.

-  Ce symbole est apposé sur le produit.

  Il indique que le niveau de température à l'intérieur du produit est tel qu'il peut provoquer des brûlures. Partout où ce symbole est présent, il est dangereux de toucher les parties intérieures du produit.

-  Ce symbole est apposé sur le produit.

  Il indique un point relié à la terre.

suite page suivante

Règles de Sécurité, suite

Alimentation

- **Important!** Ce produit doit être relié à la terre.
- Il se branche. La prise électrique doit être à proximité du produit et facilement accessible.
- Raccordez uniquement ce produit à la source d'alimentation qui est indiquée sur le panneau arrière.
- Si ce produit **n'a pas** d'interrupteur d'alimentation générale, le cordon d'alimentation remplit ce rôle.

Boîtier

- Empêchez les liquides de pénétrer à l'intérieur du produit.
- N'essayez pas d'ouvrir le boîtier à moins que vous n'en ayez reçu l'ordre.
- Ne forcez pas d'objets dans les ouvertures du boîtier.

Câbles

- Débranchez toujours le câble d'alimentation avant de procéder à l'entretien du 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 calibre adaptés. Les types et les calibres adaptés sont indiqués sur le panneau arrière du produit.
- Débranchez toujours le câble d'alimentation avant de changer un fusible.

Entretien

Ne confiez l'entretien du produit qu'à un personnel de maintenance qualifié, familier avec les procédures de sécurité et prévenu des risques potentiels inhérents à l'entretien de ce produit.

Sicherheitsvorkehrungen

Schützen Sie sich gegen Stromschlag und ihr System gegen Beschädigung!

- Dieses Produkt entspricht internationalen Sicherheits-und Designnormen. Beachten Sie alle in diesem Handbuch angegebenen Sicherheitsvorkehrungen sowie die auf dem Produkt angebrachten Warnzeichen.

- Falls die gegebenen Umstände den sicheren Betrieb dieses Produktes behindern, stellen Sie den Betrieb ein und sichern Sie das Produkt gegen weitere Inbetriebnahme.

Warnzeichen

Vermeiden Sie Personenschaden und Produktbeschädigungen! Fahren Sie mit der Installation und Inbetriebnahme über ein Warnzeichen hinaus erst dann fort, wenn Sie die angezeigten Bedingungen voll und ganz verstehen und erfüllen!

-  Sie finden dieses Symbol überall in diesem Handbuch.

  Dieses Symbol kennzeichnet eine **Warnung** oder **Vorsichtsmaßregel**. Nichtbefolgung der dieses Warnzeichen begleitenden Richtlinien kann zu Personenschaden oder Beschädigung dieses Produkts führen.

-  Dieses Symbol ist auf dem Produkt angebracht.

  Dieses Warnzeichen weist darauf hin, daß unisolierte elektrische Spannung in diesem Produkt zu Stromschlag führen kann. An Stellen, wo sich dieses Warnzeichen befindet, ist es gefährlich mit einem der inneren Teile des Produktes in Berührung zu kommen.

-  Dieses Symbol ist auf dem Produkt angebracht.

  Dieses Warnzeichen weist darauf hin, daß der Hitzegrad im Inneren dieses Produkts zu Verbrennungen führen kann. Es ist gefährlich mit den Teilen dieses Produkts, an denen sich dieses Warnzeichen befindet, in Berührung zu kommen.

-  Dieses Symbol ist auf dem Produkt angebracht.

  Dieses Warnzeichen kennzeichnet einen Erdungspunkt an der Stelle, wo das Warnzeichen angebracht ist.

Fortsetzung auf der nächsten Seite

Sicherheitsvorkehrungen, Fortsetzung

Strom	• **Wichtig!** Dieses Produkt muß geerdet sein. • Dieses Produkt ist anschließbar. Die Steckdose muß sich in der Nähe des Produkts befinden und muß leicht zugänglich sein. • Schließen Sie dieses Produkt nur an die auf der Rückwand aufgeführte Stromquelle an. • Falls dieses Produkt keinen Hauptstromschalter hat, dient das Stromkabel diesem Zweck.
Gehäuse des Produktes	• Lassen Sie keine Flüssigkeiten in dieses Produkt kommen. • Versuchen Sie nicht, das Gehäuse des Produktes zu öffnen, es sei denn, die Anleitungen fordern Sie ausdrücklich dazu auf. • Stecken Sie keine Gegenstände durch die Öffnungen in dem Gehäuse des Produktes.
Kabel	• Vor der Wartung dieses Produktes immer zuerst die Stromkabel herausziehen um die Stromzufuhr zu unterbrechen. • Dabei nur an dem Stecker oder dem Verbindungsstecker ziehen, niemals an dem Kabel selber ziehen. • Nicht auf die Kabel oder Stecker treten oder sie sonstigen Belastungen aussetzen.
Sicherung	• Nur eine Sicherung des korrekten Typs und Leistung benutzen. Der korrekte Sicherungstyp und Sicherungsleistung ist auf der Rückwand des Produktes angegeben. • Vor dem Auswechseln einer Sicherung immer die Stromkabel herausziehen.
Wartung	Die Wartung qualifiziertem Wartungspersonal überlassen, das mit den Sicherheitsmaßnahmen vertraut ist und sich der potentiellen mit der Wartung dieses Produktes verbundenen Gefahren bewußt ist.

Medidas de seguridad

¡Protéjase de descargas eléctricas y proteja de daños al producto!

- Este producto cumple con las normas internacionales de seguridad y diseño. Observe todas las medidas de seguridad que aparecen a lo largo de la presente guía, así como todos los símbolos de seguridad que están adheridos a este producto.
- Si las circunstancias impiden la utilización de este producto en condiciones de seguridad, interrumpa la misma y asegúrelo de tal manera que no sea utilizado.

Advertencias y precauciones

¡Evite heridas personales y daños al producto! ¡No prosiga más allá de un símbolo de advertencia o de precaución hasta que comprenda totalmente las condiciones indicadas en el mismo y cumpla con las mismas!

-  Encontrará este símbolo a lo largo de esta guía.

  Este símbolo indica Advertencia o Precaución. En caso de no seguirse las indicaciones que acompañan a dicho símbolo se pueden producir heridas personales o daños al producto.

-  Este símbolo está adherido al producto.

  Este símbolo indica que el voltaje eléctrico sin aislar dentro del producto puede causar una descarga eléctrica. Donde se encuentra dicho símbolo, es peligroso tocar cualquier parte dentro del producto.

-  Este símbolo está adherido al producto.

  Este símbolo indica que el nivel de calor dentro del producto puede originar quemaduras. En las partes en que se encuentra dicho símbolo, es peligroso tocar dichas partes.

-  Este símbolo está adherido al producto.

  Este símbolo indica que un punto de conexión a tierra donde se encuentra el mismo.

Continúa en la siguiente página

Medidas de seguridad, continuación

Alimentación eléctrica	• ¡**Importante!** Este producto debe conectarse a tierra. • Este producto es enchufable. El tomacorriente debe encontrarse cerca del producto, y debe ser fácilmente accesible. • Conecte el producto únicamente a la línea de alimentación con las características indicadas en el tablero posterior. • Si este producto **no tiene** interruptor para la línea de alimentación, el cordón de alimentación sirve para dicho propósito.
Gabinete del producto	• No permita que ningún líquido entre en el producto. • No trate de abrir el gabinete del producto a menos que haya recibido instrucciones de hacerlo. • No introduzca objetos en las aberturas del gabinete del producto.
Cables	• Siempre desconecte el cable de alimentación antes de darle servicio al producto. • Siempre tire del enchufe o conector para desconectar el cable. Nunca tire del cable mismo. • No camine sobre los cables o enchufes ni los someta a ninguna presión o tensión.
Fusible	• Siempre emplee fusibles del tipo y especificaciones correctas. El tipo y especificaciones correctas están indicadas en el tablero posterior del producto. • Siempre desconecte el cable de alimentación antes de cambiar el fusible.
Servicio técnico	Unicamente permita que el producto reciba servicio técnico de personal calificado que conozcan las medidas de seguridad, y que estén conscientes de los posibles peligros que pueden presentarse al dar dicho servicio.

Important Rules for Safe Operation

Notice for CATV installers

If you are a CATV installer, read the information in the box below.

Note to CATV System Installer

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC (Section 54, Part I of the Canadian Electrical Code), that provides guidelines for proper grounding and, in particular, specifies that the CATV cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

CAUTION: To reduce the risk of electric shock, do not remove cover (or back). No user-serviceable parts inside. Refer servicing to qualified service personnel.

WARNING
TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

This symbol is intended to alert you that uninsulated voltage within this product may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this product.

This symbol is intended to alert you of the presence of important operating and maintenance (servicing) instructions in the literature accompanying this product.

Read and retain instructions

Carefully read all safety and operating instructions before operating this product, and retain them for future reference.

Heed warnings

Follow all warnings and cautions in the operating instructions, as well as those that are affixed to this product.

Follow instructions

Follow all operating instructions that accompany this product.

Cleaning

Before cleaning, unplug this product from the socket-outlet. **Do not** use liquid or aerosol cleaners. Use a damp cloth for cleaning.

Continued on next page

Important Rules for Safe Operation, Continued

Water and moisture

Do not expose this product to moisture. Do not place this product on a wet surface, or spill liquids on or near this product.

Placement

- Place this product close enough to a mains AC socket-outlet to accommodate the length of the product power cord.
- Make sure the mounting surface is stable and can support the size and weight of this product.

WARNING!
AVOID PERSONAL INJURY AND DAMAGE TO THIS PRODUCT! AN UNSTABLE SURFACE MAY CAUSE THIS PRODUCT TO FALL.

Accessories

Caution:
Maintain electrical safety! Power-operated equipment or accessories that you connect to this product should bear the UL listing mark or CSA certification mark on the accessory itself, and should not be modified so as to defeat the safety features. This will help avoid any potential for electric shock or fire. If in doubt contact qualified service personnel.

Use this product only with a cart, stand, bracket, table, or other mounting accessories that meet Scientific-Atlanta specifications. Carefully follow all instructions for proper mounting.

WARNING!

AVOID PERSONAL INJURY AND DAMAGE TO THIS PRODUCT! MOVE ANY APPLIANCE AND CART COMBINATION WITH CARE. QUICK STOPS, EXCESSIVE FORCE, AND UNEVEN SURFACES MAY CAUSE THE APPLIANCE AND CART TO OVERTURN.

Ventilation

- This product has openings for ventilation to protect it from overheating. To ensure product reliability, do not block or cover these openings.
- Do not place entertainment equipment, lamps, books, or other objects on top of this product.
- Do not place this product in any of the following locations.
  - On a bed, sofa, rug, or similar surface
  - Over a radiator or heat register
  - In a built-in installation, such as a bookcase or rack, unless the installation provides proper ventilation

WARNING!
AVOID ELECTRIC SHOCK AND FIRE HAZARD! NEVER PUSH OBJECTS THROUGH THE OPENINGS IN THIS PRODUCT. FOREIGN OBJECTS CAN TOUCH DANGEROUS VOLTAGE POINTS OR CAUSE ELECTRICAL SHORTS THAT CAN RESULT IN ELECTRIC SHOCK OR FIRE.

Continued on next page

Important Rules for Safe Operation, Continued

Power sources

- A label on this product indicates the correct power source for this product. Operate this product only from a socket-outlet with the voltage and frequency indicated on the product label.
- If you are uncertain of the type of power supply to your home or business, consult Scientific-Atlanta or your local power company.

⚠WARNING!
AVOID ELECTRIC SHOCK AND FIRE HAZARD! DO NOT OVERLOAD SOCKET-OUTLETS AND EXTENSION CORDS. FOR PRODUCTS THAT REQUIRE BATTERY POWER OR OTHER SOURCES TO OPERATE, REFER TO THE OPERATING INSTRUCTIONS FOR THOSE PRODUCTS.

Grounding

This product is equipped with **one** of the following types of safety plug.

- Three-prong (grounding pin) plug
- Two-prong (polarized) plug

Follow the guidelines in the table below to properly ground this product.

IF this product has a...	THEN insert this plug...
3-prong plug, **Note:** The middle prong on this plug is a grounding pin.	into a grounded (earthed) mains, three-socket outlet. **Note:** If you are unable to insert this plug fully into the socket-outlet, try reversing the plug. If the plug still fails to fit, contact an electrician to replace your obsolete socket-outlet.
2-prong plug, **Note:** This plug has one wide prong and one narrow prong. It is a polarized plug.	into a grounded (earthed) mains, two-socket outlet in which one socket is wider than the other. **Note:** This plug fits only one way. If you are unable to insert this plug fully into the outlet, contact your electrician to replace your obsolete socket-outlet.

Power cord protection

Route all power supply cords so that people cannot walk on, or place objects on or against, them. This can pinch or damage the cords. Pay particular attention to cords at plugs, socket-outlets, and the points where the cords exit the product.

Continued on next page

Important Rules for Safe Operation, Continued

Lightning and power surges

To protect this product against damage from lightning storms and power-line surges, do the following:

- Disconnect the power cord from the grounded (earthed) mains socket-outlet and disconnect the antenna or cable system under the following circumstances.
  - During lightning storms, or
  - When you are not using this product for an extended period
- Ground your antenna system to provide some protection against voltage surges and built-up static charge.

Servicing

Do not open the cover of this product and attempt service unless instructed to do so in the operating instructions. Refer all servicing to qualified personnel only.

WARNING!
AVOID ELECTRIC SHOCK! OPENING OR REMOVING THE COVER MAY EXPOSE YOU TO DANGEROUS VOLTAGES.

Damage requiring service

For damage that requires service, unplug this product from the socket-outlet. Refer service to qualified personnel under the following conditions.

- When there is damage to the power-supply cord or plug
- If liquid enters, or an object falls on this product
- If you expose this product to rain or water
- If this product does not operate normally by following the operating instructions
- If you drop this product or damage its cabinet
- When this product exhibits a distinct change in performance

Caution:
Avoid damage to this product! Adjust only those controls the operating instructions describe. Improper adjustment of other controls may result in damage that may require extensive corrective work by a qualified technician.

Safety check

Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that this product is in proper operating condition.

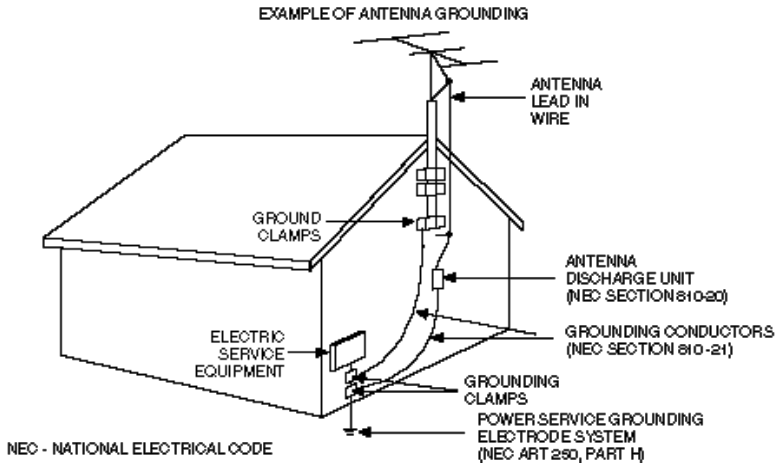
Continued on next page

Outdoor grounding system

If this product connects to an outdoor antenna or cable system, be sure the antenna or cable system is grounded (earthed). This provides some protection against voltage surges and built-up static charges.

Section 810 of the National Electric Code (NEC), ANSI/NFPA No. 70-1990, provides the following information:

- Grounding of the mast and supporting structure
- Grounding the lead-in wire to an antenna discharge unit
- Size of the grounding conductors
- Location of the antenna-discharge unit
- Connection to grounding electrodes
- Requirements for the grounding electrodes



Warranty

Statement

All items that we manufacture are warranted to be free from defects in material and workmanship and to conform to our currently published specifications.

Warranty Period

The warranty period is **one year** from the date of shipment. Written notice of defects must be received by us within this warranty period.

Limits of Liability

Our liability is limited to servicing or adjusting any item returned to the factory for that purpose, including replacing any defective parts therein.

If a fault has been caused by improper installation, maintenance or use, or by abnormal conditions of operation, repairs will be billed at normal rates.

Customer Responsibility

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

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

Procedure: In Case of a Fault

If any fault develops, do the following:

Step	Action
A	• Notify us by giving the item model number, serial number and details of the difficulty. • On receipt of this information, you will be given service data or shipping instructions.
B	• On receipt of shipping instructions, forward the item prepaid. • If the item or fault is not covered by warranty, an estimate of charges will be furnished before work begins.

Disclaimer

WE DISCLAIM STATUTORY AND IMPLIED WARRANTIES, SUCH AS WARRANTIES OF MERCHANTABILITY AND FITNESS FOR PURPOSE.

IN NO EVENT SHALL SCIENTIFIC-ATLANTA BE LIABLE, IN CONTRACT OR IN TORT OR UNDER ANY OTHER LEGAL THEORY, FOR INCIDENTAL, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES, REGARDLESS OF WHETHER WE WERE INFORMED ABOUT THE POSSIBILITY OF SUCH DAMAGES, AND IN NO EVENT SHALL SCIENTIFIC-ATLANTA'S LIABILITY EXCEED AN AMOUNT EQUAL TO THE SALES PRICE.

Notice to Owners of the Model 9660 and 9660 Professional Receivers

ATTENTION

This commercial unit, with the VideoCipher® RS Commercial Module installed, is intended for the authorized descrambling for commercial use of those satellite television signals that have been scrambled using a VideoCipher scrambling format. Ownership or possession of this integrated receiver/descrambler does not entitle (nor enable) the owner or possessor hereof to receive descrambled VideoCipher television signals. To enable your unit and obtain proper authorization for descrambling, you must separately contact the appropriate programming providers or their agents.

1. VideoCipher® is a registered trademark of General Instrument Inc.
2. VideoCipher® trademark used under license from Cable/Home Communication Corp (C/HCC), a subsidiary of General Instrument Inc.
3. US Patent No. 4,608,456; 4,613,901; 4,634,808; 4,712,238; 4,7792, 973; 4,864,615 and patent pending.

4. Brevete 1987, 1988, 1990; Patented 1986, 1987, 1988, 1989.
5. Portions of this product sold under license from C/HCC.
6. US Patent No. 4,698,598; 4,101,837, and 4,035,730.

1

General Description

1-1 Introduction

Introduction

This guide contains the installation and operation procedures and parameters for the Model 9660 Receiver and the Model 9660 Professional Video Receiver (also known as the Model 9660 PRO). It also includes information on troubleshooting. Service issues not covered in this guide should be handled by qualified service technicians only.

Equipment Description

The Model 9660 Receiver is a compact, sophisticated instrument that processes satellite signals and provides high-quality audio and video outputs. The receivers are available in a receiver/descrambler and receiver-only configuration. The products are identical except that the receiver/descrambler contains an integrated descrambling module, which is visible through the small opening in the rear panel access door. Inspect your receiver to ensure that you have the correctly configured product before beginning installation.

The Model 9660 Professional Video Receiver is a special version of the Model 9660 Receiver. The Model 9660 PRO is built to meet the video performance requirements of the EIA/TIA 250-C specification, which provides exceptional performance specifications within the receiver's video demodulation path. This performance offers an excellent beginning path for the signal launch from the headend.

Note
All references to the Model 9660 Receiver also apply to the Model 9660 PRO.

Note
The term “receiver” and the procedures outlined in this guide apply to both receiver/descrambler and receiver-only configurations, unless specifically stated otherwise.

The Model 9660 Receiver has a 2-line by 24-character LCD display that provides essential operational information in an easy-to-see format. All displays and functions are controlled by pushing a button (see figures 1-1 and 1-2). The rear panel offers Type F coaxial and terminal inputs and outputs for increased installation flexibility. These features give you a superior receiver with many applications in a very small package.

Equipment Application

The Model 9660 Receiver includes all the signal processing needed to effectively and efficiently supply a high-quality signal to your distribution system. It operates in either single-LNB (Low Noise Block Converter) or dual-LNB systems. The receiver is used with Scientific-Atlanta's Model 9321 LNB for C-band applications (3.7 GHz to 4.2 GHz) and with the Model 367 LNB for Ku-band applications (11.7 GHz to 12.2 GHz). The LNBs translate the 500 MHz input frequency band (either 3.7 GHz to 4.2 GHz or 11.7 GHz to 12.2 GHz) down to a 500 MHz frequency output band of 950 MHz to 1450 MHz, which is suitable for input into the Model 9660 and 9660 PRO Receivers.

The Model 9660 Receiver is usually equipped with a 32 MHz bandwidth IF filter. Optional filter bandwidths between 18 MHz and 36 MHz are available. If the receiver is to be used solely for narrow band, half transponder applications, the 22 MHz IF filter is recommended for improved threshold performance and protection from adjacent channel interference. Otherwise, a 32 MHz IF filter is recommended. The bandwidth of the IF filter can be seen on the OPTIONS: Status menu.

Note

The receiver is compatible with the VideoCipher II Plus and the VideoCipher® RS Commercial Modules only. Previous VideoCipher II Commercial Modules will not work with this unit. Each receiver, when purchased as an Integrated Receiver Descrambler (IRD), is equipped with the VCRS module.

