iDirect 7000 series™ Satellite Router

Installation and Safety Manual

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1 About This Manual

Thank you for purchasing the iDirect 7000 series™ Satellite Router!

This manual provides the safety and compliance information and hardware installation procedures for the 7000 series.

1.1 Intended Audience

This manual is intended for use by the VSAT (Very Small Aperture Terminal) equipment installer, System Engineer, and Network Operator responsible for maintaining the iDirect Network. Only qualified service personnel should install and operate the 7000 series. Familiarity with cabling and wiring practices is beneficial.

In this document, the 7000 series is often referred to as an IDU (Indoor Unit) while radios and LNBs are collectively referred to as ODUs (Outdoor Units).

1.2 Document Conventions

This manual was crafted with the reader in mind. In that regard, you may notice Note icons (illustrated below) which provide helpful tips and reminders that assist you in successful and safe operation of iDirect system hardware. You can also look for the Note icon to provide suggestions or references to material not contained in this manual.

NOTE Reader take note!

1.2.1 Safety Definitions

Table 1 below illustrates and defines the symbols that are used throughout this manual to alert the user to possible danger or when to use caution.

Table 1: Safety Definitions

Symbol	Warning Type	Definition
	WARNING/ CAUTION	When you see this alert symbol and the WARNING or CAUTION heading, strictly follow the warning instructions to avoid personal injury, equipment damage or loss of data.
	DANGER	Electric shock hazard: When you see this symbol and the DANGER heading, strictly follow the warning instructions to avoid electric shock injury.

1.2.2 Documentation Feedback

iDirect has made every effort to ensure the correctness and completeness of this manual. Please send your comments and/or feedback to:

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2 iDirect 7000 series™ Satellite Router Overview

The iDirect 7000 series™ Satellite Router is the highest performance remote networking solution available today, offering tremendous flexibility, security, and network capacity. Developed to meet the most demanding user requirements, 7000 series satellite routers are ideal for military, network carriers, or high-end enterprise customers requiring reliable, fast, secure and encrypted data communications.

The 7000 series delivers all the benefits of broadband IP networking while providing the highest TCP/IP throughput in the industry, 18 Mbps downstream and 4.2 Mbps upstream, and iDirect's Quality of Service (QoS).

Built in flexibility

- PCI expansion slot
- Mesh option
- SCPC option
- 8 Port switch

Secure communications

- FIPS 140 -2 Certified (Pending)
- Embedded 3DES/AES encryption
- Direct interconnection for redundant failover

Bandwidth optimization

- Reservation MF-TDMA return channel that is four times more bandwidth efficient than Slotted Aloha
- Turbo Codes on the forward and return channel providing a 1.5 dB power advantage over RSV codes
- 1.2 Spacing – delivers 14% savings in bandwidth
- Proprietary IP encapsulation that is 15% more efficient than MPE (Multi-Protocol Encapsulation)
- Networks can be configured in 1kbps increments to get exactly the bandwidth required

2.1 iDirect 7000 series™ Satellite Router Model Differences

The following table itemizes the differences between the various 7000 series models.

Table 2: Differences between the iDirect 7000 series™ Satellite Router Models

Feature	7300	7350
Encryption (Standard)	Not Available	3DES/AES
Encryption (Optional)	Not Available	FIPS 140-2 (Pending)
Processor Type	IPX 420	IPX 425

2.2 iDirect 7000 series™ Satellite Router Physical Description

The 7000 series is 17.5” wide x 16” deep and 1.72” high (44.5cm x 39.5cm x 4.5cm). It weighs 11.2 lbs (5.08 Kgs).

The front panel of the 7000 series contains five LEDs: RX, TX, NET, STATUS, and POWER. The definitions of these LED indicators are discussed in detail in Section 5.6.1.

Its rear panel contains three LEDs: INPUT POWER, BUC POWER AND LNB POWER. The definitions of these LED indicators are discussed in detail in Section 0.

There are nine interface connectors on the rear of the chassis, including an integrated 8 port switch for use by local PCs. These are described in Section 5.3.

Figure 1: Front View of the iDirect 7000 series™ Satellite Router

3 Safety Measures

Follow the safety guidelines in this manual carefully. They will help to protect the iDirect 7000 series™ Satellite Router from potential damage and help ensure your own personal safety. These safety measures have been translated into multiple languages and are listed in Appendix B. Keep this safety information where you can refer to it if necessary.

You should read this entire manual before you attempt to install or use your 7000 series Satellite Router.

- **Heed Warning Labels** – Adhere to all warnings listed on the product's warning labels and in the operating instructions.
- **Follow Instructions** – Follow all operating and usage instructions carefully.

NOTE **See Section 1.2.1 for a description of the Warning icons that are used in this manual.**

3.1 Passwords

CAUTION

Change your password as soon as possible. iDirect strongly recommends changing your passwords at time of installation.

3.2 Installation Safety Guidelines

During installation, observe the following safety guidelines.

WARNING

Ventilation: Slots and openings on the chassis are provided for ventilation and to ensure reliable operation of the product. To protect the chassis from overheating, these openings must ***NOT*** be blocked or covered at all times. This product should not be placed in a built-in installation, such as a "bookcase" or enclosed rack, unless proper ventilation is provided or the manufacturer's instructions have been adhered to.

DANGER

AC Polarization: This product is equipped with a cord plug that will fit into the power outlet only one way. Do not modify the plug by defeating this feature. If the plug does not fit, contact your electrician to replace your outlet or get the proper power cord. To prevent electric shock or impair performance, do not use this plug with an extension cord or outlet unless you can fully insert the blades without blade exposure.

DANGER

Power Sources: Operate this product only from the type of power source indicated (100-240VAC/50/60Hz). If you are not sure of the type of power supply at your site, consult your teleport operator or local power company.

DANGER

Power Cord Protection: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them; pay particular attention to cords at plugs, convenience receptacles, and at the point where they exit the product.

DANGER

Overloading: Do not overload wall outlets, extension cords, or integral convenience receptacles as this can result in a risk of fire or electrical shock

DANGER

Electrical Safety: For electrical safety, power line operated equipment accessories connected to this unit should bear the UL, NRTL, CE listing mark and should not be modified so as to defeat the safety features. This will help avoid any potential hazard from electrical shock or fire. If in doubt, contact qualified service personnel.

DANGER

Water and Moisture: To reduce the risk of fire or electrical shock, do not expose this product to rain or moisture.

DANGER

Lightning: For added protection for this product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna and cable system. Doing this will prevent damage to the product from lightning and power-line surges.

WARNING

Heat: The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

WARNING

Accessories: To avoid personal injury or damage to the iDirect 7000 series™ Satellite Router, do not place the chassis on any unstable rack, cart, stand, table, or bracket. Any mounting of the product should follow the manufacturer's instructions.

WARNING

Attachments: Do not use attachments unless recommended by the manufacturer as they may cause hazards or damage to equipment.

WARNING

Restricted Access: This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key or other means of security, and is controlled by the authority responsible for the location.

DANGER

Grounding: Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

3.3 Operational and Maintenance Safety

As you use your iDirect 7000 series™ Satellite Router, please observe the following safety guidelines.

WARNING

Cables: Never use any other RF cable than what is supplied or recommended by iDirect.

WARNING

Ventilation: Slots and openings on the chassis are provided for ventilation and to ensure reliable operation of the product. To protect it from overheating, these openings must not be blocked or covered. If there is any dust build up on the vent openings of the 7000 series chassis, vacuuming is recommended to remove these particulate to ensure proper airflow.

DANGER

Cleaning: Do not use liquid cleaners or aerosol cleaners. Use a cloth for wiping up dust or use a vacuum cleaner to remove dust.

WARNING

Object and Liquid Entry: Never push objects of any kind into the 7000 series through any openings as they may “short out” parts that could result in a fire or electric shock. Never spill liquid of any kind on the 7000 series.

3.4 Safety Guidelines to Observe During Servicing

When your iDirect 7000 series™ Satellite Router requires service, please observe the following safety guidelines.

WARNING

Servicing: Do not attempt to service the 7000 series internal assemblies yourself as opening and removing covers may expose you to dangerous voltages or other hazards. There are no user serviceable parts inside. Opening the units will void the warranty. Refer all servicing to qualified service personnel.

WARNING

Conditions Requiring Service: Unplug the 7000 series from the AC Power outlet and refer servicing to qualified service personnel under the following conditions:

a. When the power supply cord or plug is damaged.

b. If liquid has been spilled on, or objects have fallen into, the 7000 series or it has been exposed to water.

c. If the 7000 series does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. Other adjustments may result in damage and will often require extensive work by a qualified technician to restore the 7000 series to its normal operation.

d. If the 7000 series has been dropped or if the chassis has been damaged.

e. If the 7000 series exhibits a distinct change in performance.

4 Pre-Installation Safety Measures and Procedures

The safety precautions and steps that you must follow to install the iDirect 7000 series™ Satellite Router are presented in the sections below.

WARNING **It is extremely important to thoroughly read all safety precautions before proceeding with any pre-installation or installation procedures.**

4.1 Observing Safety Precautions

When installing the IDU, observe all caution and warning statements. The following guidelines will help ensure your safety and protect the equipment. However, these guidelines may not cover all of the potentially hazardous situations you may encounter during installation.

4.1.1 General Safety Recommendations

- The installation of the IDU must comply with the national and local electrical codes:
  - In the United States, the National Fire Protection Association (NFPA) 70, United States National Electric Code.
  - In Canada, the Canadian Electric Code, Part 1, CC22.1
  - In other countries, the International Electromechanical Commission (IEC) Recommendation 364, part 1 through part 7.
- Review the safety instructions in the section, “Safety Measures” and the safety notes and warnings listed the Appendix, “Regulatory Compliance and Safety Information,” before installing, configuring, or performing maintenance on the system.
- Always connect or disconnect ALL power connections before installing or removing a chassis.
- Keep the staging area clear and free of dust during and after installation.
- Keep tools, IDU components, and shipping boxes away from walk area.
- The IDU operates safely when it is used in accordance with its marked electrical ratings and product usage instructions.

WARNING	**Only Trained and qualified personnel should be allowed to install or replace this equipment.**
WARNING	**This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.4 Service Personnel.**
DANGER	**Before working on the ODU equipment, unplug the power cord from AC power source.**
WARNING	**Do not remove IDU chassis enclosure. Do not touch internal circuitry when the power cord is connected.**
WARNING	**The ODU must match the proper IDU voltage. The ODU may sustain damage if used with the incorrect power supply.**

4.1.2 Electrical Safety

Follow these basic guidelines when you are working with any electrical equipment.

- Disconnect all power and external cables before installing or removing the chassis
- Do not work alone when potentially hazardous conditions exist.
- Never assume that power has been disconnected; always check.
- Do not perform any action that creates a potential hazard to people or makes the equipment unsafe. Never install equipment that appears damaged.
- Carefully examine your work area for possible hazards, such as wet floor, ungrounded power extension cables, and missing safety grounds.

DANGER **Do not work on the system, or connect or disconnect cables, during periods of lightning activity.**

4.1.3 Preventing Electrostatic Discharge Damage

Electrostatic discharge (ESD) damage, which occurs when electronic cards or components are improperly handled, can result in complete or intermittent failure.

Use the following guidelines for preventing ESD damage.

- ***Never touch the connector pins.***
- Handle the IDU *only* by the metal enclosure.
- Avoid contact between the connector pins and clothing. ESD voltages on clothing can cause damage.

4.2 Mechanical, Environmental, Power and Network Specifications

Ensure that the installation site can accommodate the mechanical and environmental specifications of the IDU.

4.2.1 Mechanical and Environmental Specifications

<table>
<tr><td>Dimensions</td><td>1.75 (H) x 17.5 (W) x 16.0 (D) inches</td></tr>
<tr><td>Weight:</td><td>11.2 lbs [5.08 Kg]</td></tr>
<tr><td>Heat Dissipation:</td><td>80W (273 BTU/Hour); IDU with PCI Card</td></tr>
<tr><td>Airflow:</td><td>Forced Air Cooling</td></tr>
<tr><td>Ambient Temperature
Operational:

Storage:</td><td>
14° to 131°F (-10° to 55°C) at 10,000 Feet
14° to 140°F (-10° to 60°C) at Sea Level
-30° to 176°F (-34° to 80°C)</td></tr>
<tr><td>Temperature Gradient</td><td>1.0°C/min</td></tr>
<tr><td>Relative Humidity:
Operational:
Storage:</td><td>
0 to 90% non-condensing
5 to 93%</td></tr>
<tr><td>Altitude:
Operating:
Storage:</td><td>
≤ 10,000 feet (3048m)
≤ 30,000 feet (9144m)</td></tr>
<tr><td>Operational Vibration:
(10 minutes per axis)</td><td>The IDU chassis will remain operational when exposed to 0.21 grms with the following profile:
<table>
<tr><td>Freq</td><td>Slope</td><td>PSD</td></tr>
<tr><td>5 to 350 Hz</td><td>0</td><td>0.0001 g2/Hz</td></tr>
<tr><td>350 to 500 Hz</td><td>-6dB/octave</td><td></td></tr>
<tr><td>500 Hz</td><td>0</td><td>0.00005 g2/Hz</td></tr>
</table></td></tr>
<tr><td>Operational Shock:</td><td>The IDU chassis shall remain operational when exposed to 10g, 10ms half sine on x, y, z axis.</td></tr>
</table>

4.2.2 Power Specifications

Please ensure that the installation site for the iDirect 7000 series™ Satellite Router can accommodate the power specifications of the IDU.

