AMX

Instruction Manual

Precis SD

Distribution Matrix

Matrix Switchers

AMX Limited Warranty and Disclaimer

All products returned to AMX require a Return Material Authorization (RMA) number. The RMA number is obtained from the AMX RMA Department. The RMA number must be clearly marked on the outside of each box. The RMA is valid for a 30-day period. After the 30-day period the RMA will be cancelled. Any shipments received not consistent with the RMA, or after the RMA is cancelled, will be refused. AMX is not responsible for products returned without a valid RMA number.

Warranty Repair Policy

- AMX will repair any defect due to material or workmanship issues during the applicable warranty period at no cost to the AMX Authorized Partner, provided that the AMX Authorized Partner is responsible for in-bound freight and AMX is responsible for out-bound ground freight expenses.
- The AMX Authorized Partner must contact AMX Technical Support to validate the failure before pursuing this service.
- AMX will complete the repair and ship the product within five (5) business days after receipt of the product by AMX. The AMX Authorized Partner will be notified if repair cannot be completed within five (5) business days.
- Products repaired will carry a ninety (90) day warranty or the balance of the remaining warranty, whichever is greater.
- Products that are returned and exhibit signs of damage or unauthorized use will be processed under the Non-Warranty Repair Policy.
- AMX will continue to provide Warranty Repair Services for products discontinued or replaced by a Product Discontinuance Notice.

Non-Warranty Repair Policy

- Products that do not qualify to be repaired under the Warranty Repair Policy due to age of the product or Condition of the product may be repaired utilizing this service.
- The AMX Authorized Partner must contact AMX Technical Support to validate the failure before pursuing this service.
- Non-warranty repair is a billable service.
- Products repaired under this policy will carry a ninety (90) day warranty on material and labor.
- AMX will notify the AMX Authorized Partner with the cost of repair, if cost is greater than the Standard Repair Fee, within five (5) days of receipt.
- The AMX Authorized Partner must provide a Purchase Order or credit card number within five (5) days of notification, or the product will be returned to the AMX Authorized Partner.
- The AMX Authorized Partner will be responsible for in-bound and out-bound freight expenses.
- Products will be repaired within ten (10) business days after AMX Authorized Partner approval is obtained.
- Non-repairable products will be returned to the AMX Authorized Partner with an explanation.
- See AMX Non-Warranty Repair Price List for minimum and Standard Repair Fees and policies.

Software License and Warranty Agreement

- LICENSE GRANT. AMX grants to Licensee the non-exclusive right to use the AMX Software in the manner described in this License. The AMX Software is licensed, not sold. This license does not grant Licensee the right to create derivative works of the AMX Software. The AMX Software consists of generally available programming and development software, product documentation, sample applications, tools and utilities, and miscellaneous technical information. Please refer to the README.TXT file on the compact disc or download for further information regarding the components of the AMX Software. The AMX Software is subject to restrictions on distribution described in this License Agreement. AMX Dealer, Distributor, VIP or other AMX authorized entity shall not, and shall not permit any other person to, disclose, display, loan, publish, transfer (whether by sale, assignment, exchange, gift, operation of law or otherwise), license, sublicense, copy, or otherwise disseminate the AMX Software. Licensee may not reverse engineer, decompile, or disassemble the AMX Software.

- ACKNOWLEDGEMENT. You hereby acknowledge that you are an authorized AMX dealer, distributor, VIP or other AMX authorized entity in good standing and have the right to enter into and be bound by the terms of this Agreement.

- INTELLECTUAL PROPERTY. The AMX Software is owned by AMX and is protected by United States copyright laws, patent laws, international treaty provisions, and/or state of Texas trade secret laws. Licensee may make copies of the AMX Software solely for backup or archival purposes. Licensee may not copy the written materials accompanying the AMX Software.

- TERMINATION. AMX RESERVES THE RIGHT, IN ITS SOLE DISCRETION, TO TERMINATE THIS LICENSE FOR ANY REASON UPON WRITTEN NOTICE TO LICENSEE. In the event that AMX terminates this License, the Licensee shall return or destroy all originals and copies of the AMX Software to AMX and certify in writing that all originals and copies have been returned or destroyed.

- PRE-RELEASE CODE. Portions of the AMX Software may, from time to time, as identified in the AMX Software, include PRE-RELEASE CODE and such code may not be at the level of performance, compatibility and functionality of the GA code. The PRE-RELEASE CODE may not operate correctly and may be substantially modified prior to final release or certain features may not be generally released. AMX is not obligated to make or support any PRE-RELEASE CODE. ALL PRE-RELEASE CODE IS PROVIDED "AS IS" WITH NO WARRANTIES.