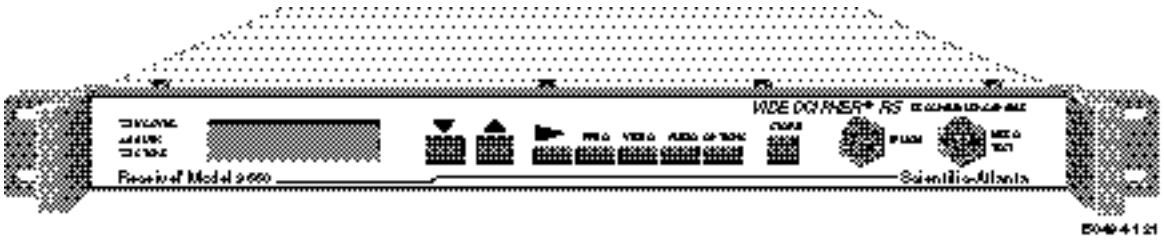


Figure 1-1. Model 9660 Receiver

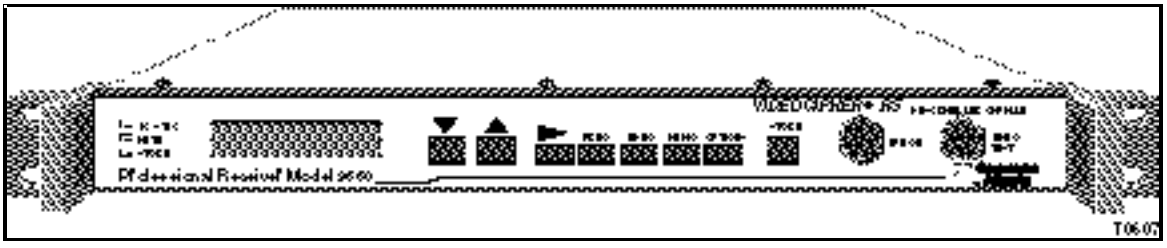


Figure 1-2. Model 9660 Professional Receiver

2

Installation

2-1 Installation Prerequisites
2-5 Installing the Receiver
2-19 Installing the VideoCipher RS Commercial Module

Installation Prerequisites

Space and Physical Arrangement

The Model 9660 Receiver measures 1.75 inches (44.45 mm) in height by 19 inches (482.6 mm) wide by 18 inches (457.2 mm) deep. It can be rack mounted or set on any type of shelf that allows air flow underneath the unit. When mounting the signal processor on a shelf or table, ensure that the unit is safe from falling caused by tangled or strained interconnecting cables.

Power Requirements

WARNING!
AVOID ELECTRIC SHOCK! CONNECT THE THREE-PRONG POWER PLUG ON THIS PRODUCT TO A GROUNDED (EARTHED) THREE-SOCKET-OUTLET ONLY.

AVERTISSEMENT!
ÉVITEZ LES CHOCS ÉLECTRIQUES! NE CONNECTEZ LA PRISE DE PUISSANCE À TROIS PLOTS DU PRODUIT QU'À UNE PRISE TRIPHASÉE RELIÉE A LA TERRE.

WARNUNG!
VERMEIDEN SIE STROMSCHLAG! STECKEN SIE DEN DREI-PUNKT STECKER DIESES PRODUKTES NUR IN EINE GEERDETE DREI-PUNKT STECKDOSE.

¡ADVERTENCIA!
¡PROTEJASE DE DESCARGAS ELECTRICAS! CONECTE EL ENCHUFE DE TRIPLE ESPIGA DE ESTE PRODUCTO A UN TOMACORRIENTE DE TRIPLE CONTACTO CON CONEXION A TIERRA.

The Model 9660 Receiver requires a standard duplex power receptacle capable of supplying 115 V AC, 60 Hz. See the Technical Specifications section in Appendix A of this guide for more information.

WARNING!
AVOID ELECTRIC SHOCK AND FIRE HAZARD! USE ONLY A COMMERCIAL-GRADE, HARMONIZED POWER CORD THAT IS ABLE TO SUSTAIN 10 AMP AT 350 VOLTS WITH THIS PRODUCT. THIS POWER CORD IS MARKED WITH THE LETTERS *HAR*. TO CONNECT THIS POWER CORD TO THE BACK PANEL OF THIS PRODUCT, YOU MUST FIT THIS POWER CORD WITH A CONNECTOR THAT COMPLIES WITH IEC 320. PROPER PLUG SELECTION FOR CONNECTION TO THE SOCKET-OUTLET IS YOUR RESPONSIBILITY.

AVERTISSEMENT!
ÉVITEZ LES RISQUES D'ÉLECTROCUTION ET D'INCENDIE! N'UTILISEZ QU'UN CÂBLE DE QUALITÉ PROFESSIONNELLE NORMALISÉE QUI PUISSE SUPPORTER UN COURANT DE 10 AMPÈRES SOUS 350 VOLTS

AVEC CE PRODUIT. CE CÂBLE DE PUISSANCE EST REPÉRÉ PAR LES LETTRES *HAR*. POUR RACCORDER CE CÂBLE D'ALIMENTATION AU PANNEAU ARRIÈRE DU PRODUIT, VOUS DEVEZ MONTER SUR CE CÂBLE UN CONNECTEUR QUI RÉPOND À LA NORME IEC 320 (COMMISSION INTERNATIONALE ÉLECTROTECHNIQUE). VOUS ÊTES RESPONSABLE DE LA BONNE SÉLECTION D'UNE PRISE À RACCORDER À LA PRISE MURALE.

 **WARNUNG!**

VERMEIDEN SIE STROMSCHLAG UND FEUERGEFAHR! BENUTZEN SIE NUR EIN KOMMERZIELLES, MIT DEM IEC ÜBEREINSTIMMENDES ELEKTRISCHES KABEL DAS 10 AMPERE BEI 350 VOLT AUSHALTEN KANN FÜR DIESES PRODUKT. DIESES ELEKTRISCHE KABEL IST MIT DEN BUCHSTABEN *HAR* GEKENNZEICHNET. UM DIESES KABEL AN DIE RÜCKSEITE DIESES PRODUKTES ANZUSCHLIEßEN, MÜSSEN SIE DAS KABEL MIT EINEM DIE ANFORDERUNGEN DES IEC 320 ERFÜLLENDEN VERBINDUNGSSTECKER VERSEHEN. DIE BESORGUNG DES RICHTIGEN STECKERS FÜR DEN ANSCHLUß AN DIE STECKDOSE LIEGT IN IHRER VERANTWORTUNG.

 **¡ADVERTENCIA!**

¡EVITE LAS DESCARGAS ELECTRICAS Y EL PELIGRO DE INCENDIO! UNICAMENTE EMPLEE CORDON DE ALIMENTACION CON IDENTIFICACION ESTANDAR DE COLORES, DE GRADO COMERCIAL, QUE SEA CAPAZ DE SOSTENER 10 AMP A 350 VOLTIOS CON ESTE PRODUCTO. ESTE CORDON DE ALIMENTACION ESTA MARCADO CON LAS LETRAS *HAR*. PARA CONECTAR ESTE CORDON DE ALIMENTACION AL TABLERO POSTERIOR DE ESTE PRODUCTO, USTED DEBE DOTAR DICHO CORDON DE UN CONECTOR QUE CUMPLA CON LAS ESPECIFICACIONES IEC 320. LA SELECCION DE UN CONECTOR ADECUADO PARA CONECTARLO AL TOMACORRIENTE ES RESPONSABILIDAD SUYA.

Fuse Requirements

The fuse holder on the back panel contains the AC power fuse and should be a 3/4 ampere, 250 V, SLO-BLO fuse. See the Maintenance section in chapter 3 of this guide for instructions on replacing the fuse.

Cooling Requirements

 **Caution:**
Avoid damage to this product! Your warranty is void if you operate this product above the maximum specified operating temperature of 122°F (50°C).

 **Attention:**
Évitez d'endommager ce produit! Votre garantie ne sera plus valable si vous utilisez ce produit au delà de la température de fonctionnement maximum indiquée du 122°F (50°C).

 **Vorsicht:**
Vermeiden Sie Beschädigung dieses Produktes! Ihre Garantie verfällt, wenn Sie dieses Produkt bei Temperaturen in Betrieb nehmen, die die angegebene Betriebshöchsttemperatur übersteigen da 122°F (50°C).

 **Precaución:**
¡Evite dañar este producto! La garantía quedará anulada si utiliza este producto arriba de la temperatura de funcionamiento especificada de 122°F (50°C).

Allow at least 3.5 inches (88.9 mm) of air space above and below the unit when you are rack mounting it. If the equipment must be installed using 1.75 inches (44.45 mm) of spacing, install a blower near the bottom of the enclosure to assist the rising warm air. Locate air outlets close to the top of the cabinet to assist natural convection air currents. The fans or blowers chosen to ventilate the cabinet should provide air movement of 200 ft^3/min per kilowatt dissipated.

 **Caution:**
Avoid damage to this product! High internal temperatures can reduce the lifetime of this product! In a forced-air ventilation installation site, maintain at least 44 mm (1.75 in.) of space above, and 44 mm (1.75 in.) of space below this product. For all other sites, maintain at least 89 mm (3.5 in.) of space above and below this product.

 **Attention:**
Évitez d'endommager ce produit! Des températures élevées à l'intérieur du produit peuvent réduire sa durée de vie! Dans un site de montage climatisé à air pulsé, maintenez au moins 44 mm (1,75 pouces) d'espace au-dessus et 44 mm (1,75 pouces) d'espace en-dessous de ce produit. Pour tous les autres sites, maintenez au moins 89 mm (3,5 pouces) d'espace au-dessus et en-dessous du produit.

 **Vorsicht:**
Vermeiden Sie Beschädigung dieses Produktes! Hohe interne Temperaturen können die Lebenszeit dieses Produktes reduzieren! Bei Installation dieses Produktes an durch Ventilatoren belüfteten Orten mindestens 44 mm (1,75 Zoll) oberhalb und 44 mm (1,75 Zoll) unterhalb des Produktes frei lassen. An allen anderen Orten mindestens 89 mm (3,5 Zoll) oberhalb und unterhalb dieses Produktes frei lassen.

 **Precaución:**
¡Evite dañar este producto! ¡Las temperaturas internas elevadas pueden reducir la vida útil de este producto! En las instalaciones que cuentan con ventilación a presión, mantenga por lo menos 44 mm (1.75 pulg.) de espacio arriba y abajo de este producto. Para todas las demás instalaciones, mantenga por lo menos 89 mm (3.5 pulg.) de espacio arriba y abajo del producto.

Installing the Receiver

This section explains how to connect one or more receivers to a single- or dual-LNB system. It also includes a description of all inputs and outputs, and a procedure for installing the VideoCipher RS Commercial Module.

The back panel views of the Model 9660 Receiver show the various connectors and terminal strips (see figure 2-1). The accompanying tables (2-1 and 2-3) describe each connector and terminal. Refer to table 2-2 for SMC Bus connector description. Refer to the figure and tables to familiarize yourself with each connection and terminal before beginning the installation.

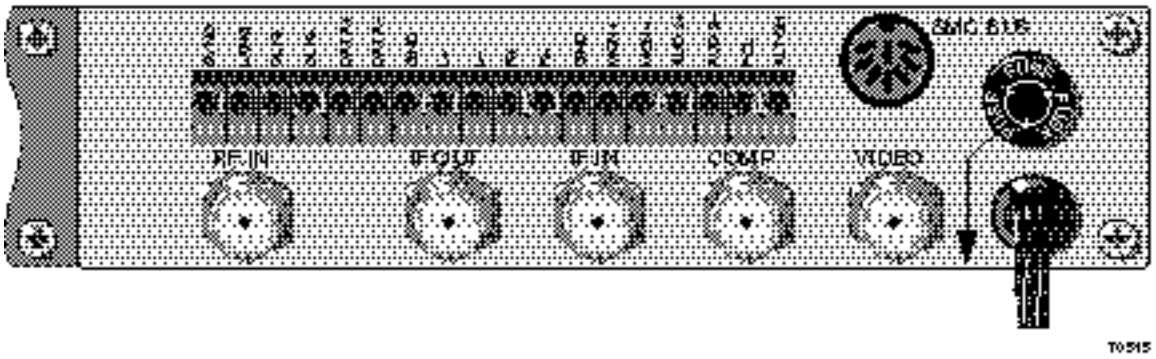


Figure 2-1. Model 9660 Receiver Back Panel

Table 2-1. Model 9660 Receiver Back Panel Connectors

F Connector	Description
RF IN	This connection provides RF input for signals from the LNB to the receiver.
IF OUT, IF IN	These connections provide a 70 MHz IF loop. IF OUT and IF IN must be connected with the supplied coaxial cable for the receiver to operate or may be used to insert a terrestrial interference filter.
VIDEO	This connection provides filtered video output (nominal 1 V p-p into 75 ohms) and may be provided as clamped or unclamped. When receiving a VideoCipher RS Commercial Module scrambled signal, the output level is not adjustable. In the unscrambled mode, the adjustment range is ±3 dB. The video level is factory preset for 1 V p-p output into 75 ohms with C-band deviation equal to ±10.75 MHz and Ku-band deviation equal to ±8.2 MHz. **Caution:** **Avoid damage to this product! Before you adjust the video-level control, read the section that describes the VideoCiper RS Commercial Module in chapter 3.** **Attention:** **Évitez d'endommager ce produit! Avant de régler le bouton de contrôle du niveau de la vidéo, lisez la section qui décrit le Module Commercial VideoCiper RS et qui se trouve au chapitre 3.** **Vorsicht:** **Vermeiden Sie eine Beschädigung dieses Produktes! Lesen Die vor dem Einstellen der Video-Outputsignalsteuerung den Abschnitt in Kapitel 3, der das VideoCiper RS Commercial Module beschreibt.** **Cuidado:** **¡Evite dañar este producto! Antes de ajustar el control de nivel de la video, lea la sección que describe el Módulo Comercial VideoCiper RS y que se encuentra en el capítulo 3.**
COMP	This connector provides composite video output for other applications such as a stand-alone VideoCipher RS Commercial Decoder or B-MAC decoder. Depending on the service being received, the composite output may contain audio subcarriers that could be routed to other audio demodulation equipment.

Table 2-2. SMC Bus Connector Description for Model 9660 Receiver

DIN Connector	Description
SMC Bus 8-pin	See Appendix A in this guide for remote operation and installation information.
TXD (Pin 1) RXD (Pin 3)	These connections are serial input and output ports capable of controlling the receiver for remote operation.
TE (Pin 2)	This transmit enable line is used for remote communication via RF modem, if required.

Table 2-2. SMC Bus Connector Description for Model 9660 Receiver (continued)

DIN Connector	Description
GND (Pin 4)	This connections provides Ground.
+5V (Pin 5)	This connection is a +5 volt supply output (40 mA maximum).
ID (Pin 7)	This connection is used for diagnostic test purposes.
Shield	This connection provides shield ground. It is connected to same point as GND (Pin 4).

Table 2-3. Model 9660 Receiver Back Panel Terminals

Barrier Strip Terminals	Description
SYNC	Open-collector terminal indicating whether incoming VideoCipher RS Commercial Module signal is encoded. Output is OFF (high impedance state) when scrambled signal is present, otherwise output is ON (low impedance state). (Maximum current in ON state is 100 mA.)
LANG*	When grounded, this terminal selects alternate VideoCipher audio output for transmitting independent information such as a different language.
CLOCK+, CLOCK-*	These terminals provide EIA RS-422 type data outputs from VideoCipher RS Commercial Module for digital interface.
DATA+, DATA-*	These terminals provide EIA RS-422 type data outputs from VideoCipher RS Commercial Module for digital interface.
GND	This terminal provides Signal Common (Ground).
L+, L- (Left+ Left-)	These terminals provide 600 ohm balanced or unbalanced left-channel audio output from the VideoCipher RS Commercial Module. With unscrambled signals, they provide output from the receiver's primary subcarrier demodulator. Phasing is indicated by the (+) and (-).
R+, R- (Right+, Right-)	These terminals provide 600 ohm balanced or unbalanced right channel audio output from the VideoCipher RS Commercial Module. With unscrambled signals, they provide output from the receiver's primary subcarrier demodulator. Phasing is indicated by the (+) and (-).
MON+, MON (Mono+, Mono-)	These terminals provide 600 ohm balanced or unbalanced monaural output from the VideoCipher RS Commercial Module or output from the receiver's primary subcarrier demodulator. With unscrambled signals, they provide output from the receiver's primary subcarrier demodulator.
AUD 2+, AUD 2-	The AUD 2 audio output is used in conjunction with the optional AUD 2 subcarrier demodulator.
POL	The open collector transistor switch is controlled by the H/V polarization indicator on the front panel. POL is ON (low impedance state) when the front panel displays (H) and OFF (high impedance state) when the front panel displays (V). The polarization assigned to a transponder can be reversed using the OPT: Polarization Menu. With proper interface, the POL line can be used to control an external polarization switch (maximum current is 100 mA).
ALT CH	When grounded, this terminal selects an alternate channel for receiver tuning.
*Terminal active only when VideoCipher RS Commercial Module is installed.	

Required Tools and Equipment for Installation

The following tools are required for installation of the Model 9660 Receiver.

- Small Phillips-head and flat-blade screwdriver
- 75-ohm coaxial cable and F-type connectors
- Small-gauge wire for terminal block connections
- Power dividers, as needed

> **Note**
> The maximum total (cable and power divider) loss from the LNB to the receiver should be 20 dB or less at the highest frequency being delivered from the LNB.

Installing the Video Receiver in a Rack

The Model 9660 Receiver installs into a standard EIA, 610-mm deep, enclosed rack. Operators should always mount the front bezel to the rack. Operators should employ either of two methods to further support the receiver. The two methods are angle support brackets or rack slides.

Caution:
Avoid damage to this product! Do not use the front-panel mounting holes as the only means of attachment to an approved rack. Always support this product with rack slides or angle support brackets that install in an approved rack.

Attention:
Évitez d'endommager ce produit! N'utilisez pas les trous de montage du panneau avant comme seul moyen d'accrochage à un cadre de montage agréé. Supportez toujours ce produit avec des étagères coulissantes ou des équerres qui se montent dans un cadre de montage.

Vorsicht:
Vermeiden Sie Beschädigung dieses Produktes! Benutzen Sie die Anschraublöcher auf der Vorderseite nicht als die einzige Befestigung dieses Produktes an einem empfohlenen Gestell. Stützen Sie dieses Produkt immer auch mit Gestellschiebern oder Winkelbändern ab, die an so einem Gestell angebracht werden können.

Precaución:
¡Evite dañar este producto! No emplee los agujeros de montaje del tablero frontal como único medio de fijación al anaquel autorizado al efecto. Siempre fije este producto al anaquel autorizado al efecto mediante las correderas o los soportes en ángulo.

Front Bezel

Position the receiver in the rack. Insert a mounting screw through each of four bezel mounting holes on the front panel, and then into the rack. There are two bezel mounting holes on each side of the receiver (see figure 2-2). Firmly tighten each mounting screw.

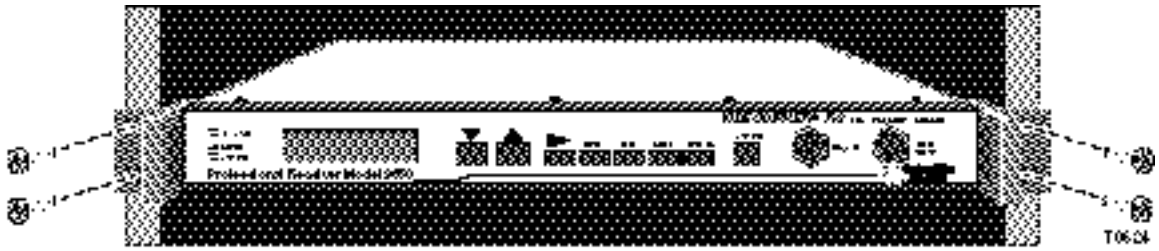


Figure 2-2. Model 9660 Receiver Front Bezel Installation

Additional Support

Operators should use either of two methods to provide additional support to the standard front bezel mount–angle support brackets or rack slides.

Angle Support Brackets

Angle support brackets (part number 345763) are a pair of L-shaped brackets that support the right and left sides of the Model 9660 Receiver. The brackets mount directly to the inside of the rack, and the receiver rests directly on the brackets. Angle support brackets provide adequate support to the entire receiver in the rack. Operators should use extreme caution when sliding apparatus on and off the brackets for maintenance and adjustment.

Rack Slides

The Universal Rack Slide Kit (part number 275317) contains sliding support assemblies that mount to both sides of the Model 9660 Receiver and the rack. Rack slides fully support the weight of the unit, both inside *and outside* of the rack, and allow operators to slide the receiver fully out of the rack for convenient maintenance and adjustment. See the *Universal Rack Slide Kit Installation Manual* for installation instructions.

Connecting the Receiver to the System

Connecting Cables

All connections are made on the rear panel of the modulator. We recommend using 75-ohm double shielded coaxial cable with F-type connectors for RF, IF, VIDEO, and COMP signals.

Take extreme care to ensure that mating F-type connectors are compatible with the female F-type connectors on the product chassis. Male connector center conductors or center pin diameters should range between 0.022 inches (0.56 mm) to 0.047 inches (1.19 mm). Conductors or center pins below or above this range may result in damage to the connector or intermittent operation.

Note
The female F-type connectors are designed to accept a conductor or center pin of 0.022 inches (0.56 mm) to 0.047 inches (1.19 mm) in diameter. Once a center conductor with a diameter in the upper part of the acceptable range has been inserted into the female connector, it is not advisable to return to a smaller conductor size.

Connecting One Receiver to a Single-LNB System

To connect one receiver to a single-LNB system, refer to figure 2-3 and complete the following steps.

1. Connect the LNB (or polarization switch) to the receiver's RF IN port with 75-ohm coaxial cable.
2. If required, toggle LNB Power to ON using the OPTIONS: LNB Power submenu.
3. Connect the IF IN to IF OUT with the short piece of coaxial cable supplied with the system.

Note
IF IN and IF OUT must be connected with coaxial cable for the receivers to operate properly.

4. Connect the receiver's video output to an RF modulator or other appropriate equipment with coaxial cable.
5. Complete the installation by following the instructions listed under Connecting Audio Outputs to the Receiver later in this chapter.
6. Plug the power cord into a 115 V AC, 60 Hz electrical outlet.


Caution:
Before adjusting this product, read chapter 3, Operation, in this guide.


Attention:
Avant de régler le produit, lisez le chapitre 3 de ce guide: Fonctionnement.


Vorsicht:
Vor Einstellung dieses Produktes bitte Kapitel 3 dieses Handbuchs über die Inbetriebnahme durchlesen.


