Imagine COMMUNICATIONS™

Installation and Configuration Manual

SPT™

SPT-LXYTOTSLUMD Serial Protocol Translator
X-Y to Under Monitor Display Using TSL Protocol

Edition D

LXYTOTSLUMD MAN

Publication Information

This publication is designed to assist in the use of the product as it exists on the date of publication of this manual, and may not reflect the product at the current time or an unknown time in the future. This publication does not in any way warrant description accuracy or guarantee the use for the product to which it refers.

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- Support Contacts: http://www.imaginecommunications.com/services/technical support/
- eCustomer Portal: http://support.imaginecommunications.com

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Preface

Manual Information

Purpose

This manual details the features, configuration details, and specifications for the SPT-LXYTOTSLUMD serial protocol translator.

Audience

This manual is written for technicians and operators responsible for installation, setup, maintenance, and/or operation of the product, and is useful to operations personnel for purposes of daily operation and reference.

Revision History

Table P-1. Manual Revision History

Edition	Date	Comments
Edition A	August 2002	Initial release
Edition B	March 2003	Various edits and updates
Edition C	September 2002	• Updated jumper designators • Added RouterMapper information
Edition D	June 2007	• Added power requirements information • Added RoHS-WEEE compliance information • Added index

Writing Conventions

To enhance your understanding, the authors of this manual have adhered to the following text conventions:

Table P-2. Writing Conventions

Term or Convention	Description
Bold	Indicates dialog boxes, property sheets, fields, buttons, check boxes, list boxes, combo boxes, menus, submenus, windows, lists, and selection names
Italics	Indicates email addresses, the names of books or publications, and the first instances of new terms and specialized words that need emphasis
CAPS	Indicates a specific key on the keyboard, such as ENTER, TAB, CTRL, ALT, or DELETE
Code	Indicates variables or command-line entries, such as a DOS entry or something you type into a field
>	Indicates the direction of navigation through a hierarchy of menus and windows
hyperlink	Indicates a jump to another location within the electronic document or elsewhere
Internet address	Indicates a jump to a Web site or URL
Note	Indicates important information that helps to avoid and troubleshoot problems

Obtaining Documents

Technical documents can be viewed or downloaded from our Web site at www.broadcast.harris.com/leitch (go to **Support > Documentation**). Alternatively, contact your Customer Service representative to request a document.

Unpacking/Shipping Information

Unpacking a Product

This product was carefully inspected, tested, and calibrated before shipment to ensure years of stable and trouble-free service.

1. Check equipment for any visible damage that may have occurred during transit.
2. Confirm that you have received all items listed on the packing list.
3. Contact your dealer if any item on the packing list is missing.
4. Contact the carrier if any item is damaged.
5. Remove all packaging material from the product and its associated components before you install the unit.

Keep at least one set of original packaging, in the event that you need to return a product for servicing.

Returning a Product

In the unlikely event that your product fails to operate properly, please contact Customer Service to obtain a Return Authorization (RA) number, then send the unit back for servicing.

Keep at least one set of original packaging in the event that a product needs to be returned for service. If the original package is not available, you can supply your own packaging as long as it meets the following criteria:

- The packaging must be able to withstand the product's weight.
- The product must be held rigid within the packaging.
- There must be at least 2 in. (5 cm) of space between the product and the container.
- The corners of the product must be protected.

Ship products back to us for servicing prepaid and, if possible, in the original packaging material. If the product is still within the warranty period, we will return the product prepaid after servicing.

Compliance and Safety Standards

Appendix A: "Safety Precautions, Certifications, and Compliances" contains product compliance and safety standards.

Restriction on Hazardous Substances (RoHS) Compliance

Directive 2002/95/EC—commonly known as the European Union (EU) Restriction on Hazardous Substances (RoHS)—sets limits on the use of certain substances found in electrical and electronic equipment. The intent of this legislation is to reduce the amount of hazardous chemicals that may leach out of landfill sites or otherwise contaminate the environment during end-of-life recycling. The Directive takes effect on July 1, 2006, and it refers to the following hazardous substances:

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent Chromium (Cr-V1)
- Polybrominated Biphenyls (PBB)
- Polybrominated Diphenyl Ethers (PBDE)

According to this EU Directive, all products sold in the European Union will be fully RoHS-compliant and "lead-free." (See our Web site, www.broadcast.harris.com/leitch > company > environmental compliance, for more information on dates and deadlines for compliance.) Spare parts supplied for the repair and upgrade of equipment sold before July 1, 2006 are exempt from the legislation. Equipment that complies with the EU directive will be marked with a RoHS-compliant emblem, as shown in Figure P-1.

Figure P-1. RoHS Compliance Emblem

Waste from Electrical and Electronic Equipment (WEEE) Compliance

The European Union (EU) Directive 2002/96/EC on Waste from Electrical and Electronic Equipment (WEEE) deals with the collection, treatment, recovery, and recycling of electrical and electronic waste products. The objective of the WEEE Directive is to assign the responsibility for the disposal of associated hazardous waste to either the producers or users of these products. Effective August 13, 2005, producers or users will be required to recycle electrical and electronic equipment at end of its useful life, and may not dispose of the equipment in landfills or by using other unapproved methods. (Some EU member states may have different deadlines.)

In accordance with this EU Directive, companies selling electric or electronic devices in the EU will affix labels indicating that such products must be properly recycled. (See our Web site, www.broadcast.harris.com/leitch > company > environmental compliance, for more information on dates and deadlines for compliance.) Contact your local sales representative for information on returning these products for recycling. Equipment that complies with the EU directive will be marked with a WEEE-compliant emblem, as shown in Figure P-2.

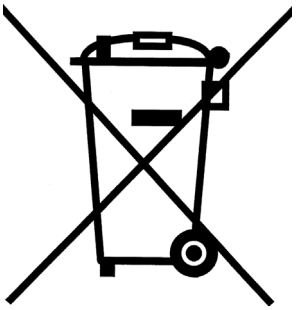


Figure P-2. WEEE Compliance Emblem

Safety

Carefully review all safety precautions to avoid injury and prevent damage to this product or any products connected to it. You will find a complete list of safety precautions in Appendix A. Any user-serviceable components (such as fuses or batteries) are only replaceable by those components listed in the manual.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual

WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.

CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Chapter 1

Introduction

The SPT serial protocol translator is a compact adapter that translates between Harris protocol and protocols used by other manufacturers or equipment. The SPT can be used to integrate otherwise incompatible devices in a system, and it may be used to expand a system beyond the normal limitations imposed by hardware or system design. The SPT is available in several modes, each of which is covered in a separate manual. For a complete list of available models, refer to the *SPT Applications Guide.*

Figure 1-1. SPT Serial Protocol Translator

Applications Involving the SPT-LXYTOTSLUMD

The SPT-LXYTOTSLUMD can be used with any Under Monitor Display (UMD) that uses TSL protocol, such as the Megahertz Under Monitor Display[1]. The UMD is assigned a destination to display the status name of the source that is currently switched to its destination. In this case the UMD uses TSL protocol. The status of the Destinations and switching is in X-Y protocol. So it is necessary to use this SPT to translate the X-Y protocol to TSL protocol. The SPT statuses the proper destinations for the UMD(s) to display. When the status is received for each of the UMD(s) on the SPT branch of the X-Y bus, the SPT translates that status to TSL protocol and transmits this information over the RS-422 line to the UMD to display, as shown in Figure 1-2.

Effectively, this adds a TSL protocol for “Under Monitor Display” capability to the Harris routing and control system.

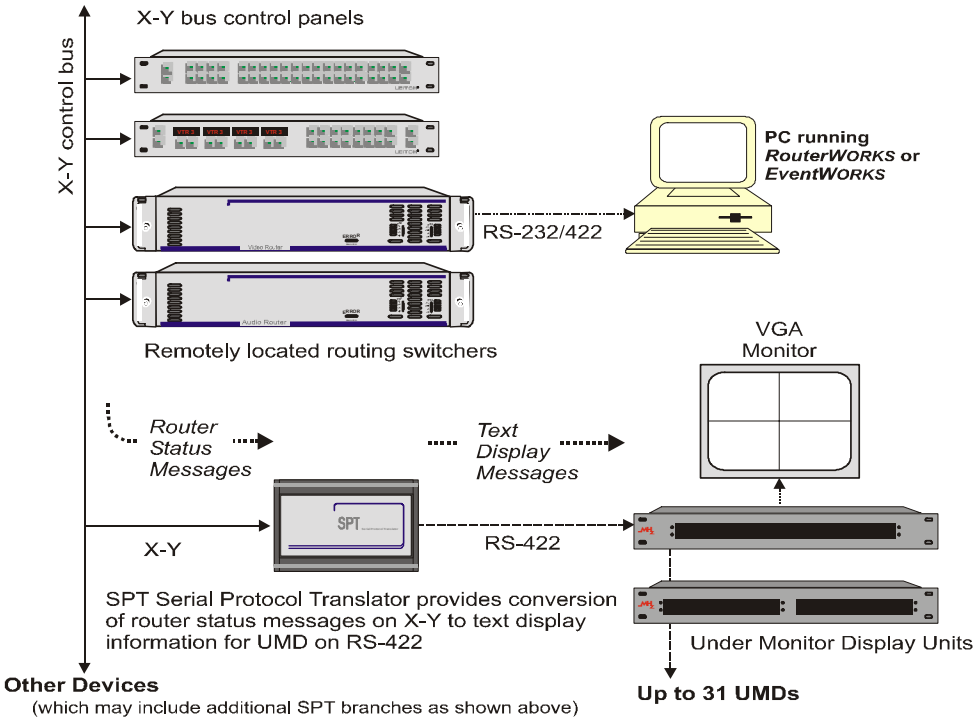


Figure 1-2. System Using SPT-LXYTOTSLUMD

[1] The Megahertz Under Monitor Display is a product of Megahertz Broadcast Systems Ltd., Cambridge, United Kingdom.

Chapter 2

Installation

Installing the SPT-LXYTOTSLUMD

The SPT-LXYTOTSLUMD is installed in the control line, as shown in Figure 2-1.

- The maximum allowable distance for each segment of the X-Y coaxial cable run is 2,000 ft (609 m).
- The maximum length for each RS-232 and RS-422 segment is 2,000 ft (609 m).
- There is no limit to the number of control devices added to the X-Y control bus.
- Each SPT can control up to 31 UMDs on one level.
- For additional UMDs or Levels, you must add an SPT branch to the X-Y control bus.