- LIMITED WARRANTY. AMX warrants that the AMX Software (other than pre-release code) will perform substantially in accordance with the accompanying written materials for a period of ninety (90) days from the date of receipt. AMX DISCLAIMS ALL OTHER WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH REGARD TO THE AMX SOFTWARE. THIS LIMITED WARRANTY GIVES LICENSEE SPECIFIC LEGAL RIGHTS. Any supplements or updates to the AMX SOFTWARE, including without limitation, any (if any) service packs or hot fixes provided to Licensee after the expiration of the ninety (90) day Limited Warranty period are not covered by any warranty or condition, express, implied or statutory.

- LICENSEE REMEDIES. AMX's entire liability and Licensee's exclusive remedy shall be repair or replacement of the AMX Software that does not meet AMX's Limited Warranty and which is returned to AMX in accordance with AMX's current return policy. This Limited Warranty is void if failure of the AMX Software has resulted from accident, abuse, or misapplication. Any replacement AMX Software will be warranted for the remainder of the original warranty period or thirty (30) days, whichever is longer. Outside the United States, these remedies may not available. NO LIABILITY FOR CONSEQUENTIAL DAMAGES. IN NO EVENT SHALL AMX BE LIABLE FOR ANY DAMAGES WHATSOEVER (INCLUDING, WITHOUT LIMITATION, DAMAGES FOR LOSS OF BUSINESS PROFITS, BUSINESS INTERRUPTION, LOSS OF BUSINESS INFORMATION, OR ANY OTHER PECUNIARY LOSS) ARISING OUT OF THE USE OF OR INABILITY TO USE THIS AMX SOFTWARE, EVEN IF AMX HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. BECAUSE SOME STATES/COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF LIABILITY FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES, THE ABOVE LIMITATION MAY NOT APPLY TO LICENSEE.

- U.S. GOVERNMENT RESTRICTED RIGHTS. The AMX Software is provided with RESTRICTED RIGHTS. Use, duplication, or disclosure by the Government is subject to restrictions as set forth in subparagraph ©(1)(ii) of The Rights in Technical Data and Computer Software clause at DFARS 252.227-7013 or subparagraphs ©(1) and (2) of the Commercial Computer Software Restricted Rights at 48 CFR 52.227-19, as applicable.

- SOFTWARE AND OTHER MATERIALS FROM AMX.COM MAY BE SUBJECT TO EXPORT CONTROL. The United States Export Control laws prohibit the export of certain technical data and software to certain territories. No software from this Site may be downloaded or exported (i) into (or to a national or resident of) Cuba, Iraq, Libya, North Korea, Iran, Syria, or any other country to which the United States has embargoed goods; or (ii) anyone on the United States Treasury Department's list of Specially Designated Nationals or the U.S. Commerce Department's Table of Deny Orders. AMX does not authorize the downloading or exporting of any software or technical data from this site to any jurisdiction prohibited by the United States Export Laws.

This Agreement replaces and supersedes all previous AMX Software License Agreements and is governed by the laws of the State of Texas, and all disputes will be resolved in the courts in Collin County, Texas, USA. For any questions concerning this Agreement, or to contact AMX for any reason, please write: AMX License and Warranty Department, 3000 Research Drive, Richardson, TX 75082.

Contents

ESD Warning

To avoid ESD (Electrostatic Discharge) damage to sensitive components, make sure you are properly grounded before touching any internal materials.

When working with any equipment manufactured with electronic devices, proper ESD grounding procedures must be followed to ensure people, products, and tools are as free of static charges as possible. Grounding straps, conductive smocks, and conductive work mats are specifically designed for this purpose.

Anyone performing field maintenance on AMX AutoPatch equipment should use an appropriate ESD field service kit complete with at least a dissipative work mat with a ground cord and a UL listed adjustable wrist strap with another ground cord. These items should not be manufactured locally, since they are generally composed of highly resistive conductive materials to safely drain static charges, without increasing an electrocution risk in the event of an accident. ESD protective equipment can be obtained from 3M™, Desco®, Richmond Technology®, Plastic Systems®, and other such vendors.

Important Safety Information & Instructions

When using and installing your AMX AutoPatch product, adhere to the following basic safety precautions. For more information about operating, installing, or servicing your AMX AutoPatch product, see your product documentation.

- Read and understand all instructions before using and installing AMX AutoPatch products.
- Use the correct voltage range for your AMX AutoPatch product.
- There are no user serviceable parts inside an AMX AutoPatch product; service should only be done by qualified personnel.
- If you see smoke or smell a strange odor coming from your AMX AutoPatch product, turn it off immediately and call technical support.
- For products with multiple power supplies in each unit, make sure all power supplies are turned on simultaneously.
- Use surge protectors and/or AC line conditioners when powering AMX AutoPatch products.
- Only use a fuse(s) with the correct fuse rating in your enclosure.
- Make sure the power outlet is close to the product and easily accessible.
- Make sure the product is on or attached to a stable surface.
- Turn off equipment before linking pieces together, unless otherwise specified in that product's documentation.
- For safety and signal integrity, use a grounded external power source and a grounded power connector.
- To avoid shock or potential ESD (Electrostatic Discharge) damage to equipment, make sure you are properly grounded before touching components inside an AMX AutoPatch product.