Precaución:
Antes de ajustar este producto, lea el capítulo 3, Funcionamiento, de esta guía.

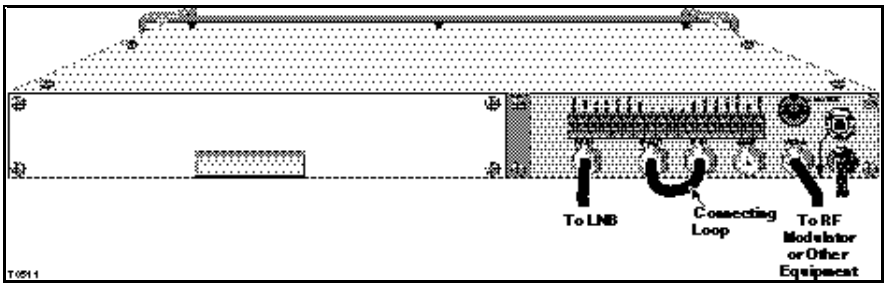


Figure 2-3. Connecting the LNB and Completing the IF Loop

Connecting Multiple Receivers to a Single-LNB System

To connect multiple receivers to a single-LNB system, refer to figure 2-4 and complete the following steps.

1. Connect the LNB to the input port of the power divider with 75-ohm coaxial cable.
2. Connect the DC passing port of the power divider to RF IN of the first receiver with coaxial cable.
3. Connect the remaining power divider output ports to the RF IN of the remaining receivers with coaxial cable.
4. If required, toggle LNB Power to ON using the OPTIONS: LNB Power submenu.
5. Connect the IF IN to the IF OUT on each receiver with the short pieces of coaxial cable supplied with the system.

   Note
   IF IN and IF OUT must be connected with coaxial cable for the receivers to operate properly.

6. Connect the receiver's video outputs to an RF modulator or other appropriate equipment with coaxial cable. Do not install a 75-ohm termination on unused video outputs.
7. Complete the installation by following the instructions listed under Connecting Audio Outputs to the Receiver later in this chapter.
8. Plug the power cord of each receiver into a 115 V AC, 60 Hz electrical outlet.

Caution:
Before adjusting this product, read chapter 3, Operation, in this guide.

Attention:
Avant de régler le produit, lisez le chapitre 3 de ce guide: Fonctionnement.

Vorsicht:
Vor Einstellung dieses Produktes bitte Kapitel 3 dieses Handbuchs über die Inbetriebnahme durchlesen.

Precaución:
Antes de ajustar este producto, lea el capítulo 3, Funcionamiento, de esta guía.

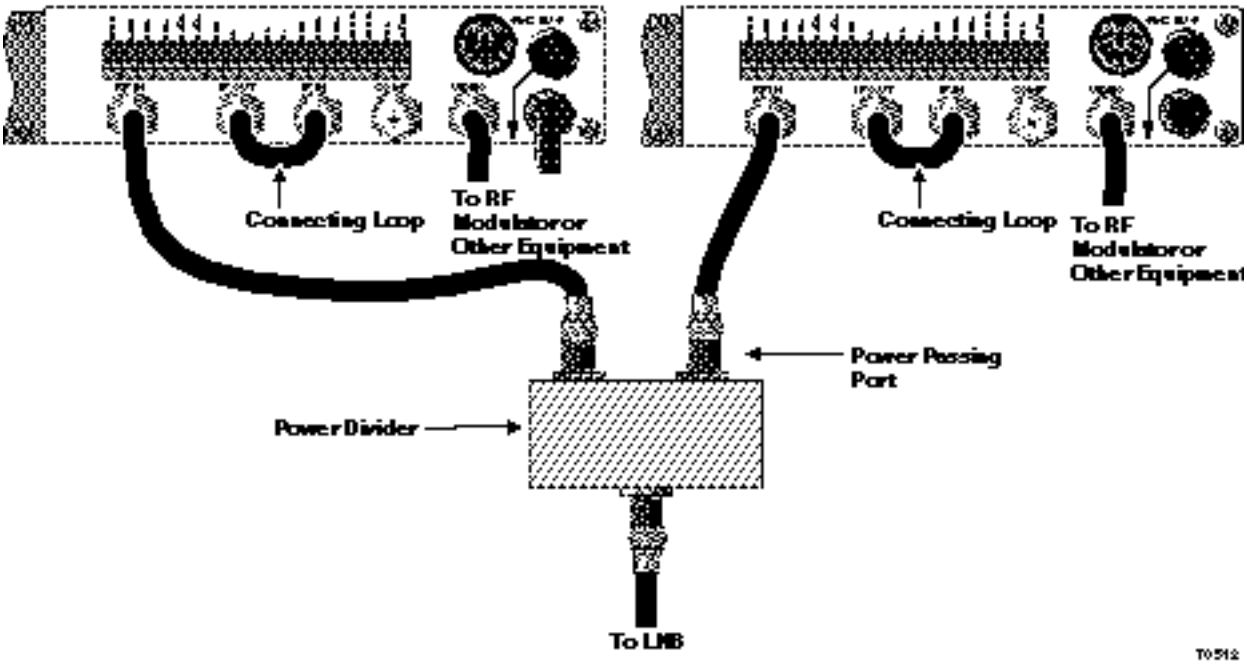


Figure 2-4. Connecting Multiple Receivers to the LNB

Connecting Multiple Receivers to a Dual-LNB System

In a dual-polarization system, use one coaxial cable to send vertically polarized signals from one LNB to the receivers and another coaxial cable to send horizontally polarized signals from another LNB to the receivers. Contact the Customer Service Center by dialing **1-800-722-2009** for additional dual-LNB system information and polarization switch availability.

> **Note**
> Two sources of DC power are required in a dual-LNB system because a single receiver can power only one LNB.

To connect the receivers in a dual-LNB system, refer to figure 2-5 and complete the following steps.

1. Use coaxial cable to connect the vertical LNB to the input port of the power divider.
2. Use coaxial cables to connect the output ports of the vertical power divider to each receiver's polarization switch vertical input port.
3. Use coaxial cables to connect the RF OUT of the polarization switches to the video receivers.
4. Connect POL output on terminal strip of each receiver to the polarity switch for each receiver. This output is an open collector transistor output that follows the H, V indication on the front panel. The low impedance state selects horizontal input and high impedance state selects vertical.
5. Use coaxial cable to connect the horizontal LNB to the input port of the other power divider.
6. Use coaxial cables to connect the output ports of the horizontal power divider to each receiver's polarization switch horizontal input.

> **Note**
> Make sure that you have connected the power divider's DC power passing port to the appropriate receiver.

7. On the receiver that will power the horizontal LNB, toggle LNB Power to ON using the OPTIONS:LNB Power submenu. This will power the horizontal LNB.
8. On the receiver that will power the vertical LNB, toggle LNB Power to ON using the OPTIONS:LNB Power submenu. This will power the vertical LNB.

> **Note**
> If you are providing current to the LNBs with a separate power supply and power inverters, be sure to toggle LNB Power to OFF using the OPTIONS:LNB Power submenu. Further, if you are using more than two Model 9660 Receivers in your system, toggle LNB Power to OFF using the OPTIONS:LNB Power submenu on the additional receivers.

9. Use the short pieces of coaxial cable supplied with the system to connect IF IN to IF OUT on each receiver.

> **Note**
> IF IN and IF OUT must be connected with coaxial cable for the receivers to operate properly.

10. Use coaxial cable to connect the receiver's video outputs to an RF modulator and a monitor if desired. Do not connect a 75-ohm termination to unused video outputs.
11. Complete the installation by following the instructions listed under Connecting Audio Outputs to the Receiver later in this chapter.
12. Plug the power cord of each receiver into a 115 V AC, 60 Hz electrical outlet.

Caution:
Before adjusting this product, read chapter 3, Operation, in this guide.

Attention:
Avant de régler le produit, lisez le chapitre 3 de ce guide: Fonctionnement.

Vorsicht:
Vor Einstellung dieses Produktes bitte Kapitel 3 dieses Handbuchs über die Inbetriebnahme durchlesen.

Precaución:
Antes de ajustar este producto, lea el capítulo 3, Funcionamiento, de esta guía.

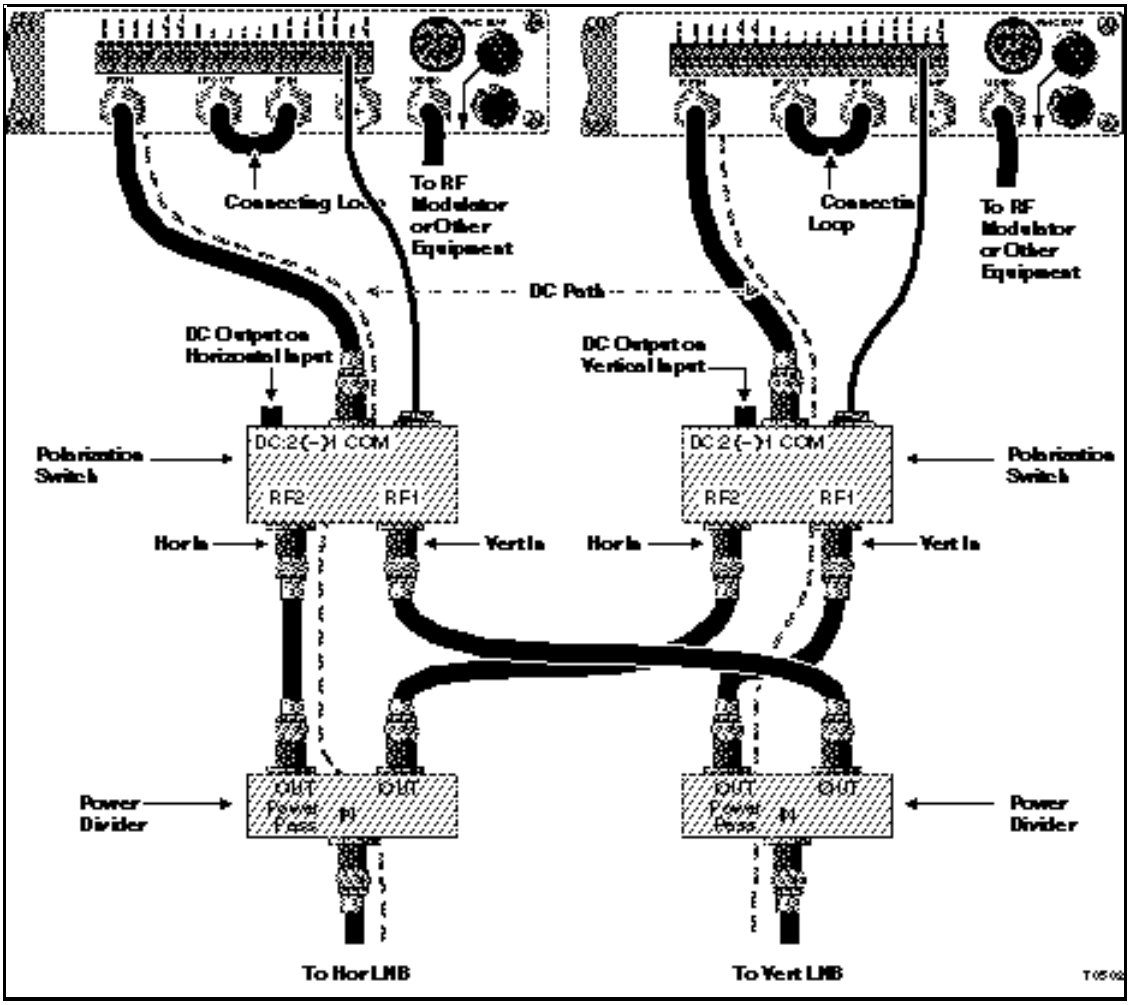


Figure 2-5. Connecting and Powering the LNBs and Completing the IF Loops

Connecting Audio Outputs to the Receiver

Use small-gauge wire (preferably shielded twisted pair) to connect the receiver's audio outputs. The Model 9660 Receiver's standard configuration is one audio with one audio subcarrier demodulator. A second audio subcarrier demodulator is available as an option. The configuration of the receiver and your own output requirements will determine the format of the audio connections. Use one of the configurations illustrated in figure 2-6 to connect your audio outputs. Use figure 2-7 to connect audio outputs with optional 2nd audio.

VideoCipher RS (Scrambled) Mode

In the VideoCipher RS Mode, the L+ and L- terminals provide the left audio channel output from the VideoCipher RS Commercial Module. Likewise, the R+ and R- terminals provide the right audio channel output.

Select the audio source for the Mono (+) and (-) terminals from the AUDIO: Mono Out submenu. Select the desired terminals to output one of the following:

- The sum of the VideoCipher RS Commercial Module left and right audio outputs (VC L+R), which is the factory preset mode for scrambled signals
- The output of the primary audio subcarrier demodulator

Bypass (Unscrambled) Mode

In the Bypass Mode, the L+ and L-, R+ and R-, and MON+ and MON- provide output from the primary subcarrier demodulator. AUD 2+ and AUD 2- provide output from the optional second audio demodulator if it is installed.

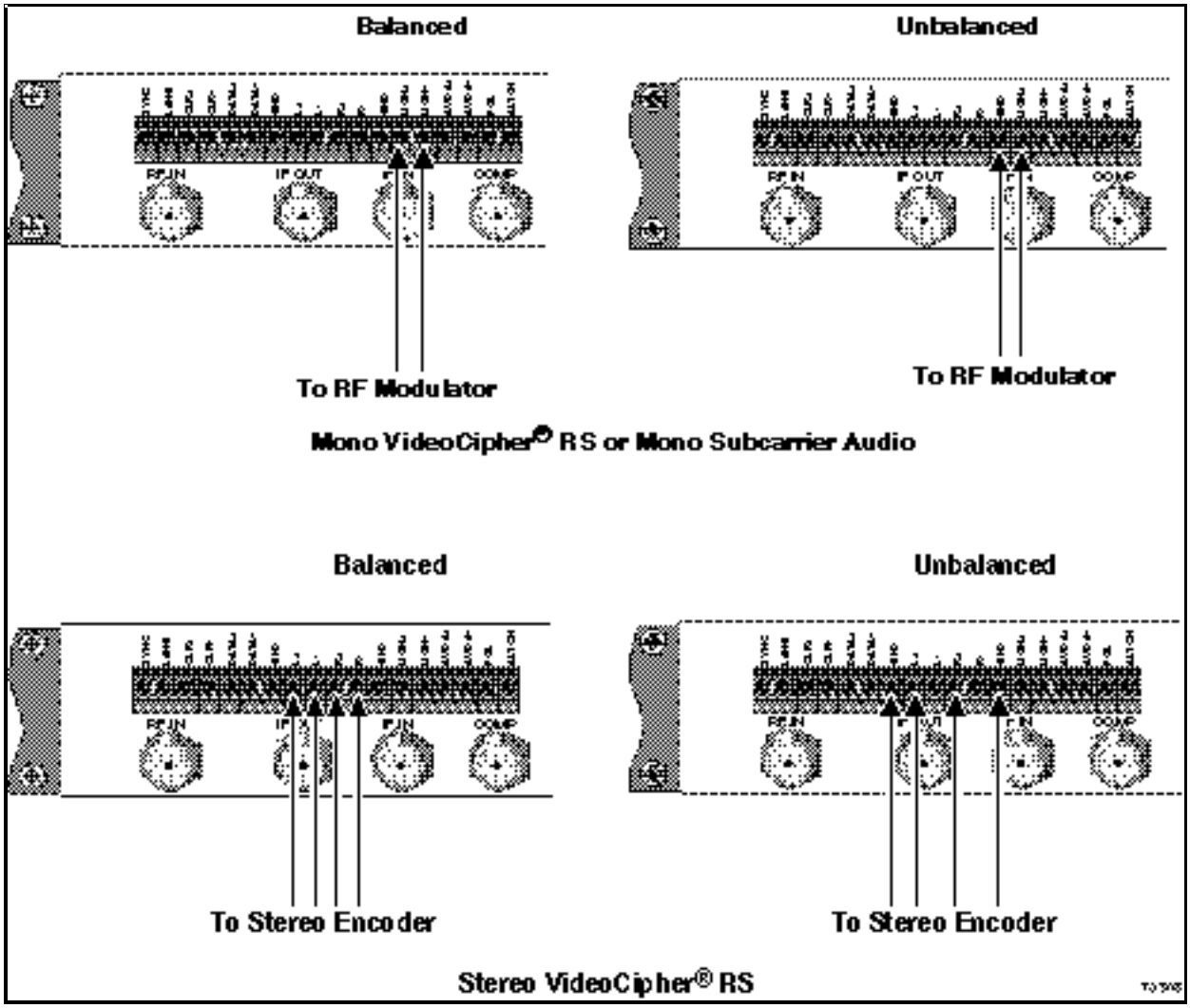


Figure 2-6. Connecting Audio Outputs

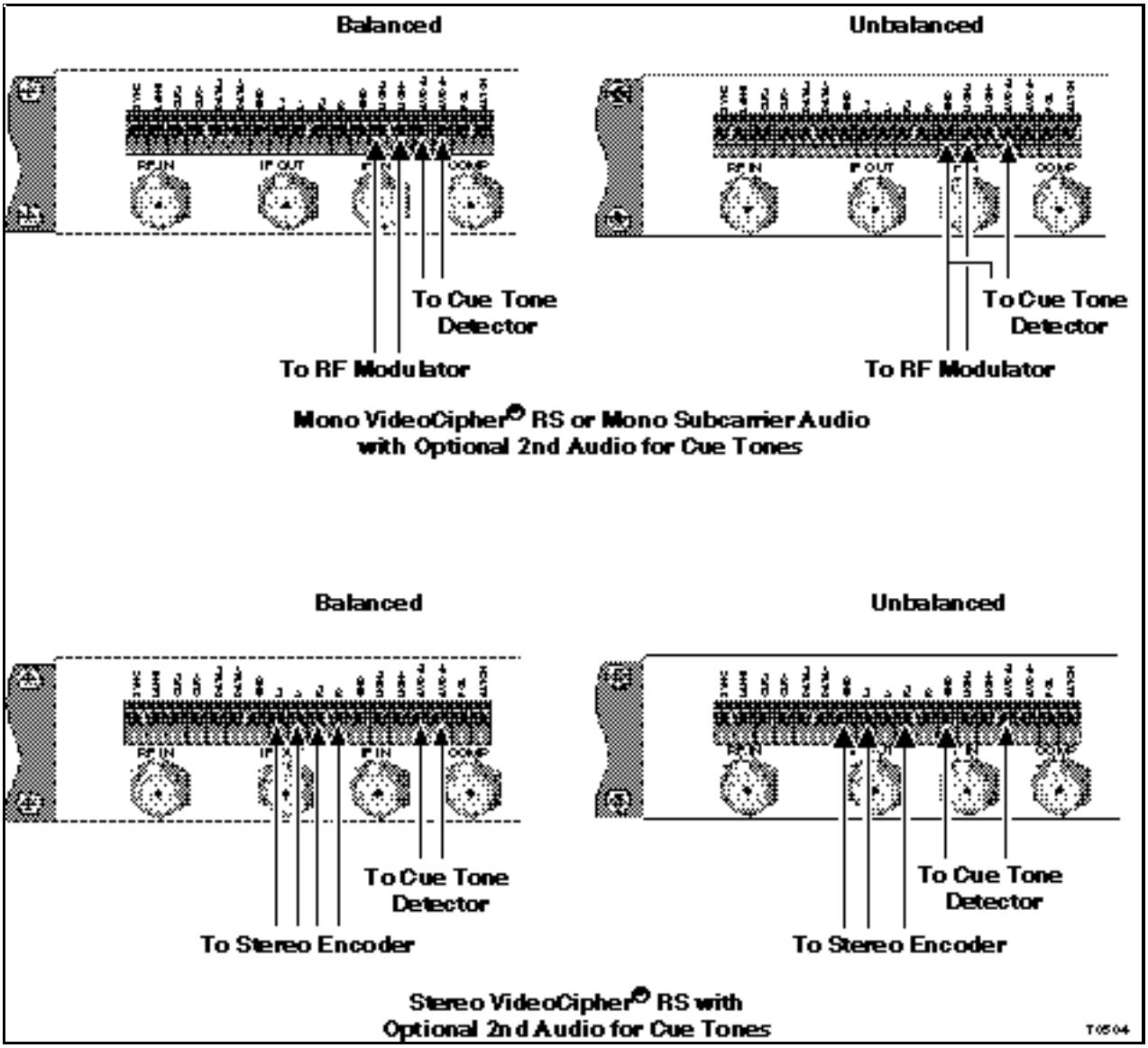


Figure 2-7. Connecting Audio Outputs with Optional 2nd Audio

Installing the VideoCipher RS Commercial Module

The Model 9660 Receiver is designed to allow easy installation or removal of the VideoCipher RS Commercial Module.

WARNING!
AVOID ELECTRIC SHOCK AND DAMAGE TO THIS PRODUCT! DISCONNECT THE POWER CORD ON THIS PRODUCT BEFORE YOU BEGIN THIS PROCEDURE.

AVERTISSEMENT!
ÉVITEZ LES RISQUES D'ÉLECTROCUTION ET LES RISQUES D'ENDOMMAGEMENT DE CE PRODUIT! DÉBRANCHEZ LE CORDON D'ALIMENTATION DU PRODUIT AVANT DE COMMENCER CETTE PROCÉDURE.

WARNUNG!
VERMEIDEN SIE STROMSCHLAG! ZIEHEN SIE DAS ELEKTRISCHE KABEL DIESES PRODUKTES AUS DER STECKDOSE BEVOR SIE MIT DIESEM SCHRITT BEGINNEN.

¡ADVERTENCIA!
¡EVITE LAS DESCARGAS ELECTRICAS Y LOS DAÑOS A ESTE PRODUCTO! DESCONECTE EL CORDON DE ALIMENTACION DEL PRODUCTO ANTES DE INICIAR ESTE PROCEDIMIENTO.