Input Voltage Range:	100 – 240 V~ (VAC) Universal Input
Frequency:	50 – 60 Hz
AC Power Consumption **at 90 VAC:** **at 254 VAC:**	≤ 2.0 Amps maximum 1.16 amp typical (with 4W BUC and LNB) 0.41 amp typical (with 4W BUC and LNB)
Protection:	▪ Internal, primary current fuse, inside power supply ▪ Over current protection ▪ Short protection
Power Factor Correction	Complies with EN61000-3-2 and EN61000-3-3
Efficiency:	86% typical
Input Transient Response:	0.5msec for 50% load change typical
AC Input Connector:	IEC-320-C14
AC Power Cord	18 AWG, country dependent

NOTE

The iDirect 7000 series™ Satellite Router is available with a +48VDC BUC power option (+24VDC is standard.) Care must be taken to select the appropriate BUC power option for your application.

4.2.3 Network Configuration Specifications

Network Topology	Star (TDM/TDMA), Star/Mesh, or Point to Point SCPC
Multiple Access	TDM (Downstream) D-TDMA aka Deterministic TDMA (Upstream)
Symbol Rates	Downstream: 48 ksps up to 15 Msps* Upstream: 48 ksps up to 7.5 Msps*
Modulation	QPSK, BPSK
IP Data Rates	Downstream: 128 kbps – 18 Mbps Upstream: 64 kbps – 4.2 Mbps
FEC	Downstream: TPC Rate 0.431, 0.533, 0.793, or 0.879 Upstream:TPC Rate 0.431, 0.533, 0.66, or 0.793

* These symbol rates are achievable only under certain FEC and Modulation conditions.

4.2.4 RF Specification

For RF connector specifications, see Section 5.3.

Frequency Range:	
Transmit:	950-1700 MHz
Receive:	950-1700 MHz
Frequency Tuning Step Size:	
Transmit:	38 Hz
Receive:	Sub-Hertz with Demodulator
RF Power Range:	
Transmit:	-35 to +7 dBm
Receive:	-65 to 0 dBm composite
RF Power Adjustability:	
Transmit:	0.5 dB Nominal Step Size
Receive:	Under AGC for all valid Rx input power range
Typical Transmit and Receive Phase Noise (dBc/Hz) at:	
1 KHz	-83
10 KHz	-83
100 KHz	-96
1 MHz	-112
Typical Phase Jitter:	
14 KHz to 1 MHz	≤ 1.8° rms
Transmit Carrier Suppression:	≥ 30 dBc
Discrete Spurs within Modulation Bandwidth:	≥ 35 dBc
Discrete Spurs, harmonics and non-harmonics:	≥ 50 dBc with output ≥ -15 dBm
Modulator Spectral Shaping	Intelsat: IESS-309 (See figure 9-1)
Transmitter On/Off Ratio	≥ 50 dBc with output power ≥ -15 dBm

4.3 Tools and Supplies

The following tools and supplies are recommended for a typical IDU installation.

Table 3: Recommended Tools and Supplies

Quantity	Description
1	Number 2 Phillips screwdriver (for rack mounting)
1	F-Connector Crimping Tool
1	RG-6 Coax Stripper
1	Coax / Wire Cutter
1	DB-9 to RJ-45 Adapter
1	Straight LAN Cable

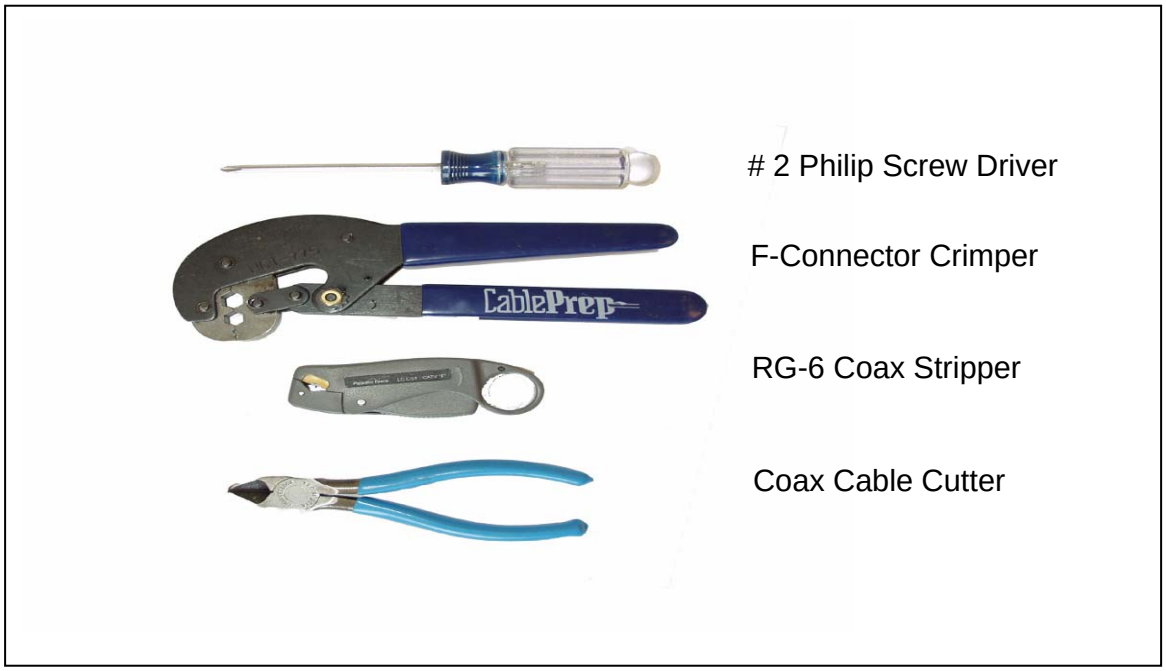


Figure 2: Installation Tools

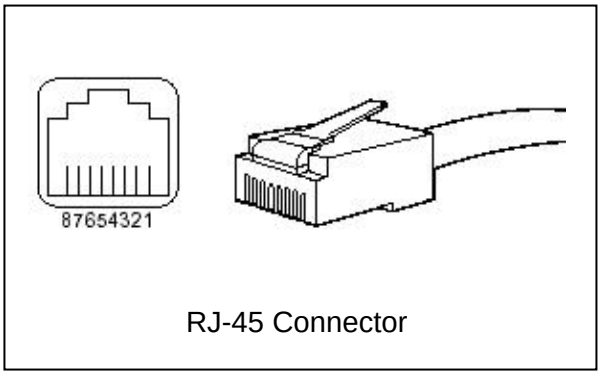


Figure 3: DB-9 to RJ-45 Adapter and Connector

You may need additional tools and equipment to install related equipment and cables. You may also require test equipment to check signal, power levels and communication links. See Appendix A.3 for RJ-45 pinouts.

4.4 Unpacking the iDirect 7000 series™ Satellite Router Equipment

The 7000 series may be shipped in one or more shipping containers, depending on the type of bundle purchased. Once you have received all the boxes, you should:

- Ensure the boxes are facing upward (Refer to the box orientation arrows on the shipping container).
- Inspect all shipping containers. If any damage or other signs of mishandling are evident, inform the carrier and either iDirect or the reseller.
- Remove the tape and any exterior covering from the box's lid.

NOTE **You should save the iDirect 7000 series™ Satellite Router shipping boxes after you have unpacked the system. You will need these boxes if you want to move or ship the system in the future.**

- Remove items from the box only as needed. Verify that you have received all of the proper 7000 series components and accessory items listed in your order, including the optional equipment you ordered.

4.4.1 iDirect 7000 series™ Satellite Router Installation Parts

Prior to installation, ensure that you have received all of the necessary components for a complete VSAT installation. If any items are missing or damaged, please contact your Network Operator/Distributor for replacement. A typical installation includes:

- An iDirect 7000 series™ Satellite Router
- Two mounting ears for rack installation.

Figure 4: Mounting Ears for the iDirect 7000 series™ Satellite Router

NOTE **When the 7000 series is installed, make sure that the notches on the bottom of the mounting ears are pointing down. See Section 5.2.5 for more information.**

- Four self adhesive rubber feet for desktop installation
- An AC power cord appropriate for the country of installation
- Two high speed Ethernet LAN cables
- An antenna ranging in size from 0.96m, 1.2m, 1.8m, or 2.4m for Ku band, and 1.8, 2.4m, and 3.8m for C-band
- IFL Cable
- An appropriate feed assembly for the antenna (OMT)
- Block Up Converter (BUC); 1W, 2W or 4W for Ku band and 2W and 5W for C-band
- Optional Ku Band Power Booster: 8W or 16W
- Optional C Band Power Booster: 10W or 20W
- Low Noise Block converter (LNB)
- Installation and Safety Manual

4.4.2 Additional Components Normally Needed

- An iDirect Specified L-Band cable – An RG 6 or RG11 dual-coax cable and connectors to connect the IDU and ODU. Type F connectors and sealant tape. (See Appendix A.)
- Non-Pen (Non-Penetrating) Roof Mount.
- Ballast (anchor weight)

Figure 5: Typical Antenna with BUC and LNB

NOTE **For instructions on installing your antennae, refer to its manufacturer's Installation Guide.**

4.5 Repacking the iDirect 7000 series™ Satellite Router

If your system is damaged, or if you need to move the chassis to another location, you will need to repack it in the original shipping boxes.

1. Remove all cabling connected to the IDU and ODU.
2. Place the IDU or ODU inside the original foam cutout in the shipping box.
3. Properly seal the box with packing tape.

NOTE **For warranty service, obtain a Return Material Authorization (RMA) number from your reseller or iDirect prior to shipping. If you are a direct customer of iDirect, you may contact iDirect's TAC directly to obtain an RMA number and shipping instructions. Follow the shipping instructions, complete the RMA form and attach the form to the outside of the shipping box.**

5 Installing the iDirect 7000 series™ Satellite Router

The 7000 series is designed for indoor use only.

5.1 Before Installation: Perform All Pre-Installation Procedures

Ensure that you have read all safety precautions and performed all of the pre-installation procedures.

5.2 Mounting the iDirect 7000 series™ Satellite Router

The chassis can be placed on a table top or flush-mounted on a 19 inch rack with a 1U opening.

5.2.1 General Guidelines for Mounting the iDirect 7000 series™ Satellite Router

When installing the IDU, follow these guidelines:

- When selecting the site, consider accessibility, availability of power, signal, network cable connections and the possibility of future expansion.
- Plan for access to both the front and rear of the IDU chassis.
- Ensure that the room where the IDU operates has adequate ventilation. Ambient air temperature may not cool the IDU chassis to acceptable operating temperatures without adequate ventilation. The ambient temperatures and other environmental specifications are listed in this manual under “Mechanical and Environmental Specifications.”
- Select a suitable IDU installation location away from any area that tends to collect dust.
- Do not install the IDU chassis on the floor.

WARNING **Install the IDU chassis in a location where access is unobstructed. The ventilation of the enclosure must not be blocked. Failure to follow this warning will result in performance degradation or damage due to over heating.**

5.2.2 Guidelines for Desktop or Shelf Mounting

If the IDU chassis is mounted in an enclosed shelf, follow the guidelines below:

- Ensure that the shelf has adequate ventilation.
- An enclosed shelf should have openings on the sides and top to provide air movement.

5.2.3 Procedure for Desktop or Shelf Mounting the Satellite Router

1. Turn over the 7000 series chassis.
2. Using the four circles on the bottom of the chassis as a guide, affix the four adhesive rubber feet.

The rubber feet will ensure that the 7000 series will stay firmly in place on a desktop or shelf.

5.2.4 Guidelines for Rack Mounting

If the IDU chassis is flush-mounted in a 19 inch rack, follow the guidelines below:

- The IDU requires a minimum of one rack unit (1.75 inches) of vertical rack spaces. You should measure the proposed rack location before mounting the chassis.
- If the IDU chassis is mounted in an enclosed rack, ensure that the rack has adequate ventilation. An enclosed rack should have louvered sides and top with fans to provide cooling air.
- Before using a particular rack, check for obstructions, such as a power strip, that could impair rack-mount installation.