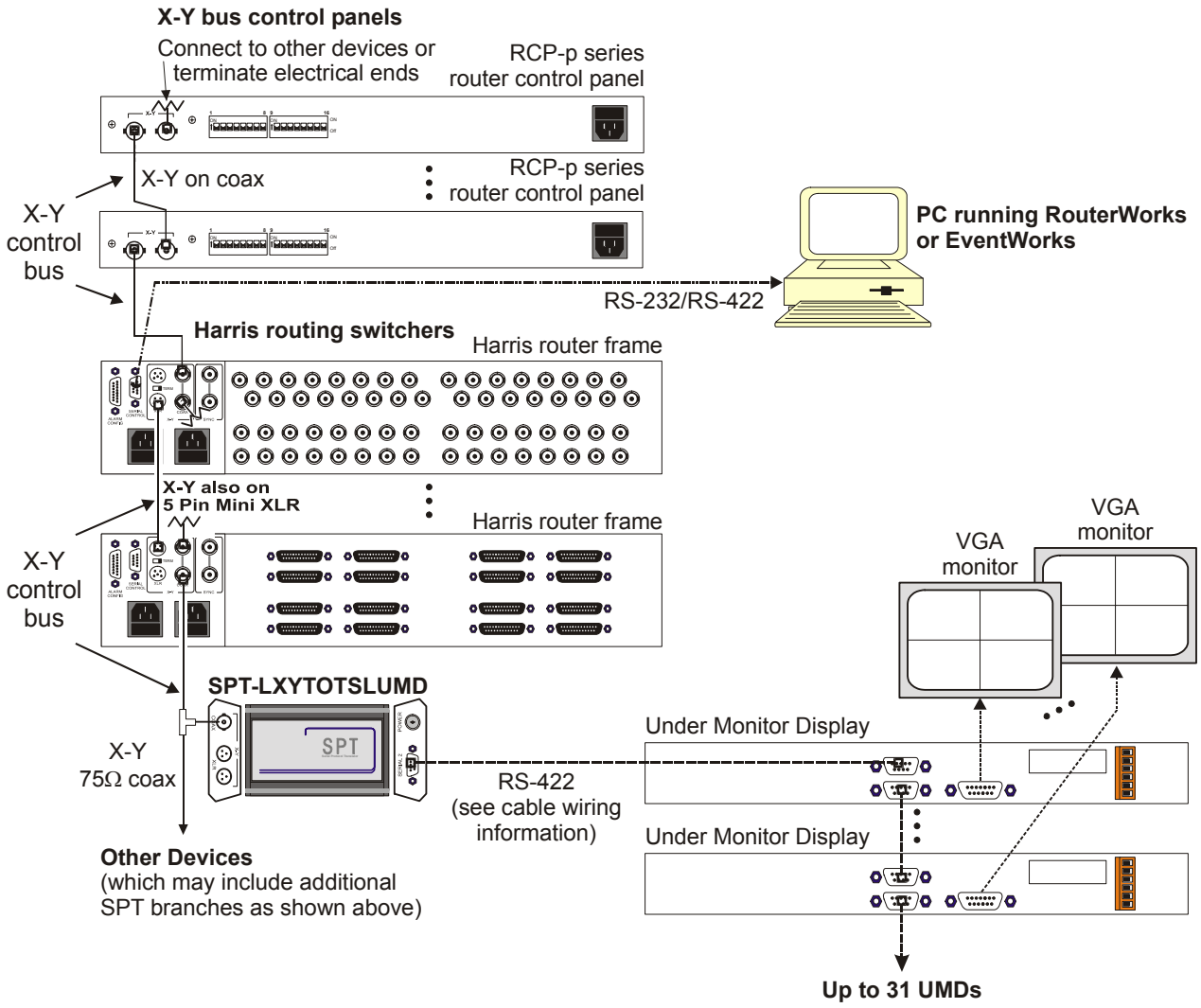


Figure 2-1. Installation Guide for the SPT-LXYTOTSLUMD

Port Configured For RS-232		Port Configured For RS-422	
Pin	**Function**	**Pin**	**Function**
1		1	Frame Ground
2	RxD (Data Received by Router)	2	Ta (Data Sent by Router)
3	TxD (Data Sent by Router)	3	Rb (Data Received by Router)
4		4	Receiver Common
5	Ground	5	
6		6	Transmit Common
7		7	Tb (Data Sent by Router)
8		8	Ra (Data Received by Router)
9		9	Frame Ground

Figure 2-2. Serial Connector Pin Assignments

Cable Wiring Details

Figure 2-3 shows the connector pin assignments on both ends of the connection and the cable wiring description is shown between the connectors. Connections between UMDs should use a cable that has both a female and male end.

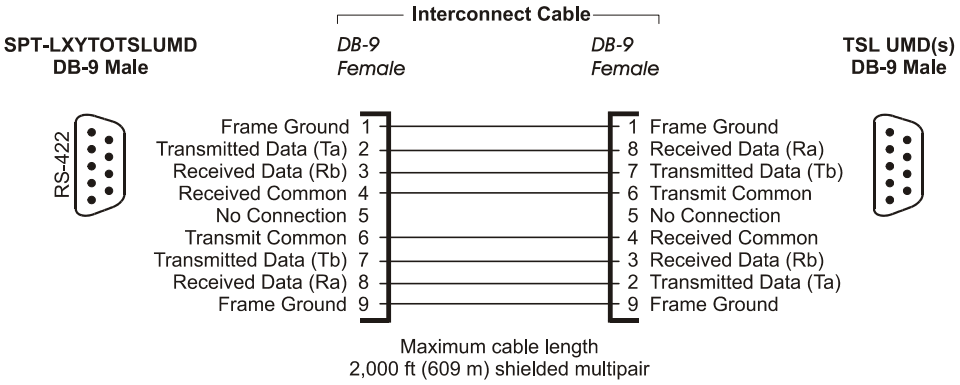


Figure 2-3. Cable Wiring Details for SPT-LXYTOTSLUMD

Power Requirements

Locations with 110-127 Volt Electrical Systems

Note

If you did not receive the correct adaptor for your electrical system, please contact your Customer Service representative. Go to www.broadcast.harris.com/leitch > Support > Technical Support for contact information for our service centers worldwide.

Locations with 110-127 volt electrical systems should use the **PD9200PL6A** adaptor.

Figure 2-4. PD9200PL6A Adaptor

- Input voltage: 120 VAC, 60 Hz
- Input current: 60 mA max.
- Output voltage: 9.0 VDC
- Output current: 200 mA
- Output connector: 5.5 mm×2.5 mm female barrel power plug with positive center (see Figure 2-4)

Locations with 220-240 Volt Electrical Systems

Locations with 220-240 volt electrical systems should use the **PD9300EPL6A** adaptor.

Figure 2-5. D9300EPL6A Adaptor

- Input voltage: 230 VAC, 5 0Hz
- Input current: 40 mA max
- Output voltage: 9.0 VDC
- Output current: 30 0mA
- Output connector: 5.5 mm×2.5 mm female barrel power plug with positive center (see Figure 2-5)

Chapter 3

Configuration and Assembly

Configuring the SPT-LXYTOTSLUMD

Note

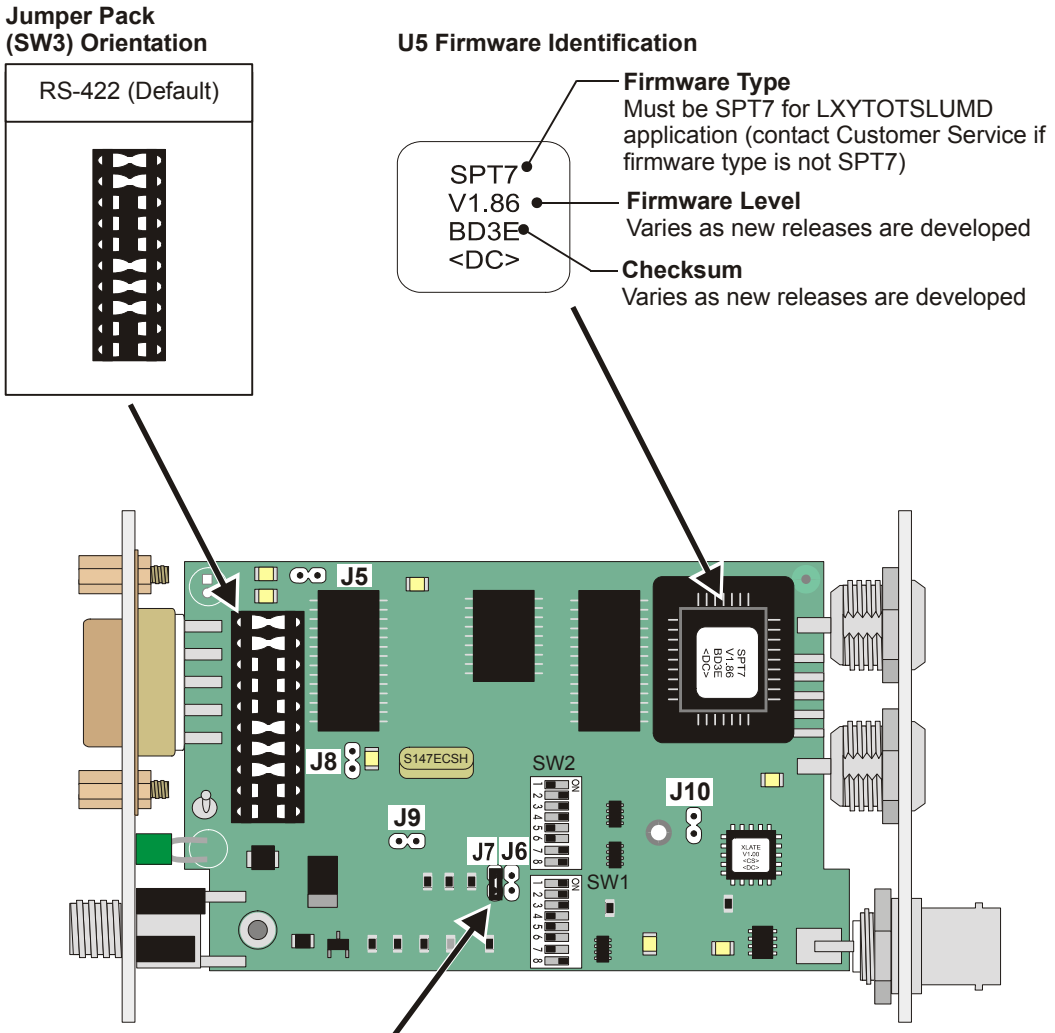
In the unlikely event that you need to change settings, see Figure 3-1 and Figure 3-2 for more information on these settings.

