

TECHNICAL MANUAL

888-2727-001

FlexStar™ HDI-200 Importer

746-0303-003

FlexStar™
HDI-200 Importer



T.M. No. 888-2727-001

Printed: 07/30/2013

RevD

© Copyright Harris Broadcast 2011, 2012, 2013
All rights reserved

Manual Revision History

FlexStar™ HDI-200 Importer Technical Manual

REV.	DATE	ECN	Pages Affected
Preliminary	14Jul2011	-----	Created
0			Review Copy to Service, Engineering, & Safety
A	18jul2011	P50543	Release Rev. A
B	13Aug2012	P53523	Title Page, MRH-1, and Page 2-4
C	30Oct2012	61224	Per software release 4.4.7
D	30Jul2013	62943	Title Page, MRH-1, Pages 1-4 & 2-1

Technical Assistance

Technical and troubleshooting assistance for Transmission products is available from Harris Broadcast Field Service (factory location: Quincy, Illinois, USA) during normal business hours (8:00 AM - 5:00 PM Central Time). Telephone **+1-217-222-8200** to contact the Field Service Department; FAX **+1-217-221-7086**; or E-mail questions to ***tsupport@harris.com***.

Emergency service is available 24 hours a day, seven days a week, by telephone only.

Online assistance, including technical manuals, white papers, software downloads, and service bulletins, are available at ***http://www.broadcast.harris.com*** (from there, click on ***Customer Support Portal*** under the ***Services & Support*** tab dropdown menu).

Address written correspondence to Field Service Department, HARRIS Broadcast Communications Division, P.O. Box 4290, Quincy, Illinois 62305-4290, USA. For other global service contact information, please visit: ***http://www.broadcast.harris.com/contact***.

NOTE: For all service and parts correspondence, you will need to provide the Sales Order number, as well as the Serial Number for the transmitter or part in question. For future reference, record those numbers here: _____/_____

Please provide these numbers for any written request, or have these numbers ready in the event you choose to call regarding any Service, or Parts requests. For warranty claims it will be required, and for out of warranty products, this will help us to best identify what specific hardware was shipped.

Replaceable Parts Service

Replacement parts are available from HARRIS Service Parts Department 7:00 AM to 7:00 PM Central Time, Monday through Friday, and 8:00 AM to 1:00 PM Central Time on Saturday. Telephone **+1-217-222-8200** or email ***servicepartsreq@harris.com*** to contact the Service Parts Dept.

Emergency replacement parts are available by telephone only, 24 hours a day, seven days a week by calling **+1-217-222-8200**.

Unpacking

Carefully unpack the equipment and perform a visual inspection to determine if any apparent damage was incurred during shipment. Retain the shipping materials until it has been verified that all equipment has been received undamaged. Locate and retain all PACKING CHECK LISTS. Use the PACKING CHECK LIST to help locate and identify any components or assemblies which are removed for shipping and must be reinstalled. Also remove any shipping supports, straps, and packing materials prior to initial turn on.

Returns And Exchanges

No equipment can be returned unless written approval and a Return Authorization is received from HARRIS Broadcast Communications Division. Special shipping instructions and coding will be provided to assure proper handling. Complete details regarding circumstances and reasons for return are to be included in the request for return. Custom equipment or special order equipment is not returnable. In those instances where return or exchange of equipment is at the request of the customer, or convenience of the customer, a restocking fee will be charged. All returns will be sent freight prepaid and properly insured by the customer. When communicating with HARRIS Broadcast Communications Division, specify the HARRIS Order Number or Invoice Number.

⚠ WARNING:
THE CURRENTS AND VOLTAGES IN THIS EQUIPMENT ARE DANGEROUS. PERSONNEL MUST AT ALL TIMES OBSERVE SAFETY WARNINGS, INSTRUCTIONS AND REGULATIONS.

This manual is intended as a general guide for trained and qualified personnel who are aware of the dangers inherent in handling potentially hazardous electrical/electronic circuits. It is not intended to contain a complete statement of all safety precautions which should be observed by personnel in using this or other electronic equipment.

The installation, operation, maintenance and service of this equipment involves risks both to personnel and equipment, and must be performed only by qualified personnel exercising due care. HARRIS Broadcast shall not be responsible for injury or damage resulting from improper procedures or from the use of improperly trained or inexperienced personnel performing such tasks. During installation and operation of this equipment, local building codes and fire protection standards must be observed.

The following National Fire Protection Association (NFPA) standards are recommended as reference:

- Automatic Fire Detectors, No. 72E
- Installation, Maintenance, and Use of Portable Fire Extinguishers, No. 10
- Halogenated Fire Extinguishing Agent Systems, No. 12A

⚠ WARNING:
ALWAYS DISCONNECT POWER BEFORE OPENING COVERS, DOORS, ENCLOSURES, GATES, PANELS OR SHIELDS. ALWAYS USE GROUNDING STICKS AND SHORT OUT HIGH VOLTAGE POINTS BEFORE SERVICING. NEVER MAKE INTERNAL ADJUSTMENTS, PERFORM MAINTENANCE OR SERVICE WHEN ALONE OR WHEN FATIGUED.

Do not remove, short-circuit or tamper with interlock switches on access covers, doors, enclosures, gates, panels or shields. Keep away from live circuits, know your equipment and don't take chances.

⚠ WARNING:
IN CASE OF EMERGENCY ENSURE THAT POWER HAS BEEN DISCONNECTED.

⚠ WARNING:
IF OIL FILLED OR ELECTROLYTIC CAPACITORS ARE UTILIZED IN YOUR EQUIPMENT, AND IF A LEAK OR BULGE IS APPARENT ON THE CAPACITOR CASE WHEN THE UNIT IS OPENED FOR SERVICE OR MAINTENANCE, ALLOW THE UNIT TO COOL DOWN BEFORE ATTEMPTING TO REMOVE THE DEFECTIVE CAPACITOR. DO NOT ATTEMPT TO SERVICE A DEFECTIVE CAPACITOR WHILE IT IS HOT DUE TO THE POSSIBILITY OF A CASE RUPTURE AND SUBSEQUENT INJURY.