WARNING **Install the chassis in the rack where access to the connectors is unobstructed. Do not block the vents.**

WARNING **To prevent bodily injury when mounting or servicing the IDU chassis in a rack, you must take special precautions to ensure that the rack(s) remains mechanically stable. The equipment rack must be firmly secured to the foundation/floor and/or secured to the adjacent racks.**

5.2.5 Procedure for Rack Mounting the iDirect 7000 series™ Satellite Router

1. Using a Number 2 Phillips head screwdriver, attach the mounting ears on the right and left sides of the 7000 series. Make sure that the notches on the mounting ears point toward the bottom of the unit.

Figure 6: Front View of the iDirect 7000 series™ with Mounting Ears

Figure 7: Rear View of the iDirect 7000 series™ Satellite Router with Mounting Ears

2. Mount the unit into the 19” rack.
3. Connect the AC power cord to the 7000 series.

5.3 iDirect 7000 series™ Satellite Router Rear Interface Connectors

As illustrated below, the 7000 series has nine interface connectors on the rear of the chassis that include an integrated 8 port switch for use by local PCs.

Figure 8: Rear View of the iDirect 7000 series™ Satellite Router

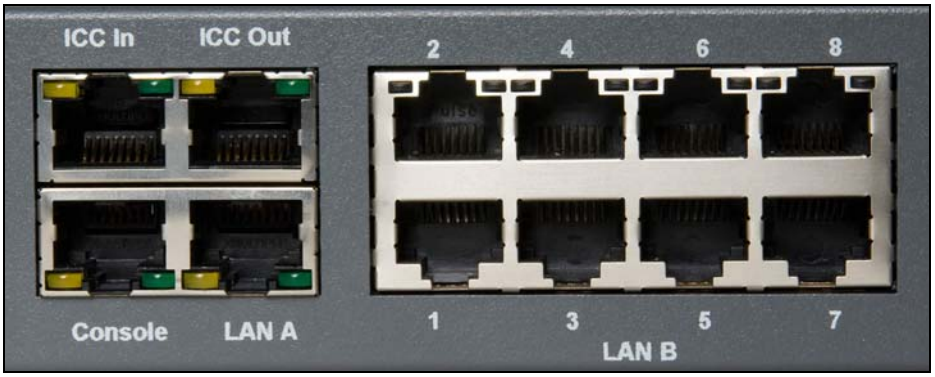


Figure 9: Closeup of the Console, ICC In, ICC Out, LAN A and LAN B Ports

You can configure up to nine IP addresses on the 7000 series, one on LAN A and up to eight on LAN B. IP addresses are configured through the iSite software.

The LAN A port is normally assigned to the WAN (towards the VPN). Its IP address acts as a next hop for the VPN.

The LAN B ports are normally assigned to the user's local LAN (away from the VPN). Its IP address acts as a local gateway for local PCs while providing an integrated eight port switch for use by local PCs.

The interfaces are described in the table below.

Table 4: iDirect 7000 series™ Satellite Router Rear Interface Connectors

Label	Connector Type	Interface and Purpose
100-240~4A/6A 50/60Hz	IEC-320-C14	AC input
TX Out	75 ohm, F-Type	L-band Transmit signal to Block UpConverter (BUC) capable of 10 MHz Reference and 24 VDC power to BUC (+48VDC is optional).
RX Out	75 ohm, F-Type with DC Blocked Termination	Monitor of the actual receive signal from LNB Output, -10 dB nominal composite, buffered.
RX In	75 ohm, F-Type	L-band receive signal, capable of 10MHz Reference and DC power to LNB. 75 ohm, F-Connector female
CONSOLE	RJ45	RS232, servicing serial connection console to PC or Laptop.
ICC In	RJ45	RS232 - Inter-chassis connectors for future use.
ICC Out	RJ45	RS232 - Inter-chassis connectors for future use.
LAN A	RJ45	Cat. 5 STP or UTP cable, 10/100 Base-T Ethernet LAN port connects the 7000 series Satellite Router to the customer's LAN Hub/switch.
LAN B	RJ45	Cat. 5 STP or UTP cable, 10/100 Base-T Ethernet LAN port connects the 7000 series to the customer's LAN Hub/switch.
PCI Slot	PCI Card	Future enhancement/upgrade.

WARNING **A +24VDC BUC should NEVER be connected to the +48 VDC version of the 7000 series. Damage to the BUC will result. Instead, use the + 48VDC approved BUC to connect to the +48 VDC version of the 7000 series.**

5.4 Connecting AC Power to the IDU

The IDU can be powered directly from the facility AC power source from 100 to 240 V~ (VAC). iDirect recommends that the chassis be powered from a low noise, low transient AC power source.

WARNING **Improper AC power source rating, excessive noise or transients, or undersized circuit breaker will result in service interruption.**

WARNING **If you must remove power from the chassis, you should disconnect power using the AC power cord.**

5.4.1 Preparing Your PC/Laptop for Connection to the IDU

See Section 5.3 for information on interface connectors.

- Your PC/laptop is loaded with iDirect's iSite software. Please refer to the current *iSite User Guide*, which will guide you through the necessary software configuration.
- Your PC/laptop contains a Network Interface Card (NIC) connected with a crossover cable to the 10/100 LAN port of the IDU.
- Your PC/Laptop is running console terminal software, such as HyperTerminal.

5.4.2 Checking Conditions before Powering Up the System

Check for the following conditions before you power up the IDU chassis.

- Verify that the RF coax cables are connected to the Tx and Rx ports on the rear of the chassis.

WARNING **A +24VDC BUC should NEVER be connected to the +48 VDC version of the 7000 series. Damage to the BUC will result. Instead, use the + 48VDC approved BUC to connect to the +48 VDC version of the 7000 series.**

WARNING **Do not connect or disconnect the Tx or Rx IFL cable while the IDU is powered; this action may result in damage to the BUC, LNB, and/or IDU.**

- A DB9 to RJ45 adapter connects the COM Port of the PC/laptop to the Console port of IDU. (Typical terminal settings are: COM1 / 9600 / 8 / None / 1 / None)

5.4.3 Powering Up the System

After checking the setup as outlined above, power up the IDU as follows:

1. Connect the AC cord to the iDirect 7000 series™ Satellite Router.
2. Plug the AC power cord into the AC outlet.

Upon boot up, the power LED will illuminate green, and within several seconds the Status LED will flash green as the unit performs a self diagnostic test. If this test is successful, the status LED will be illuminated green. If the test fails the status, the LED will be illuminated red.

After the initial hardware diagnostic the system will take approximately one minute to complete the boot up cycle, during which period the status LED will flash green. If the application successfully loads, the status LED will be illuminated solid green, if the application cannot start due to configuration or other errors, the LED will be illuminated solid red.

Once the IDU chassis is initialized, a typical functional IDU chassis with the proper factory-default option file loaded should display the following LED states (The Option file, or Config file, is loaded prior to shipping).

Table 5: LED Indicators

LED Label	LED Color
PWR	Solid Green
NET	Off
STATUS	Solid Green
TX	Off
RX	Solid Yellow

NOTE **The STATUS LED should always be green. A red STATUS LED indicates a malfunction of the IDU.**

WARNING **A +24VDC BUC should NEVER be connected to the +48 VDC version of the 7000 series. Damage to the BUC will result. Instead, use the + 48VDC approved BUC to connect to the +48 VDC version of the 7000 series.**

WARNING **Do not connect or disconnect the Tx or Rx IFL cable while the IDU is powered on; this action may result in damage to the BUC, LNB, and/or IDU.**

5.5 Loading Your Network Specific Option File

After verifying the health of the IDU, the factory-default option file must be replaced with your network-specific Option file. Normally, your network-specific Option file is provided to you by your Network Operator or Reseller. This network-specific Option file is created by configuring all of your network parameters via the (Network Management System) NMS.

If this Option file is not already loaded onto your PC, use the iSite application to download this network-specific ASCII Option file onto your PC. Then, use the iSite software to load your network-specific Option file onto the remote, overwriting the default Option file. You must load the proper Option file before the IDU can be acquired into the network.

1 With the IDU booted up, use iSite on your PC or laptop to download the option file to the IDU via the IDU LAN port.

2 After the option file is loaded, reset the IDU via iSite or cycle the AC power. (Turn the AC power off and then back on again.)

After the IDU is rebooted, the new option file configuration is active.

5.6 Monitoring LED Status Indicators

Once the IDU is powered up with the appropriate option file, check the LEDs to ensure the IDU is functioning properly.

5.6.1 Front Panel Power and Network LED Status Indicators

For diagnostic purposes, the IDU chassis has five LED indicators located on the front panel.

- The Power LED indicates whether the IDU is powered On or Off.
- The Status LED indicates the IDU's overall status.
- The Network LED indicates the IDU's network acquisition status.
- The Tx LED indicates the IDU's transmitter status.
- The Rx LED indicates the IDU's receiver status.

The color of the LEDs signifies the various IDU states.

Table 6: Front Panel LED Indicators

LED Label	LED Color	Indicated Unit Status
PWR	OFF	Indicates that the IDU is powered Off or there is a Power Supply problem.
	GREEN	The IDU is powered On. The bootloader has started.
NET	GREEN	Indicates that the elements have been acquired into the network.
	FLASHING GREEN	Indicates that the elements are in network acquisition.
	SOLID YELLOW	Indicates that the downstream SCPC is locked.
	FLASHING YELLOW	Indicates that the downstream SCPC is not locked.
STATUS	GREEN	IDU is functioning properly. The DRAM test is successful.
	FLASHING GREEN	Indicates that the board is booting. The DRAM test is in progress.
	RED	Indicates a serious fault or failure in either software, hardware or configuration. May indicate that the DRAM test failed.
TX	GREEN	Indicates that the IDU's transmitter is enabled.
	YELLOW	Indicates that the IDU's transmitter is disabled.
RX	GREEN	Indicates that the IDU transmitter is successfully locked to the downstream.
	YELLOW	Indicates that the IDU is not locked to the downstream carrier.

5.6.2 Rear Panel LED Status Definitions

On the rear of the IDU are three LEDs that indicate whether or not certain components of the IDU are powered On or Off.

Table 7: Rear Panel LED Indicators

LED Label	LED Color	Indicated Unit Status
INPUT PWR	OFF	Indicates that the IDU does not have power.
	GREEN	Indicates that the IDU has power.
BUC PWR	OFF	Indicates that the BUC power is not being supplied.
	GREEN	Indicates that the BUC power (+24V/+48V) is being supplied.
	RED	Indicates a BUC problem or an IFL disturbance.
LNB PWR	OFF	Indicates that the LNB power is not being supplied.
	GREEN	Indicates that the LNB power (+19V nominal) is being supplied.
	RED	Indicates an LNB problem or an IFL disturbance.

5.7 Maintaining the Remote

The IDU requires basic maintenance to keep it running efficiently and to prolong its life. However, the only maintenance you should perform on the unit, without explicit directions from iDirect Technologies, is to maintain the temperature of the IDU and keep its external areas free from dust or dirt.

NOTE **Do not attempt to repair or replace a malfunctioned or defective component or module. Doing so may void the warranty.**

NOTE **There are no *user-serviceable* parts within the iDirect 7000 series™ Satellite Router.**

5.7.1 Temperature Control

The IDU has a built in temperature sensor. The temperature sensor measures the actual circuit board temperature. If the board temperature exceeds a defined threshold, the IDU will alert the NMS about the high temperature situation. See Section 4.2 for the proper temperature range.

Various conditions can cause the IDU chassis to have an elevated internal temperature, such as:

- objects blocking the enclosure vents
- dust accumulated on the enclosure or the vents
- the ambient temperature is elevated beyond the specified limits (Ambient temperature is defined as the inlet air temperature into the chassis.)

5.7.2 Dust Removal

A dusty environment requires frequent maintenance.

With the unit powered down, use a *slightly* damp cloth with the excess moisture wrung out (not a saturated, wet or dripping cloth) to wipe away the dust that collects on the outside of the enclosure.

Vacuum the dust off the enclosure vents. Vacuum the circuit board through the enclosure vents, if possible.

6 iDirect Technical Support and Sales Information

In accordance with your contract, contact your local service representative or reseller, if further information is needed beyond the coverage of this manual.

NOTE **Do not attempt to repair or replace a malfunctioned or defective component or module. Doing so may void the warranty.**

NOTE **If any equipment is used in a manner not specified by the manufacturer, the protection provided in the equipment may be impaired.**

Technical Assistance Center (TAC)

Technical support is available to customers with a current contract with iDirect. If you currently are a contracted iDirect customer, please check our customer-only, password-protected TAC web page at TAC.iDirect.net.

Customers will find useful information, such as the Technical Assistance Center's hours of operation, product documentation, release notes, procedures and a technical FAQ. Our web-based customer ticketing system for entering service issues and requesting RMAs is also located on our TAC web page.