The SPT-LXYTOTSLUMD is shipped from the factory preconfigured for use. In most cases, it will not be necessary to reconfigure the SPT. The following parameters, however, are user-configurable:

Table 3-1. Settings

User-Configurable Setting	Factory Default Setting
RS-422 jumper switch	RS-422
Serial port baud rate	38400 baud
X-Y on XLR termination (XLR ports must be terminated if the SPT is located at the end of the bus)	Terminated
SPT Address (ID)	1

Configuration is accomplished via DIP switch and jumper settings, as shown in Figure 3-1 and Figure 3-2.



Suitcase Jumpers

Jumper Designator	Setting
J5	Not installed
J6	Not installed
J7	Installed
J8	Not installed
J9	Not installed
J10	Not installed

IMPORTANT
To ensure proper identification of new parameters, update the label on the back of the SPT whenever you modify any switch or jumper settings.

Figure 3-1. DIP Switch and Jumper Locations

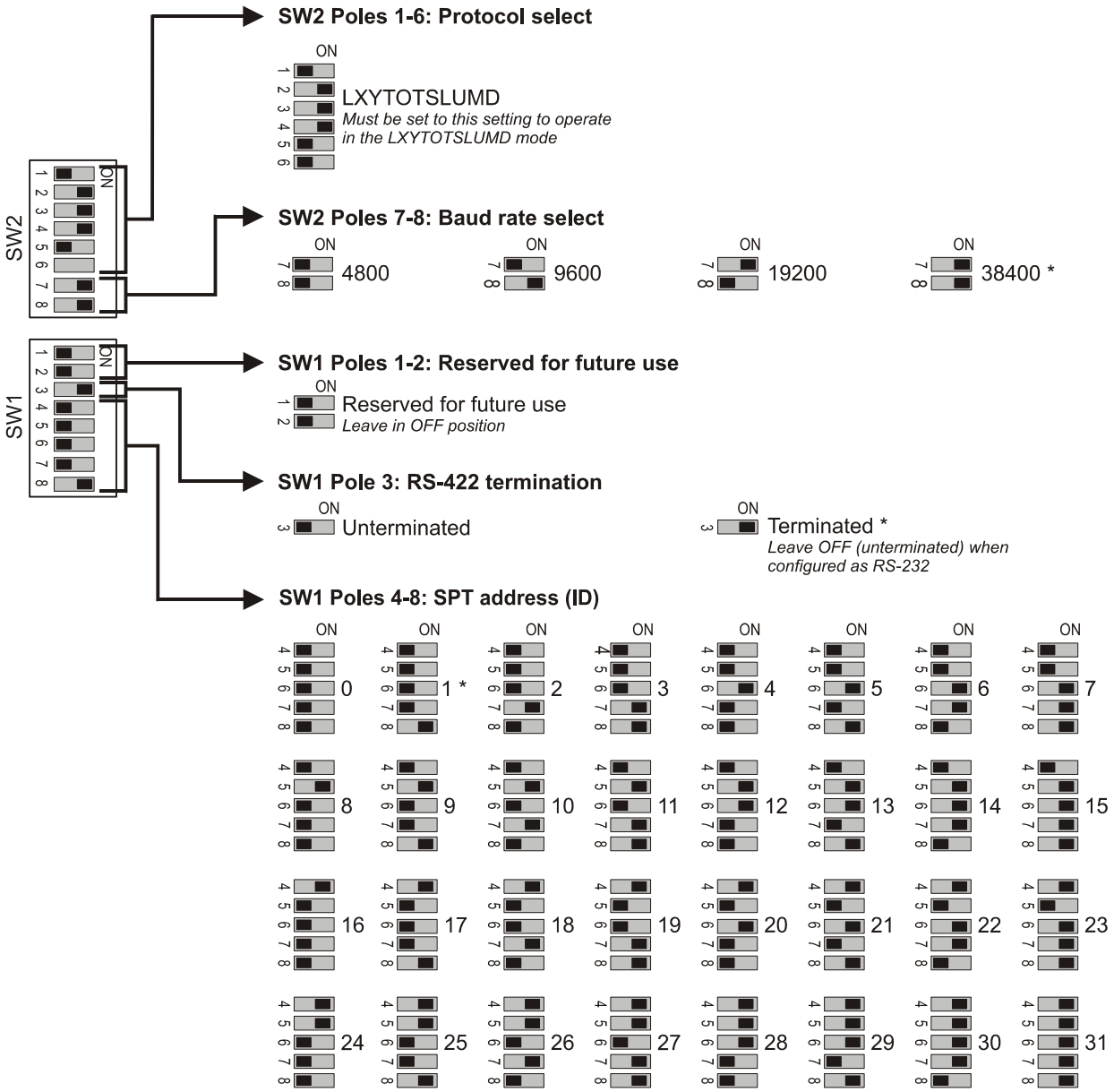
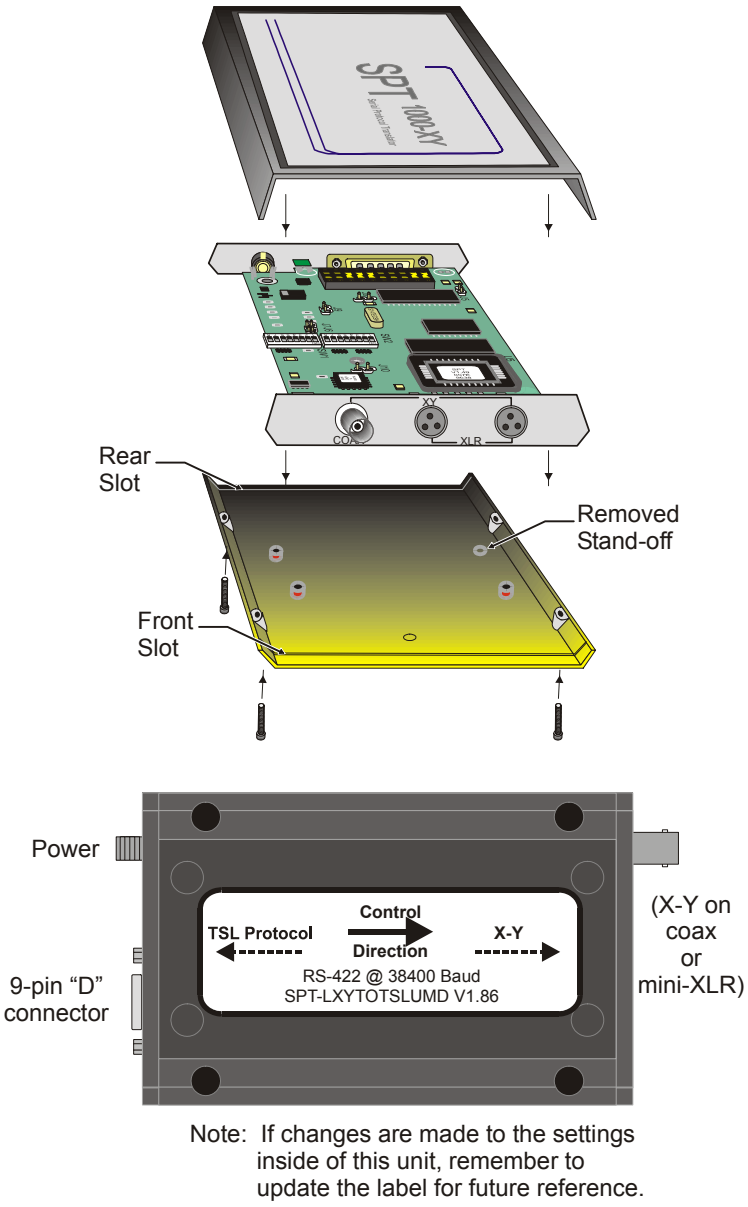