1. Remove the four screws securing the rear panel access door and remove the door (see figure 2-8).
2. Slide the module through the rear panel access door and press firmly into place. Ensure module authorization address can be viewed through the rear cover of the unit.
3. Replace the door and secure with the four screws.

Note

Module removal is a reverse of the above process.

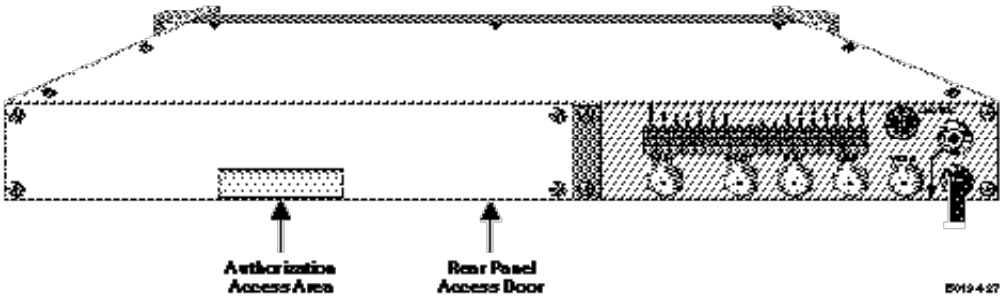


Figure 2-8. The Access Door and Authorization Access Area

3

Operation

3-1 Main Menu Display
3-5 Indicators and Menu Keys
3-7 Frequency Key (FREQ) and Submenus
3-15 Video Key (VIDEO) and Submenus
3-19 Audio Key (AUDIO) and Submenus
3-25 Options Key (OPTIONS) and Submenus
3-31 The VideoCipher RS Commercial Module
3-33 Maintenance

Main Menu Display

The Model 9660 Receiver is automatically turned on when the power cord is plugged into a power outlet (refer to chapter 2, **Installation**). After power is applied to the unit, the receiver sequences through the initial displays indicated in figure 3-1. Press the appropriate function key (FREQ, VIDEO, AUDIO, and OPTIONS) to enter a submenu and make operational selections. Once the submenu is selected, the function key sequentially displays the choices in that menu.

> **Note**
> If the receiver main menu illustrated at the bottom of figure 3-1 is displayed, you must press and hold the desired function key for a few seconds to select the submenus. The receiver main menu is displayed after pressing the STORE key or after two minutes of no operator commands.

If the front panel controls appear to be "locked out," press and hold one of the function keys (FREQ, VIDEO, AUDIO, and OPTIONS) for a few seconds. If the display is still blank, press the OPTIONS function key. Then, press the up key to increase the contrast of the display. If the receiver does not operate normally at this point, refer to chapter 4, **Troubleshooting**. When you press the STORE function key, the selected data is stored and the display appears to be locked out until one of the other functions keys is pressed for a few seconds.

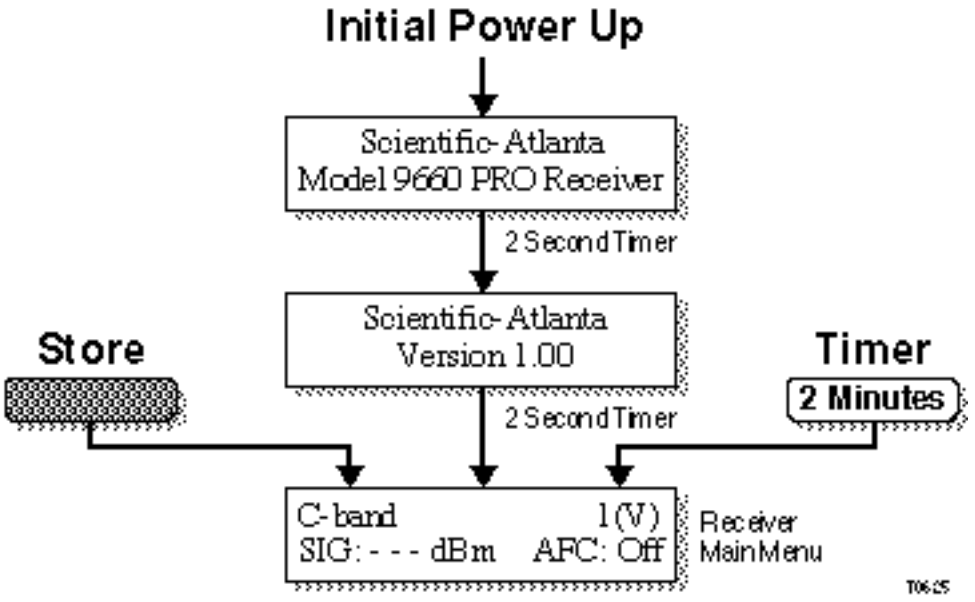


Figure 3-1. Main Receiver Menus

The STORE Key

To activate the STORE function, press the **STORE** key on the front panel of the receiver. The STORE indicator will turn on to show that the settings associated with the current channel selection are stored.

In the Pre-Programmed mode, this operation stores only the settings (TUNE, AFC, POL REV, and AUDIO FREQ) associated with the current channel selection in the receiver's memory. Whenever new settings are stored, previously stored settings are overwritten. The last stored selections are recalled when recovering from a power failure, when turning the receiver back on, or when remote tuning is removed.

> **Note**
> Be sure to press **STORE** after you finish entering any new front panel settings. If STORE is not pressed after two minutes from the last operation and there is no power interrupt, the unit will automatically store the entered information and return the display to the main menu. If a power interrupt occurs, newly entered front panel settings cannot be recovered unless the STORE key was pressed.

Resetting the Front Panel Using the STORE Key

The STORE key can also reset all front panel settings to the factory defaults. To accomplish this, complete the following steps.

1. Unplug the receiver's power cord.
2. Press and hold the **STORE** key, and plug the power cord back into an electrical outlet.
3. Continue to hold the **STORE** key until the Scientific-Atlanta logo displays.

At this point, the unit has been re-configured for the following default settings as listed in table 3-1.

Table 3-1. Default Settings for the Model 9660 Receiver

Setting	Default Value
Plan	C-Band
Channel	1 (V)
Offsets	0 MHz
AFC	Off
Label	Sat Plan
Video Level	100 %
Composite Deemphasis	On
Video Clamp	On
Freq 1	6.80 MHz

Table 3-1. Default Settings for the Model 9660 Receiver (continued)

Setting	Default Value
Bandwidth 1	280 kHz
Deemphasis	75 µsec
Audio Levels	25%
SMC Baud rate	9600
SMC Address	001

Indicators and Menu Keys

The indicators and menu keys located on the front panel of the receiver are illustrated in figure 3-2 and described in tables 3-2 and 3-3. Table 3-4 describes the front panel connections.

Note
For more information, read the frequency tables in Appendix A.

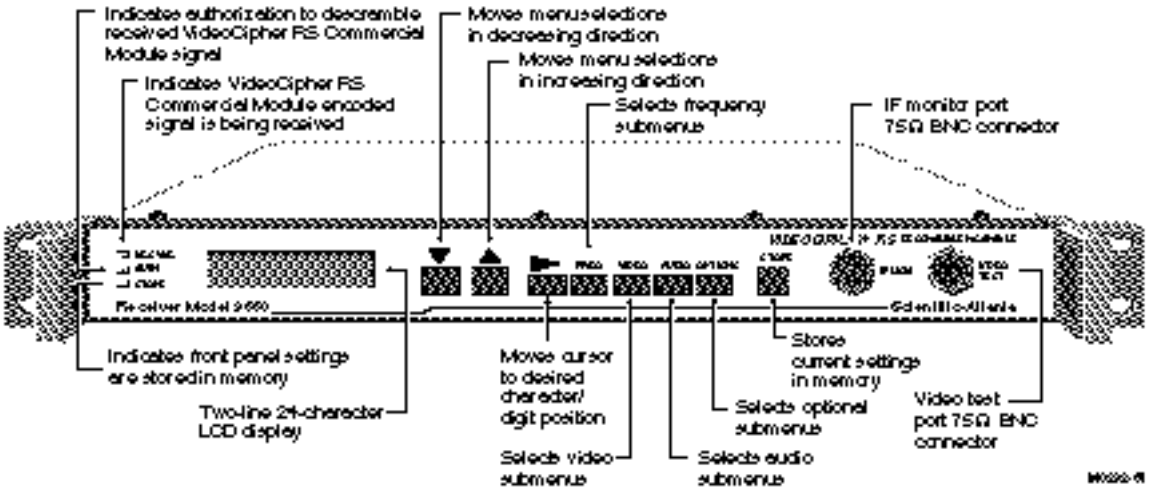


Figure 3-2. Receiver Front Panel Indicators and Menu Keys

Table 3-2. Front Panel LED Indicators

LED Indicator	Description
VC SYNC	Illuminates when the Model 9660 Receiver is tuned to a VideoCipher RS Commercial Module encoded signal. VC SYNC illuminates whether or not the descrambler module is authorized for that service. It is OFF when receiving a non-scrambled signal.
AUTH	Illuminates when VideoCipher RS Commercial Module is receiving an encoded signal and is authorized to descramble it.
STORE	Illuminates when current front panel settings have been stored in nonvolatile memory.

Table 3-3. Front Panel Menu Keys

Menu Key	Description
INCREMENT  **DECREMENT** 	The increment and decrement (up or down) controls are used to move through the menu selections displayed in the LCD window. Press the key briefly to move one step, or press and hold to scroll through the selections.
CURSOR 	Selects digit/character to be changed in the Program mode Frequency or Custom Label submenus.
FREQ	Cycles the display through the Frequency Functions menu: Satellite Plan, Transponder, Band (C/Ku Select, program mode only), Frequency (program mode only), Polarization (Vert/Horiz), Offset frequency, AFC (On/Off), Label Display, Custom Label.
VIDEO	Cycles the display through Video Functions menu: Video/Composite Output Level, Video Output Clamp, Composite Output Deemphasis, and On-Screen Display.
AUDIO	Cycles the display through the Audio Functions menu: Frequency 1, Bandwidth 1, Deemphasis, Frequency 2 (optional), Bandwidth 2 (Optional), Deemphasis 2 (Optional), Left Level, Right Level, Mono Level, Audio 2 Output Level (optional), Mono Source (in VC mode), Mono source (in Bypass mode).
OPTIONS	Cycles the display through the Options Functions menu: LCD Contrast, Status (page 1), Status (page 2), IF Filter, LNB Power, Display Mode, C/N Set, Alt Channel, Alt Channel Polarization, AGC/MGC, MGC Level, SMC Baudrate, SMC Address, Software Revision, Keypad Delay.
STORE	Stores all current front panel settings of standard frequency plan. In user-programmable mode (Prog frequency plan), stores channel frequency and associated settings. Resets front panel setting to default condition (see section on Resetting the Front Panel Using the STORE Key).

Table 3-4. Front Panel Connectors

Front Panel Connectors	Description
IF MON	Provides an IF monitor port for the operator to monitor the 70 MHz IF signal. This is a 75-ohm BNC connector.
VIDEO TEST	Provides a video test port for the operator to monitor the baseband video signal. This is a 75-ohm BNC connector.

Frequency Key (FREQ) and Submenus

The frequency submenus are selected by pressing the FREQ key. Once selected, the submenus appear sequentially each time the FREQ key is pressed. The submenus are illustrated in figure 3-3 and are described in table 3-5. Each submenu has a tag number located in the upper right corner that identifies the submenu sequence number.

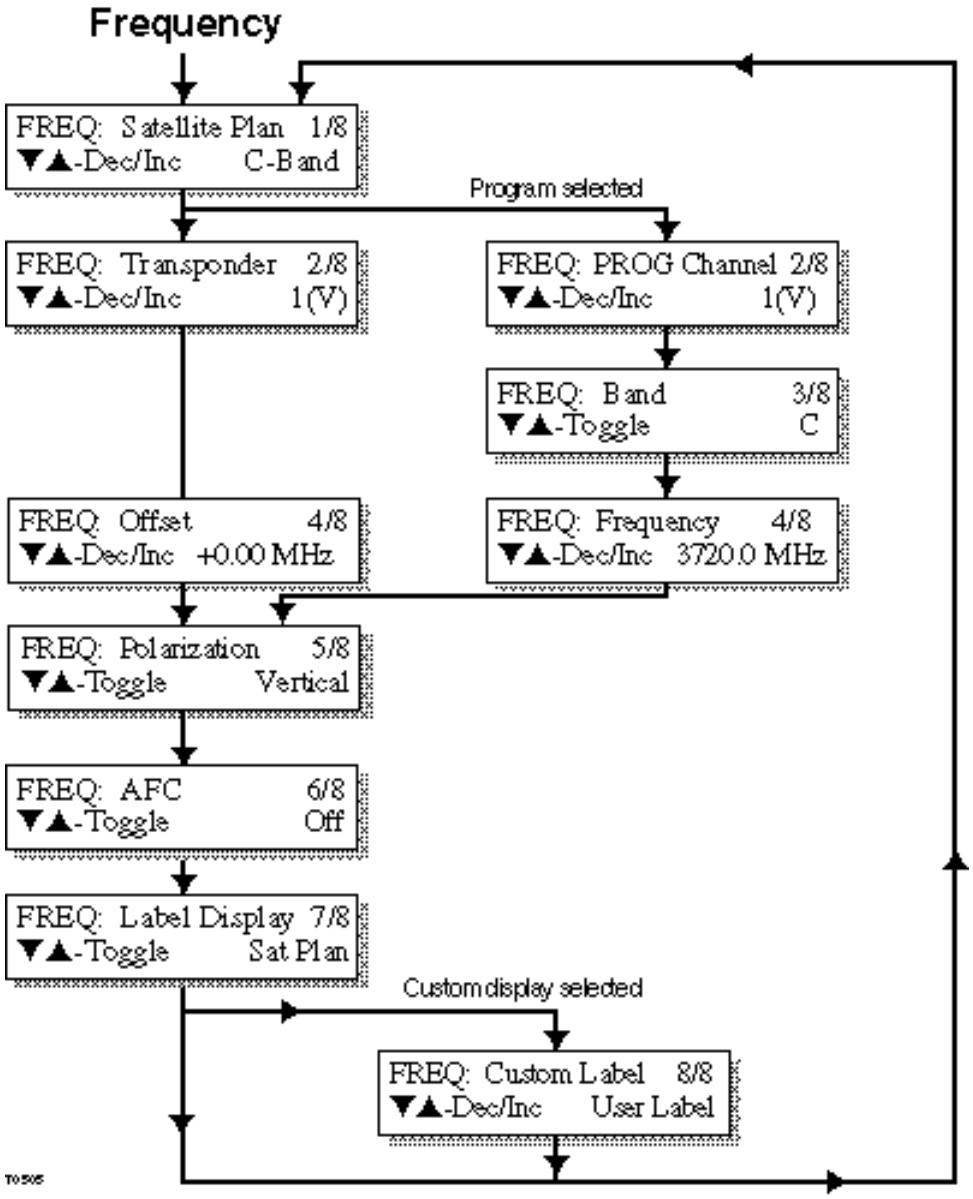


Figure 3-3. Frequency Key and Submenus

Table 3-5. Description of Frequency Submenus

Tag	Label	Alternate Menu Labels	Description
1/8	Satellite Plan	None	A pre-programmed assignment of frequencies to channels. Refer to table 3-6.
2/8	Transponder	PROG Channel (Programmable plan only)	Shows transponder # and shows polarization (H or V).
3/8	Band	Programmable plan only	In the Programmable plan, this selects either the C- or Ku-band input frequency range.
4/8	Frequency	Programmable plan only	Adjusts input frequency in 0.1 MHz, 1 MHz, or 10 MHz increments.
4/8	Offset (range of ±6.00 MHz)	None	Fine tunes input in 0.1 MHz increments.
5/8	Polarization	None	Selects the desired polarization for the selected channel.
6/8	AFC (Off, Avg, MOP)	None	Default mode is off. Frequency averaging (AVG) mode is typically used when AFC is required. Some unique descrambler services may benefit from Means of Peaks (MOP) mode.
7/8	Label Display	None	Selects either current satellite plan (**Sat plan**) or user custom label (**Custom**) for display in the upper left corner of the main menu Automatically resets to **Sat plan** if the plan, channel, or frequency is changed.
8/8	Custom Label	None	A 10-character user-definable string that is displayed in the upper left corner of the main menu display.

Selecting a Satellite Plan (Tag 1 of 8)

Table 3-6 lists the available satellite plans. To select a satellite plan, follow these instructions.

1. Press the **FREQ** key until the first Frequency submenu (tag number 1/8 in upper right corner) is displayed (see figure 3-3).
2. Press the up or down key until the correct frequency plan is displayed in lower right corner.

Table 3-6. Satellite Plans

Plan	Satellite	Notes
C-band	C-band	950 MHz to 1450 MHz Input
C-band 2	C-band	1000 MHz to 1500 MHz Input
ANIK-H (Ku)	ANIK C2, C3	Half Transponder
GE-F (Ku)	GE K1, K2	Full Transponder
GE-H (Ku)	GE K1, K2, K3, K4	Half Transponder
GSTR-F (Ku)	GStar A1, A2, A3	Full Transponder
GSTR-H (Ku)	GStar A1, A2, A3	Half Transponder
MORELOS (Ku)	Morelos 1, 2	Full Transponder
SBS-F (Ku)	SBS I, II, III, IV	Full Transponder
SBS-H (Ku)	SBS I, II, III, IV	Half Transponder
SBS 6 (Ku)	SBS VI	Full Transponder
SNET-F (Ku)	Spacenet 1, 2, 3, 4 ASC 1	Full Transponder
Prog	User-Programmable Mode	User Specified Input Frequencies

Selecting a Transponder (Tag 2 of 8)

Refer to tables A-1 through A-12 in Appendix A of this guide for a list of transponders and the input frequency assignments for each of the satellite plans.

To select a transponder, follow these instructions.

1. Press the **FREQ** key until Transponder submenu (tag number 2/8) is displayed (see figure 3-3).
2. Press the **up** or **down** key until the desired transponder is displayed in the lower right corner.

Setting the Frequency Offset Submenu (Tag 4 of 8)

To set the frequency offset, follow these instructions.

1. Press the **FREQ** key until the Offset submenu (tag number 4/8) is displayed.
2. Press the **up** or **down** key until the desired offset is displayed in the lower right corner.

This offset is used to compensate for LNB frequency offset when AFC is off.

Setting the Polarization (Tag 5 of 8)

To set the polarization, follow these instructions.

1. Press the **FREQ** key until the Polarization submenu (tag number 5/8) is displayed.
2. Press the **up** or **down** key until the desired polarization is displayed in the lower right corner.

Selecting the AFC Mode (Tag 6 of 8)

To select the AFC mode, follow these instructions.

1. Press the **FREQ** key until the AFC submenu (tag number 6/8) is displayed.
2. Press **up** or **down** until the desired AFC mode is displayed in the lower right corner.

AFC is automatically turned off when the frequency or offset is changed. The frequency averaging (Avg) mode is typically used when AFC is required. Some unique descrambler services may benefit from Means of Peaks (MOP) mode. Use of terrestrial interference filters may require AFC be turned off for maximum rejection.

Selecting the Label Display Mode (Tag 7 of 8)

To select the label display mode, follow these instructions.

1. Press the **FREQ** key until the Label Display submenu (tag number 7/8) is displayed.
2. Press the **up** or **down** key until the desired label display mode is displayed in the lower right corner.

If Sat Plan is selected, the current satellite plan is displayed in the upper left corner of the main menu display. If **Custom** is selected, a user definable label is displayed instead (see the following paragraph).

Setting the Custom Label (Tag 8 of 8)

The custom label submenu is available if the Label Display mode is set to Custom. The custom label is a string of ten characters that is displayed in the upper left corner of the main menu display in place of the selected plan information. The available characters are the upper case letters A through Z, the numbers 0 through 9, the SPACE character, and the characters !, #, $, %, &, ( ), *, +, -, ., /.

To set the custom label, follow these instructions.

1. Press the **FREQ** key until the Custom Label submenu (tag number 8/8) is displayed.
2. Press the **Cursor** key (right arrow) to move the block cursor to the character to be changed.
3. Press the **up** or **down** key until the desired character is displayed under the block cursor in the lower right corner.

> **Note**
> When all Frequency submenu parameters are correct, press the STORE key to save all changes.

> **Note**
> The Band, Frequency and Polarization submenus are only displayed when programmable mode (Prog) is selected from the satellite plan (1/8) menu. See the paragraph titled User-Programmed Frequency Mode for information on using these submenus.

User-Programmed Frequency Mode (Tags 1 through 6 of 8)

The receiver can be operated in pre-programmed or user-programmed mode. In pre-programmed mode, you can select one of two pre-defined C-band formats or one of 10 popular Ku-band formats. The frequency submenus and corresponding satellite plans are shown in tables 3-5 and 3-6. The last frequency format is the user-programmable mode, which allows the user to store up to 32 specific channel selections including frequency and any other specific front panel settings the user requires.

To enter a user-programmed frequency plan complete these steps.

1. Press the **FREQ** key until the Satellite Plan (tag number 1/8) is displayed. Press the **up** or **down** key until the plan PROG is displayed in the lower right corner.
2. Press the **FREQ** key again until the PROG Channel submenu (tag number 2/8) is displayed. Press **up** or **down** until the desired channel number is displayed in the lower right corner.
3. Press the **FREQ** key again until the Band submenu (tag number 3/8) is displayed. Press **up** or **down** until the desired C or Ku (frequency band) is displayed in the lower right corner.
4. Press the **FREQ** key until Frequency submenu (tag number 4/8) is displayed. Press the **right arrow** key to select the desired step size for incrementing or decrementing. Press **up** or **down** until the desired frequency is displayed.
5. Press the **FREQ** key until Polarization submenu (tag number 5/8) is displayed. Press **up** or **down** to toggle polarization between Vertical and Horizontal as displayed in the lower right corner.
6. Press the **FREQ** key until AFC submenu (tag number 6/8) is displayed. Press **up** or **down** to toggle AFC on or off as displayed in the lower right corner.
7. Press the **STORE** key to store the user-programmed frequency plan.