If you are unable to find the answer to your question, iDirect Customer support is available by telephone, 703.648.8151, or you are welcome to enter a service issue through our web-based ticketing system.

If you are not a direct customer of iDirect, support can be provided at a billable rate using a major credit card for payment.

Sales

If you are interested in purchasing iDirect products, please contact iDirect Corporate Sales by telephone or email.

Telephone:	703.648.8000
email:	SALES@iDirect.net

Appendix A Cabling Specifications

A.1 Coaxial Cable Specifications

Use high quality coaxial cable to connect the iDirect 7000 series™ Satellite Router to the ODU equipment. iDirect recommends that you use solid copper center conductor quad shield coaxial cable with a minimum of 60% + 40% braid and double foil shield to connect the IDU to the ODU equipment, such as:

- RG-6 – 0.04 inch (1 mm), solid bare copper center conductor (CommScope 5782)
- RG-11 – 0.064 inch (1.6mm), solid bare copper center conductor (CommScope 5902)

The center conductor must be straight and extend 1/8 inch (3.2mm) beyond the end of the F-connector, and the connector should be securely crimped to the cable.

NOTE **iDirect does not recommend using RG-59 with solid bare copper center conductor unless the IFL length is less than 120 feet (37 m). If lower RF insertion loss is required due to the distant between the IDU chassis and the ODU equipment, then RG-11 or other 75 ohm types of coax can be used.**

If you use different types of coaxial cable other than quad shield RG-6 or RG-11, the following problems can appear:

- Co-channel Interference – If signals at the same frequency are carried on long, parallel runs of coaxial cable (in cable trays, riser, etc.) interference can occur between the signals. Higher quality cable helps to prevent this with better shielding. Co-channel interference will cause degradation in higher packet rate loss.
- Damage to the iDirect 7000 series Satellite Router connectors – The chassis connectors are designed for RG-6 or RG-11 cable and connectors. Larger cables can damage the connectors.
- Good return loss – High quality cable and correct connectors help ensure an optimal return loss of 10 dB or more.

A.2 Terminating Coaxial Cable

Recommended Tools

Coax Cutter: Benner-Nawman UP-B76

Cable Prep: RG-6 HCT-775 Hex Crimper, Size 0.384 inch
RG-11 HCT-116 Hex Crimper, Size 0.472 inch

Paladin Tools: LC-CST-CATV-"F" 1257

Figure 10: Recommended Tools for Terminating Coaxial Cable

Procedure

Below are basic instructions for terminating a Type-F Connector onto a RG-6 or RG-11 cable.

1. Cut off each end of the coax cable squarely, using the proper cable cutter.

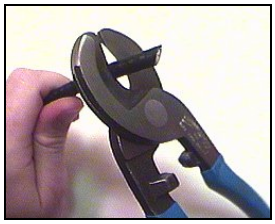


Figure 11: Coax Cable Cutting Technique

CAUTION **If another cutter type is used, ensure that the center conductor is straight and cylindrical without any burrs. Failure to do so will result in damage to the IDU, BUC, and/or LNB connector.**

2. Remove the jacket material and foam insulation according to dimension " A " in the trim table below. For RG-6, use a 2-step Coax Stripper such as the LC-CST 1257 from Paladin Tools.

Table 8: Coax Trim Dimensions

Coax Trim Dimension Table			
	A inch (mm)	B inch (mm)	C inch (mm)
RG-6	5/8 (15.9)	1/4 (6.4)	3/8 (9.5)
RG-11	13/32 (10.3)	3/32 (2.4)	13/32 (10.3)

3. Remove any foil in the braid.

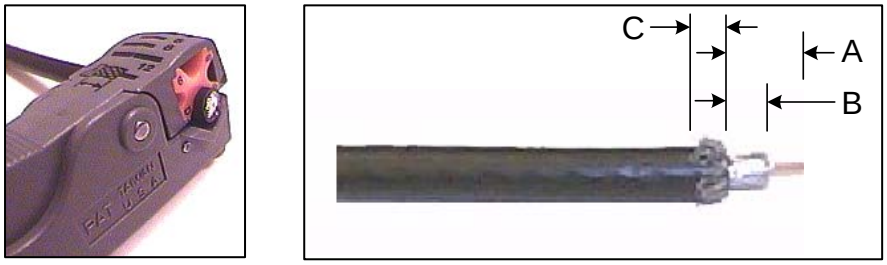


Figure 12: Cutting Technique for Removing Foil in the Braid

4. Fold the braid back over the jacket and trim the braid length per the braid fold-back dimension "C" in the Coax Trim Dimension Table.

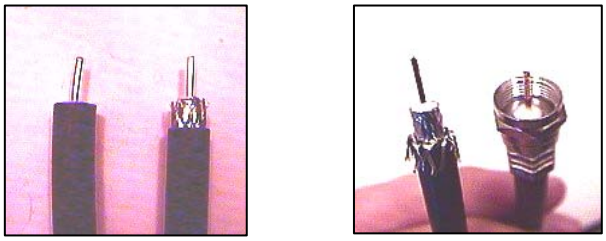


Figure 13: Folding the Braid

5. Flare the inner, outer braids and the outer foil shield only. Do not flare inner foil shield (last foil around dielectric).

6. Remove foil, and cut dielectric to length " B " in the Coax Trim Dimension Table. (If using a coax stripper, skip this step.) Be careful not to cut into the copper of the center conductor. Remove any dielectric residue.

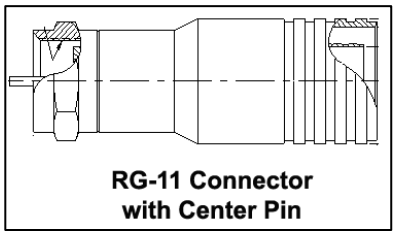
7. If the conductive foil is burred, then smooth out the burr so that the edge (area where the dielectric material was removed) is smooth and provides a lead-in for the connector mandrel.

8. Install connector mandrel over foil and underneath the braid.

NOTE

For RG-6, the white color inner dielectric insulation should be flush with the inner rear surface of the connector. Refer to the picture on the left below for RG-6 termination.

9. Since RG-11 connector has a built-in center pin, ensure that the coax center pin makes contact to the internal seizing pin of the connector. Refer to the picture on the right below.



RG-11 Connector with Center Pin

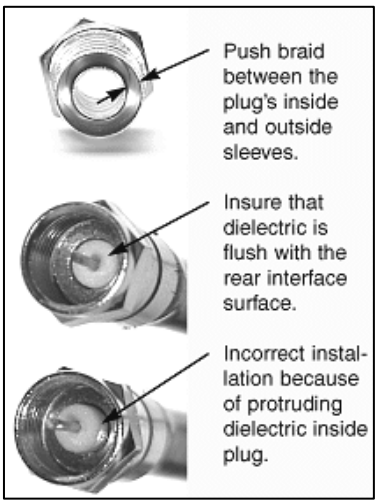


Figure 14: Attaching the RG-11 Connector

10. Crimp the connector with the proper crimp tool such as CablePrep HCT-775 for RG-6 or HCT-116 for RG-11.

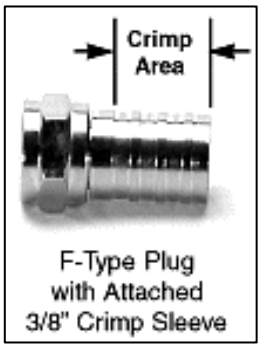


Figure 15: Crimp Area for F-Type Plugs

11. Inspect and ensure that the copper center conductor only protrudes 1/8 inch (3.2mm) nominally beyond the rim of the F-connector. Trim if necessary.

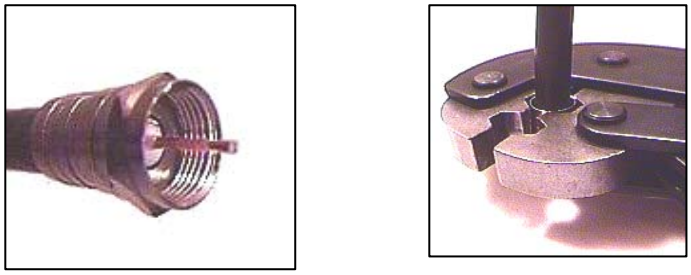


Figure 16: Proper Center Connector Length and Crimping Techninique

CAUTION

The center conductor length shall be a minimum of 1/16" (1.6mm) to a maximum of 1/8" (3.2mm) protrusion beyond the rim of the F-connector. It must be straight and cylindrical without any burrs at the end. Failure to do so will result in damage to the IDU, BUC, LNB connector and/or possible intermittent service.

A.3 Console Port Cable Specifications and Pinout

Use the RJ-45 to RJ45 straight cable and RJ-45 to DB-9 female DTE adapter to connect the Universal Line Card Console Port to the PC that is running terminal emulation software. You can identify a straight cable (or crossover cable) by comparing the two modular connector ends of the RJ-45 cable.

Holding the RJ-45 cable connectors side by side with the tab at the back, as shown below, examine the sequence of the colored wires to determine the type of RJ-45 cable.

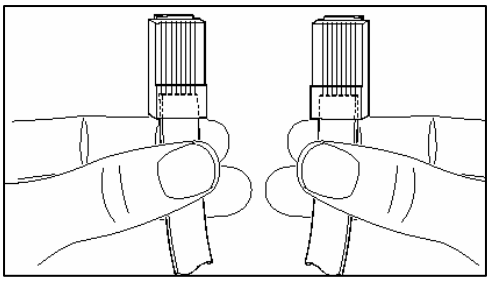


Figure 17: Holding the RJ-45 Cable Connectors

- Straight-through – The colored wires are in the same sequence at both ends of the cable.
- Crossover – The first (far left) colored wire at one end of the cable is the third colored wire at the other end of the cable.

The following table lists the signal and pinouts for the asynchronous serial Console Port, and the RJ-45 to DB-9 female DTE adapter.

Table 9: RJ-45 to DB-9 Pinouts

Console Port(DTE)	RJ-45 Pin	Color Code	RJ-45 to DB-9 Terminal Adapter	Console Device
RTS	1	Blue	8	CTS
DTR	2	Orange	6	DSR
TxD	3	Black	2	RxD
GND	4	Red	5	GND
GND	5	Green	NC	GND
RxD	6	Yellow	3	TxD
DSR	7	Brown	4	DTR
Rx-RF-Power	8	White/Grey	7	--

Figure 18: RJ-45 to DB-9 Female DTE Adapter

NOTE

For use with External GPS and NMEA 0183 protocol standard, use Pin 5 and 6 of RJ-45 or Pin 5 and 3 on DB-9 Terminal Adapter to interface with the serial port of the GPS to obtain various GPS information.

A.4 Ethernet Port Cable Specifications and Pinouts

The 10 Base-T/100 Base-T Fast Ethernet ports support IEEE 802.3 and IEEE 802.3u specifications for the 10-Mbps and 100-Mbps transmission over unshielded twisted-pair (UTP) cables. Use Category 3 or Category 5 UTP cable with RJ-45 connectors to attach the 10/100 Base-T Ethernet LAN port on the iDirect 7000 series™ Satellite Router chassis to the customer's LAN Hub/switch.

NOTE

iDirect supplies one 7 foot Category 5 UTP cable to connect the 7000 series to the LAN hub or switch. If additional cables or different lengths are needed, they may be bought commercially.

To determine the type of RJ-45 cable, examine the sequence of the colored wires as follows:

- Straight-through – The colored wires are in the same sequence at both ends of the cable.
- Crossover – The first (far left) colored wire at one end of the cable is the third colored wire at the other end of the cable, and the second colored wire at one end of the cable is the sixth colored wire at the end of the cable.

The table below lists the pinouts for the Ethernet ports of the IDU chassis.

Table 10: Ethernet Port Pinouts

Ethernet Port Pinouts	
RJ-45 Pin	**Description**
1	Tx+
2	Tx-
3	Rx+
6	Rx-

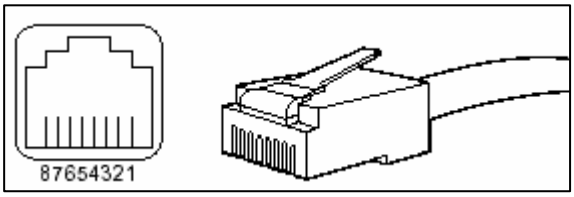


Figure 19: RJ-45 Cable Connectors, Plug and Receptacle

Appendix B Safety Warnings: Translated into Multiple Languages

This section repeats, in multiple languages, the warnings contained in this manual. In addition, this section contains translated warnings that can be used with other documents.

B.1 Danger/Warning Symbol

WARNING: This warning symbol means *danger*! You are in a situation that could cause bodily injury. Before you work on any equipment, be aware of the hazards involved with electrical circuitry and be familiar with standard practices for preventing accidents.