Figure 3-2. DIP Switch Settings

Reassembling the Unit

To avoid damage to the SPT-LXYTOTSLUMD circuitry, the unit must be reassembled as shown in Figure 3-3. Note that one of the four standoffs on the underside of the bottom cover has been removed. Orient the cover so that this area is positioned directly over U1. If U1 is positioned under an intact standoff, the standoff will press against the component, and possibly cause damage to the unit.



Note: If changes are made to the settings inside of this unit, remember to update the label for future reference.

Figure 3-3. Reassembling the Unit

Protocol Notes

The TSL UMD protocol is a simple, one-way communications protocol in which the SPT is the only device transmitting and each TSL UMD "listens." The only message sent to the TSL unit is a message specifying both the "Address ID" for which the Source Identification (or Text) should be set, and the specific text to be displayed. The names of the sources are downloaded and stored in the SPT using the RouterMapper software configuration utility.

SPT-LXYTOTSLUMD RouterMapper Configuration Procedure

Note

For a more detailed explanation of these procedures, see your *RouterMapper Configuration Utility Reference Guide.*

Follow these steps to have each TSL UMD display its Destination's status correctly.

- Poll the system (see page 13).
- Delete Sources to the UMD (see page 14).
- Assign the Destinations (see page 15).

Step 1. Poll the System

Note

Each UMD represents or displays the status of one Destination.

In RouterMapper, a Poll of the system will show that each SPT-LXYTOTSLUMD is recognized as an RC-ABA-XY control panel. This allows RouterMapper to assign and download both the "Status" source names to be displayed on the TSL UMD, and the destinations associated with each of the display(s).

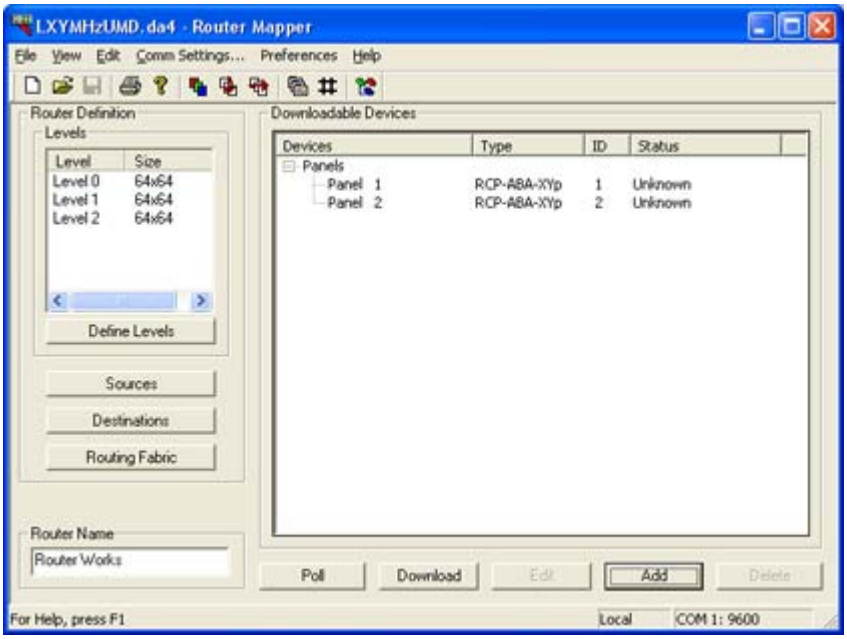


Figure 3-4. A Poll Showing SPT-LXYTOTSLUMD as RCP-ABA/XY

Step 2. Delete the Sources to the UMD

Only Destinations are monitored by the SPT-LXYTOTSLUMD; therefore, by deleting the sources to the TSL UMD, the download time will be decreased.

a. At the RouterMapper main menu window, highlight the name of the item that has the Sources you want to delete, and then select **Edit**.

b. At the **Assignments** tab, select **Delete All** for Sources.

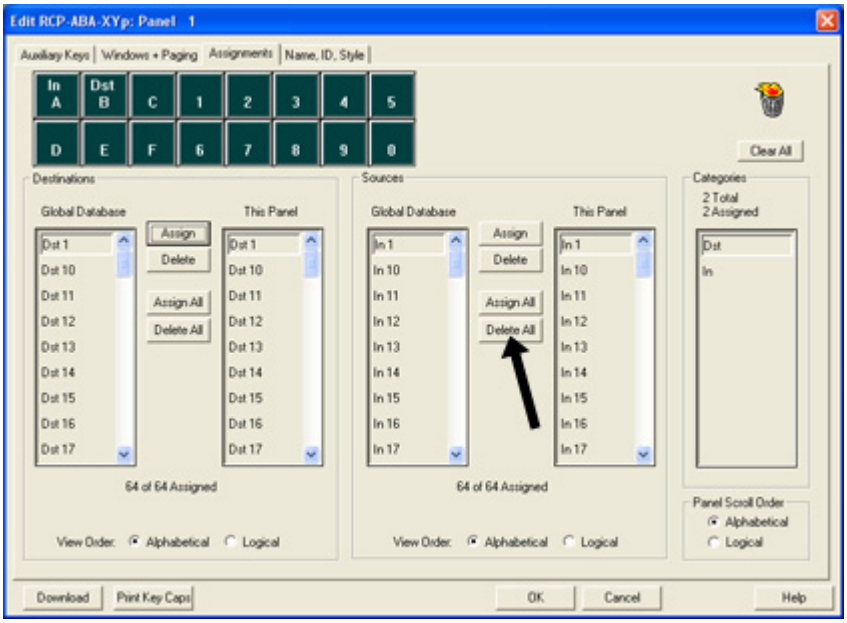


Figure 3-5. Deleting Sources

Step 3. Assign the Destinations

Each UMD must have its own Address ID. The Address ID is assigned on each UMD from the front panel. Directions for assigning an Address ID can be found in in the *Megahertz Under Monitor Display User Manual*.