Repeat steps 2 through 7 to store additional user-programmed frequency plans (up to 32) with different user-program numbers.

> **Note**
> If your system contains a C-band LNB with an IF of 1000 MHz to 1500 MHz (instead of the more common 950 MHz to 1450 MHz), then you should tune the receiver until the displayed frequency is 50 MHz below the desired input frequency. For example, to receive 4090 MHz, tune the receiver until 4040 is displayed.

The procedure for entering User Defined Frequencies allows you to store up to 32 channels in the user-programmable (Prog) frequency plan. When you press the STORE key, the STORE indicator will turn on to show that the current channel selections are stored. These stored selections may be recalled at any time, even after a power failure, by simply selecting the desired channel number. If you fill the 32 available selections and then wish to add an additional channel, you will have to overwrite (delete) one of the channels previously stored in the Prog plan. To accomplish this, simply perform the procedure above and select the user-program channel number (in step 2) that you wish to terminate and enter the information for the new channel. The Program mode will store frequency, band, polarization, AFC, video clamp and composite deemphasis, and audio frequency (for both audio 1 and audio 2 if installed).

> **Note**
> When turning the receiver on, leaving remote mode, or returning power to the receiver, the last setting stored is the one recalled.

Video Key (VIDEO) and Submenus

The video submenus are selected by pressing the VIDEO key. Once selected, the submenus are sequenced each time the VIDEO key is pressed. The submenus are illustrated in figure 3-4 and described in table 3-7. Each submenu has a tag number located in the upper right corner that identifies the submenu sequence number.

The video submenus allow the operator to set the video output level and turn on or off the video clamp, deemphasis circuit, and VC Sync on-screen display.

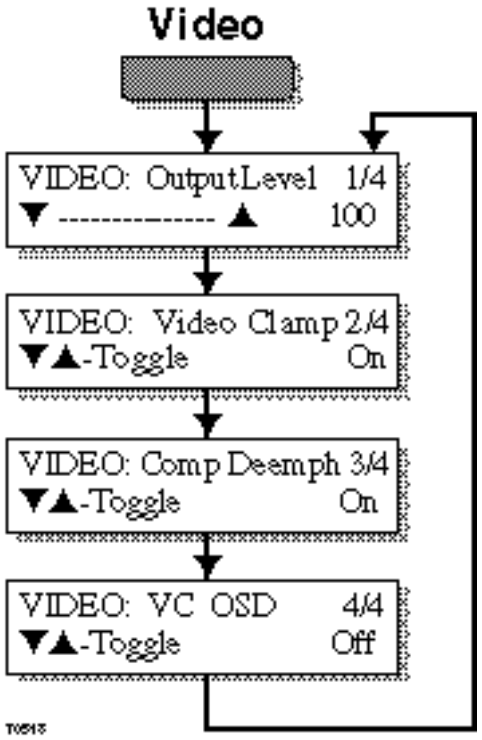


Figure 3-4. Video Submenus

Table 3-7. Video Submenus Descriptions

Tag	Label	Description
1/4	Output Level (50 to 150%)	Max = 1.5 V p-p into 75 ohms Min = 0.5 V p-p into 75 ohms. 100% represents 1.0 V p-p
2/4	Video Clamp (On, Off)	Switches clamp off if required, for some nonstandard scrambling applications
3/4	Comp Deemph (On, Off)	Switches deemphasis circuit out of the composite video for nonstandard applications
4/4	VC OSD (On, Off)	Enables On-screen Display if descrambler module is in chassis and VC Sync is present

Setting the Video Output Level (Tag 1 of 4)

To set the video output level, follow these instructions.

1. Press the **VIDEO** key until the Output Level submenu is displayed (tag number 1/4 displayed in the upper right corner, see figure 3-4).
2. Press the **up** and **down** key to select the desired output level as displayed in the lower right corner.

The display in percent corresponds to the percentage of a 1.0 V p-p level (100% = 1 V, 50% = 0.5 V) and approximately corresponds to the level of the active video in IRE (100% @100 IRE). The display is calibrated such that 100% equals 1.0 V p-p for 10.75 MHz deviation with C-band plans or 8.2 MHz deviation with Ku-band plans. This adjustment affects both the Video and Composite Baseband outputs.

Setting the Video Clamp (Tag 2 of 4)

To set the video clamp, follow these instructions.

1. Press the **VIDEO** key until Video Clamp submenu (tag number 2/4) is displayed.
2. Press **up** or **down** key until desired video clamp state (on or off) is displayed in the lower right corner.

If enabled (On), the Video Clamp removes dispersal energy from the video signal provided at Video F-connector on the rear panel and the Video Test BNC connector on the front panel.

Setting Composite Baseband Deemphasis (Tag 3 of 4)

To set the composite baseband deemphasis, follow these instructions.

1. Press the **VIDEO** key until Comp Deemp submenu (tag number 3/4) is displayed.
2. Press **up** or **down** key until desired composite video deemphasis circuit state (on or off) is displayed in the lower right corner.

If disabled (Off), the composite baseband video signal provided at the COMP F-connector is not de-emphasized (flat) for compatibility with certain external descramblers.

Setting the VC OSD (On-Screen Display) Mode (Tag 4 of 4)

For more information on this option, contact General Instrument Inc. To set the VC OSD mode, follow these instructions.

1. Press the **VIDEO** key until VC OSD submenu (tag number 4/4) is displayed.
2. Press the **up** or **down** key until desired VC Sync on-screen display state (on or off) is displayed in the lower right corner.

> **Note**
> VC OSD can only be enabled if the receiver is tuned to a VideoCipher encoded signal (VC Sync LED on). The OSD function will automatically turn off after three minutes.

> **Note**
> Once all Video related parameters are set, you must press the STORE key to save all changes.

Audio Key (AUDIO) and Submenus

The Model 9660 Receiver is provided with only one subcarrier demodulator. A second audio subcarrier demodulator is available as an option.

In the VideoCipher RS Commercial Module mode, three audio outputs are available: stereo-left, stereo-right, and mono. When unscrambled programming is received, the left, right, and mono outputs all provide the primary subcarrier audio as tuned on Audio 1. Each audio output is a 600-ohm, balanced output. Unbalanced loads are connected to one side and ground. For example, MONO + and GND.

The audio submenus are selected by pressing the AUDIO key. Once selected, the submenus are sequenced each time the AUDIO key is pressed. The submenus are illustrated in figure 3-5 and briefly described in table 3-8. Each submenu has a tag number located in the upper right corner that identifies the submenu sequence number.

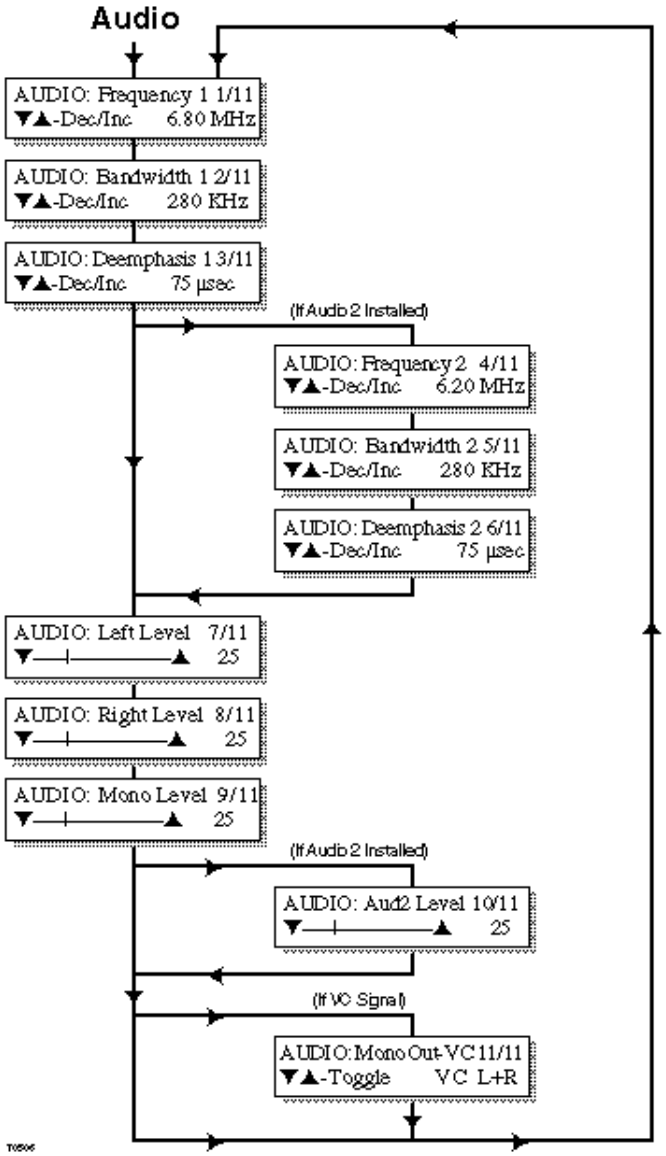


Figure 3-5. Audio Submenus

Table 3-8. Audio Submenus

Tag	Label	Description
1/11	Frequency 1 (5.00 to 8.50 MHz)	Tunes Audio 1 demodulator input in 0.02 MHz increments
2/11	Bandwidth 1 (150 kHz, 280 kHz, 400 kHz)	Selects IF bandwidth for Audio 1 demodulator
3/11	Deemphasis 1 (75µs, 50µs, J17, None)	Selects audio deemphasis for Audio 1 demodulator
4/11	Frequency 2 (5.00 to 8.50 MHz)	Tunes Audio 2 demodulator input in 0.02 MHz increments. Only appears if second audio card is in receiver
5/11	Bandwidth 2 (150 kHz, 280 kHz, 400 kHz)	Selects IF bandwidth for Audio 2 demodulator
6/11	Deemphasis 2 (75µs, 50 µs, J17, None)	Selects audio deemphasis for Audio 2 demodulator
7/11	Left Level (0 to 100% of audio range)	Adjusts left channel output level (default level is 25%)
8/11	Right Level (0 to 100% of audio range)	Adjusts right channel output level (default level is 25%)
9/11	Mono Level (0 to 100% of audio range)	Adjusts mono channel output level (default level is 25%)
10/11	Audio 2 Level (0 to 100% of audio range	Adjusts Audio 2 channel output level (default level is 25%). Only appears if second audio card is installed
11/11	Mono Source (in VC mode, VC L+R, Audio 1)	Selects source used for MONO output when receiving a VideoCipher encoded signal

Setting Audio Frequency 1 (Tag 1 of 11)

To set the Audio Frequency 1, perform the following steps.

1. Press the **AUDIO** key to select Frequency 1 submenu (tag number 1/11 is displayed in upper right corner, see figure 3-5).
2. Press the **up** or **down** key until the desired frequency for the primary audio subcarrier demodulator (Audio 1) is displayed in the lower right corner.

Setting Audio IF Bandwidth 1 (Tag 2 of 11)

To set the Audio IF Bandwidth 1, perform the following steps.

1. Press the **AUDIO** key to select Bandwidth 1 submenu (tag number 2/11 is displayed in upper right corner, see figure 3-5).
2. Press the **up** or **down** key until the desired bandwidth (150 kHz, 280 kHz or 400 kHz) for the primary audio subcarrier demodulator (Audio 1) is displayed in the lower right corner.

Setting Audio Deemphasis 1 (Tag 3 of 11)

To set the Audio Deemphasis 1, perform the following steps.

1. Press the **AUDIO** key to select Deemphasis 1 submenu (tag number 3/11 is displayed in upper right corner, see figure 3-5).
2. Press the **up** or **down** key until the desired deemphasis (75 µs, 50 µs, J17 or none) for the primary audio subcarrier demodulator (Audio 1) is displayed in the lower right corner.

Setting Audio Frequency 2 (Tag 4 of 11)

To set the Audio Frequency 2, perform the following steps.

> **Note**
> The following three submenus will only appear when the second audio demodulator is installed.

1. Press the **AUDIO** key to select Frequency 2 submenu (tag number 4/11 is displayed in upper right corner, see figure 3-5).
2. Press the **up** or **down** key until the desired frequency for the secondary audio demodulator (Audio 2) is displayed in the lower right corner.

Setting Audio IF Bandwidth 2 (Tag 5 of 11)

To set the Audio IF Bandwidth 2, perform the following steps.

1. Press the **AUDIO** key to select Bandwidth 2 submenu (tag number 5/11 is displayed in upper right corner, see figure 3-5).
2. Press the **up** or **down** key until the desired bandwidth (150 kHz, 280 kHz or 400 kHz) for the secondary audio subcarrier demodulator (Audio 2) is displayed in the lower right corner.

Setting Audio Deemphasis 2 (Tag 6 of 11)

To set the Audio Deemphasis 2, perform the following steps.

1. Press the **AUDIO** key to select Deemphasis 2 submenu (tag number 6/11 is displayed in upper right corner, see figure 3-5).
2. Press the **up** or **down** key until the desired deemphasis (75 us, 50 us, J17 or none) for the secondary audio subcarrier demodulator (Audio 2) is displayed in the lower right corner.

Setting the Audio Output Levels (Tag 7, 8, and 9 of 11)

To set the audio output levels, perform the following steps.

1. Press the **AUDIO** key to select either Left Level (tag number 7/11), Right Level (tag number 8/11) or Mono Level (tag number 9/11) submenu.

> **Note**
> If the second audio demodulator is installed, the Audio 2 Level (tag number 10/11) may also be selected.

2. Press **up** or **down** key until the desired audio level (as a percentage of maximum) is displayed in the lower right corner.

Selecting the Mono Output Source (Tag 11 of 11)

To set the mono output source, perform the following steps.

1. Press the **AUDIO** key until Mono Out (VC) (tag number 11/11) is displayed.
2. Press the **up** or **down** key until the desired mono source for the VC mode is displayed in the lower right corner.

When VC L+R is selected, the mono output is the sum of the signals appearing at the Left and Right terminals. When Audio 1 is selected, the mono output is from the primary audio demodulator and is independent of the signals appearing at the Left or Right terminals.

> **Note**
> If the received signal is not VC scrambled, then the mono output provides the output of the primary audio demodulator (Audio 1).

> **Note**
> When the AUDIO parameters are correctly set, press the STORE key to save the changes.

Options Key (OPTIONS) and Submenus

The options submenus are selected by pressing the OPTIONS key. Once selected, the submenus are sequenced each time the OPTIONS key is pressed. The submenus are illustrated in figure 3-6 and described in table 3-9. Each submenu has a tag number located in the upper right corner that identifies the submenu sequence number.

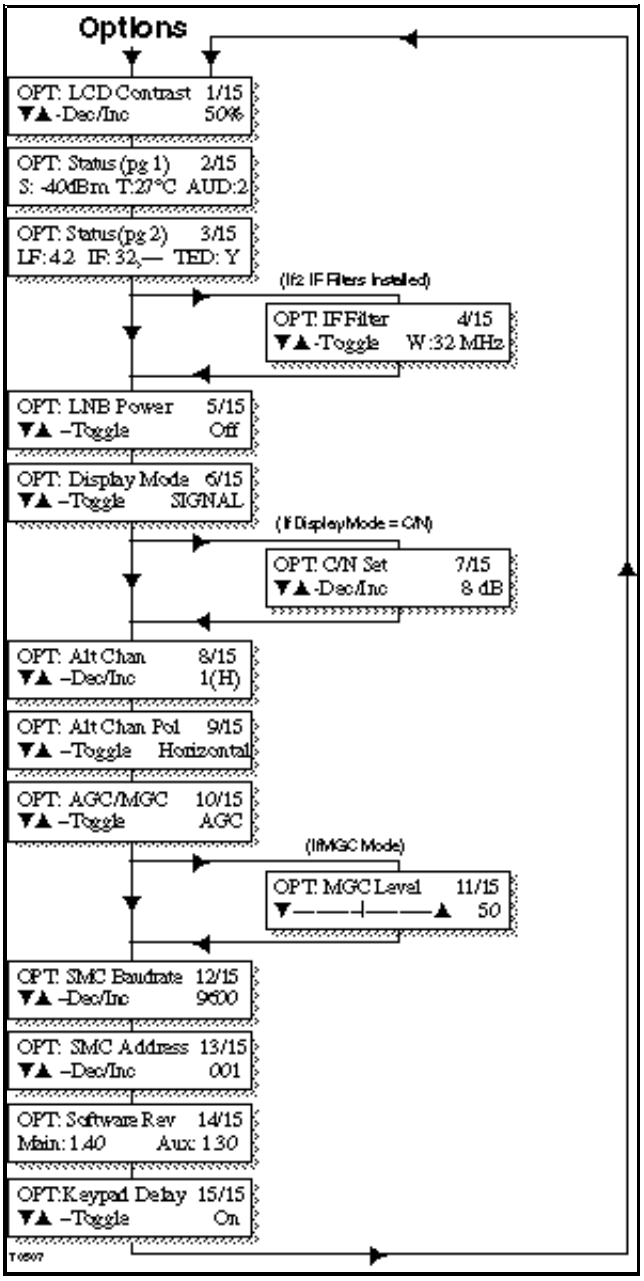


Figure 3-6. Options Submenus

Table 3-9. Options Submenus

Tag	Label	Description
1/15	LCD Contrast (0 to 100%)	Adjusts front panel display contrast.
2/15	Status (pg 1) (Display only)	Indicates input signal level in dBm, internal receiver temperature in degrees C, and quantity (1 or 2) of audio cards installed.
3/15	Status (pg 2) (Display only)	Indicates the low pass filter bandwidth (LF) in MHz, the IF filter bandwidth in MHz, and whether threshold extension filter is installed (Y or N).
4/15	IF Filter (W, N, Auto Sel)	Allows the user to select which filter should be used if more than one IF filter is installed. **W** selects the wide BW filter and **N** selects the narrow BW filter. **Auto Sel** uses the wide filter for C-band plans and the narrow filter for K-band plans.
5/15	LNB Power (On or Off)	Turns DC voltage on or off at RF output.
6/15	Display Mode (Signal, C/N)	Selects whether the front panel displays the input signal level in -dBm or in an AGC derived Carrier-to-Noise (C/N) in dB.
7/15	C/N Set	Allows the user to calibrate the C/N measurement if the C/N display mode is chosen.
8/15	Alt Channel (1 to 32)	Selects alternate program channels.
9/15	Alt Chan Pol	Selects the desired polarization for the selected alternate channel.
10/15	AGC/MGC (AGC or MGC)	Switches from automatic to manual gain control.
11/15	MGC Level (MGC Mode only - 0 to 100% of Gain adjustment)	Adjusts gain level in manual mode.
12/15	SMC Baudrate (300, 1200, 2400, 4800, 9600)	Selects the baud rate used for the SMC bus. The default value is 9600.
13/15	SMC Address (1..65535)	Sets the unit address for SMC Bus control.
14/15	Software Rev	Displays the software revision in the Main and Auxiliary microprocessors.
15/15	Keypad Delay	Adds a four second delay before the keypad responds the first time the keypad is accessed.

Setting the LCD Contrast (Tag 1 of 15)

To set the LCD contrast, do the following.

1. Press the **OPTIONS** key to select LCD Contrast submenu (tag number 1/15 displayed in upper right corner, see figure 3-6).
2. If display contrast level needs adjustment, press the **up** or **down** key until the display is properly adjusted. The default setting is 50%.

Selecting the IF Filter (Tag 4 of 15)

To set the IF Filter power if two filters are installed, follow these instructions.

1. Press the **OPTIONS** key until the IF Filter submenu (tag number 4/15) is displayed.
2. Press the **up** or **down** key to select the desired IF filter. W selects the wider of the two filters and N selects the narrower of the two filters. If Auto Sel is selected, the receiver will automatically use the wide filter when a C-band plan is selected and will use the narrow filter when a Ku-band plan is selected.

Selecting the LNB Power (Tag 5 of 15)

To set the LNB power, follow these instructions.

1. Press the **OPTIONS** key until the LNB Power submenu (tag number 5/15) is displayed.
2. Press the **up** or **down** key to toggle the LNB Power On or Off. When On, +19 V DC is applied to the center conductor of the RF Input connector for powering LNBs.

Selecting the Display Mode (Tag 6 of 15)

To set the Display Mode, follow these instructions.

1. Press the **OPTIONS** key until the Display Mode submenu (tag number 6/15) is displayed.
2. Press the **up** or **down** key to toggle the Display mode between Signal and C/N. If signal is selected the main menu will display the current RF input signal level in -dBm. If C/N is selected the main menu will display a calculated C/N ratio in dB.
3. If the C/N mode is selected, the C/N display must be calibrated to a measured C/N ratio. This may be set by pressing the OPTIONS key one more time until the C/N Set (tag number 7/15) submenu is displayed. Press the **up** or **down** key to display the C/N ratio as measured for the installed system with the desired input signal. Now as the input signal level changes, the displayed C/N ratio will also change by the same amount.

Selecting the Alternate Channel Number (Tag 8 of 15)

To set the alternate channel number, follow these instructions.

1. Press the **OPTIONS** key until the Alt Channel submenu (tag number 8/15) is displayed.
2. Press the **up** or **down** key to select the desired channel.

The range of valid channels/transponders is set by the selected satellite plan (FREQ: Satellite Plan). While the rear panel terminal AltCh is grounded, the receiver will tune to this channel (using the current satellite plan) instead of the channel selected with the FREQ: Transponder submenu.

Selecting the Alternate Channel Polarization (Tag 9 of 15)

To set the alternate channel polarization, follow these instructions.

1. Press the **OPTIONS** key until the Alt Channel Polarization submenu (tag number 9/15) is displayed.
2. Press the **up** or **down** key to select the desired polarization for the alternate channel.

Selecting the Automatic Gain Control (AGC) or Manual Gain Control (MGC) Modes (Tag 10 of 15)

To set the automatic or manual gain control, follow these instructions.

1. Press the **OPTIONS** key until the AGC/MGC submenu (tag number 10/15) is displayed.
2. Press the **up** or **down** key to select either automatic or manual IF gain control (MGC).