Waarschuwing	Dit waarschuwingssymbool betekent gevaar. U verkeert in een situatie die lichamelijk letsel kan veroorzaken. Voordat u aan enige apparatuur gaat werken, dient u zich bewust te zijn van de bij elektrische schakelingen betrokken risico's en dient u op de hoogte te zijn van standaard maatregelen om ongelukken te voorkomen.
Varoitus	Tämä varoitusmerkki merkitsee vaaraa. Olet tilanteessa, joka voi johtaa ruumiinvammaan. Ennen kuin työskentelet minkään laitteiston parissa, ota selvää sähkökytkentöihin liittyvistä vaaroista ja tavanomaisista onnettomuuksien ehkäisykeinoista.
Attention	Ce symbole d'avertissement indique un danger. Vous vous trouvez dans une situation pouvant causer des blessures ou des dommages corporels. Avant de travailler sur un équipement, soyez conscient des dangers posés par les circuits électriques et familiarisez-vous avec les procédures couramment utilisées pour éviter les accidents.
Warnung	Dieses Warnsymbol bedeutet Gefahr. Sie befinden sich in einer Situation, die zu einer Körperverletzung führen könnte. Bevor Sie mit der Arbeit an irgendeinem Gerät beginnen, seien Sie sich der mit elektrischen Stromkreisen verbundenen Gefahren und der Standardpraktiken zur Vermeidung von Unfällen bewußt.

Avvertenza	Questo simbolo di avvertenza indica un pericolo. La situazione potrebbe causare infortuni alle persone. Prima di lavorare su qualsiasi apparecchiatura, occorre conoscere i pericoli relativi ai circuiti elettrici ed essere al corrente delle pratiche standard per la prevenzione di incidenti.
Advarsel	Dette varselsymbolet betyr fare. Du befinner deg i en situasjon som kan føre til personskade. Før du utfører arbeid på utstyr, må du vare oppmerksom på de faremomentene som elektriske kretser innebærer, samt gjøre deg kjent med vanlig praksis når det gjelder å unngå ulykker.
Aviso	Este símbolo de aviso indica perigo. Encontra-se numa situação que lhe poderá causar danos físicos. Antes de começar a trabalhar com qualquer equipamento, familiarize-se com os perigos relacionados com circuitos eléctricos, e com quaisquer práticas comuns que possam prevenir possíveis acidentes.
¡Advertencia!	Este símbolo de aviso significa peligro. Existe riesgo para su integridad física. Antes de manipular cualquier equipo, considerar los riesgos que entraña la corriente eléctrica y familiarizarse con los procedimientos estándar de prevención de accidentes.
Varning!	Denna varningssymbol signalerar fara. Du befinner dig i en situation som kan leda till personskada. Innan du utför arbete på någon utrustning måste du vara medveten om farorna med elkretsar och känna till vanligt förfarande för att förebygga skador.

B.2 Installation Warning

WARNING: Read the installation instructions before you connect the system to its power source.

Waarschuwing	Raadpleeg de installatie-aanwijzingen voordat u het systeem met de voeding verbindt.
Varoitus	Lue asennusohjeet ennen järjestelmän yhdistämistä virtalähteeseen.
Attention	Avant de brancher le système sur la source d'alimentation, consulter les directives d'installation.
Warnung	Lesen Sie die Installationsanweisungen, bevor Sie das System an die Stromquelle anschließen.
Avvertenza	Consultare le istruzioni di installazione prima di collegare il sistema all'alimentatore.
Advarsel	Les installasjonsinstruksjonene før systemet kobles til strømkilden.
Aviso	Leia as instruções de instalação antes de ligar o sistema à sua fonte de energia.
¡Advertencia!	Ver las instrucciones de instalación antes de conectar el sistema a la red de alimentación.
Varning!	Läs installationsanvisningarna innan du kopplar systemet till dess strömförsörjningsenhet.

B.3 Restricted Area Warning

WARNING: This unit is intended for installation in restricted access areas. A restricted access area is where access can only be gained by service personnel through the use of a special tool, lock and key or other means of security, and is controlled by the authority responsible for the location.

Waarschuwing	Dit toestel is bedoeld voor installatie op plaatsen met beperkte toegang. Een plaats met beperkte toegang is een plaats waar toegang slechts door servicepersoneel verkregen kan worden door middel van een speciaal instrument, een slot en sleutel, of een ander veiligheidsmiddel, en welke beheerd wordt door de overheidsinstantie die verantwoordelijk is voor de locatie.
Varoitus	Tämä laite on tarkoitettu asennettavaksi paikkaan, johon pääsy on rajoitettua. Paikka, johon pääsy on rajoitettua, tarkoittaa paikkaa, johon vain huoltohenkilöstö pääsee jonkin erikoistyökalun, lukkoon sopivan avaimen tai jonkin muun turvalaitteen avulla ja joka on paikasta vastuussa olevien toimivaltaisten henkilöiden valvoma.
Attention	Cet appareil est à installer dans des zones d'accès réservé. Ces dernières sont des zones auxquelles seul le personnel de service peut accéder en utilisant un outil spécial, un mécanisme de verrouillage et une clé, ou tout autre moyen de sécurité. L'accès aux zones de sécurité est sous le contrôle de l'autorité responsable de l'emplacement.
Warnung	Diese Einheit ist zur Installation in Bereichen mit beschränktem Zutritt vorgesehen. Ein Bereich mit beschränktem Zutritt ist ein Bereich, zu dem nur Wartungspersonal mit einem Spezialwerkzeugs, Schloß und Schlüssel oder anderer Sicherheitsvorkehrungen Zugang hat, und der von dem für die Anlage zuständigen Gremium kontrolliert wird.
Avvertenza	Questa unità deve essere installata in un'area ad accesso limitato. Un'area ad accesso limitato è un'area accessibile solo a personale di assistenza tramite un'attrezzo speciale, lucchetto, o altri dispositivi di sicurezza, ed è controllata dall'autorità responsabile della zona.

Advarsel	Denne enheten er laget for installasjon i områder med begrenset adgang. Et område med begrenset adgang gir kun adgang til servicepersonale som bruker et spesielt verktøy, lås og nøkkel, eller en annen sikkerhetsanordning, og det kontrolleres av den autoriteten som er ansvarlig for området.
Aviso	Esta unidade foi concebida para instalação em áreas de acesso restrito. Uma área de acesso restrito é uma área à qual apenas tem acesso o pessoal de serviço autorizado, que possua uma ferramenta, chave e fechadura especial, ou qualquer outra forma de segurança. Esta área é controlada pela autoridade responsável pelo local.
¡Advertencia!	Esta unidad ha sido diseñada para instalarse en áreas de acceso restringido. Área de acceso restringido significa un área a la que solamente tiene acceso el personal de servicio mediante la utilización de una herramienta especial, cerradura con llave, o algún otro medio de seguridad, y que está bajo el control de la autoridad responsable del local.
Varning!	Denna enhet är avsedd för installation i områden med begränsat tillträde. Ett område med begränsat tillträde får endast tillträdas av servicepersonal med ett speciellt verktyg, lås och nyckel, eller annan säkerhetsanordning, och kontrolleras av den auktoritet som ansvarar för området.

B.4 Service Personnel Warning

WARNING: This equipment is to be installed and maintained by service personnel only as defined by AS/NZS 3260 Clause 1.2.14.3 Service Personnel.

Waarschuwing	Deze apparatuur mag slechts geïnstalleerd en onderhouden worden door servicepersoneel conform de definitie van AS/NZS 3260 Clausule 1.2.14.3 Service Personnel.
Varoitus	Tämän laitteen saa asentaa tai huoltaa ainoastaan Australiassa ja Uudessa Seelannissa sovellettavan AS/NZS 3260 -standardin kohdan 1.2.14.3 Service Personnel määrittelemä huoltohenkilöstö.
Attention	Cet équipement ne doit être installé et entretenu que par du personnel d'entretien comme défini par la réglementation AS/NZS 3260 Clause 1.2.14.3 Service Personnel.
Warnung	Dieses Gerät darf nur von Wartungspersonal gemäß AS/NZS-Definition 3260, Paragraph 1.2.14.3, "Service Personnel", installiert und gewartet werden.
Avvertenza	Questo apparecchio deve essere installato e mantenuto in efficienza esclusivamente da personale tecnico che soddisfi i requisiti specificati nella sezione 1.2.14.3 sul `Service Personnel' contenuta nelle norme AS/NZS 3260.
Advarsel	Installasjon og vedlikehold av dette utstyret skal kun foretas av vedlikeholdspersonell som definert i AS/NZS 3260, klausul 1.2.14.3 Service Personnel.
Aviso	Este equipamento deverá ser instalado e reparado apenas por pessoal de manutenção qualificado, conforme estipulado em AS/NZS 3260 Cláusula 1.2.14.3 Service Personnel.
Advertencia	Este equipo se debe instalar y mantener solamente por personal de servicio, según definido por AS/NZS 3260 Cláusula 1.2.14.3 Service Personnel.

Varning!	Installation och underhåll av denna utrustning får endast utföras av servicepersonal enligt definition i AS/NZS 3260 klausul 1.2.14.3 Service Personnel.

B.5 Qualified Personnel Warning

WARNING: Only trained and qualified personnel should be allowed to install or replace this equipment.

Waarschuwing	Installatie en reparaties mogen uitsluitend door getraind en bevoegd personeel uitgevoerd worden.
Varoitus	Ainoastaan koulutettu ja pätevä henkilökunta saa asentaa tai vaihtaa tämän laitteen.
Avertissement	Tout installation ou remplacement de l'appareil doit être réalisé par du personnel qualifié et compétent.
Achtung	Gerät nur von geschultem, qualifiziertem Personal installieren oder auswechseln lassen.
Avvertenza	Solo personale addestrato e qualificato deve essere autorizzato ad installare o sostituire questo apparecchio.
Advarsel	Kun kvalifisert personell med riktig opplæring bør montere eller bytte ut dette utstyret.
Aviso	Este equipamento deverá ser instalado ou substituído apenas por pessoal devidamente treinado e qualificado.
¡Atención!	Estos equipos deben ser instalados y reemplazados exclusivamente por personal técnico adecuadamente preparado y capacitado.
Varning	Denna utrustning ska endast installeras och bytas ut av utbildad och kvalificerad personal.

B.6 Chassis Warning—Rack-Mounting and Servicing

WARNING: To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety:

WARNING	To prevent bodily injury when mounting or servicing this unit in a rack, you must take special precautions to ensure that the system remains stable. The following guidelines are provided to ensure your safety: • This unit should be mounted at the bottom of the rack if it is the only unit in the rack. • When mounting this unit in a partially filled rack, load the rack from the bottom to the top with the heaviest component at the bottom of the rack. • If the rack is provided with stabilizing devices, install the stabilizers before mounting or servicing the unit in the rack.
Waarschuwing	Om lichamelijk letsel te voorkomen wanneer u dit toestel in een rek monteert of het daar een servicebeurt geeft, moet u speciale voorzorgsmaatregelen nemen om ervoor te zorgen dat het toestel stabiel blijft. De onderstaande richtlijnen worden verstrekt om uw veiligheid te verzekeren: • Dit toestel dient onderaan in het rek gemonteerd te worden als het toestel het enige in het rek is. • Wanneer u dit toestel in een gedeeltelijk gevuld rek monteert, dient u het rek van onderen naar boven te laden met het zwaarste onderdeel onderaan in het rek. • Als het rek voorzien is van stabiliseringshulpmiddelen, dient u de stabilisatoren te monteren voordat u het toestel in het rek monteert of het daar een servicebeurt geeft.

Varoitus	Kun laite asetetaan telineeseen tai huolletaan sen ollessa telineessä, on noudatettava erityisiä varotoimia järjestelmän vakavuuden säilyttämiseksi, jotta vältytään loukkaantumiselta. Noudata seuraavia turvallisuusohjeita: • Jos telineessä ei ole muita laitteita, aseta laite telineen alaosaan. • Jos laite asetetaan osaksi täytettyyn telineeseen, aloita kuormittaminen sen alaosasta kaikkein raskaimmalla esineellä ja siirry sitten sen yläosaan. • Jos telinettä varten on vakaimet, asenna ne ennen laitteen asettamista telineeseen tai sen huoltamista siinä.
Attention	Pour éviter toute blessure corporelle pendant les opérations de montage ou de réparation de cette unité en casier, il convient de prendre des précautions spéciales afin de maintenir la stabilité du système. Les directives ci-dessous sont destinées à assurer la protection du personnel : • Si cette unité constitue la seule unité montée en casier, elle doit être placée dans le bas. • Si cette unité est montée dans un casier partiellement rempli, charger le casier de bas en haut en plaçant l'élément le plus lourd dans le bas. • Si le casier est équipé de dispositifs stabilisateurs, installer les stabilisateurs avant de monter ou de réparer l'unité en casier.
Warnung	Zur Vermeidung von Körperverletzung beim Anbringen oder Warten dieser Einheit in einem Gestell müssen Sie besondere Vorkehrungen treffen, um sicherzustellen, daß das System stabil bleibt. Die folgenden Richtlinien sollen zur Gewährleistung Ihrer Sicherheit dienen: • Wenn diese Einheit die einzige im Gestell ist, sollte sie unten im Gestell angebracht werden. • Bei Anbringung dieser Einheit in einem zum Teil gefüllten Gestell ist das Gestell von unten nach oben zu laden, wobei das schwerste Bauteil unten im Gestell anzubringen ist. • Wird das Gestell mit Stabilisierungszubehör geliefert, sind zuerst die Stabilisatoren zu installieren, bevor Sie die Einheit im Gestell anbringen oder sie warten.