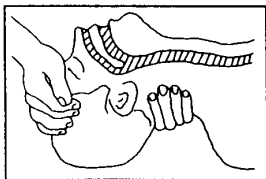
TREATMENT OF ELECTRICAL SHOCK

1. IF VICTIM IS NOT RESPONSIVE FOLLOW THE A-B-C'S OF BASIC LIFE SUPPORT.

PLACE VICTIM FLAT ON HIS BACK ON A HARD SURFACE

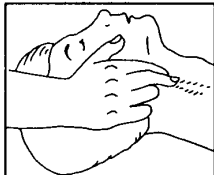
(A) AIRWAY

IF UNCONSCIOUS,
OPEN AIRWAY



LIFT UP NECK
PUSH FOREHEAD BACK
CLEAR OUT MOUTH IF NECESSARY
OBSERVE FOR BREATHING

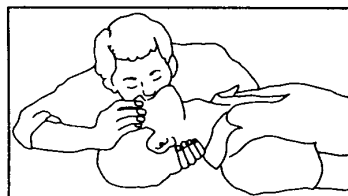
CHECK
CAROTID PULSE



IF PULSE ABSENT,
BEGIN ARTIFICIAL
CIRCULATION

(B) BREATHING

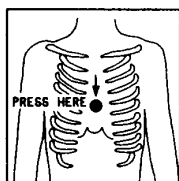
IF NOT BREATHING,
BEGIN ARTIFICIAL BREATHING



TILT HEAD
PINCH NOSTRILS
MAKE AIRTIGHT SEAL
4 QUICK FULL BREATHS
REMEMBER MOUTH TO MOUTH
RESUSCITATION MUST BE
COMMENCED AS SOON AS POSSIBLE

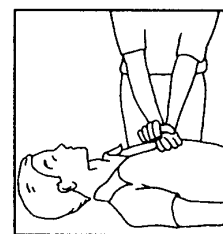
(C) CIRCULATION

DEPRESS STERNUM 1 1/2 TO 2 INCHES



APPROX. RATE
OF COMPRESSIONS { ONE RESCUER
--80 PER MINUTE { 15 COMPRESSIONS
2 QUICK BREATHS

APPROX. RATE
OF COMPRESSIONS { TWO RESCUERS
--60 PER MINUTE { 5 COMPRESSIONS
1 BREATH



NOTE: DO NOT INTERRUPT RHYTHM OF COMPRESSIONS
WHEN SECOND PERSON IS GIVING BREATH

CALL FOR MEDICAL ASSISTANCE AS SOON AS POSSIBLE.

2. IF VICTIM IS RESPONSIVE.

- A. KEEP THEM WARM
- B. KEEP THEM AS QUIET AS POSSIBLE
- C. LOOSEN THEIR CLOTHING
- D. A RECLINING POSITION IS RECOMMENDED

FIRST-AID

Personnel engaged in the installation, operation, maintenance or servicing of this equipment are urged to become familiar with first-aid theory and practices. The following information is not intended to be complete first-aid procedures, it is a brief and is only to be used as a reference. It is the duty of all personnel using the equipment to be prepared to give adequate Emergency First Aid and there by prevent avoidable loss of life.

Treatment of Electrical Burns

1. Extensive burned and broken skin
 - a. Cover area with clean sheet or cloth. (Cleanest available cloth article.)
 - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply any salve or ointment.
 - c. Treat victim for shock as required.
 - d. Arrange transportation to a hospital as quickly as possible.
 - e. If arms or legs are affected keep them elevated.

NOTE:

If medical help will not be available within an hour and the victim is conscious and not vomiting, give him a weak solution of salt and soda: 1 level teaspoonful of salt and 1/2 level teaspoonful of baking soda to each quart of water (neither hot or cold). Allow victim to sip slowly about 4 ounces (a half of glass) over a period of 15 minutes. Discontinue fluid if vomiting occurs. (Do not give alcohol.)

2. Less severe burns - (1st & 2nd degree)
 - a. Apply cool (not ice cold) compresses using the cleanest available cloth article.
 - b. Do not break blisters, remove tissue, remove adhered particles of clothing, or apply salve or ointment.
 - c. Apply clean dry dressing if necessary.
 - d. Treat victim for shock as required.
 - e. Arrange transportation to a hospital as quickly as possible.
 - f. If arms or legs are affected keep them elevated.

REFERENCE:

ILLINOIS HEART ASSOCIATION
AMERICAN RED CROSS STANDARD FIRST AID AND PERSONAL SAFETY
MANUAL (SECOND EDITION)

Guide to Using Parts List Information

The Replaceable Parts List Index portrays a tree structure with the major items being leftmost in the index. The example below shows the Transmitter as the highest item in the tree structure. If you were to look at the bill of materials table for the Transmitter you would find the Control Cabinet, the PA Cabinet, and the Output Cabinet. In the Replaceable Parts List Index the Control Cabinet, PA Cabinet, and Output Cabinet show up one indentation level below the Transmitter and implies that they are used *in* the Transmitter. The Controller Board is indented one level below the Control Cabinet so it will show up in the bill of material for the Control Cabinet. The tree structure of this same index is shown to the right of the table and shows indentation level versus tree structure level.

Example of Replaceable Parts List Index and equivalent tree structure:

<u>Replaceable Parts List Index</u>	<u>Part Number</u>	<u>Page</u>	
Table 7-1. Transmitter	995 9283 001	7-2	
Table 7-2. Control Cabinet	981 9244 002	7-3	
Table 7-3. Controller Board	901 8344 002	7-6	
Table 7-4. PA Cabinet	981 9400 002	7-7	
Table 7-5. PA Amplifier	971 7894 002	7-9	
Table 7-6. PA Amplifier Board	901 7904 002	7-10	
Table 7-7. Output Cabinet	981 9450 001	7-12	

The part number of the item is shown to the right of the description as is the page in the manual where the bill for that part number starts. Each table headings is in the format of; **Table #-#. ITEM NAME - PART NUMBER** - this line gives the information that corresponds to the Replaceable Parts List Index entry;

Inside the actual tables, four main headings are used:

- **PART NUMBER** column gives the Harris Broadcast part number (usually in ascending order);
- **DESCRIPTION** column gives a 25 character or less description of the part number;
- **Qty UM** column notes the quantity and unit of measure of the item;
- **REF. SYMBOLS/EXPLANATIONS** column 1) gives the reference designators for the item (i.e., C001, R102, etc.) that corresponds to the number found in the schematics (C001 in a bill of material is equivalent to C1 on the schematic) or 2) gives added information or further explanation (i.e., “Used for 208V operation only,” or “Used for HT 10LS only,” etc.).