If MGC mode is selected, the manual gain level may be set by pressing the OPTIONS key one more time until the MGC level submenu (tag number 11/15) is displayed. Press the up or down key to set the manual gain as a percentage of maximum IF gain (minimum input signal).

Setting the SMC Bus Parameters (Tags 12 and 13 of 15)

To configure the SMC Bus, follow these instructions.

1. Press the **OPTIONS** key until the SMC baudrate submenu (tag number 12/15) is displayed.
2. Press the **up** or **down** key to select the baudrate used by the SMC bus (300, 1200, 2400, 4800, 9600). The default value is 9600. Press the OPTIONS key again until the SMC Address (tag number 13/15) submenu is displayed. The location of the block cursor indicates the factor by which the address will be incremented or decremented. If the cursor is over the 10's digit then pressing the up or down key will change the address in steps of 10. Press the cursor key (right arrow) to move the block cursor to the desired digit and press the up or down key to change to the desired unit address.

> **Note**
> Once all Option parameters are set, press the **STORE** key to save all changes.

The VideoCipher RS Commercial Module

The Model 9660 Receiver has been designed for maximum ease of use in receiving both unscrambled and VideoCipher RS Commercial Module encoded signals. Integration of the descrambler module inside the receiver minimizes the number of cables and rack space required and also ensures a perfect match between receiver and descrambler.

Unit Authorization

A commercial VideoCipher RS Commercial Module integrated receiver descrambler can only be authorized for one encoded program service. To receive authorization, follow this procedure.

1. Tune the receiver to the desired channel. You will not observe any audio or video. The screen will be black, and the VC SYNC light should be lit.
2. Call the program supplier. Have the Model 9660 Receiver's serial number and VideoCipher RS Commercial Module address number handy.
3. Tell the program supplier to send receiver authorization via satellite.
4. The AUTH indicator will be lit once the unit becomes authorized. It will also be lit if the programmer transmits in a "fixed-key" global authorization mode.

> **Note**
> You must secure proper authorization from each program provider or their agent before receiving scrambled programming.

> **Note**
> If your receiver is equipped with the VideoCipher RS Commercial Module, then the VC SYNC LED will be lit whenever it is receiving an encoded signal—whether your receiver is authorized or not.

If the receiver is tuned to an unauthorized signal, the video output will be a black screen with sync pulses, color burst, but no audio. Occasionally, you may be able to receive encoded signals for which authorization has not been obtained. This occurs because the signals are transmitted in the "fixed-key" global authorization mode.

For a discussion of troubleshooting receiver problems, refer to chapter 4.

Video Level Requirements for the VideoCipher RS Module

The Model 9660 Receiver is factory adjusted to give correct video levels for most scrambled and unscrambled CATV signals and normally will not need adjustment. The receiver is factory set to meet the following standards.

- On C-band, 1 V peak-to-peak video output into 75 ohms with signals having a peak deviation of ±10.75 MHz.
- On Ku-band, 1 V peak-to-peak video output into 75 ohms with signals having a peak deviation of ±8.2 MHz.

When the Model 9660 Receiver is tuned to VideoCipher RS Commercial Module encoded signals, the receiver's video output level will be 1 V peak-to-peak into 75 ohms, factory preset, and is not adjustable. Any attempt to change the system video level by adjusting the receiver could cause an interrupt of the descrambled video. Therefore, any system video level adjustments should be made after the receiver at the RF modulator or at the monitor to which the receiver is connected.

Any incorrect video level into the VideoCipher RS Commercial Module could cause a failure to descramble the signal properly. The following specific circumstances would generate the need for an adjustment.

- If receiving signals with other than ±10.75 MHz deviation on C-band or ±8.2 MHz deviation of Ku-band.
- In the video gain control has been inadvertently or incorrectly adjusted.
- If the video output level on unscrambled signals is not 1 V peak-to-peak into 75 ohms.

Setting the Video Level

If an unscrambled signal is available for use as a reference, follow these instructions.

1. Tune the receiver to an unscrambled signal with deviation similar to that of the desired VideoCipher RS Commercial Module scrambled signal.
2. Adjust VIDEO Output Level until the output level is 1 V peak-to-peak into 75 ohms.

> **Note**
> If an unscrambled signal is not available, no procedure is required. Call one of our Technical Service Centers. Refer to the Customer Support section of Appendix B for a list of telephone numbers.

Maintenance

This section provides information on routine maintenance and describes some common reception problems and how to solve them.

Routine Care

The Model 9660 Receiver requires little care. Glass cleaner, applied with a soft cloth, may be used to clean the display and indicator covers. Care should be taken to ensure that fluid does not contact other surfaces.

Replacing the Receiver Fuse

The 3/4-Amp, 250 V, SLO-BLO fuse on the receiver is provided to prevent bodily injury or damage to the receiver caused by electrical power fluctuations. A blown fuse must be replaced in order for the receiver to operate. The fuse is located on the back panel of the receiver.

 **WARNING!**
AVOID ELECTRIC SHOCK AND DAMAGE TO THIS PRODUCT! REPLACE THE FUSE ONLY WITH A FUSE THAT IS THE CORRECT TYPE AND RATING. THE CORRECT TYPE AND RATING IS INDICATED ON THE BACK PANEL.

 **AVERTISSEMENT!**
PROTÉGEZ-VOUS DES CHOCS ÉLECTRIQUES ET ÉVITEZ L'ENDOMMAGEMENT DU PRODUIT! NE REMPLACEZ LE FUSIBLE QU'AVEC UN FUSIBLE DE TYPE ET DE CALIBRE CORRECTS. LE TYPE ET LE CALIBRE CORRECTS SONT INDIQUÉS SUR LE PANNEAU ARRIÈRE.

 **WARNUNG!**
VERMEIDEN SIE STROMSCHLAG UND BESCHÄDIGUNG DIESES PRODUKTES! WECHSELN SIE DIE SICHERUNG NUR GEGEN EINE DES GLEICHEN TYPS UND DER GLEICHEN LEISTUNG AUS. DER KORREKTE TYP UND LEISTUNG SIND AUF DER RÜCKWAND DES PRODUKTES ANGEGEBEN.

 **¡ADVERTENCIA!**
¡PROTEJASE DE DESCARGAS ELECTRICAS Y PROTEJA DE DAÑOS AL PRODUCTO! UNICAMENTE UTILICE FUSIBLES DEL TIPO Y ESPECIFICACIONES CORRECTAS. EL TIPO Y ESPECIFICACIONES CORRECTAS ESTAN INDICADAS EN EL TABLERO POSTERIOR DEL PRODUCTO.

 **WARNING!**
AVOID ELECTRIC SHOCK! DISCONNECT THE POWER CORD ON THIS PRODUCT BEFORE YOU REMOVE THE FUSE.

 **AVERTISSEMENT!**
ÉVITEZ LES RISQUES D'ÉLECTROCUTION! DÉBRANCHEZ LE CORDON D'ALIMENTATION DE CE PRODUIT AVANT DE CHANGER LE FUSIBLE.

 **WARNUNG!**
VERMEIDEN SIE STROMSCHLAG! ZIEHEN SIE DAS ELEKTRISCHE KABEL DIESES PRODUKTES AUS DER STECKDOSE BEVOR SIE MIT DIESEM SCHRITT BEGINNEN.

 **¡ADVERTENCIA!**
¡EVITE LAS DESCARGAS ELECTRICAS! DESCONECTE EL CORDON DE ALIMENTACION DE ESTE PRODUCTO ANTES DE RETIRAR EL FUSIBLE.

The procedure for replacing the fuse is as follows:

1. Disconnect the power cord from the electrical outlet.
2. Remove the fuse holder on the back panel by pushing it inward and turning counterclockwise.
3. Remove the fuse from the fuse holder and examine the fuse.
4. Replace blown fuse with another fuse of the same type and rating. Insert the fuse in the fuse holder. Insert the fuse holder into the fuse compartment on the receiver, and secure the fuse holder in place by turning it clockwise.

4

Troubleshooting

4-1 Troubleshooting Guide
4-5 Error Messages

Troubleshooting Guide

If you know a problem exists or if you suspect a problem with the Model 9660 Receiver, refer to the troubleshooting guide tables 4-1 and 4-2 for a list of the common errors and common error messages that can occur with the product.

If you have questions about this product, telephone one of our Technical Service Centers or your local sales subsidiary. The Customer Support section in **Appendix B** contains a list of telephone numbers.

When an alarm condition exists, the Model 9660 Receiver will flash an alarm message on the lower line of the display. If more than one alarm condition exists, the Model 9660 Receiver will display the alarm having the highest priority or the alarm condition that might cause secondary alarms. In addition to the alarm message, a two-digit hexadecimal number is displayed that indicates which alarms are active. This hexadecimal number indicates the sum of all active alarms (the eight hexadecimal errors are treated as one alarm condition). The hexadecimal number appears before the alarm message as indicated in table 4-2.

Table 4-1. Common Problems and How to Solve Them

Problem	Causes	Solution
The Model 9660 Receiver's front panel LCD display is not lit.	a. No power to unit	a. Verify power to AC outlet
	b. Blown fuse	b. Replace fuse
	c. Equipment fault	c. Telephone a Technical Service Center
Backlight is on but no characters are displayed on LCD.	LCD contrast not properly adjusted	Press and hold Options key for two seconds. Press the up key until the display is visible. Adjust display using the up and down arrow keys for desired intensity
The video receiver's front panel LCD does not show a signal level between -25 and -65 dBm.	a. Improper incoming signal	a. Recheck and correct incoming signal connections. Check antenna alignment
	b. Improper tuning of receiver	b. Recheck and correct tuning of the Model 9660 Receiver
	c. IF loop not connected	c. Connect IF loop on back of Model 9660 Receiver
	d. LNB not powered	d. Check that LNB power is on using the OPT Power submenu. Check that Power Divider power passing port is wired correctly
	e. Defective LNB	e. Replace LNB
	f. Equipment fault	f. Telephone a Technical Service Center

Table 4-1. Common Problems and How to Solve Them (continued)

Audio and video quality is poor.	a. Antenna not aimed properly	a. Aim antenna for peak signal reception according to manufacturers' antenna pointing instructions
	b. Line-of-sight impaired between antenna and satellite	b. Either relocate antenna or remove obstacle(s) from line-of-sight
	c. Cable(s) between receiver and LNB faulty or not connected	c. Connect (replace if necessary) cable(s) between receiver and LNB
	d. Incorrect polarization for channel selected	d. Use the OPT Polarization submenu to reverse polarization
	e. Polarization adjustment required	e. Adjust both vertical and horizontal polarization. Rotation of antenna feed may be required
	f. Terrestrial interference	f. If fine tuning of audio and video does not correct condition, contact a Technical Service Center. A TI filter may be required
	g. Defective LNB	g. Replace LNB
Video is OK. Audio is missing or quality is poor.	Incorrect frequency selected for subcarrier	Use the AUDIO Frequency 1 or 2 submenus to select the correct frequency for the subcarrier
Only odd or only even channels have good reception. The other channels (odd or even) have poor reception.	a. One good cable, one bad cable	a. Replace bad cable
	b. One good LNB, one bad LNB	b. Replace bad LNB
There is no video (black screen), no audio, or noise. VC SYNC LED is on. AUTH LED is off.	a. Module is tuned to an encoded signal that is not authorized.	a. Leave receiver tuned to channel and telephone programmer. Have programmer send authorization over satellite
	b. Module is defective	b. Try known good module in the receiver. Refer to **How to Return Products** section in Appendix B

Table 4-1. Common Problems and How to Solve Them (continued)

Video is scrambled at video output. VC SYNC LED is off.	a. Scrambled signal is not VideoCipher RS encoded	a. If reception is required, use external descrambler of appropriate type
	b. Module is not installed or is installed incorrectly	b. Refer to **Installing the VideoCipher RS Commercial Module** section of chapter 2
	c. Video level is incorrectly set	c. Refer to **Setting the Video Level** section of chapter 3
	d. Module is defective	d. Try known good module in the receiver. Refer to **How to Return Products** section in Appendix B
Video and audio contain noise and sparklies. VC SYNC LED blinks on and off. Authorization comes and goes.	a. Receiving marginal signal	a. Check antenna alignment, LNB, and cables
	b. Terrestrial interference	b. Verify if interference is present by observing the IF MON output with a Spectrum Analyzer
Video is scrambled with sparklies at video output. VC SYNC LED is off.	a. Signal is too weak for receiver to recognize it as a VideoCipher RS Commercial Module signal	a. Check antenna alignment, LNB, and cables
	b. Terrestrial interference	b. Verify if interference is present by observing the IF MON output with a Spectrum Analyzer
Video Receiver has video but no audio, or audio but no video. VC SYNC LED is on.	a. Incorrect connections to receiver	a. Check cables and connections
	b. Module is defective	b. Try known good module in receiver. Refer to **How to Return Products** section in Appendix B
Store LED is not illuminated	Front panel settings have not been stored	Press the **STORE** key

Error Messages

Contact Technical Services for further assistance when any of these messages appear.

Table 4-2. Error Messages and How to Solve Them

Hex	Message	Description
- -	MCU RAM ERROR	MCU internal RAM failed self test.
- -	MCU ROM ERROR	MCU internal ROM failed self test.
- -	MCU TIMER BAD	MCU internal timer failed self test.
- -	MCU NVM ERROR	MCU external nonvolatile memory failed self test.
- -	AUX RAM ERROR	AUX MCU internal RAM failed self test.
- -	AUX ROM ERROR	AUX MCU internal ROM failed self test.
- -	AUX TIMER BAD	AUX MCU internal timer failed self test.
--	OVR TEMP	Internal temperature exceeds 75°C. Reduce ambient temperature surrounding unit.
80	IPC FAILURE	Internal inter-processor communications have failed.
40	TED MISSING	Threshold Extension Demodulator (TED). Filter is not installed or is not functional. Ensure that a TED filter is installed in slot A. See figure A-1 for slot location.
20	TUNER UNLOCK	Tuner local oscillator is not locked. Tune the receiver to another channel or frequency and then back to the original settings.
10	AUD1 MISSING	Primary audio demodulator (Audio 1) is not installed or is not functional. Ensure that an audio demodulator is installed in slot A5 (see figure A-1 for A5 location).
08	BPF MISSING	IF bandpass filter (BPF) is not installed. Ensure that an IF BPF is installed in slot A2 (see figure A-1 for A2 location).
04	LPF MISSING	Baseband video lowpass filter (LPF) is not installed. Ensure that an LPF is installed in slot A3 (see figure A-1 for A3 location).

Table 4-2. Error Messages and How to Solve Them (continued)

Hex	Message	Description
02	AUDIO1 UNLOCK	Audio 1 demodulator local oscillator is not locked. Tune the audio 1 demodulator to another frequency and then back to the original frequency.
01	AUDIO2 UNLOCK	Optional audio 2 demodulator local oscillator is not locked. Tune the audio 2 demodulator to another frequency and then back to the original frequency.

Appendix A

A-1 Installing the Optional Bandpass Filter or Audio 2 Card
A-3 Remote Control Operation of the Model 9660 Receiver Using an SMC Bus
A-5 Menu Quick Reference Guide
A-11 Technical Specifications
A-17 Transponder Frequencies

Installing the Optional Bandpass Filter or Audio 2 Card

The Model 9660 Receiver can be upgraded to install a second IF bandpass filter (BPF) and audio 2 card. Refer to figure A-1 and complete the following steps to install either card. Figure A-1 also identifies the lowpass filter (LPF) and Threshold Extension Demodulator (TED) locations.


WARNING!
AVOID ELECTRIC SHOCK! DISCONNECT THE POWER CORD ON THIS PRODUCT BEFORE YOU REMOVE THE FUSE.


AVERTISSEMENT!
ÉVITEZ LES RISQUES D'ÉLECTROCUTION! DÉBRANCHEZ LE CORDON D'ALIMENTATION DE CE PRODUIT AVANT DE CHANGER LE FUSIBLE.


WARNUNG!
VERMEIDEN SIE STROMSCHLAG! VOR DER ENTFERNUNG DER SICHERUNG DAS ELEKTRISCHE KABEL AUS DER STECKDOSE ZIEHEN.


¡ADVERTENCIA!
¡EVITE LAS DESCARGAS ELECTRICAS! DESCONECTE EL CORDON DE ALIMENTACION DE ESTE PRODUCTO ANTES DE RETIRAR EL FUSIBLE.


Caution:
Avoid damage to this product! Use the proper techniques when handling the electro-sensitive devices in this product.


Attention:
Évitez d'endommager ce produit! Utilisez les techniques adaptées quand vous maniez les circuits sensibles aux faibles charges électriques de ce produit.


Vorsicht:
Vermeiden Sie Beschädigung dieses Produktes! Beim Umgang mit den elektro-sensitiven Vorrichtungen in diesem Produkt die richtigen Techniken benutzen.


Precaución:
¡Evite dañar este producto! Emplee la técnica adecuada al manejar los dispositivos electrosensibles del producto.

1. Remove the four screws on top, three screws on each side, and one screw in back that hold the top cover to the chassis.
2. Remove the top cover.
3. Locate the appropriate slot to install either the optional BPF or the optional audio 2 card (see figure A-l).
4. Install the card by pressing it straight down into the card slot.
5. Replace the top cover onto the unit.
6. Secure the top cover using four screws on top, three screws on each side, and one screw in back.

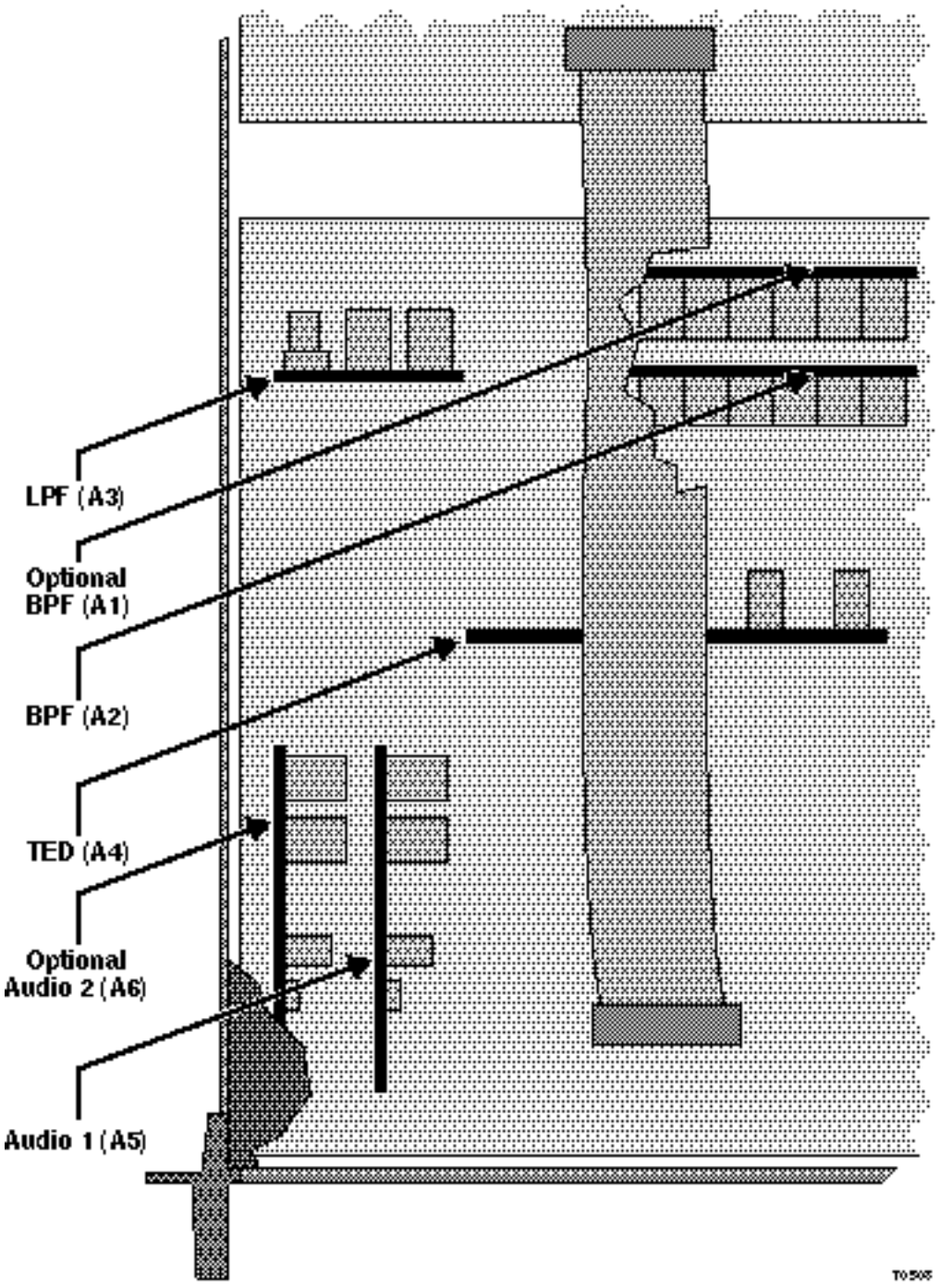


Figure A-1. LPF, BPF, TED, and Optional Audio Card Locations

Remote Control Operation of the Model 9660 Receiver Using an SMC Bus

The Model 9660 Receiver provides a serial Status Monitor and Control (SMC) Bus interface for remote monitoring and control of the unit. The SMC Bus uses an 8-pin DIN type receptacle located on the rear of the unit. In remote operation, the SMC Bus uses two data lines (TTL level RXD and TXD), +5 V, circuit common (GND), and a shield. These signals interface with a Model 6222 RS-232 to TTL converter (part number 467432) which connects to a microcomputer running an appropriate software package such as Headend Manager. The Headend Manager system interconnect is shown in figure A-2. The pin-out arrangement for the SMC receptacle is shown in figure A-3.