Avvertenza	Per evitare infortuni fisici durante il montaggio o la manutenzione di questa unità in un supporto, occorre osservare speciali precauzioni per garantire che il sistema rimanga stabile. Le seguenti direttive vengono fornite per garantire la sicurezza personale: • Questa unità deve venire montata sul fondo del supporto, se si tratta dell'unica unità da montare nel supporto. • Quando questa unità viene montata in un supporto parzialmente pieno, caricare il supporto dal basso all'alto, con il componente più pesante sistemato sul fondo del supporto. • Se il supporto è dotato di dispositivi stabilizzanti, installare tali dispositivi prima di montare o di procedere alla manutenzione dell'unità nel supporto.
Advarsel	Unngå fysiske skader under montering eller reparasjonsarbeid på denne enheten når den befinner seg i et kabinett. Vær nøye med at systemet er stabilt. Følgende retningslinjer er gitt for å verne om sikkerheten: • Denne enheten bør monteres nederst i kabinettet hvis dette er den eneste enheten i kabinettet. • Ved montering av denne enheten i et kabinett som er delvis fylt, skal kabinettet lastes fra bunnen og opp med den tyngste komponenten nederst i kabinettet. • Hvis kabinettet er utstyrt med stabiliseringsutstyr, skal stabilisatorene installeres før montering eller utføring av reparasjonsarbeid på enheten i kabinettet.
Aviso	Para se prevenir contra danos corporais ao montar ou reparar esta unidade numa estante, deverá tomar precauções especiais para se certificar de que o sistema possui um suporte estável. As seguintes directrizes ajudá-lo-ão a efectuar o seu trabalho com segurança: • Esta unidade deverá ser montada na parte inferior da estante, caso seja esta a única unidade a ser montada. • Ao montar esta unidade numa estante parcialmente ocupada, coloque os itens mais pesados na parte inferior da estante, arrumando-os de baixo para cima. • Se a estante possuir um dispositivo de estabilização, instale-o antes de montar ou reparar a unidade.

¡Advertencia!	Para evitar lesiones durante el montaje de este equipo sobre un bastidor, o posteriormente durante su mantenimiento, se debe poner mucho cuidado en que el sistema quede bien estable. Para garantizar su seguridad, proceda según las siguientes instrucciones: • Colocar el equipo en la parte inferior del bastidor, cuando sea la única unidad en el mismo. • Cuando este equipo se vaya a instalar en un bastidor parcialmente ocupado, comenzar la instalación desde la parte inferior hacia la superior colocando el equipo más pesado en la parte inferior. • Si el bastidor dispone de dispositivos estabilizadores, instalar éstos antes de montar o proceder al mantenimiento del equipo instalado en el bastidor.
Varning!	För att undvika kroppsskada när du installerar eller utför underhållsarbete på denna enhet på en ställning måste du vidta särskilda försiktighetsåtgärder för att försäkra dig om att systemet står stadigt. Följande riktlinjer ges för att trygga din säkerhet: • Om denna enhet är den enda enheten på ställningen skall den installeras längst ned på ställningen. • Om denna enhet installeras på en delvis fylld ställning skall ställningen fyllas nedifrån och upp, med de tyngsta enheterna längst ned på ställningen. • Om ställningen är försedd med stabiliseringsdon skall dessa monteras fast innan enheten installeras eller underhålls på ställningen.

B.7 Jewelry Removal Warning

WARNING: Before working on equipment that is connected to power lines, remove jewelry (including rings, necklaces, and watches). Metal objects will heat up when connected to power and ground and can cause serious burns or weld the metal object to the terminals.

Waarschuwing	Alvorens aan apparatuur te werken die met elektrische leidingen is verbonden, sieraden (inclusief ringen, kettingen en horloges) verwijderen. Metalen voorwerpen worden warm wanneer ze met stroom en aarde zijn verbonden, en kunnen ernstige brandwonden veroorzaken of het metalen voorwerp aan de aansluitklemmen lassen.
Varoitus	Ennen kuin työskentelet voimavirtajohtoihin kytkettyjen laitteiden parissa, ota pois kaikki korut (sormukset, kaulakorut ja kellot mukaan lukien). Metalliesineet kuumenevat, kun ne ovat yhteydessä sähkövirran ja maan kanssa, ja ne voivat aiheuttaa vakavia palovammoja tai hitsata metalliesineet kiinni liitäntänapoihin.
Attention	Avant d'accéder à cet équipement connecté aux lignes électriques, ôter tout bijou (anneaux, colliers et montres compris). Lorsqu'ils sont branchés à l'alimentation et reliés à la terre, les objets métalliques chauffent, ce qui peut provoquer des blessures graves ou souder l'objet métallique aux bornes.
Warnung	Vor der Arbeit an Geräten, die an das Netz angeschlossen sind, jeglichen Schmuck (einschließlich Ringe, Ketten und Uhren) abnehmen. Metallgegenstände erhitzen sich, wenn sie an das Netz und die Erde angeschlossen werden, und können schwere Verbrennungen verursachen oder an die Anschlußklemmen angeschweißt werden.
Avvertenza	Prima di intervenire su apparecchiature collegate alle linee di alimentazione, togliersi qualsiasi monile (inclusi anelli, collane, braccialetti ed orologi). Gli oggetti metallici si riscaldano quando sono collegati tra punti di alimentazione e massa: possono causare ustioni gravi oppure il metallo può saldarsi ai terminali.

Advarsel	Fjern alle smykker (inkludert ringer, halskjeder og klokker) før du skal arbeide på utstyr som er koblet til kraftledninger. Metallgjenstander som er koblet til kraftledninger og jord blir svært varme og kan forårsake alvorlige brannskader eller smelte fast til polene.
Aviso	Antes de trabalhar em equipamento que esteja ligado a linhas de corrente, retire todas as jóias que estiver a usar (incluindo anéis, fios e relógios). Os objectos metálicos aquecerão em contacto com a corrente e em contacto com a ligação à terra, podendo causar queimaduras graves ou ficarem soldados aos terminais.
¡Advertencia!	Antes de operar sobre equipos conectados a líneas de alimentación, quitarse las joyas (incluidos anillos, collares y relojes). Los objetos de metal se calientan cuando se conectan a la alimentación y a tierra, lo que puede ocasionar quemaduras graves o que los objetos metálicos queden soldados a los bornes.
Varning!	Tag av alla smycken (inklusive ringar, halsband och armbandsur) innan du arbetar på utrustning som är kopplad till kraftledningar. Metallobjekt hettas upp när de kopplas ihop med ström och jord och kan förorsaka allvarliga brännskador; metallobjekt kan också sammansvetsas med kontakterna.

B.8 Operating Temperature and Airflow Warning

WARNING: To prevent IDU from overheating, do not operate it in an area that exceeds the maximum recommended ambient temperature of 140°F (60°C). To prevent airflow restriction, allow at least 6 inches (15.2 cm) of clearance around the ventilation openings.

Waarschuwing	Om te voorkomen dat de IDU oververhit raakt, dient u deze niet in een gebied te bedienen waar de maximaal aanbevolen omgevingstemperatuur van 60°C wordt overschreden. Om luchtstroombeperkingen te voorkomen, dient u minstens 15 cm speling rond de ventilatieopeningen te laten.
Varoitus	Jotta IDU ei kuumentuisi liikaa, sitä ei saa käyttää alueella, jonka lämpötila ylittää suositellun maksimiympäristölämpötilan 60°C. Ilmanvaihdon säilyttämiseksi on tuuletusaukkojen ympärille jätettävä ainakin 15,2 cm:n tila.
Attention	Pour éviter toute surchauffe du IDU, il est recommandé de maintenir une température ambiante inférieure à 60°C. Pour assurer une parfaite circulation de l'air autour du routeur, prévoyez un espace minimum de 15 cm autour des ouvertures de ventilation.
Warnung	Um den IDU vor Überhitzung zu schützen, vermeiden Sie Benutzung des Geräts in einer Gegend, in denen die Umgebungstemperatur das empfohlene Maximum von 60°C überschreitet. Um eine Behinderung der Luftzirkulation zu vermeiden, stellen Sie sicher, daß um die Kühlungsöffnungen herum ein Raum von mindestens 15,2 cm frei bleibt.
Avvertenza	Per evitare che il IDU si surriscalda, non utilizzatelo in una zona dove la temperatura ambiente eccede le massime raccomandate di 140°F (60°C). Per evitare di bloccare il passaggio dell'aria, lasciate almeno 6 pollici (15.2 cm) di spazio libero attorno alle aperture per la ventilazione.
Advarsel	Forhindre at IDU blir overopphetet ved å ikke bruke den på et sted der den anbefalte omgivelsestemperaturen overstiger 60°C. Unngå at luftsirkulasjonen reduseres ved å ha en klaring på minst 15,2 cm rundt ventilasjonsåpningene.

Aviso	Para impedir o sobreaquecimento do IDU, não o utilize numa área que exceda a temperatura ambiente máxima recomendada de 60°C (140°F). Para não restringir o fluxo de ar, deixe um espaço de pelo menos 15,2 cm (6 polegadas) em volta dos orificios de ventilação.
¡Advertencia!	Para impedir que el IDU se caliente, no lo use en un área que exceda la temperatura ambiente máxima recomendada de 140°F (60°C). Con el fin de no restringir el flujo de aire, deje un espacio de un mínimo de 6 pulgadas (15,2 cm) alrededor de los orificios de ventilación.
Varning!	Förhindra att IDU chassis blir överhettad genom att inte använda den på en plats där den rekommenderade omgivningstemperaturen överstiger 60°C. Undvik att luftcirkulationen reduceras genom att ha ett fritt utrymme på minst 15,2 cm runt ventilationsöppningarna.

B.9 Lightning Activity Warning

WARNING: Do not work on the system or connect or disconnect cables during periods of lightning activity.

Waarschuwing	Tijdens onweer dat gepaard gaat met bliksem, dient u niet aan het systeem te werken of kabels aan te sluiten of te ontkoppelen.
Varoitus	Älä työskentele järjestelmän parissa äläkä yhdistä tai irrota kaapeleita ukkosilmalla.
Attention	Ne pas travailler sur le système ni brancher ou débrancher les câbles pendant un orage.
Warnung	Arbeiten Sie nicht am System und schließen Sie keine Kabel an bzw. trennen Sie keine ab, wenn es gewittert.
Avvertenza	Non lavorare sul sistema o collegare oppure scollegare i cavi durante un temporale con fulmini.
Advarsel	Utfør aldri arbeid på systemet, eller koble kabler til eller fra systemet når det tordner eller lyner.
Aviso	Não trabalhe no sistema ou ligue e desligue cabos durante períodos de mau tempo (trovoada).
¡Advertencia!	No operar el sistema ni conectar o desconectar cables durante el transcurso de descargas eléctricas en la atmósfera.
Varning!	Vid åska skall du aldrig utföra arbete på systemet eller ansluta eller koppla loss kablar.

B.10 Safety Extra-Low Voltage Port Warning

WARNING: The ports labeled "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” and "RX In" are safety extra-low voltage (SELV) circuits. SELV circuits should only be connected to other SELV circuits. Avoid connecting these circuits to telephone network voltage (TNV) circuits.

Waarschuwing	De poorten die gelabeld zijn met "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” en "RX In" zijn veiligheidscircuits met extra-laag voltage (SELV). SELV-circuits mogen alleen maar op andere SELV-circuits worden aangesloten. Sluit deze circuits niet op telefoonnetwerkvoltage-circuits (TNV) aan.
Varoitus	Varoitus Portit, joissa on merkintä "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” ja "RX In", ovat suojattuja erittäisen alhaisen jännitteen (SELV) piirejä. SELV-piirit tulisi liittää ainoastaan toisiin SELV-piireihin. Vältä kytkemästä näitä piirejä puhelinverkkojännitteen (TNV) piireihin.
Attention	Les ports "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” et « RX In » sont des circuits SELV (« Safety Extra-Low Voltage » :très basse tension de sécurité). Les circuits SELV ne devant être connectés qu'à d'autres circuits du même type, il est recommandé de ne pas les raccorder à des circuits TNV (« Telephone Network Voltage » :tension de réseau téléphonique).
Warnung	Die Ports mit der Bezeichnung "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” und "RX In" sind SELV-Schaltkreise (safety extra-low voltage circuits - Sicherheits-Niedrigspannungskreise). SELV-Schaltkreise sollten nur an andere SELV-Schaltkreise angeschlossen werden. Achten Sie darauf, diese Schaltkreise nicht an TNV-Schaltkreise (telphone network voltage - Telefonnetzspannung) anzuschließen.
Avvertenza	Le porte etichettate "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” e "RX In" sono circuiti di sicurezza a basso voltaggio (Safety Extra-Low Voltage SELV). Evitate di collegare questi circuiti con circuiti a voltaggio rete telefonica (Telephone Network Voltage - TNV).