Once each UMD has its own Address ID, the Destinations must be assigned to these UMD Address IDs so that the proper UMD will monitor the proper Destination.

To assign Destinations, follow these steps:

a. At the **Assignment** tab, select **Delete All** for Destinations.

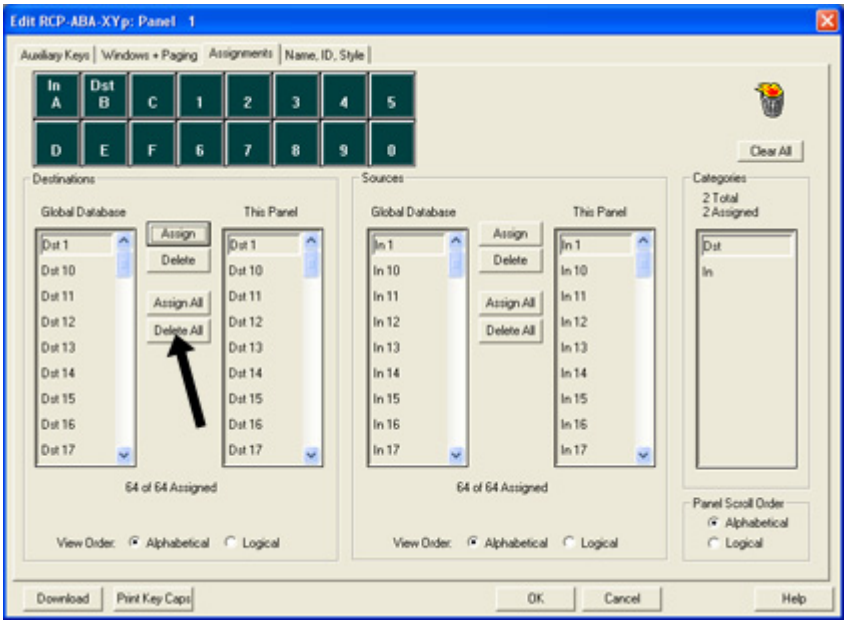


Figure 3-6. Deleting Destinations

b. Select the proper Destinations from the Global Database box (make sure they are sorted in Logical sort order) to assign the Destinations.

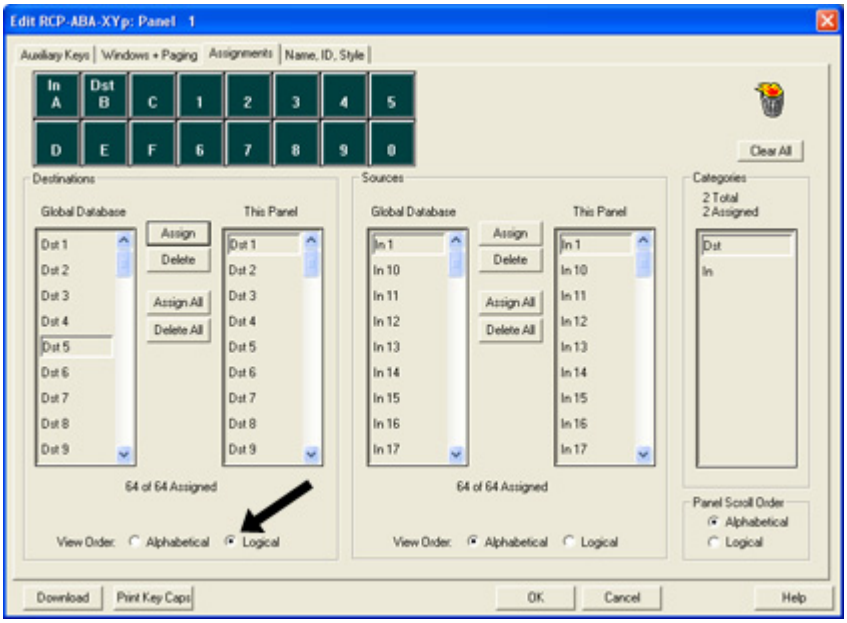


Figure 3-7. Assigning Destinations

These Destinations will list in numeric physical order; the proper UMD must be in this order from the SPT in its physical order. For example

- Dest 7 must be assigned the UMD Address 1 (This UMD should be physically located first following the SPT in its branch, because its physical location is first in this two destination monitoring example.)
- Dest 8 must be assigned the UMD Address 2, etc.

Because of limited memory storage, the SPT-LXYTOTSLUMD can operate up to 32 Display IDs with one level of up to 128 Status Source names.

The SPT-LXYTOTSLUMD can operate only one level (the level is determined from the first download logical Destination's control level).

The Destinations are downloaded in numerical order. After a download from the RouterMapper, the SPT requires at least 60 seconds of idle time for it to back up the data to the EEProm. To increase this download speed, do not assign Sources to the SPT-LXYTOTSLUMD.

Text Displayed on the UMD

Status Source names are displayed when the UMD displays the status of its Destination. The Status Source name is the name of the Source that is switched to that Destination. Follow these steps to edit these Status Source names .

a. At the RouterMapper main menu screen, highlight the name of the item that has the status Source name text you want to edit.

b. Select **Sources**, and then select the **Status Names** tab.

c. Change the names of the Sources.