NOTE: Inside the individual tables some standard conventions are used:

- A # symbol in front of a component such as #C001 under the REF. SYMBOLS/EXPLANATIONS column means that this item is used on or with C001 and is not the actual part number for C001.
- In the ten digit part numbers, if the last three numbers are 000, the item is a part that has purchased and has not manufactured or modified. If the last three numbers are other than 000, the item is either manufactured by Harris Broadcast or is purchased from a vendor and modified for use in the product.
- The first three digits of the ten DIGIT part number tell which family the part number belongs to - for example, all electrolytic (can) capacitors will be in the same family (524 xxxx 000). If an electrolytic (can) capacitor is found to have a 9xx xxxx xxx part number (a number outside of the normal family of numbers), it has probably been modified in some manner at the factory and will therefore show up farther down into the individual parts list (because each table is normally sorted in ascending order). Most Harris Broadcast made or modified assemblies will have 9xx xxxx xxx numbers associated with them.

The term “SEE HIGHER LEVEL BILL” in the description column implies that the reference designated part number will show up in a bill that is higher in the tree structure. This is often the case for components that may be frequency determinant or voltage determinant and are called out in a higher level bill structure that is more customer dependent than the bill at a lower level.

Table of Contents

Section 1

Introduction

Introduction	1-1
Benefits and Features	1-4
Overall description	1-4
Useful Terms	1-5

Section 2

Installation

Installation Introduction	2-1
Unpacking	2-1
Returns and Exchanges	2-1
Air Cooling Requirements	2-2
Installation	2-3
Rack Placement	2-3
Visual Inspection	2-3
Configuration	2-3
Bench Test	2-4
System Interconnections	2-4
Ethernet Connections	2-4
SPS Audio and Synchronization	2-6
SPSD Data	2-7
Licensing	2-8
License Key	2-8

Section 3

Operation

Software Operation	3-1
Lynx Audio Card	3-1
Helpful Information	3-1

Section 4

Troubleshooting

Troubleshooting Audio	4-1
Verify Audio Via Meters	4-1
Factory Audio Mixer Settings	4-3
Lynx AES16e	4-3
System Issues	4-4
Restoring/Reloading Operating System	4-4
OS Reinstallation Procedures	4-4

To Record HDI-200 Importer Network Info	4-4
To Record HDI-200 Importer Network Info	4-5
Norton Ghost Install	4-5
Windows XP Setup:	4-6
iBiquity License	4-7
Importer Network Setup:	4-7
Initial Importer Setup:	4-8
License Key Issues	4-8

Section 5

Parts List

Replacement Parts Listing	5-1
-------------------------------------	-----

Table of Contents (continued)

Section 1

Introduction

1

1.1 Introduction

This technical manual describes the FlexStar™ HDI-200 Data Importer (Harris Broadcast part number 746-0303-003), part of the new family of HD Radio products. It is to be used along side of the included iBiquity document, *Importer User's Guide*.

This manual contains the following sections:

- Section 1: Introduction
- Section 2: Installation
- Section 3: Operation
- Section 4: Parts List
- Section 5: Troubleshooting

With the advent of HD Radio™, broadcast stations can now transmit their programs as a high quality digital signal. In addition to the Main Program Service (MPS) and Station Information Guide (SIG), the HD Radio system also provides the capacity to transmit other digital services referred to as Advanced Application Services (AAS). Supplemental Program Service (SPS) forms an essential part of the AAS framework.

The WebAdmin provides the broadcast station with the functional capabilities to efficiently manage the transmission, configuration and status of all Advanced Application Services provided by external Service Providers and other customers. Service Providers can be located in close proximity or even remotely connected across a Wide Area Network (WAN).

The WebAdmin also allows the broadcast station to define the allocation for each service which may be a fixed bandwidth allocation for dedicated services. It is designed so that its connection to the exciter ensures that the broadcast station makes an optimal use of its bandwidth capacity so that maximum services can be broadcast.



Figure 1-1 HDI 200-Importer With Front Cover and Cover Opened



Figure 1-2 HDI 200-Importer Rear Panel

1.2 Benefits and Features

The new FlexStar HDI-200 Importer allows the addition of Advanced Application Services (AAS) including one or more supplemental audio channels for HD Radio. It accepts, manages, encodes and multiplexes all AAS including supplemental audio channels and Program Service Data (PSD) for transport to the HDE-200 Exporter. It also manages connections and content delivery from service providers, system bandwidth allocation, exciter configuration and codec bit rates. In addition, it handles monitoring and reporting capabilities for scheduling, traffic and utilization reports.

Future Advanced Applications Services that can be possibly supported by the HDI-200 include Album Art/Artist Experience, traffic information, breaking news, weather information and alerts, stock quotes, sports scores, Amber alerts, display of advertiser information including location specific advertising and possible resale of bandwidth to third parties.

This software upgradable Importer is compatible with the Harris Broadcast HDE-200 Exporter and can evolve as the HD radio industry evolves.

1.2.1 Overall description

The Importer is server-grade PC running Windows XP SP3 (service pack 3) Professional operating system, with software provided by iBiquity.

1.3 Useful Terms

Below are some terms associated with the FlexStar HD Radio architecture.

- *AAS* - Advanced Applications Service. Non-program related data services encoded into the HD bitstream and include Supplemental Audio, traffic information, news, weather, stock quotes, etc. The first AAS to be implemented in HD receivers will be Supplemental Audio channels. The HDI-200 receives, manages and multiplexes all AAS services for HD Radio.
- *AES3* - Abbreviation for AES3-1992 which is the established standard for professional digital audio conveying two channels of periodically sampled and uniformly quantized digital audio on a single twisted pair wire. The sample rate standard for HD Radio is 44.1 kHz.
- *API* - Application Programmers Interface. A set of programming calls used to manipulate an existing program.
- *Capture Client* - Simple software application to ingest audio from the sound card.
- *Exgine* - iBiquity hardware used in an HD exciter to create the digital portion of the transmission.
- *FlexStar* - FlexStar is a Harris Broadcast trademark for the series of HD Radio products.
- *MPS* - Main Program Service. The stations main program audio delivered from the station's on-air studio.
- *QoS* - Quality of Service
- *PAD* - Program Associated Data. Program-related data such as song title and artist information
- *PSD* - Program Service Data. Program-related data such as song title and artist information, *delivered in the iBiquity protocol* from the station's audio hard disk storage system via an Ethernet communications port. This may also be referred to as *HDP PSD*.
This data is fed to the HDE-200 Exporter as MPSPD, Main Program Service Data, when related to the main program audio; or fed to the Importer as SPSPD, Supplemental Program Service Data, when related to any of the supplemental audio streams.
- *SPS* - Supplemental Program Service. Also referred to as Supplemental Audio Service or multicasting, supplemental program audio is input to the HDI-200 Importer in AES3 digital format.
- *WebAdmin* - The application that manages the functional capabilities related to transmission, configuration and status of all AAS inputs.