Advarsel	Utgangene merket "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out”og "RX In" er sikkerhetskretser (SELV) med ekstra lav spenning. SELV-kretser skal bare kobles til andre SELV-kretser. Unngå å koble disse kretsene til kretser for telefonnettspenning(TNV).
Aviso	As portas assinaladas com "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” e "RX In" são circuitos de segurança de baixa tensão (SELV). Os circuitos de segurança de baixa tensão só deverão ser conectados a outros circuitos de segurança de baixa tensão. Evite conectar estes circuitos a circuitos de tensão de rede telefónica (TNV).
Advertencia	Los puertos "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” y "RX In" son circuitos de seguridad de voltaje extra bajo (SELV). Estos circuitos SELV deben conectarse solamente a otros circuitos SELV. Evite conectar este tipo de circuitos a circuitos de la red de voltaje del teléfono (TNV).
Varning!	Portarna med beteckningen "+24VDC/+48VDC", "TX Out", "10/100 LAN", “Console”, “RX Out” och "RX In" är SELV-kretsar (skyddskretsar för mycket låg spänning). SELV-kretsar får endast kopplas till andra SELV-kretsar. Undvik att koppla dessa kretsar till TNV-kretsar (kretsar med telefonnätspänning).

B.11 No On/Off Switch Warning

WARNING: Unplug the power cord before you work on a system that does not have an on/off switch.

Waarschuwing	Voordat u aan een systeem werkt dat geen aan/uit schakelaar heeft, dient u de stekker van het netsnoer uit het stopcontact te halen.
Varoitus	Ennen kuin teet mitään sellaiselle järjestelmälle, jossa ei ole kaksiasentokytkintä, kytke irti virtajohto.
Attention	Avant de travailler sur un système non équipé d'un commutateur marche-arrêt, débrancher le cordon d'alimentation.
Warnung	Bevor Sie an einem System ohne Ein/Aus-Schalter arbeiten, ziehen Sie das Netzkabel heraus.
Avvertenza	Prima di lavorare su un sistema che non è dotato di un interruttore on/off, scollegare il cavo di alimentazione.
Advarsel	Før det skal utføres arbeid på et system som ikke har en av/på-bryter, skal strømledningen trekkes ut.
Aviso	Antes de começar a trabalhar num sistema que não possua um interruptor ON/OFF, desligue o cabo de alimentação.
Advertencia	Antes de trabajar sobre cualquier sistema que carezca de interruptor de Encendido/Apagado (ON/OFF), desenchufar el cable de alimentación.
Varning!	Dra ur nätsladden innan du utför arbete på ett system utan strömbrytare.

B.12 Disconnect Device Warning

WARNING: A readily accessible two-poled disconnect device must be incorporated in the fixed wiring.

Waarschuwing	Er moet een gemakkelijk toegankelijke, tweepolige stroomverbreker opgenomen zijn in de vaste bedrading.
Varoitus	Kiinteään johdotukseen on liitettävä kaksinapainen kytkinlaite, johon on helppo päästä käsiksi.
Attention	Un disjoncteur bipolaire facile d'accès doit être intégré dans le câblage fixe.
Warnung	Die feste Verdrahtung muß eine leicht zugängliche, zweipolige Trennvorrichtung enthalten.
Avvertenza	Nei cablaggi fissi va incorporato un sezionatore a due poli facilmente accessibile.
Advarsel	En lett tilgjengelig, topolet frakoblingsenhet må være innebygd i det faste ledningsnettet.
Aviso	Deverá incorporar-se um dispositivo de desconexão de dois pólos de acesso fácil, na instalação eléctrica fixa.
Advertencia	El cableado fijo debe incorporar un dispositivo de desconexión de dos polos y de acceso fácil.
Varning!	En lättillgänglig tvåpolig frånkopplingsenhet måste ingå i den fasta kopplingen.

B.13 Ground Conductor Warning

WARNING: Never defeat the ground conductor or operate the equipment in the absence of a suitably installed ground conductor. Contact the appropriate electrical inspection authority or an electrician if you are uncertain that suitable grounding is available.

Waarschuwing	De aardingsleiding mag nooit buiten werking gesteld worden en de apparatuur mag nooit bediend worden zonder dat er een op de juiste wijze geïnstalleerde aardingsleiding aanwezig is. Neem contact op met de bevoegde instantie voor elektrische inspecties of met een elektricien als u er niet zeker van bent dat er voor passende aarding gezorgd is.
Varoitus	Älä koskaan ohita maajohdinta tai käytä laitteita ilman oikein asennettua maajohdinta. Ota yhteyttä asianmukaiseen sähkötarkastusviranomaiseen tai sähköasentajaan, jos olet epävarma maadoituksen sopivuudesta.
Attention	Ne jamais rendre inopérant le conducteur de masse ni utiliser l'équipement sans un conducteur de masse adéquatement installé. En cas de doute sur la mise à la masse appropriée disponible, s'adresser à l'organisme responsable de la sécurité électrique ou à un électricien.
Warnung	Auf keinen Fall den Erdungsleiter unwirksam machen oder das Gerät ohne einen sachgerecht installierten Erdungsleiter verwenden. Wenn Sie sich nicht sicher sind, ob eine sachgerechte Erdung vorhanden ist, wenden Sie sich an den zuständigen elektrischen Fachmann oder einen Elektriker.
Avvertenza	Non escludere mai il conduttore di protezione né usare l'apparecchiatura in assenza di un conduttore di protezione installato in modo corretto. Se non si sa con certezza che è disponibile un collegamento di messa a terra adeguato, esaminare le Norme CEI pertinenti o rivolgersi a un elettricista qualificato.
Advarsel	Omgå aldri jordingslederen og bruk aldri utstyret uten riktig montert jordingsleder. Ta kontakt med det riktige organet for elektrisk inspeksjon eller en elektriker hvis du er usikker på om det finnes velegnet jording.

Aviso	Nunca anule o condutor à terra nem opere o equipamento sem ter um condutor à terra adequadamente instalado. Em caso de dúvida em relação ao sistema de ligação à terra, contacte os serviços locais de inspecção eléctrica ou um electricista qualificado.
Advertencia	No inhabilitar nunca el conductor de tierra ni hacer funcionar el equipo si no existe un conductor de tierra instalado correctamente. Póngase en contacto con una autoridad apropiada de inspección eléctrica o con un electricista competente si no está seguro de que hay una conexión a tierra adecuada.
Varning!	Koppla aldrig från jordledningen och använd aldrig utrustningen utan en på lämpligt sätt installerad jordledning. Om det föreligger osäkerhet huruvida lämplig jordning finns skall elektrisk besiktningsauktoritet eller elektriker kontaktas.

B.14 Use Copper Conductors Only

WARNING: Use copper conductors only.

Waarschuwing	Gebruik alleen koperen geleiders.
Varoitus	Käytä vain kuparijohtimia.
Attention	Utilisez uniquement des conducteurs en cuivre.
Warnung	Verwenden Sie ausschließlich Kupferleiter.
Avvertenza	Usate unicamente dei conduttori di rame.
Advarsel	Bruk bare kobberledninger.
Aviso	Utilize apenas fios condutores de cobre.
¡Advertencia!	Emplee sólo conductores de cobre.
Varning!	Använd endast ledare av koppar.

B.15 Ground Connection Warning

WARNING: When installing the unit, the ground connection must always be made first and disconnected last.

Waarschuwing	Bij de installatie van het toestel moet de aardverbinding altijd het eerste worden gemaakt en het laatste worden losgemaakt.
Varoitus	Laitetta asennettaessa on maahan yhdistäminen aina tehtävä ensiksi ja maadoituksen irti kytkeminen viimeiseksi.
Attention	Lors de l'installation de l'appareil, la mise à la terre doit toujours être connectée en premier et déconnectée en dernier.
Warnung	Der Erdanschluß muß bei der Installation der Einheit immer zuerst hergestellt und zuletzt abgetrennt werden.
Avvertenza	In fase di installazione dell'unità, eseguire sempre per primo il collegamento a massa e disconnetterlo per ultimo.
Advarsel	Når enheten installeres, må jordledningen alltid tilkobles først og frakobles sist.
Aviso	Ao instalar a unidade, a ligação à terra deverá ser sempre a primeira a ser ligada, e a última a ser desligada.
¡Advertencia!	Al instalar el equipo, conectar la tierra la primera y desconectarla la última.
Varning!	Vid installation av enheten måste jordledningen alltid anslutas först och kopplas bort sist.

B.16 Power Supply Warning

WARNING: Do not touch the power supply when the power cord is connected. For systems with a power switch, line voltages are present within the power supply even when the power switch is off and the power cord is connected. For systems without a power switch, line voltages are present within the power supply when the power cord is connected.

Waarschuwing	U dient de voeding niet aan te raken zolang het netsnoer aangesloten is. Bij systemen met een stroomschakelaar zijn er lijnspanningen aanwezig in de voeding, zelfs wanneer de stroomschakelaar uitgeschakeld is en het netsnoer aangesloten is. Bij systemen zonder een stroomschakelaar zijn er lijnspanningen aanwezig in de voeding wanneer het netsnoer aangesloten is.
Varoitus	Älä kosketa virtalähdettä virtajohdon ollessa kytkettynä. Virrankatkaisimella varustetuissa järjestelmissä on virtalähteen sisällä jäljellä verkkojännite, vaikka virrankatkaisin on katkaistu-asennossa virtajohdon ollessa kytkettynä. Järjestelmissä, joissa ei ole virrankatkaisinta, on virtalähteen sisällä verkkojännite, kun virtajohto on kytkettynä.
Attention	Ne pas toucher le bloc d'alimentation quand le cordon d'alimentation est branché. Avec les systèmes munis d'un commutateur marche-arrêt, des tensions de ligne sont présentes dans l'alimentation quand le cordon est branché, même si le commutateur est à l'arrêt. Avec les systèmes sans commutateur marche-arrêt, l'alimentation est sous tension quand le cordon d'alimentation est branché.
Warnung	Berühren Sie das Netzgerät nicht, wenn das Netzkabel angeschlossen ist. Bei Systemen mit Netzschalter liegen Leitungsspannungen im Netzgerät vor, wenn das Netzkabel angeschlossen ist, auch wenn das System ausgeschaltet ist. Bei Systemen ohne Netzschalter liegen Leitungsspannungen im Netzgerät vor, wenn das Netzkabel angeschlossen ist.

Avvertenza	Non toccare l'alimentatore se il cavo dell'alimentazione è collegato. Per i sistemi con un interruttore di alimentazione, tensioni di linea sono presenti all'interno dell'alimentatore anche quando l'interruttore di alimentazione è en posizione di disattivazione (off), se il cavo dell'alimentazione è collegato. Per i sistemi senza un interruttore, tensioni di linea sono presenti all'interno dell'alimentatore quando il cavo di alimentazione è collegato.
Advarsel	Berør ikke strømforsyningsenheten når strømledningen er tilkoblet. I systemer som har en strømbryter, er det spenning i strømforsyningsenheten selv om strømbryteren er slått av og strømledningen er tilkoblet. Når det gjelder systemer uten en strømbryter, er det spenning i strømforsyningsenheten når strømledingen er tilkoblet.
Aviso	Não toque na unidade abastecedora de energia quando o cabo de alimentação estiver ligado. Em sistemas com interruptor, a corrente eléctrica estará presente na unidade abastecedora, sempre que o cabo de alimentação de energia estiver ligado, mesmo quando o interruptor se encontrar desligado. Para sistemas sem interruptor, a tensão eléctrica dentro da unidade abastecedora só estará presente quando o cabo de alimentação estiver ligado.
¡Advertencia!	No tocar la fuente de alimentación mientras el cable esté enchufado. En sistemas con interruptor de alimentación, hay voltajes de línea dentro de la fuente, incluso cuando el interruptor esté en Apagado (OFF) y el cable de alimentación enchufado. En sistemas sin interruptor de alimentación, hay voltajes de línea en la fuente cuando el cable está enchufado.
Varning!	Vidrör inte strömförsörjningsenheten när nätsladden är ansluten. För system med strömbrytare finns det nätspänning i strömförsörjningsenheten även när strömmen har slagits av men nätsladden är ansluten. För system utan strömbrytare finns det nätspänning i strömförsörjningsenheten när nätsladden är ansluten.