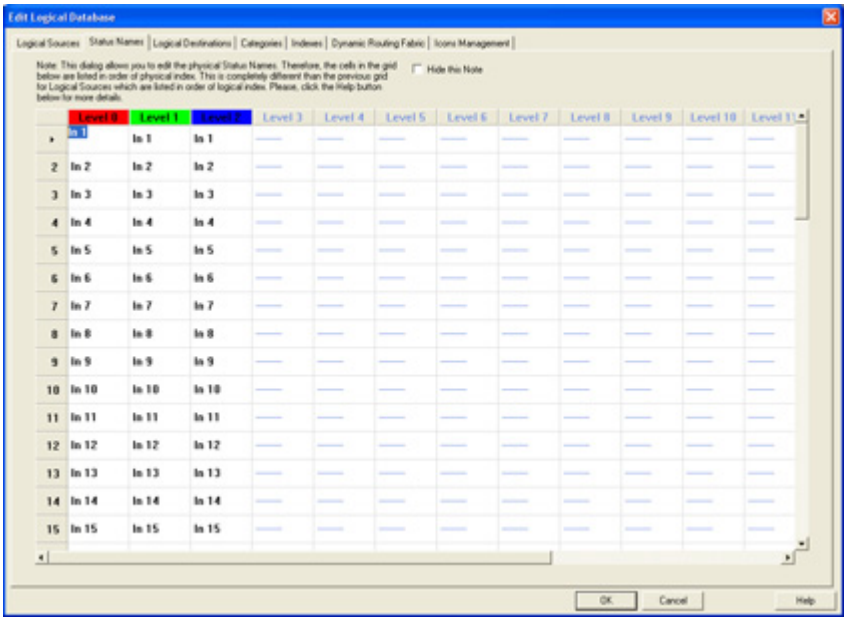


Figure 3-8. Renaming Status Sources

Monitoring Levels

The SPT-LXYTOTSLUMD only statuses the Level of the Destination that is associated with the Level of the Source; that is, if there is a Source on Levels 2 and 3 only and the destination is on Level 1, the source will not be switched to that Destination and the UMD will not display the switched Status Source name.

The SPT will control the lowest Level of the first Destination. Therefore, if the first Destination is on Level 1, all status of Destinations for that SPT will show Level 1 status. If the first Destination is on Level 2, all status of Destinations for that SPT will show Level 2 status, and ignore what occurs other levels.

To monitor multiple levels, an SPT branch for each Level must be installed.

References

The following documentation used as a reference for implementing the protocol translation:

Megahertz Under Monitor Display User Manual, Issue 2
Issue: A2-00, Version 0.10B 25/02/97

Appendix A

Safety Precautions, Certifications, and Compliances

Overview

Carefully observe the safety alert symbols below for dangers, warnings, and cautions. They alert installers and operators of possible dangers or important information contained in this manual.

Keep in mind, though, that warnings alone do not eliminate hazards, nor are they a substitute for safe operating techniques and proper accident prevention measures.

Any user-serviceable components (such as fuses or batteries) are only replaceable by those components listed in the manual.

IMPORTANT! Only qualified personnel should perform service procedures.

Safety Terms and Symbols in this Manual

WARNING

Statements identifying conditions or practices that may result in personal injury or loss of life. High voltage is present.

CAUTION

Statements identifying conditions or practices that can result in damage to the equipment or other property.

Safety Terms and Symbols on the Product

DANGER: *High voltage and indicates a personal injury hazard immediately accessible as one reads the marking.*

WARNING: *Indicates a personal injury hazard not immediately accessible as one reads the marking.*

CAUTION: *Indicates a hazard to property, including the product, or to pay attention and refer to the manual.*

Protective ground (earth) terminal.

Fuse. *Replace with same type and rating of fuse.*
Zur Vermeidung von Feuer verwenden Sie nur Sicherungen mit der für dieses Produkt geforderten Typ und Stromstärke.

Preventing Electrostatic Discharge

Observe precautions for handling electrostatic sensitive devices.

CAUTION: Electrostatic discharge (ESD) can damage components in the product. To prevent ESD, observe these precautions when directed to do so:

1. ***Use a Ground Strap.*** Wear a grounded antistatic wrist strap to discharge the static voltage from your body while installing or removing sensitive components.
2. ***Use a Safe Work Area.*** Do not use any devices capable of generating or holding a static charge in the work area where you install or remove sensitive components. Avoid handling sensitive components in areas that have a floor or benchtop surface capable of generating a static charge.
3. ***Handle Components Carefully.*** Do not slide sensitive components over any surface. Do not touch exposed connector pins. Handle sensitive components as little as possible.
4. ***Transport and Store Carefully.*** Transport and store sensitive components in a static-protected bag or container.

Injury Precautions

WARNING
Potentially lethal voltages are present within the frame during normal operation. The AC power cord must be disconnected from the frame before the top panel is removed. (In frames with multiple power supplies, remove ALL power cords.) Power should not be applied to the frame while the top is open unless properly trained personnel are servicing the unit.
Pull out the plug from the main socket before the removal of a cover.
Przod zdjeciem pokrywy wyciagnac wtyczke z gniazda sieciowego.

WARNING: *SHOCK HAZARD - DO NOT OPEN.*
AVIS: *RISQUE DE CHOC ÉLECTRIQUE - NE PAS OUVRIR.*
MOUNT IN RACK ONLY
I*NSTALLER SUR SUPPORT DE MONTAGE SEULEMENT.*

Use proper power cord

To avoid fire hazard, use only the power cord specified for this product.

Ground the product

This is a Safety Class 1 product and is grounded through the grounding conductor of the power cord. To avoid electrical shock, the grounding conductor must be connected to earth ground. Before making connections to the product's input or output terminals, ensure the product is properly grounded.
WARNING: *THIS APPLIANCE MUST BE GROUNDED.*
WARNING: *THIS APPLIANCE MUST BE EARTHED.*
VARNING: *APPARATEN SKALL ANSLUTAS TILL JORDAT UTTAG NÄR DEN ANSLUTS TILL ETT NÄTVERK.*

Do Not Operate Without Covers

To avoid electrical shock or fire hazard, do not operate this product with covers or panels removed.

Use Proper Fuse

To avoid fire hazard, use only the fuse type and rating specified for this product.

Do Not Operate in Wet/Damp Conditions

To avoid injury or fire hazard, do not operate this product in wet or damp conditions.

Do Not Operate in an Explosive Atmosphere

To avoid injury or fire hazard, do not operate this product in an explosive atmosphere.

Avoid Exposed Circuitry

To avoid injury, remove jewelry such as rings, watches, and other metallic objects. Do not touch exposed connections and components when power is present.

Product Damage Precautions

CAUTION:

Disconnect power from the frame before removing or installing input/output modules. Removing or installing modules with power applied could cause serious damage to system components.

Use Proper Power Source

Do not operate this product from a power source that supplies more than the specified voltage.

Use Proper Voltage Settings

Before applying power, ensure that the line selector is in the proper position for the power source being used.

Provide Proper Ventilation

To prevent product overheating, provide proper ventilation.

Do Not Operate With Suspected Failures

If you suspect there is damage to this product, have it inspected by qualified service personnel.
CAUTION: This unit can have more than one power supply cord. To de-energize the internal circuitry, you have to disconnect all power cords.
ADVARSEL: Utstyret kan ha mere ennn en tilførselsledning. For å gjore interne deler spennigsløse må alle tilførselsledningene trekkes ut.
VARNING: Denna apparat har mer än en nätanslutning. Samtliga nätkablar måste bortkopplas för att göra de interna kretsarna spänningsfria.