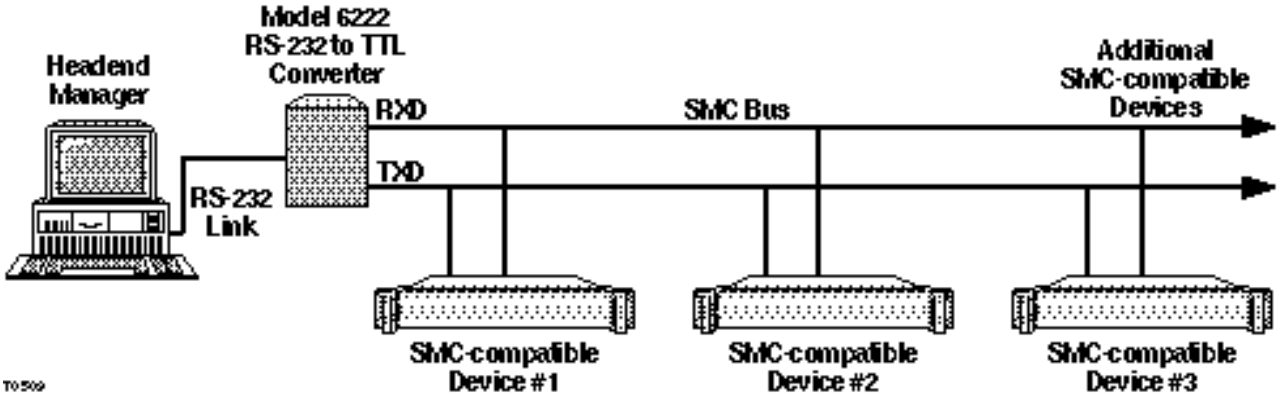


Figure A-2. Headend Manager SMC Control Bus Configuration

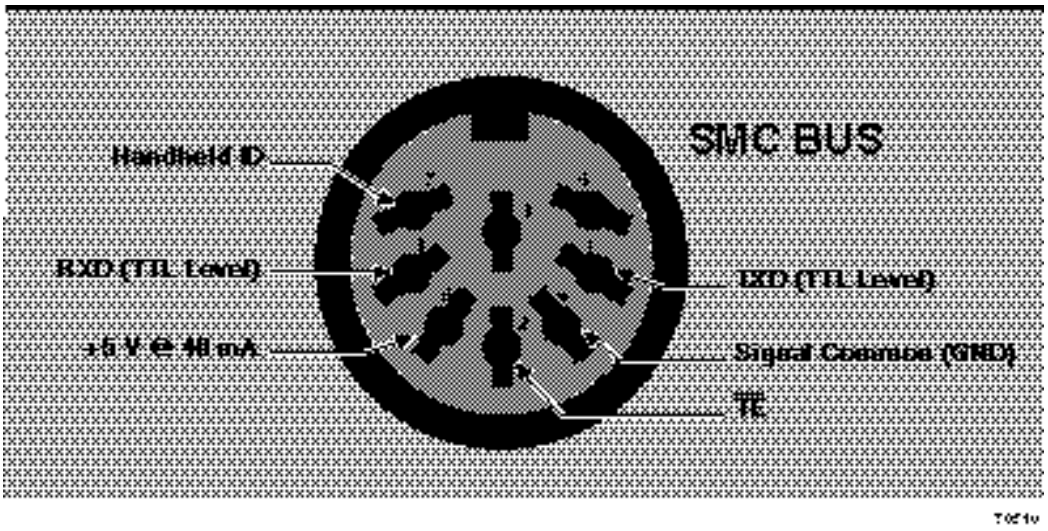


Figure A-3. Pin-Out Arrangement for SMC Receptacle

Menu Quick Reference Guide

This section provides you with quick and easy-to-find menu listings for all of the menu and submenu displays. Refer to chapter 3 of this manual for a detailed description and procedures for using the submenus. Figure A-2 contains the power-up menus along with the receiver main menu. You can select the other submenus using the keys identified at the bottom of figure A-4. The submenu listings are illustrated in figures A-5 through A-8 as identified in figure A-4.

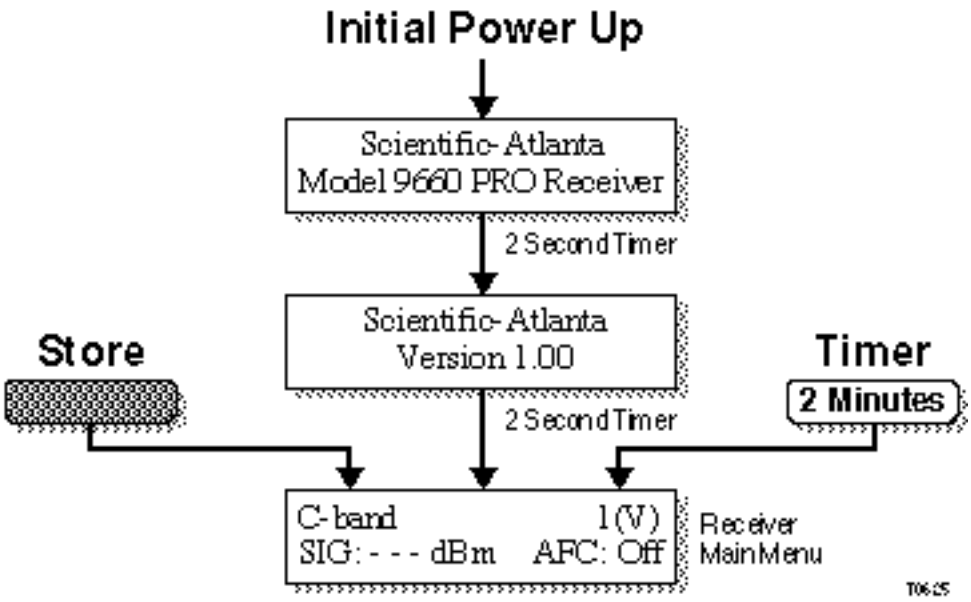


Figure A-4. Receiver Main Menus

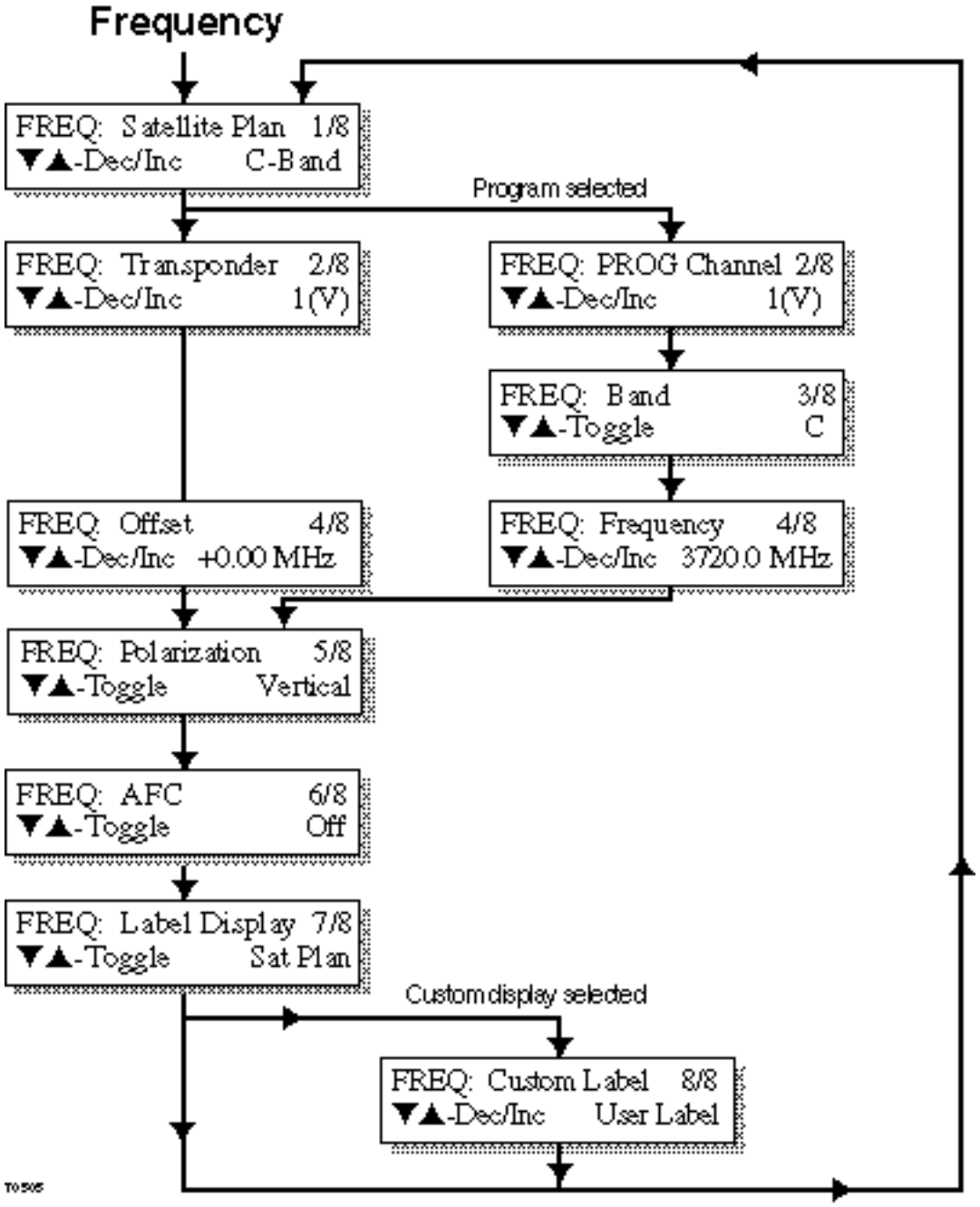


Figure A-5. Frequency Submenus

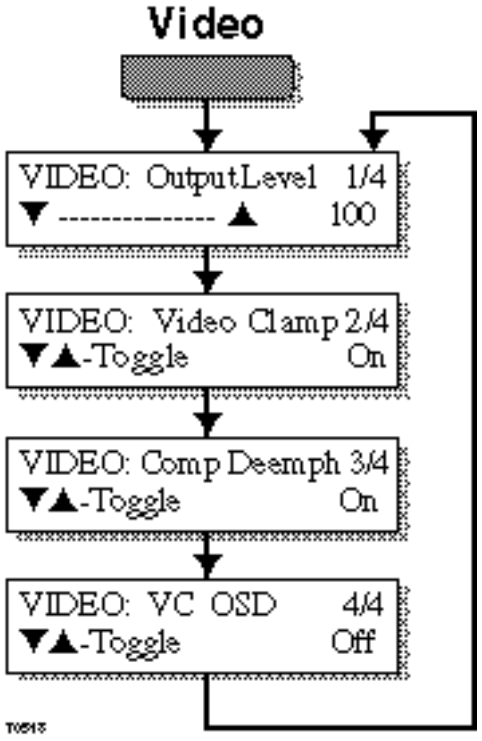


Figure A-6. Video Submenus

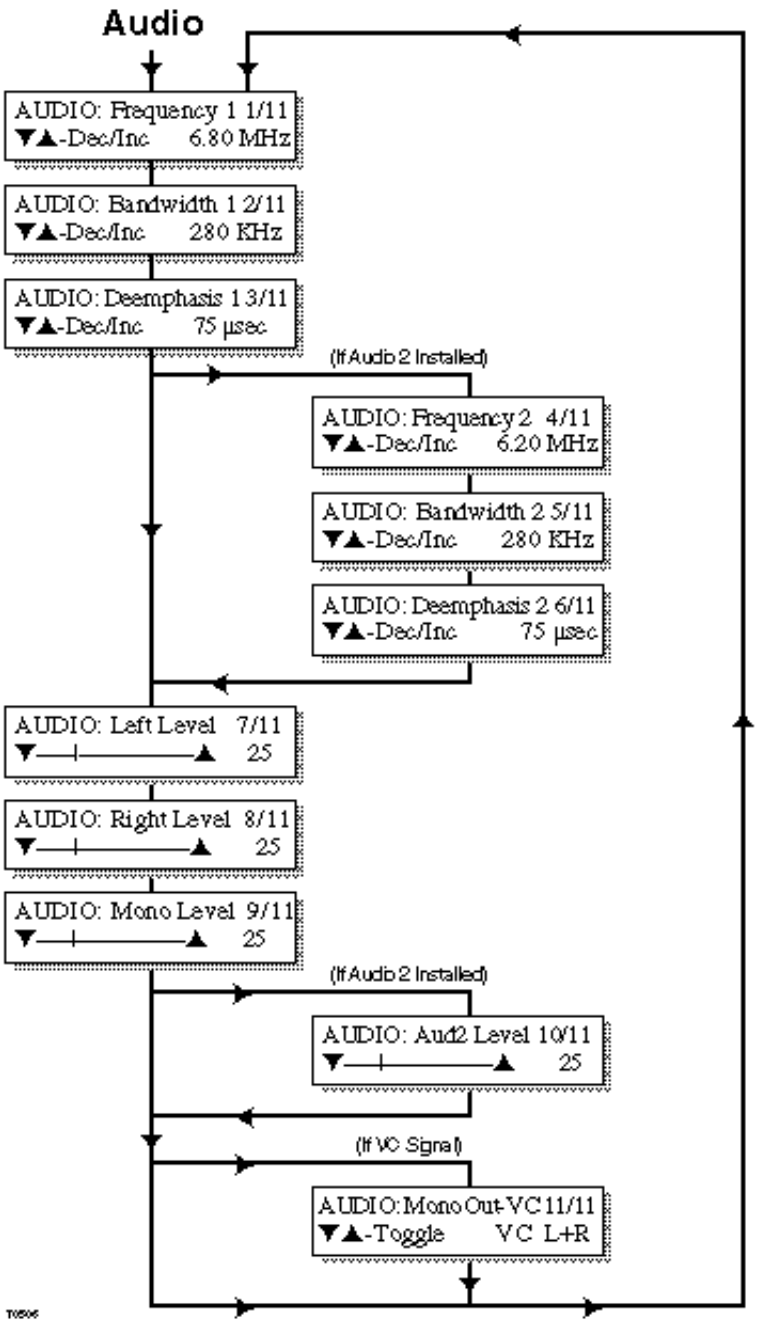


Figure A-7. Audio Submenus

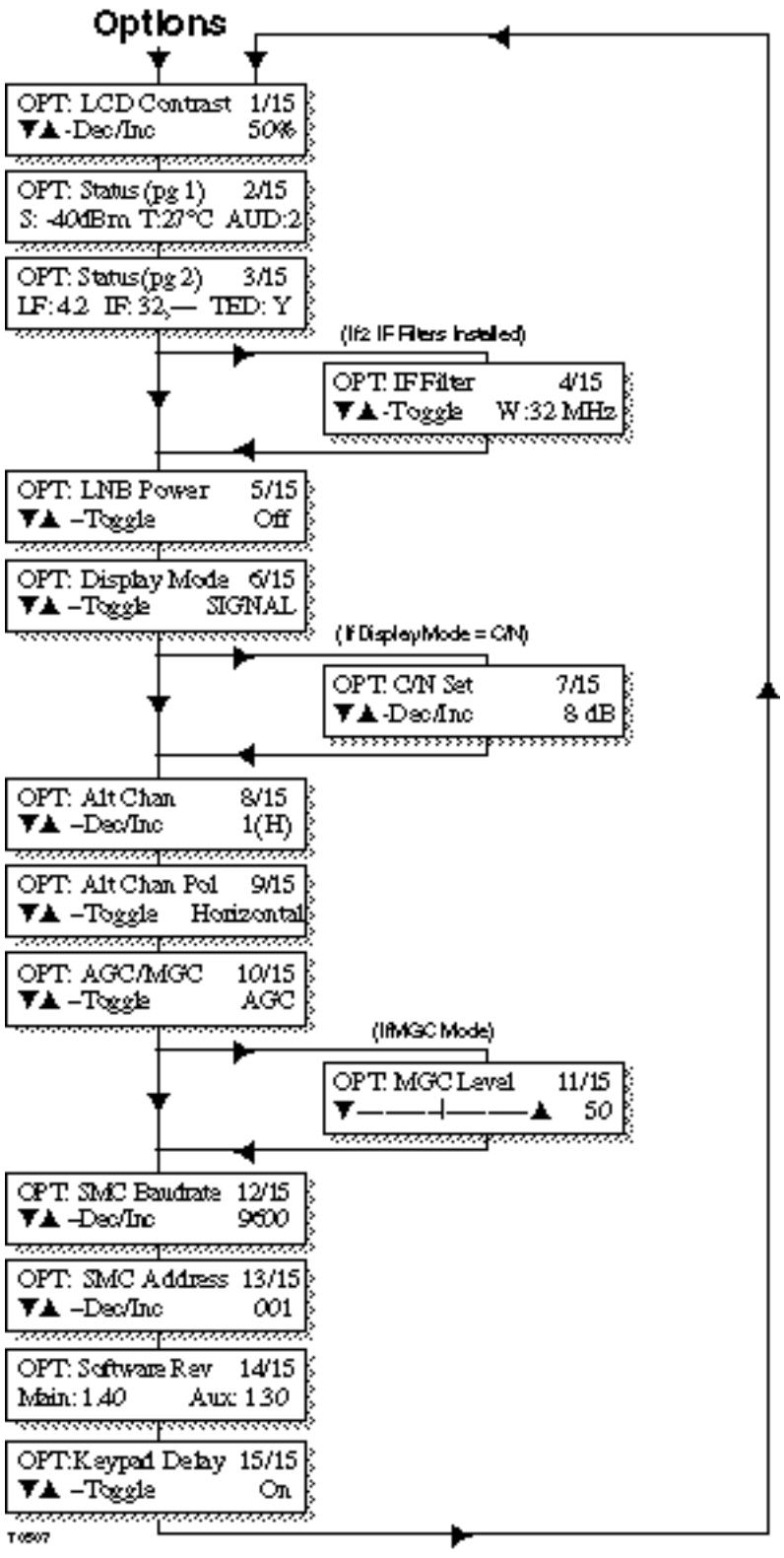


Figure A-8. Options Submenus

Technical Specifications


Caution:
Avoid damage to this product! Connect this product only to the power source that is indicated on the back panel.


Attention:
Évitez d'endommager ce produit! Branchez-le uniquement à la source de courant indiquée sur le panneau arrière.


Vorsicht:
Vermeiden Sie Beschädigung dieses Produktes. Schließen Sie dieses Produkt nur an die auf der Rückseite angegebenen Stromquellen an.


Precaución:
¡Evite dañar este producto! Unicamente conecte este producto a la línea de alimentación con las características indicadas en el tablero posterior.

To ensure your receiver will operate properly, choose a location that provides an acceptable operating environment and allows adequate air circulation around the receiver.

The Model 9660 Receiver has been designed and tested to meet these specifications.

RF

	Model 9660 Receiver	Model 9660 PRO Receiver
Level into RF input	-65 dBm to -25 dBm (per carrier, 12 channels)	-65 dBm to -25 dBm (per carrier, 12 channels)
Frequency range	950 MHz to 1450 MHz, 1000 MHz to 1500 MHz, or 950 MHz to 1750 MHz, depending on the selected frequency plan	950 MHz to 1450 MHz, 1000 MHz to 1500 MHz, or 950 MHz to 1750 MHz, depending on the selected frequency plan
Synthesizer step size	100 kHz	100 kHz

Channel Selections

	Model 9660 Receiver	Model 9660 PRO Receiver
Front panel	Switch-selectable with 12 frequency plans, including standard 24-channel C-band, Ku-band, and 32-channel user-programmable modes	Switch-selectable with 12 frequency plans, including standard 24-channel C-band, Ku-band, and 32-channel user-programmable modes
Rear panel	ALT CHAN select input used to select alternate channel within current frequency plan. Desired channel is set using the OPTIONS Alt Channel submenu	ALT CHAN select input used to select alternate channel within current frequency plan. Desired channel is set using the OPTIONS Alt Channel submenu

Input

	Model 9660 Receiver	Model 9660 PRO Receiver
Input connectors	Type F, female	Type F, female
Input impedance	75 ½	75 ½
Return loss at RF input	>10 dB, -65 dBm to -30 dBm input	>10 dB, -65 dBm to -30 dBm input
	>8 dB, -30 dBm to -25 dBm input	>8 dB, -30 dBm to -25 dBm input
Noise figure at RF input	12 dB max, 950 MHz to 1450 MHz	12 dB max, 950 MHz to 1450 MHz
	14 dB max, 1450 MHz to 1750 MHz	14 dB max, 1450 MHz to 1750 MHz

IF

	Model 9660 Receiver	Model 9660 PRO Receiver
AFC range	± 3 MHz	± 3 MHz
Frequency	70 MHz	70 MHz
Bandwidth	32 MHz, standard	32 MHz, standard
Loop impedance	75 ½	75 ½
AGC dynamic range	40 dB	40 dB

Composite Baseband

	Model 9660 Receiver	Model 9660 PRO Receiver
Deemphasis	525 CCIR Rec. 405-1 (defeatable)	525 CCIR Rec. 405-1 (defeatable)
Format	NTSC	NTSC

Video (bypass mode)

	Model 9660 Receiver	Model 9660 PRO Receiver
		IF bandwidth ³32 MHz
Deemphasis	525/625 line CCIR Rec. 405-1	525/625 line CCIR Rec. 405-1
Output level	1 V p-p, ±10% into 75 ½ (scrambled)	1 V p-p, ±10% into 75 ½ (scrambled)
	1 V p-p adjustable, ±3 dB (unscrambled)	1 V p-p adjustable, ±3 dB (unscrambled)
Frequency response	±0.5 dB, 30 Hz to 3.58 MHz ±0.75 dB, 3.58 MHz to 4.2 MHz	Meets EIA/TIA 250-C video frequency response mask
Polarity	Black to white positive-going	Black to white positive-going

Video (bypass mode), continued

	Model 9660 Receiver	Model 9660 PRO Receiver
Clamping (defeatable)	>30 dB dispersal rejection	>30 dB dispersal rejection
Line-time waveform distortion	<2.0% tilt	<1.0% tilt
Field-time waveform distortion	<2.0% tilt	<2.0% tilt
Differential phase	<3°, 10% to 90% APL	<1.5°, 10% to 90% APL
Differential gain	<3.0%, 10% to 90% APL	<3.0%, 10% to 90% APL