B.17 Power Supply Disconnection Warning

WARNING: Before working on a chassis or working near power supplies, unplug the power cord on AC units; disconnect the power at the circuit breaker on DC units.

Waarschuwing	Voordat u aan een frame of in de nabijheid van voedingen werkt, dient u bij wisselstroom toestellen de stekker van het netsnoer uit het stopcontact te halen; voor gelijkstroom toestellen dient u de stroom uit te schakelen bij de stroomverbreker.
Varoitus	Kytke irti vaihtovirtalaitteiden virtajohto ja katkaise tasavirtalaitteiden virta suojakytkimellä, ennen kuin teet mitään asennuspohjalle tai työskentelet virtalähteiden läheisyydessä.
Attention	Avant de travailler sur un châssis ou à proximité d'une alimentation électrique, débrancher le cordon d'alimentation des unités en courant alternatif ; couper l'alimentation des unités en courant continu au niveau du disjoncteur.
Warnung	Bevor Sie an einem chassis oder in der Nähe von Netzgeräten arbeiten, ziehen Sie bei Wechselstromeinheiten das Netzkabel ab bzw. schalten Sie bei Gleichstromeinheiten den Strom am Unterbrecher ab.
Avvertenza	Prima di lavorare su un telaio o intorno ad alimentatori, scollegare il cavo di alimentazione sulle unità CA; scollegare l'alimentazione all'interruttore automatico sulle unità CC.
Advarsel	Før det utføres arbeid på kabinettet eller det arbeides i nærheten av str¿mforsyningsenheter, skal str¿mledningen trekkes ut pÅ vekselstrømsenheter og strømmen kobles fra ved strømbryteren på likestrømsenheter.
Aviso	Antes de trabalhar num chassis, ou antes de trabalhar perto de unidades de fornecimento de energia, desligue o cabo de alimentação nas unidades de corrente alternada; desligue a corrente no disjuntor nas unidades de corrente contínua.

¡Advertencia!	Antes de manipular el chasis de un equipo o trabajar cerca de una fuente de alimentación, desenchufar el cable de alimentación en los equipos de corriente alterna (CA); cortar la alimentación desde el interruptor automático en los equipos de corriente continua (CC).
Varning!	Innan du arbetar med ett chassi eller nära strömförsörjningsenheter skall du för växelströmsenheter dra ur nätsladden och för likströmsenheter bryta strömmen vid överspänningsskyddet.

B.18 Power Cabling Warning

WARNING: Secure all power cabling when installing this unit to avoid disturbing field-wiring connections.

Waarschuwing	Zet alle stroomkabels vast wanneer dit toestel wordt geïnstalleerd om te voorkomen dat de verbindingen van de veldbedrading worden verstoord.
Varoitus	Kiinnitä kaikki voimakaapelit tiukkaan tätä laitetta asentaessasi, jotta vältät kentän johdinkytkentöjen vioittumista.
Attention	Lors de l'installation de cet appareil, fixer tous les câbles d'alimentation pour éviter de provoquer des perturbations aux raccordements des câblages propres au site.
Warnung	Bei der Installation dieser Einheit die Netzverkabelung befestigen, um die Störung von Feldkabelanschlüssen zu vermeiden.
Avvertenza	In fase di installazione dell'unità, assicurare tutti i cablaggi di alimentazione per evitare di alterare i collegamenti degli avvolgimenti di campo.
Advarsel	Når denne enheten installeres, må alle kraftledninger sikres for å unngå at feltkabelkoblingene forstyrres.
Aviso	Para evitar problemas com as ligações de rede de campanha, prenda todos os cabos de corrente quando instalar esta unidade.
¡Advertencia!	Sujetar todo el cableado de alimentación cuando se instale este equipo para evitar que se mezcle con las conexiones del cableado "in situ".
Varning!	Fäst allt starkströmskablage vid installation av denna enhet så att fältkopplingen inte rubbas.

B.19 AC Power Supply Circuit Warning

WARNING: Care must be given to connecting units to the supply circuit, so that wiring is not overloaded.

Waarschuwing	Let erop dat de toestellen op voedingscircuits worden aangesloten zonder het vermogen van de bedrading te overschrijden.
Varoitus	Laiteyksiköt on yhdistettävä huolellisesti syöttöpiiriin niin, että johdot eivät ole ylikuormitettuja.
Avertissement	Veillez à bien connecter les unités au circuit d'alimentation afin de ne pas surcharger les connections.
Achtung	Beim Anschließen der Geräte an das Stromnetz ist darauf zu achten, daß die Schaltverbindungen nicht überlastet werden.
Avvertenza	Fare attenzione quando si collegano le unità al circuito di alimentazione, per non sovraccaricare i cablaggi.
Advarsel	Vær nøye med å koble enheter til strømforsyningskretsen slik at ledningene ikke overbelastes.
Aviso	Deverá ter precaução ao ligar unidades ao circuito de fornecimento de energia, para não sobrecarregar a instalação.
¡Atención!	Poner mucho cuidado al conectar los equipos al circuito de alimentación a fin de no sobrecargar el cableado.
Varning	Var noga vid anslutning av enheter till matarströmkretsen så att ledningarna inte överbelastas.

Appendix C Regulatory Compliance and Safety Information

This section provides international agency compliance, safety, statutory information and translated safety warnings for the iDirect 7000 series™ Satellite Router. Please also refer to the EC-Declaration of Conformity.

NOTE

Triple DES Encryption is eligible for export from the U.S. to all customers worldwide, except to U.S. embargoed destinations. Other countries may exercise separate jurisdiction over the import, export or use of encryption products. Users who use this product should observe any local regulations that may apply to the distribution or use of encryption products.

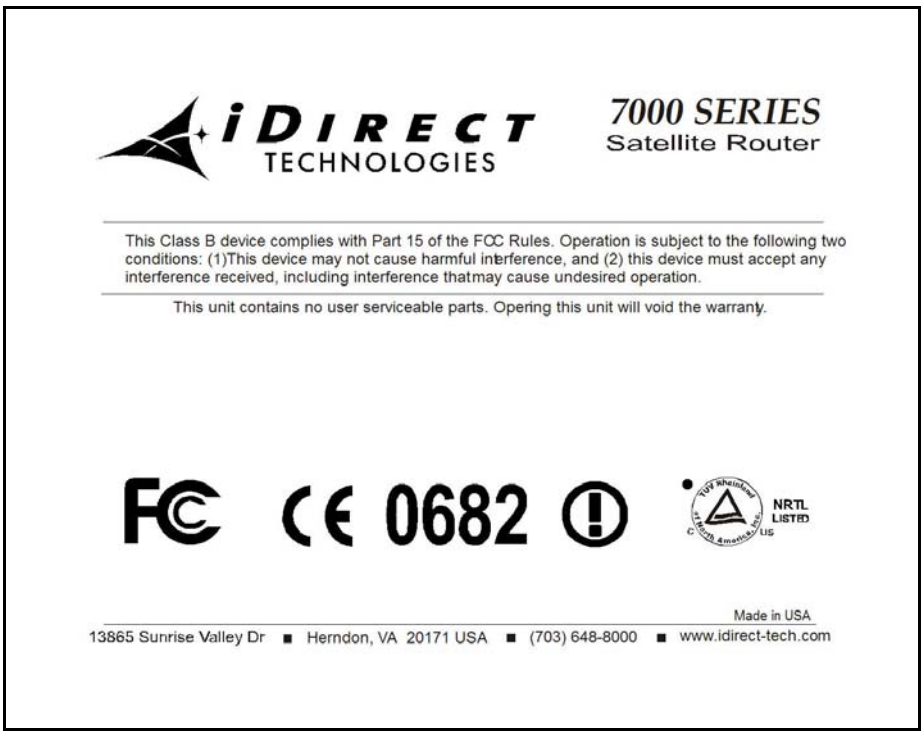


Figure 20: iDirect 7000 series™ Satellite Router Product Label

FCC Compliance

The iDirect 7000 series™ Satellite Router complies with Class B of Part 15 of the FCC (Federal Communications Commission) rules as is identified by use of the FCC logo.

Radiated and Conducted Emission	47CFR15 Class B, CISPR-22 Class B, EN55022 Class B.

Part 15 Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. The equipment uses, generates, and radiates frequency energy. If the equipment is not installed and used in accordance with the instructions, it may cause harmful interference to radio communications. There is also no guarantee that interference will not occur in a particular installation. You can determine if the equipment is interfering with radio or television reception by removing or applying power to the equipment and seeing if the interference goes away, or returns, when the unit is off or on.

To meet FCC requirements, only peripherals, such as computer input/output devices, terminals, and printers certified to comply with the Class B limits, may be attached to this device. Operation with non-certified peripherals is likely to result in interference to radio and TV reception.

To meet FCC requirements, shielded cables are required to connect the device to a personal computer, peripheral, or other Class B certified device.

WARNING **Modification of this equipment without written authorization from iDirect Technologies, Inc. may result in this equipment no longer complying with FCC requirements for Class B digital devices. In that event, your right to use the equipment may be limited by FCC regulations, and you may be required to correct any interference to radio or television communications at your own expense.**

Canadian Labeling Requirements

The iDirect 7000 series™ Satellite Router meets Canadian labeling requirements.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la Classe B est conforme à la norme NMB-003 du Canada.

CE Compliance (European Union)

CE 0682 ⓘ

Marking by this symbol indicates the iDirect 7000 series™ Satellite Router is in compliance with all relevant European Radio and Telecommunications Terminal Equipment (R&TTE) Directives. This Class 2 equipment has been registered with the European Notified Body 0682 (NB).

EMC Emission	EN301428, EN301443, EN300673, EN55022, EN61000-3-2, EN61000-3-3
EMC Radio Spectrum Matters	EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11, ISO7637
EMC Immunity	EN301489-1 Part 12
Health	R&TTE Article 3.1a, DIN VDE 0848 Part1, FCC OET Bullet Number 65
Safety	IEC/EN60950 - 1

Safety

TUV Rheinland of North America is a Nationally Recognized Testing Laboratory (NRTL) in the United States and is accredited by the Standards Council of Canada to test and certify products to Canadian National Standards. The iDirect 7000 series™ Satellite Router is in compliance to both U.S. and Canadian National Standards on Safety.

In addition, the IECEE CB Scheme Test Report and CB Test Certificate for the iDirect 7000 series™ Satellite Router is done with TUV Rheinland of North America. This CB Scheme is recognized by the multilateral agreement among participating countries and certification organizations. Since iDirect is utilizing this CB test report issued by TUV, the iDirect 7000 series™ Satellite Router is in compliance with all other member countries of the CB Scheme.

Safety	UL60950-1 / CAN/CSA-C22.2 NO. 60950-1 -03

EC - Declaration of Conformity

Manufacturer/Responsible Person:	iDirect Technologies Inc. Hai Tang/Greg Braunberg
Address:	13865 Sunrise Valley Drive Herndon, VA 20171 USA

Declares that the Product:

Type:	VSAT System
Model:	NetModem II Plus, Private HUB, MUSiC Box, NetModem Hub 1-IF, NetModem Hub 5-IF, iNFINITY Series 1000, 3000, 5000, 7000, 10000, 15000
Intended Use:	Satellite Router System

Complies with the essential requirements of Article 3 of the R&TTE 1999/5/EC Directive, if used for its intended use and that the following standards has been applied:

1. Health (Article 3.1a of the R&TTE Directive)

Applied Standard(s):	DIN, VDE 0848 Part 1 (2000-08), 1999/519/EC (1999-07) which refers to ICNIRP Guidelines, FCC OET Bullet No. 65, Edition 97-01, August 1997
Issue:	August 2, 2001

2. Safety (Article 3.1a of the R&TTE Directive)

Applied Standard(s):	EN 60950: 2001
Issue:	Aug., 2001, July 2002, Nov 2003, Feb 2005

3. Electromagnetic compatibility (Article 3.1b of the R&TTE Directive)

Applied Standard(s):	EN 300 673, EN301 489-1, V1.2.1, EN 301 489-12 V1.1.1
Issue:	Aug. 2001, Aug. 2002, July 2003, Jan 2005

4. Efficient use of the radio frequency spectrum (Article 3.2 of the R&TTE Directive)

Applied Standard(s):	Final Draft ETSI EN 301 428 V1.2.1 (2001-02) ETSI EN 301 443 V1.2.1 (2001-02)
Issue:	Aug. 2001, July 2002, July 2003, Jan 2005

Herndon, VA USA April 13, 2005

Place Of Issue Date Of Issue

Hai Tang
Director – Hardware Engineering