Section 2

Installation

2

2.1 Installation Introduction

This section contains the information to assist in the installation of the Importer.

The FlexStar HDI-200 Importer is to be connected to a FlexStar HDE-200 Exporter.

CURRENT COMPATIBILITY STATEMENT:

- HDE-200 Exporter: version 4.4.7.1
(managed by ECC Control Center version 1.3.6)
- HDx-FM FlexStar Exciter:
 - *Exgine μ P*: version 4.40 (on Exgine Module)
 - *Main μ P*: version 8.37 (on Signal Processing board)
- HDI-200 Importer: version 4.4.7

2.2 Unpacking

Carefully unpack the Importer and perform a visual inspection to ensure that no apparent damage was incurred during shipment. Retain the shipping materials until it has been determined that the unit is not damaged. The contents of the shipment should be as indicated on the packing list. If the contents are incomplete or if the unit is damaged electrically or mechanically, notify the carrier and HARRIS Broadcast, at 217-222-8200.

2.3 Returns and Exchanges

Damaged material or undamaged equipment should not be returned unless written approval and a Return Authorization (RMA) is received from HARRIS Broadcast. Special shipping instructions and coding will be provided to assure proper handling.

Complete details regarding circumstances and reasons for return are to be included in the request for return. Custom equipment or special order equipment is not returnable. In those instances where return or exchange of equipment is at the request of the customer, or convenience of the customer, a restocking fee will be charged. All returns will be sent freight prepaid and properly insured by the customer. When communicating with Harris Broadcast, specify the Harris Broadcast *order* number or *invoice* number.

2.4 Air Cooling Requirements

This Harris Broadcast FlexStar™ Importer is designed to operate in an unobstructed environment with a maximum inlet air temperature of 48°C. Refer to the Outline Drawing in the schematic package for information on air requirements.

⇒ NOTE:

“Clean” air is required. No salt air, polluted air, or sulfur air can be tolerated. A closed air system is recommended in these environments; that is, an air conditioned room that recirculates, and properly filters the room air.

2.5 Installation

Prior to installation, this Technical Manual should be carefully studied to obtain a thorough understanding of the principles of operation, circuitry and nomenclature. This will facilitate proper installation and initial checkout.

⇒ NOTE:

Also see the following technical manuals for more information:
HDE-200 Exporter (Harris Broadcast part #75-56)
HDx-FM Exciter (Harris Broadcast part #888-2570-001)
Importer User's Guide (Harris Broadcast part #888-2618-002)

The Importer installation is accomplished in the following order:

1. Rack placement
2. Visual Inspection
3. Configuration
4. Interconnect wiring
5. Input connections
6. Output connections
7. Initial checkout

2.5.1 Rack Placement

If a new rack cabinet is also part of the installation, set the rack in place on a level surface near power and signal cables. Either or both sidewalls of the rack may be placed against a wall or other equipment. Complete access is through the front and rear.

2.5.2 Visual Inspection

Before installing the Importer into the rack, visually inspect the Importer for any signs of rough shipping or handling.

2.5.3 Configuration

Configuration consists of both hardware and software configuration for your particular application. The Harris Broadcast Importer is configurable to perform with one or two audio channels at different bitrate allocations.

Configuration of the Importer is controlled via an external monitor using a mouse and keypad.

⇒ **NOTE:**

You will need to provide an external monitor, keyboard, mouse and CAT5, or CAT6, cable for the Importer to set it up and connect it to your network. *These are not included with the Importer.* A conventional PC monitor, PS2 keyboard, PS2 mouse and CAT5/CAT6 cable are all that is needed.

An optional LCD display, keyboard and mouse unit (1RU size) is available from Harris Broadcast: Part number MAARM-KB-LCD17.

2.6 Bench Test

⇒ **NOTE:**

See "2.5 Quick Start - Bench Test" on page 2-3 of the Exporter tech manual for more information on first Bench Testing the Exporter and Exciter connectivity.

It is advisable to bench test the Importer, Exporter and HDx-FM exciter together to ensure communications before separating them via a network, managed switch, firewall, etc. This will confirm operation of the these elements of the system prior to adding more layers and complexity that could possibly cause communication failure. When connecting an Importer/HDE-200 combination directly together, a standard network CAT5/CAT6 cable is required. Otherwise, an external Ethernet switch and standard network CAT5/CAT6 cables may be used to connect all three units together.

2.7 System Interconnections

This section provides simplified diagrams for connecting an Importer to an Exporter. An Importer is used as a device to multiplex SPS/AAS services into the Exporter, which provides MPS services. The Importer administers the settings for MPS as well as SPS.

2.7.1 Ethernet Connections

When connecting to the HDE-200 Exporter, use a standard Ethernet cable to connect direct, or connect through a network switch, or managed switch.

On the HDI-200 rear panel, connect the Ethernet cable to the network connector on left side.

⇒ IMPORTANT:

When connecting through a network, managed switch, firewall, etc., be sure the following ports are open: 10001, 10002, 10100, 9025, 8145, 8025 and 1600; also ports 10010, 10011, and 10012 are suggested for the Importer's PSD (PAD) ports; and the Exporter will use either 10000 for MPS PAD or 11000 for HDP PSD, depending on which data type you'll use.

When connecting Ethernet, check the IP address of the Importer itself. Verify that it is **static** and on the same subnet as the Exciter or Exporter, but a different address (the last set of numbers). Example; if the Exporter is 10.10.10.10 set the Importer to 10.10.10.9. Both units should be set to static IP addressing.

To change the Importer's IP address:

From the Importer computer's Start menu, go to Settings/Network connections. Right click the Local Area Network, and select properties. In the new window, click InterNet protocol (TCP/IP), then Properties. Select; Use this IP address (this sets it to static), and enter in the IP address mentioned above and the same subnet mask and Default Gateway as in the Exporter *Network GPS* screen. Remember that the Importer's IP address has to be different than the Exporter's IP address.

Figure 2-1 on page 2-5 shows the simplified specific connections necessary between an Importer the Exporter.