FUSE: REPLACE WITH SAME TYPE AND RATING OF FUSE.
CAUTION: REPLACE WITH SAME TYPE FUSE.
ATTENTION: UTILISER UN FUSIBLE DE RECHANGE DE MÊME TYPE.
CAUTION: DISCONNECT SUPPLY CORD BEFORE CHANGING FUSE.
ATTENTION: DÉBRANCHER AVANT DE REMPLACER LE FUSIBLE.
ACHTUNG: VOR AUSWECHSELN DER SICHERUNG IST DAS GERÄT VOM NETZ ZU TRENNEN.

CAUTION

Disconnect power from the frame before removing or installing input/ output modules. Removing or installing modules with power applied could cause serious damage to system components.

Use Proper Power Source

Do not operate this product from a power source that supplies more than the specified voltage.

EMC and Safety Standards

This product has been tested and found to comply with the following IEC, FCC, UL, ICES, and CSA standards, per the provision of the Electromagnetic Compatibility Directive 89/336/EEC of 3 May 1989 as amended by 92/31EEC of 28 April 1992 and 93/68/EEC, Article 5 of 22 July 1993, and the Low Voltage Directive 73/23/EEC of 19 February 1973.

EMC Standards

Table A-1. EMC Standards

EMC Standard	Description
EN55014	Limits and Methods of Measurement of Radio Disturbance Characteristics of Electric Motor-Operated and Thermal Appliances for Household and Similar Purposes, Electric Tools, and Similar Electric Apparatus
EN55022	Limits and Methods of Measurement of Radio Disturbance Characteristics of Information Technology Equipment-Class A
EN55103-1	Electromagnetic Compatibility — Product Family Standard for Audio, Video, Audio-Visual, and Entertainment Lighting Control Apparatus for Professional Use — Part 1: Emission, Environment E4
EN55103-2	Electromagnetic Compatibility — Product Family Standard for Audio, Video, Audio-Visual, and Entertainment Lighting Control Apparatus for Professional Use — Part 2: Immunity, Environment E4
EN61000-3-2	Limits for Harmonic Current Emissions (Equipment Input Current Less Than or Equal to 16 A Per Phase)
EN61000-3-3	Limitations of Voltage Fluctuations and Flicker in Low Voltage Supply Systems for Equipment with Rated Current Less Than 16 A
EN61000-4-2	Electrostatic Discharge Requirements “ESD” 2 kV CD, 4 kV AD
EN61000-4-3	Radiated Radio-Frequency Electromagnetic Field Immunity Test 1 V/m {1 kHz 80% AM, 80-1000 MHz}
EN61000-4-4	Electrical Fast Transient Requirements “Burst,” 0.5 kV Sig. & Ctrl. Lines 0.5 kV a.c. & d.c. Power Line, 0.5 kV Functional Earth
EN61000-4-5	Surge Immunity Test 0.5 kV a.c. Power Line
EN61000-4-6	Immunity to Conducted Disturbances Induced by Radio Frequency Fields 1 V rms 0.15-80 MHz Sig. & Ctrl. Lines, 3 V rms 0.15-80 MHz d.c. Power Line, 1 V rms 0.15-80 MHz a.c. Power Line, 1 V rms 0.15-80 MHz Functional Earth
EN61000-4-11	Voltage Dips, Short Interruptions, and Voltage Variations- Immunity Tests

These devices are for professional use only and comply with Part 15 of FCC rules. Operation is subject to the following two conditions:

1. These devices may cause interference to radio and TV receivers in residential areas.
2. These devices will accept any interference received, including interference that may cause undesired operations.

Changes or modifications not expressly approved by Harris Corporation, the party responsible for compliance to the FCC Part 15 Rule, could void the user's authority to operate this equipment legally in the United States.

These devices do not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference standard entitled "Digital apparatus," ICES-003 of the Canadian Department of Communications.

Additional EMC Information

This device is for professional use in a controlled EMC environment, such as purpose-built broadcast studios.

EMC regulations require that the radiation emitted from this unit does not exceed certain limits. These limits are only met when the front panel is closed and the two thumb screws are secured.

Compliance to the EMC regulations is also dependent on the use of suitably shielded (screened) cables. Coax cables should be of the double-shielded (screened) variety. Unused BNCs should be fitted with 75Ω terminations.

All audio cables should be screened with the shield (screen) making good contact with the metallic parts of the cable connectors.

D-type connectors used with this unit should always have metallic shells with the shield (screen) of the cable mechanically bonded to the metal shell. It is further recommended that the D-type cable connectors be of the "dimple" variety. These connectors make a better contact and consequently improve EMC performance.

Safety Standards

Table A-2. Harmonized and Reference IEC Safety Standards

Harmonized Standard	Reference IEC Standard	Description
EN 60950:1992 with Am1, Am 2, Am 3, Am4, A11 amendments	IEC 60950:1991 (Modified)	Safety of Information Technology Equipment
EN 60950	IEC 60950:1999 (Modified)	Safety of Information Technology Equipment
	IEC 60950-1 (2001-10)	Information Technology Equipment Safety—Part 1: General Requirements
EN 60065	IEC 60065: 1998 (Modified) 6th Edition	Audio, Video, and Similar Electronic Apparatus Safety Requirements
	IEC 60065 (2001) 7th Edition	Audio, Video, and Similar Electronic Apparatus Safety Requirements
	Amendment 1 to IEC 60065 7th Edition	Audio, Video, and Similar Electronic Apparatus Safety Requirements
EN 60825-1:1999	IEC 60825-1:1993	Safety of Laser Products—Part 1: Equipment Classification, Requirements, and User's Guide
EN 60825-2:2000	IEC 60825-2:2000	Safety of Laser Products—Part 2: Safety of Optical Fibre Communication Systems
	IEC 60825-1 (2001-08) Edition 1.2	Safety of Laser Products—Part 1: Equipment Classification, Requirements, and User's Guide
UL 1419 (March 28, 1997	2nd Edition	Standard for Professional Video and Audio Equipment
UL 6500 (September 30, 1999)	2nd Edition	Standard for Audio/Video and Musical Instrument Apparatus for Household, Commercial, and Similar General Use
UL 60950 (December 1, 2000)	3rd Edition	Safety of Information Technology Equipment
CAN/CSA-C22.2 No. 60950-00		Safety of Information Technology Equipment (Bi-National Standard, with UL 60950)
CAN/CSA-E60065-00		Audio, Video and Similar Electronic Apparatus Safety Requirements (Adopted IEC 60065:1998, 6th Edition, with Canadian Deviations)
CAN/CSA-C22.2 No. 1-98		Audio, Video, and Similar Electronic Equipment
CSA C22.2 No. 1-98 including Am1 (June, 2003)		Audio, Video, and Similar Electronic Equipment

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