Audio (bypass mode)

	Model 9660 Receiver	Model 9660 PRO Receiver
Audio 1	Tunable 5.0 MHz to 8.5 MHz in 20 kHz steps	Tunable 5.0 MHz to 8.5 MHz in 20 kHz steps
Audio 2 (optional)	Tunable 5.0 MHz to 8.5 MHz in 20 kHz steps	Tunable 5.0 MHz to 8.5 MHz in 20 kHz steps
Frequency response	20 Hz to 15 kHz, 1.0 dB p-p	Meets EIA/TIA 250-C audio frequency response mask
Audio filter bandwidth	Selectable, 150, or 400 kHz	Selectable, 150, or 400 kHz
De-emphasis	Selectable, 75 µs, 50 µs, J17 or none (flat)	Selectable, 75 µs, 50 µs, J17 or none (flat)
Impedance	600 ½, balanced	600 ½, balanced
Harmonic distortion	<1.0%	<0.5%
Output level	+16 dBm (600 ½) VideoCipher RS Commercial Module	+16 dBm (600 ½) VideoCipher RS Commercial Module
	+10 dBm (600 ½) bypass (75 kHz deviation, 280 kHz BW)	+10 dBm (600 ½) bypass (75 kHz deviation, 280 kHz BW)

General

	Model 9660 Receiver	Model 9660 PRO Receiver
LNB power supply (RF input center conductor)	+ 19 V @ 220 mA (max)	+ 19 V @ 220 mA (max)
Power requirements	115 V AC, ±10%, 60 Hz or	115 V AC, ±10%, 60 Hz or
	<45 W (LNB and VideoCipher RS Commercial Module)	<45 W (LNB and VideoCipher RS Commercial Module)
	<35 W (no LNB; with VideoCipher RS Commercial Module)	<35 W (no LNB; with VideoCipher RS Commercial Module)
	<30 W (no LNB or VideoCipher RS Commercial Module)	<30 W (no LNB or VideoCipher RS Commercial Module)
Shipping weight	16 lbs (7.3 kg) without VideoCipher RS Commercial Module	16 lbs (7.3 kg) without VideoCipher RS Commercial Module
	17 lbs (7.7 kg) with VideoCipher RS Commercial Module	17 lbs (7.7 kg) with VideoCipher RS Commercial Module
Dimensions	1.75 in. H x 19.0 in. W x 18.0 in. D (44.45 mm H x 482.6 mm W x 457.2 mm D)	1.75 in. H x 19.0 in. W x 18.0 in. D (44.45 mm H x 482.6 mm W x 457.2 mm D)
Operating temperature	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)
Mounting	19 in. standard rack, brackets or rack slides	19 in. standard rack, brackets or rack slides

Transponder Frequencies

Table A-1. C-band Transponder Frequencies (950 to 1450 LNB)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	V	3720.0	1430.0
2	H	3740.0	1410.0
3	V	3760.0	1390.0
4	H	3780.0	1370.0
5	V	3800.0	1350.0
6	H	3820.0	1330.0
7	V	3840.0	1310.0
8	H	3860.0	1290.0
9	V	3880.0	1270.0
10	H	3900.0	1250.0
11	V	3920.0	1230.0
12	H	3940.0	1210.0
13	V	3960.0	1190.0
14	H	3980.0	1170.0
15	V	4000.0	1150.0
16	H	4020.0	1130.0
17	V	4040.0	1110.0
18	H	4060.0	1090.0
19	V	4080.0	1070.0
20	H	4100.0	1050.0
21	V	4120.0	1030.0
22	H	4140.0	1010.0
23	V	4160.0	990.0
24	H	4180.0	970.0

Table A-2. C-band 2 Transponder Frequencies (1000 to 1500 LNB)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	V	3720.0	1480.0
2	H	3740.0	1460.0
3	V	3760.0	1440.0
4	H	3780.0	1420.0
5	V	3800.0	1400.0
6	H	3820.0	1380.0
7	V	3840.0	1360.0
8	H	3860.0	1340.0
9	V	3880.0	1320.0
10	H	3900.0	1300.0
11	V	3920.0	1280.0
12	H	3940.0	1260.0
13	V	3960.0	1240.0
14	H	3980.0	1220.0
15	V	4000.0	1200.0
16	H	4020.0	1180.0
17	V	4040.0	1160.0
18	H	4060.0	1140.0
19	V	4080.0	1120.0
20	H	4100.0	1100.0
21	V	4120.0	1080.0
22	H	4140.0	1060.0
23	V	4160.0	1040.0
24	H	4180.0	1020.0

Table A-3. Ku-band Transponder Frequencies (Anik C3, E1, E2 Half Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	V	11717.0	967.0
2	V	11743.0	993.0
3	V	11778.0	1028.0
4	V	11804.0	1054.0
5	V	11839.0	1089.0
6	V	11865.0	1115.0
7	V	11900.0	1150.0
8	V	11926.0	1176.0
9	V	11961.0	1211.0
10	V	11987.0	1237.0
11	V	12022.0	1272.0
12	V	12048.0	1298.0
13	V	12083.0	1333.0
14	V	12109.0	1359.0
15	V	12144.0	1394.0
16	V	12170.0	1420.0
17	H	11730.0	980.0
18	H	11756.0	1006.0
19	H	11791.0	1041.0
20	H	11817.0	1067.0
21	H	11852.0	1102.0
22	H	11878.0	1128.0
23	H	11913.0	1163.0
24	H	11939.0	1189.0
25	H	11974.0	1224.0
26	H	12000.0	1250.0
27	H	12035.0	1285.0
28	H	12061.0	1311.0
29	H	12096.0	1346.0
30	H	12122.0	1372.0
31	H	12157.0	1407.0
32	H	12183.0	1433.0

Table A-4. Ku-band Transponder Frequencies (GE K1, K2)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	H	11729.0	979.0
2	V	11758.5	1008.5
3	H	11788.0	1038.0
4	V	11817.5	1067.5
5	H	11847.0	1097.0
6	V	11876.5	1126.5
7	H	11906.0	1156.0
8	V	11935.5	1185.5
9	H	11965.0	1215.0
10	V	11994.5	1244.5
11	H	12024.0	1274.0
12	V	12053.5	1303.5
13	H	12083.0	1333.0
14	V	12112.5	1362.5
15	H	12142.0	1392.0
16	V	12171.5	1421.5

Table A-5. Ku-band Transponder Frequencies (GE K1, K2 Half Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	H	11724.0	974.0
2	V	11738.6	988.6
3	H	11753.2	1003.2
4	V	11767.7	1017.7
5	H	11782.3	1032.3
6	V	11796.9	1046.9
7	H	11811.5	1061.5
8	V	11826.1	1076.1
9	H	11840.6	1090.6
10	V	11855.2	1105.2
11	H	11869.8	1119.8
12	V	11884.4	1134.4
13	H	11899.0	1149.0
14	V	11913.5	1163.5
15	H	11928.1	1178.1
16	V	11942.7	1192.7
17	H	11957.3	1207.3
18	V	11971.9	1221.9
19	H	11986.4	1236.4
20	V	12001.0	1251.0
21	H	12015.6	1265.6
22	V	12030.2	1280.2
23	H	12044.8	1294.8
24	V	12059.3	1309.3
25	H	12073.9	1323.9
26	V	12088.5	1338.5
27	H	12103.1	1353.1
28	V	12117.7	1367.7
29	H	12132.2	1382.2
30	V	12146.8	1396.8
31	H	12161.4	1411.4
32	V	12176.0	1426.0

Table A-6. Ku-band Transponder Frequencies (GSTAR 1, 2, 3, 4 Full Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	H	11730.0	980.0
2	H	11791.0	1041.0
3	H	11852.0	1102.0
4	H	11913.0	1163.0
5	H	11974.0	1224.0
6	H	12035.0	1285.0
7	H	12096.0	1346.0
8	H	12157.0	1407.0
9	V	11744.0	994.0
10	V	11805.0	1055.0
11	V	11866.0	1116.0
12	V	11927.0	1177.0
13	V	11988.0	1238.0
14	V	12049.0	1299.0
15	V	12110.0	1360.0
16	V	12171.0	1421.0

Table A-7. Ku-band Transponder Frequencies (GSTAR 1, 2, 3, 4 Half Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1L	H	11716.0	966.0
1U	H	11744.0	994.0
2L	H	11777.0	1027.0
2U	H	11805.0	1055.0
3L	H	11838.0	1088.0
3U	H	11866.0	1116.0
4L	H	11899.0	1149.0
4U	H	11927.0	1177.0
5L	H	11960.0	1210.0
5U	H	11988.0	1238.0
6L	H	12021.0	1271.0
6U	H	12049.0	1299.0
7L	H	12082.0	1332.0
7U	H	12110.0	1360.0
8L	H	12143.0	1393.0
8U	H	12171.0	1421.0
9L	V	11730.0	980.0
9U	V	11758.0	1008.0
10L	V	11791.0	1041.0
10U	V	11819.0	1069.0
11L	V	11852.0	1102.0
11U	V	11880.0	1130.0
12L	V	11913.0	1163.0
12U	V	11941.0	1191.0
13L	V	11974.0	1224.0
13U	V	12002.0	1252.0
14L	V	12035.0	1285.0
14U	V	12063.0	1313.0
15L	V	12096.0	1346.0
15U	V	12124.0	1374.0
16L	V	12157.0	1407.0
16U	V	12185.0	1435.0

Table A-8. Ku-band Transponder Frequencies (Morelos (Ku) 1 & 2 Full Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	H	11764.0	1014.0
2	H	11888.0	1138.0
3	H	12012.0	1262.0
4	H	12136.0	1386.0

Table A-9. Ku-band Transponder Frequencies (SBS 2, 3, 4, 5 Full Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	H	11725.0	975.0
2	H	11774.0	1024.0
3	H	11823.0	1073.0
4	H	11872.0	1122.0
5	H	11921.0	1171.0
6	H	11970.0	1220.0
7	H	12019.0	1269.0
8	H	12068.0	1318.0
9	H	12117.0	1367.0
10	H	12166.0	1416.0

Table A-10. Ku-band Transponder Frequencies (SBS 2, 3, 4, 5 Half Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1L	H	11713.0	963.0
1U	H	11737.0	987.0
2L	H	11762.0	1012.0
2U	H	11786.0	1036.0
3L	H	11811.0	1061.0
3U	H	11835.0	1085.0
4L	H	11860.0	1110.0
4U	H	11884.0	1134.0
5L	H	11909.0	1159.0
5U	H	11933.0	1183.0
6L	H	11958.0	1208.0
6U	H	11982.0	1232.0
7L	H	12007.0	1257.0
7U	H	12031.0	1281.0
8L	H	12056.0	1306.0
8U	H	12080.0	1330.0
9L	H	12105.0	1355.0
9U	H	12129.0	1379.0
10L	H	12154.0	1404.0
10U	H	12178.0	1428.0

Table A-11. Ku-band Transponder Frequencies (SBS 6 Full Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
1	H	11725.0	975.0
2	V	11749.5	999.5
3	H	11774.0	1024.0
4	V	11798.5	1048.5
5	H	11823.0	1073.0
6	V	11847.5	1097.5
7	H	11872.0	1122.0
8	V	11896.5	1146.5
9	H	11921.0	1171.0
10	V	11945.5	1195.5
11	H	11970.0	1220.0
12	V	11994.5	1244.5
13	H	12019.0	1269.0
14	V	12043.5	1293.5
15	H	12068.0	1318.0
16	V	12092.5	1342.5
17	H	12117.0	1367.0
18	V	12141.5	1391.5
19	H	12166.0	1416.0

Table A-12. Ku-band Transponder Frequencies (SpaceNet 1, 2, 3, 4; ASC 1 Full Transponder)

Channel	Pol	Downlink Freq(MHz)	IF (MHz)
19	H	11740.0	990.0
20	H	11820.0	1070.0
21	H	11900.0	1150.0
22	H	11980.0	1230.0
23	H	12060.0	1310.0
24	H	12140.0	1390.0

Appendix B

B-1 Customer Support
B-2 Suivi des Clients
B-3 Kundendienst
B-4 Apoyo téchnico al consumidor
B-5 Apoyo al cliente
B-6 How to Return Products
B-8 VideoCipher RS Commercial Module Return Guidelines
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Customer Support

List of telephone numbers

If you have questions about this product, telephone one of the following numbers.

The Americas		
United States	Scientific-Atlanta Customer and Technical Service Centers, Atlanta, Georgia	• From within North America **1-800-722-2009 (toll-free)** • From outside North America **+1-404-903-5400 (direct)**
Canada	Burnaby, British Columbia	• **604-420-5322**
Central America, South America, the Caribbean	Miami, Florida USA	**305-592-3948**
Mexico	Colonia Juarez	**52-5-207-1575**
United Kingdom and Europe		
United Kingdom	Kings Langley	• **44-9123-266-133** • **44-9123-271-420** (Technical Service Centre for Europe)
Spain	Madrid	**34-1-415-6809**
Australia		
Australia	Frenchs Forrest	**61-2-452-3388**
Asia-Pacific		
Japan	Tokyo	**81-44-952-1471**
People's Republic of China	Shanghai	**86-21-475-0770**
Singapore	Singapore	**65-733-9805**
Hong Kong	Central, Hong Kong	**852-522-5059**

Suivi des Clients

Liste des numéros de téléphone

Si vous avez des questions à poser sur ce produit, appelez l'un des numéros suivants.

Amérique, Nord et Sud		
Etats-Unis	Clients de Scientific-Atlanta et Centres de Services Techniques, Atlanta, Georgie	• A partir de l'Amérique du Nord **1-800-722-2009 (appel gratuit)** • Depuis un pays extérieur à l'Amérique du nord **+1-404-903-5400 (direct)**
Canada	Burnaby, Colombie Britannique	**604-420-5322**
Amérique centrale, Amérique du sud, Caraibes	Miami, Floride, USA	**305-592-3948**
Mexique	Colonia, Juarez	**52-5-207-1575**
Royaume-Uni et Europe		
Royaume-Uni	Kings Langley	• **44-9123-266-133** • **44-9123-271-420** (Centre de Services Techniques pour l'Europe)
Espagne	Madrid	**34-1-415-6809**
Australie		
Australie	Frenchs Forrest	**61-2-452-3388**
Asie-Pacifique		
Japon	Tokyo	**81-44-952-1471**
République Populaire de Chine	Shanghai	**86-21-475-0770**
Singapour	Singapour	**65-733-9805**
Hong-Kong	Central, Hong-Kong	**852-532-8373**

Kundendienst

Liste von Telefonnummern

Falls Sie Fragen zu diesem Produkt haben, rufen Sie eine der folgenden Telefonnummern an.

Die Amerikas		
Vereinigte Staaten	Scientific Atlanta Customer and Technical Service Centers, Atlanta, Georgia	• Innerhalb von Nordamerika **1-800-732-2009** (gebührenfrei) • Außerhalb von Nordamerika **+1-404-903-5400** (direkt)
Kanada	Burnaby, British Columbia	**604-420-5322**
Zentralamerika, Südamerika, Karibik	Miami, Florida, USA	**305-592-3948**
Mexiko	Colonia Juarez	**52-5-207-1575**
Großbritannien und Europa		
Großbritannien	Kings Langley	• **44-9123-266-133** • **44-9123-271-420** (Technisches Wartungszentrum für Europa)
Spanien	Madrid	**34-1-415-6809**
Australien		
Australien	Frenchs Forrest	**61-2-452-3388**
Asien - Pazifik		
Japan	Tokio	**81-44-952-1471**
Volksrepublik China	Shanghai	**86-21-475-0770**
Singapur	Singapur	**65-733-9805**
Hong Kong	Zentral Hong Kong	**852-522-5059**

Apoyo técnico al consumidor

Lista de números telefónicos

Si tiene alguna pregunta sobre este producto, sírvase llamar a uno de los siguientes números.

Las Américas		
Estados Unidos	Clientes científicos de Atlanta y Centros de Servicio Técnico, Atlanta, Georgia	• Dentro de Norteamérica **1-800-722-2009 (libre de cargo)** • Fuera de Norteamérica **+1-404-903-5400 (directo)**
Canadá	Burnaby, British Columbia	**604-420-5322**
Centroamérica, Sudamérica y el Caribe	Miami, Florida, USA	**305-592-3948**
México	Colonia Juárez	**52-5-207-1575**
Reino Unido y Europa		
Reino Unido	Kings Langley	• **44-9123-266-133** • **44-9123-271-420** (Centro de Servicio Técnico para Europa)
España	Madrid	**34-1-415-6809**
Australia		
Australia	Frenchs Forrest	**61-2-452-3388**
Asia-Pacífico		
Japón	Tokio	**81-44-952-1471**
República Popular de China	Shanghai	**86-21-475-0770**
Singapur	Singapur	**65-733-9805**
Hong Kong	Hong Kong, Central	**852-522-5059**

Apoyo al cliente

Lista de números telefónicos

Si tiene preguntas acerca de este producto, llame a uno de los siguientes números telefónicos.

En las Américas		
Estados Unidos	Scientific-Atlanta Customer and Technical Service Centers, Atlanta, Georgia	• Desde Norte América **1-800-722-2009 (gratuito)** • Desde fuera de Norte América **+1-404-903-5400 (directo)**
Canadá	Burnaby, British Columbia	• **604-420-5322**
América Central, América del Sur, y el Caribe	Miami, Florida, EE. UU.	**305-592-3948**
México	Colonia Juárez	**52-5-207-1575**
Reino Unido y Europa		
Reino Unido	Kings Langley	• **44-9123-266-133** • **44-9123-271-420** (Centro de servicio técnico para Europa)
España	Madrid	**34-1-415-6809**
Australia		
Australia	Frenchs Forrest	**61-2-452-3388**
Asia-Pacífico		
Japón	Tokyo	**81-44-952-1471**
República Popular de China	Shanghai	**86-21-475-0770**
Singapur	Singapur	**65-733-9805**
Hong Kong	Central, Hong Kong	**852-522-5059**

How to Return Products

Procedure

To return any Scientific-Atlanta product for repair or replacement, follow the steps in the table below. Products **must** have an RMA number to receive credit.

<table>
<tr><th>Step</th><th>Action</th></tr>
<tr><td>1</td><td>Telephone or fax Scientific-Atlanta and request a return material authorization (RMA) number.
<table>
<tr><th>From within the US</th><th>From outside the US</th></tr>
<tr><td>• Tel: 1-800-722-2009
• Fax: 404-903-5888</td><td>• To the United States
Tel: +1-404-903-5300
Fax: +1-404-903-5888

• To the United Kingdom
Tel: +44-923-271-420</td></tr>
</table></td></tr>
<tr><td>2</td><td>Tag or identify the defective product and write a detailed description of the circumstances.

Include the following information on the tag.

• RMA number
• Sales order
• Purchase order (if available)
• Date the product was received</td></tr>
<tr><td>3</td><td>Pack the product in its original container and protective packing material.

Note: If the original container and packing material are no longer available, pack the product in a sturdy, corrugated box and cushion it with packing material.</td></tr>
</table>

Continued on next page

Procedure (continued)

Step	Action
4	Write the following information on the **outside** of the container. • Your name • Complete address • Telephone number • RMA number • Problem description **Note:** Absence of the RMA number may delay processing your product for repair. Include the RMA number in all correspondence.
5	Ship the product, prepaid and insured, via United Parcel Service (UPS), your postal service, or other freight carrier to the following address: Scientific-Atlanta, Inc. RMA Number _____ Product Services 1775 MacLeod Drive Lawrenceville, Georgia 30245 USA **Note:** Scientific-Atlanta, Inc. does not accept freight collect. Be sure to prepay all shipments.

VideoCipher RS Commercial Module Return Guidelines

Introduction	The operator is responsible for determining if the unit is non-operative. Obtain technical support from the General Instrument VideoCipher technical support group, or telephone one of our Technical Service Centers or your local sales subsidiary. The Customer Support section in **Appendix B** contains a list of telephone numbers.
Notes	Spare VideoCipher RS Commercial Modules should be purchased from General Instrument Inc. All Model 9660 Receivers, with or without VideoCipher RS Commercial Modules, should be returned to Scientific-Atlanta according to guidelines in the **How to Return Products** section of this appendix.
Return Material Authorization	A Return Material Authorization must be issued if the VideoCipher RS Commercial Module is found to be defective. Modules received without a Return Material Authorization may be delayed from repair or exchange until a Return Material Authorization is properly assigned.
Damaged case seals	If the VideoCipher RS Commercial Module case seals are broken, the warranty will be considered void. The module will be examined for any unauthorized modifications. If case seals are broken or tampering is noted, the contact named on the Return Material Authorization will be notified of current replacement and/or repair charges by General Instrument Inc.
Guideline	All returned modules must be shipped, freight prepaid.
Electrostatic discharge (ESD) bags	Modules must be returned in electrostatic discharge (ESD) bags whenever possible. Operators are urged to save ESD bags shipped with each video receiver.
Guideline	Affix a short description of the defect to the module.
Charge for non-defective products	The operator may be assessed a charge for products returned that are not found defective.
Pricing	Pricing for repair services is based upon pricing at the time of receipt and is subject to change without notice.

Your Comments, Please

Model 9660 and Model 9660 Professional Receivers *69T363B*

Introduction

Please take a few minutes to fill out and mail this questionaire. Your comments will help us improve our publications.

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FCC Compliance

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

This equipment generates, uses, and can radiate radio frequency energy and, if the user does not install and use this equipment according to the instruction manual, may cause harmful interference to radio communications.

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

 **Caution:**
Any changes or modification to this equipment not expressly approved by Scientific-Atlanta could void the user's authority to operate this equipment.

United States: 4386 Park Drive, Box 105027, Atlanta, GA 30348;
Tel: 404-903-5000; TWX: 810-799-4912; Telex: 0542898
Europe: Home Park Estate, Kings Langley, Herts WD4 8LZ, England;
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Publication No. 69T363B Part No. 499505 May 1995