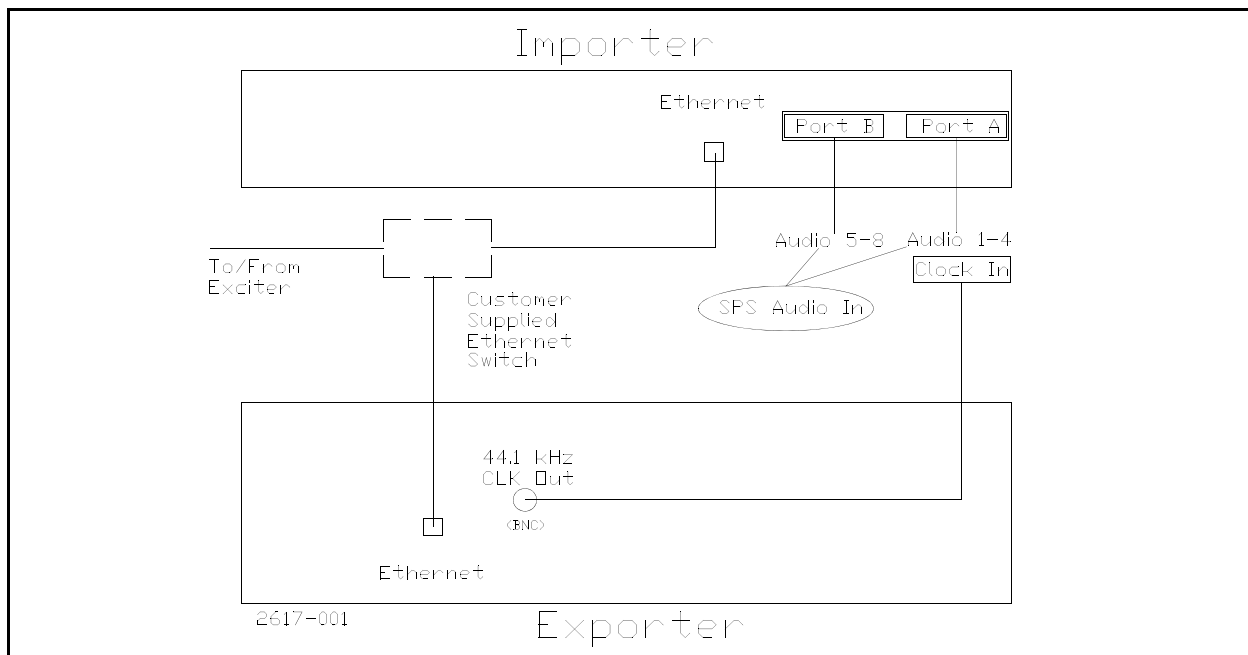


Figure 2-1
Simplified connection drawing showing *late* model Exporter connecting to *late* model Importer with the Lynx AES16e audio card

2.7.2 SPS Audio and Synchronization

TO DETERMINE CARD TYPE within Windows operating system, follow these steps:

- From the desktop, right click *My Computer*
- Click *Manage*
- Double click *Device Manager* in left pane
- Double click *Sound, video, and game controllers* to see installed devices
- Verify Lynx audio card type

or a secondary method to get to Device Manager:

- Click *Start*
- Click *Settings*
- Click *Control Panel*
- Double click *System*
- Click *Hardware* tab
- Click *Device Manager*
- Double click *Sound, video, and game controllers* to see installed devices
- Verify Lynx audio card type

The latest version of the Importer, the HDI-200, uses the Lynx AES16e audio card which allows all inputs to be rate converted.

This version of the Lynx audio card requires a TTL 0-5Vdc single-ended word clock input.

Install the Importer with the Exporter when using the FlexStar HDx-FM Exciter. The SPS audio inputs to the Importer audio card are D connectors to be used with the supplied break-out cabling.

The 8-channel type Importer digital audio card, the Lynx AES16e, has two identical break-out cable assemblies. The Importer connector on the **right** side (as viewed from the rear) is Port A and the audio cables that connect there are inputs **1 through 4** and the cable labeled *Clock* is an input. On port B (the left connector) the audio inputs are 5 through 8, and the BNC cable labeled *Clock* is an output.

⇒ IMPORTANT:

The word clock BNC on the Port A cable assembly (right side) is *word clock input*. The word clock BNC on the Port B cable assembly (left side) is *word clock output*.

Syncing the Lynx AES16e audio card:

Using the AES16e type card allows you to sync the audio *within* the Importer. Be sure *SRC Enable* is checked (enabled) for all used inputs (see Figure 4-2 on page 4-3).

Connect program audio to inputs 1-4 of the breakout cable connected to the Importer.

⇒ NOTE:

The rate converter functionality is available for the audio connected to all inputs.

- For the latest version of the Exporter, use a BNC cable to connect the 44.1kHz CLK Out to the BNC input on the Port A breakout cable of the Importer.
Select "External" as the Preferred Clock Source in the Adapter screen of the Lynx Mixer application (see Figure 4-2 on page 4-3).

2.7.2.1 SPSD Data

Supplemental Program Service Data (was known as SPS PAD) is formatted by your source equipment. To enable the PSD data to go through, the network ports 10010, 10011, and 10012 must be opened by your network administrator.

2.8 Licensing

There are two licensing arrangements associated with this Importer; Windows operating system and iBiquity HD Radio.

The Windows XP operating system is activated by Harris Broadcast during factory testing. This is a one-time activation. It is recommended that you register the Windows XP Professional; see www.Microsoft.com.

2.8.1 License Key

The end-user must submit a request for a License Key in accordance with the license agreement with iBiquity.

⇒ NOTE:

You will need to renew the iBiquity license agreement in one year.

When the License Manager application is started the Window shown is displayed.

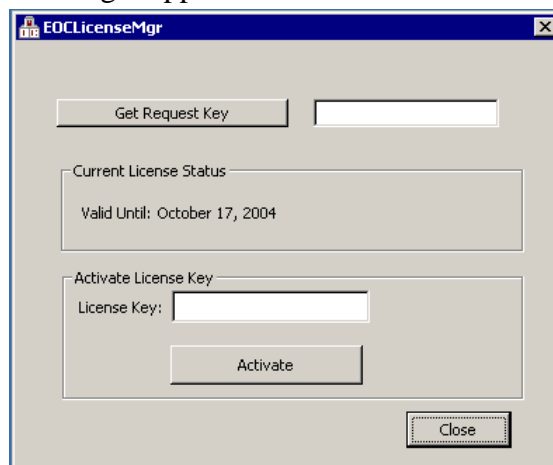


Figure 2-2 License Manager: Initial Dialog Box

Press “Get Request Key” and a 48 character key is displayed. E-mail this key to iBiquity Digital (importerkey@ibiquity.com).

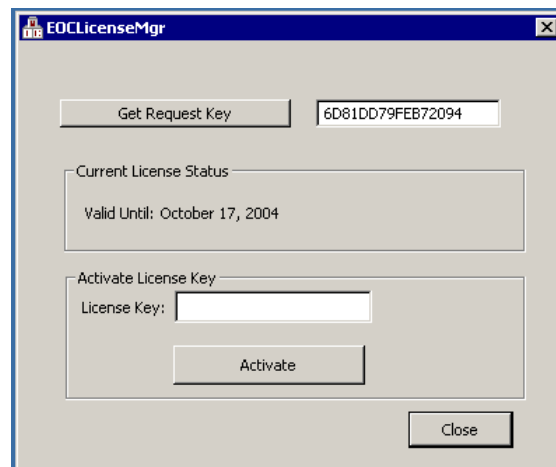


Figure 2-3 License Manager: Request Key Example

A 48 character activation key will be emailed back. Enter this key in the Activate License Key data entry area and press activate. The current License Status Valid Until data will be updated upon acceptance of a valid key Press close to complete the process.

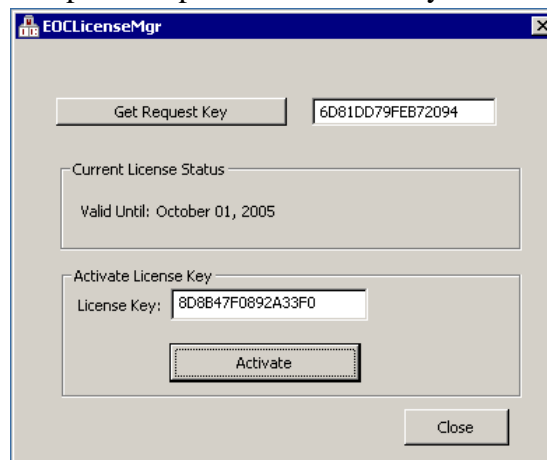


Figure 2-4 License Manager: Valid License Key Acceptance Example

Section 3

Operation

3

3.1 Software Operation

See *Importer User's Guide* (Harris Broadcast part #888-2618-002) for configuration, day to day operation, and other software-related information.

3.2 Lynx Audio Card

The HDI-200 Importer has an AES16e 8 input/output digital audio card with static rate conversion available on all inputs.

For information on operating the Lynx audio card, refer to the Lynx users manual.

3.2.1 Helpful Information

Checks to perform in order to ensure it is properly installed and is functioning correctly:

1. Open the **Lynx Mixer**.
2. Select the *Adapter* screen.
3. AES Audio Sources goes into Lynx audio card *Digital In* 1 through 8 .
4. If correctly connected, the **Digital In** panel should show green and *Locked*.
5. **Sample Clock** should show the following:
 - a. **Current Source:** *External*



NOTE:

44.1kHz AES Sync from Exporter must be connected to the Port A BNC cable (Clock Input).

- b. **Current Rate:** *44.1kHz*
 - c. **Rate Lock:** *Checked*
 - d. **SynchroLock:** *Locked (green)*
6. *SRC Enable* should be checked.
7. Under **Settings; Advanced** menu, *Allow Clock Change if Active* should be checked.

Checking using Sound Recorder:

1. Select the **Record/Play** screen.
2. Verify AES audio levels on inputs with AES sources connected.
3. Set *Depth* to Auto.
4. *Dither* should be selected (button appears indented).
5. *Mute* should be unselected.

Section 4


Troubleshooting

4

4.1 Troubleshooting Audio

Buffer overruns or underruns at the Exporter or Importer can occur when the audio processor or rate converter, ahead of the Importer, is allowed to self clock. The result is minor audio glitches or pops when the two clocks are not linked together. These errors can occur over a long period of time as the two clocks skew, or drift relative to each other and fill up the buffer or deplete the buffer. The time period between occurrences of the glitches can be a matter of days to months depending on the accuracy of the 44.1 reference sources. A GPS reference is the best source and the Exporter provides this with it's 44.1kHz reference.

If the Importer and Exporter are not co-located they must both derive their clock from an external GPS source.

 **CAUTION:**
IT IS IMPERITIVE THAT THE AES AUDIO ENTERING THE IMPORTER IS CLOCKED BY THE EXPORTER, OR A WORD CLOCK SYNCHRONIZED TO GPS!

4.1.1 Verify Audio Via Meters

Check to verify audio is present by checking both the Output and Record/Play meters.

1. Double-click on Lynx Mixer desktop shortcut, or single click on the Quick Launch bar icon.
2. Once Lynx Mixer application is loaded, click on the "Record/Play" or "Outputs" window to make it visible. Or select either from the "Window" drop down toolbar menu.
3. Verify meter movement on desired channel (see Figure 4-1 on page 4-2)

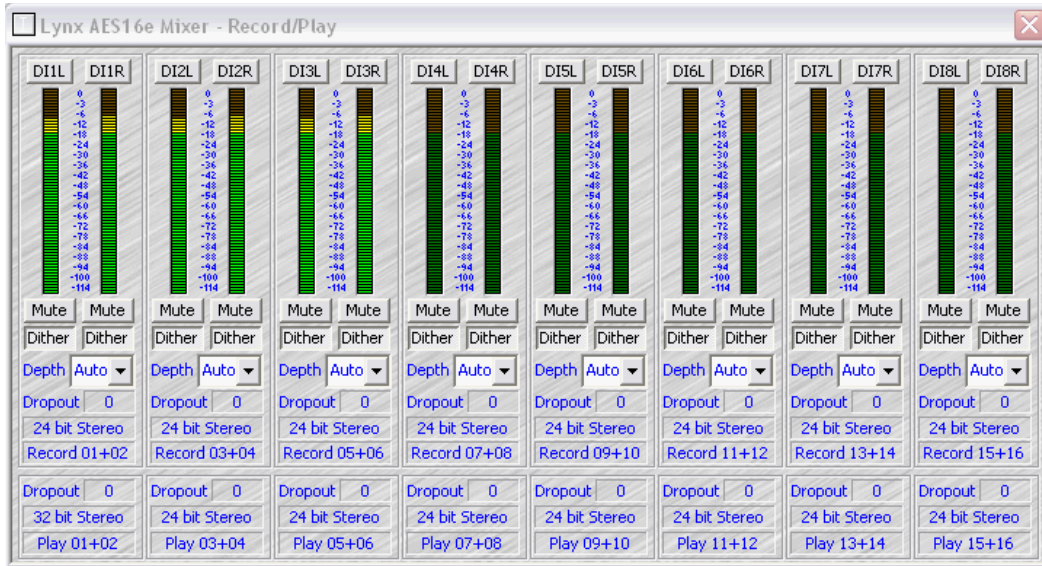


Figure 4-1 Record/Play Mixer Screenshot

4.2 Factory Audio Mixer Settings

4.2.1 Lynx AES16e

If the Lynx AES16e audio card drivers have to be reinstalled, a couple of default settings need to be changed to return the Importer to the factory setting.

1. Double-click on **Lynx Mixer** desktop shortcut, or single click on the Quick Launch bar icon.
2. Once Lynx Mixer application is loaded, click on the *Adapter* window to make it visible. Or select *Adaptor* from the Window drop down toolbar menu.
3. Within the "Preferred Clock Source" box, select "External"
4. Be sure SRC Enable is checked to ensure that any of the inputs are being clocked by the BNC Clock input on the breakout cable of Port A.

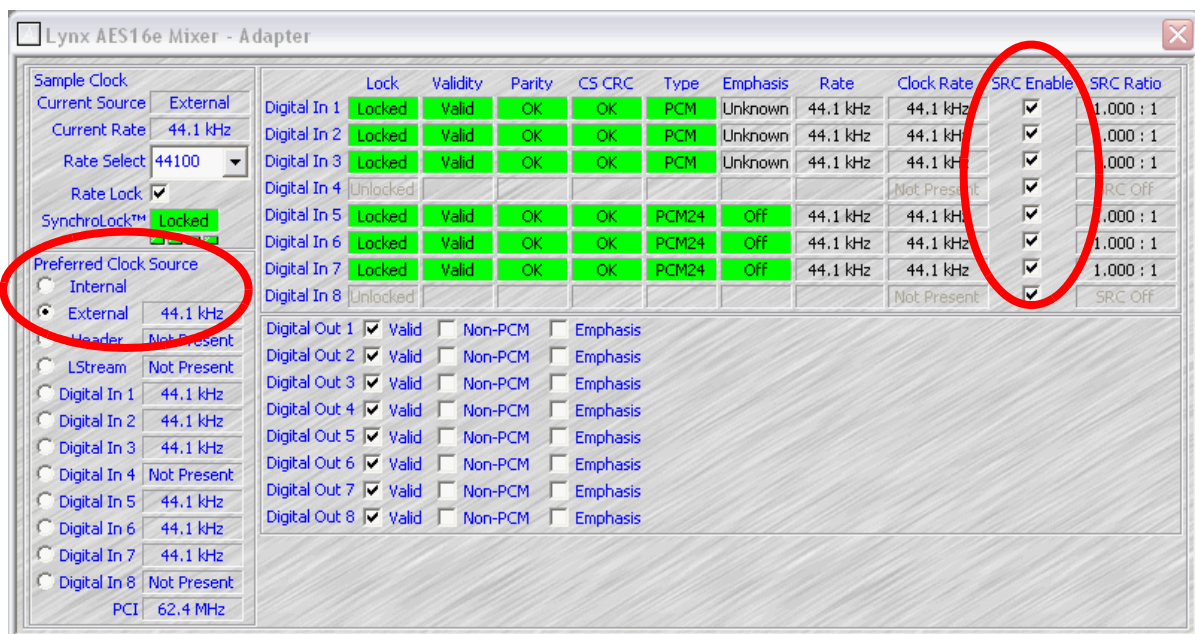


Figure 4-2 Lynx AES16e Mixer Adapter
Shown configured correctly for Word Clock (External) sync source

4.3 System Issues

4.3.1 Restoring/Reloading Operating System

**WARNING:**

THIS IS AN EMERGENCY OPERATION ONLY. DO NOT ATTEMPT TO LOAD THE OPERATING SYSTEM OR SOFTWARE UNLESS A TOTAL SET UP IS DESIRED. LOADING THESE ONTO YOUR IMPORTER WILL EFFECTIVELY OVER WRITE ALL PREVIOUSLY INSTALLED OPERATING SYSTEMS AND SETTINGS. AFTER THE OPERATING SYSTEM HAS BEEN RESTORED IN THIS MANNER, THEN A SOFTWARE UPGRADE IS NEEDED TO GET IT TO THE CURRENT SOFTWARE VERSION.

This information is provided in the event of a hard-drive failure where you would need to start over and reload all previous software. Obtain the reload image and support documentation files off the Internet via the <http://support.broadcast.harris.com> website. Read the PDF document for instructions prior to beginning this task. Complete all the following procedures.

4.3.1.1 OS Reinstallation Procedures

This procedure will effectively be starting over with the installation of Windows operating system and reload the iBiquity Importer software. *ALL* settings will be over written. Only perform this procedure as an emergency restore. Allow sufficient time to perform this task, approximately 30 minutes. Locate the DVD disk needed to complete this operation by requesting it, or by downloading the ISO file from the <http://support.broadcast.harris.com> site and then burning the "ISO image" to a DVD (do not simply copy the file to a data disk).

**NOTE:**

Record *ALL* network information for the HDI-200 Importer and HDE-200 Exporter prior to these procedures as all parameters of the Importer setup will be overwritten.

4.3.1.1.1 *To Record HDI-200 Importer Network Info*

- Left-click on the "**Start**" button. Select "**Settings**" then "**Network Connections**"
- Right-click on "**Local Area Connection**" icon

- Left-click on "**Properties**". Left-click on "**Internet Protocol (TCP/IP)**" then left-click on "**Properties**". Record *IP address*, *subnet mask*, and *default gateway* if using static IP address.

4.3.1.1.2 *To Record HDI-200 Importer Network Info*

- Place a USB flash memory stick into the Exporter USB port.
- After 30 seconds, remove the USB stick and place into the USB port of PC running the HDE-200 Exporter Control Center (ECC).
- Select *Flash Drive Configuration Utility* from the **System** menu.
- Load the configuration file from the USB stick and record the "CPU" IP address (you will need this when configuring the Importer).
- Close out of the ECC program.

4.3.1.1.3 *Norton Ghost Install*

STEP 1 Stop SPS processors.

STEP 2 Close the **Importer Control Panel**.

STEP 3 Open the front cover on the Importer to expose the DVD drive. Press the eject button and insert the install DVD.

STEP 4 Left-click the "**Start**" button on the Windows Desktop. Select "**Turn off computer...**". Select "**Restart**".

STEP 5 Norton Ghost will load. Left-click "**OK**" in the "**About Norton Ghost**" screen.

STEP 6 Select "**Local**" | "**Disk**" | "**From Image**" from the menu options.

STEP 7 A screen called "**Image File Name to Restore From**" will display. Left-click (on the blue line with the red arrow pointing left) *once* to go back one level in the directory.

STEP 8 Left-click *once* on "**AVNT_431.GHO**" file name (it will be the only GHO file on the list.).

STEP 9 Select "**OK**" when the "**Select local destination drive by clicking on the drive number**" screen appears.

STEP 10 Select "**OK**" to "**Destination Drive Details**" screen.

STEP 11 Left-click "**Yes**" to "**Proceed with disk restore?**"

- STEP 12** The DVD will start loading. A display bar will show progress of installation..
- STEP 13** When installation is complete a "**Clone Complete (1912)**" screen will appear with the message "**Clone Completed Successfully**".
- STEP 14** *Eject Disk* (this must be done before resetting computer)
- STEP 15** Click "**Reset Computer**".

4.3.1.1.4 *Windows XP Setup:*

- STEP 1** When "**Welcome to Microsoft Windows**" screen appears, left-click on "**Next**".
- STEP 2** Left-click on "**Yes, I accept**", then "**Next**" to read and accept the End User License Agreement.
- STEP 3** Using an attached keyboard, type in the **Windows XP Product Key**. The Microsoft product key code label is located on the top cover of the Importer. Left-click on "**Next**".
- STEP 4** At the "**Help protect your PC**" screen, left-click on "**Not right now**", then "**Next**".
- STEP 5** At the "**What's your computer's name?**" screen, type **IMPORTER-WXYZ** (WXYZ being your call letters) in the computer name box and leave the computer description box blank. Left-click on "**Next**".
- STEP 6** After a few moments, setup will ask you to enter an **administrator password**. Leave these boxes blank and left-click on "**Skip**".
- STEP 7** Setup will then ask if this computer is in a domain. Make sure that "**No, don't make this computer part of a domain**" is selected, then left-click on "**Next**".
- STEP 8** Wait while setup is **checking for an internet connection** (Left-click on "**Skip**" if Importer is not connected to a network with Internet access).
- STEP 9** Setup will then ask if you are "**Ready to activate Windows?**"
- STEP 10** If the Importer isn't connected to a network with Internet access then you can activate via Microsoft's activation phone number.
- STEP 11** Accept default "**Yes**" to "**Will this computer connect to the Internet directly, or through a network?**"
- STEP 12** Left-click "**Yes, I'd like to register with Microsoft now**", then "**Next**". Enter your registration information then left-click "**Next**".

STEP 13 At "Thank you!" screen, left-click on "Finish". The Importer should now successfully reboot up to Windows XP Professional.

4.3.1.1.5 *iBiquity License*

STEP 1 Double-click on the "License Manager" icon on the Desktop. Left-click "OK" to "Invalid license". Left-click "OK" to "Unable to check validity of the License, License not found."

STEP 2 Left-click on "Get License Key". You can re-use the existing license key code if you have it on record. If not write down the **request key code** and

Email to: *importerkey@ibiquity.com*

Subject line enter: *Importer 4.3.x license key code request*

In the email text body enter:

Upgrading Harris Broadcast HDI-200 Importer to revision 4.3.x.

Station call letters: (your station's call letters)

Request key code: (your request code).

Please reply with valid license key code.

STEP 3 Enter the new license key code into the "License Key" field. Left-click on "Activate". "Current License Status" should now say valid until (current date plus 1 year).

STEP 4 Left-click "Close" to close the License Manager window.

4.3.1.1.6 *Importer Network Setup:*

STEP 1 Left-click on the "Start" button. Select "Settings", then "Network Connections".

STEP 2 Right-click on "Local Area Connection" icon. This is for the left network connector on the back of the Importer.

STEP 3 Left-click on "Properties". Left-click on "Internet Protocol (TCP/IP)" then left-click on "Properties".

STEP 4 Select "Use the following IP address". Enter your **static IP address**, **subnet mask** and **default gateway** recorded earlier.

Default Static IP address: 10.10.10.9

Default Subnet mask: 255.255.255.0

Default Gateway: 10.10.10.1

- STEP 5** Left-click "OK", then "OK" again to close "Local Area Connection" windows.
- STEP 6** The default setup for "Local Area Connection 2" is for "Obtain an IP address automatically" (DHCP). This is the right side Ethernet connector on the back of the Importer. If a static IP address is required change this connection using same method as above.

4.3.1.1.7 Initial Importer Setup:

- STEP 1** Double-click on the "Importer Control Panel" icon.
- STEP 2** Left-click on the "Setup" menu option, then "Importer".
- STEP 3** Change the "Exporter IP address" to the Exporter IP address recorded earlier. Leave all other fields with default settings. Left-click "OK".
- STEP 4** Double-click the "WebAdmin" icon on the desktop.
- STEP 5** When the "WebAdmin" window opens, left-click the "Importer" tab.
- STEP 6** Verify the correct mode of operation; MP1 or MP3 (Extended Hybrid - adds P3 carrier).
- STEP 7** Select the "Exporter" tab; if blue *Synchronize* button is displayed, click on it to synchronize Importer and the Exporter.
- STEP 8** This completes the installation for Importer software 4.3.x. Please review the "HD Radio Importer's User Guide Release 4.x" for information on SPS configuration and operation. A PDF version is available for download from the Harris Broadcast Support web site: <http://support.broadcast.harris.com>.

4.3.2 License Key Issues

If License Manager has stopped recognizing a known-good license key, verify that the Ethernet connection is enabled. Re-Enabling the connection will allow License Manager to recognize the license key.

- STEP 1** Right click Network icon in task tray
- STEP 2** Select *Open Network Connections*

Or, if icons are not available...

- STEP 1** Click **Start**
- STEP 2** Select **Control Panel**

STEP 3 Select **Network Connections**

Once you have Network Connections open, verify Ethernet Connection(s) are either enabled or connected. If Disabled:

STEP 1 Right click disabled connection

STEP 2 Select *Enable*

STEP 3 Close **Network Connections**

STEP 4 Verify **License Manager** recognizes license key

Section 5

Parts List

5

5.1 Replacement Parts Listing

- Lynx AES16e PCI Express Audio Card
- 961-1127-027: FlexStar HDI-200 Importer Software

Support Contacts: <http://harrisbroadcast.com/support>
eCustomer Portal: <http://support.harrisbroadcast.com>

Trademarks and tradenames are the property of their respective companies.



9800 S Meridian Blvd | Ste 300 | Englewood, CO 80112 U.S.A.
©2013 Harris Broadcast