Information et directives de sécurité importantes

Veuillez vous conformer aux directives de sécurité ci-dessous lorsque vous installez et utilisez votre appareil AMX AutoPatch. Pour de plus amples renseignements au sujet de l'installation, du fonctionnement ou de la réparation de votre appareil AMX AutoPatch, veuillez consulter la documentation accompagnant l'appareil.

- Lisez attentivement toutes les directives avant d'installer et d'utiliser les appareils AMX AutoPatch.
- Le voltage doit être approprié à l'appareil AMX AutoPatch.
- Les appareils AMX AutoPatch ne contiennent aucune pièce réparable par l'usager; la réparation ne doit être effectuée que par du personnel qualifié.
- Si de la fumée ou une odeur étrange se dégagent d'un appareil AMX AutoPatch, fermez-le immédiatement et appelez le Service de soutien technique.
- Veillez à ce que tous les blocs d'alimentation des appareils dotés de blocs d'alimentation multiples dans chaque unité soient allumés simultanément.
- Servez-vous de protecteurs de surtension ou de conditionneurs de lignes à courant alternatif lorsque vous mettez les appareils AMX AutoPatch sous tension.
- Placez uniquement des fusibles de calibre exact dans les boîtiers.
- Veillez à ce que la prise de courant soit proche de l'appareil et facile d'accès.
- Veillez à ce que votre appareil AMX AutoPatch soit installé sur une surface stable ou qu'il y soit fermement maintenu.
- Fermez toutes les composantes de l'équipement avant de relier des pièces, à moins d'indication contraire fournie dans la documentation de l'appareil.
- Par mesure de sécurité et pour la qualité des signaux, servez-vous d'une source d'alimentation externe mise à la terre et d'un connect d'alimentation mis à la terre.
- Pour éviter les chocs ou les dommages éventuels causés à l'équipement par une décharge électrostatique, veillez à ce le dispositif oit bien relié à la terre avant de toucher les composantes se trouvant à l'intérieur d'un appareil AMX AutoPatch.

Notices

Copyright Notice

AMX© 2008 (Rev B), all rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of AMX. Copyright protection claimed extends to AMX hardware and software and includes all forms and matters copyrightable material and information now allowed by statutory or judicial law or herein after granted, including without limitation, material generated from the software programs which are displayed on the screen such as icons, screen display looks, etc. Reproduction or disassembly of embodied computer programs or algorithms is expressly prohibited.

No patent liability is assumed with respect to the use of information contained herein.

Liability Notice

While every precaution has been taken in the preparation of this publication, AMX assumes no responsibility for error or omissions. No liability is assumed for damages resulting from the use of the information contained herein.

Further, this publication and features described herein are subject to change without notice.

USFCC Notice

The United States Federal Communications Commission (in 47CFR 15.838) has specified that the following notice be brought to the attention of the users of this product.

Federal Communication Commission Radio Frequency Interference Statement:

"*This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturers instructions, may cause interference to radio and television reception. It has been type-tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However there is no guarantee that interference will not occur in a particular installation. If this equipment causes interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:*

- *Re-orient the receiving antenna*
- *Relocate the matrix with respect to the receiver*
- *Move the matrix away from the receiver*
- *Plug the matrix into a different outlet so that computer and receiver are on different branch circuits*

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the booklet, How to Identify and Resolve Radio-TV Interference Problems, *prepared by the Federal Communications Commission to be helpful.*"

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock N. 004-000-00345-4.

Use shielded cables. To comply with FCC Class B requirement, all external data interface cables and adapters must be shielded.

Lithium Batteries Notice

Switzerland requires the following notice for products equipped with lithium batteries. This notice is not applicable for all AMX equipment.

Upon shipment of the products to Switzerland, the requirements of the most up-to-date Swiss Ordinance Annex 4.10 of SR 814.013 will be met by providing the necessary documents and annual reports relative to the disposal of the batteries to the Swiss Authorities.

Trademark Notices

AMX®, AutoPatch®, and NetLinx® are trademarks of AMX.

Windows®, Windows 2000®, Windows NT®, and Windows XP Professional® are registered trademarks of Microsoft Corporation.

HyperTerminal® is a copyright product of Hilgraeve Inc.

3M™, Desco®, Richmond Technology®, and Plastic Systems® are registered trademarks.

Neuron® and LonTalk® are registered trademarks of Echelon.

TosLink® is a registered trademark of the Toshiba Corporation.

Ethernet® is a registered trademark of the Xerox Corporation.

Other products mentioned herein may be the trademarks of their respective owners.

Warnings & Cautions

This manual uses the following conventions and icons to draw attention to actions or conditions that could potentially cause problems with equipment or lead to personal risk.

ESD Warning: *The icon to the left indicates text regarding potential danger associated with the discharge of static electricity from an outside source (such as human hands) into an integrated circuit, often resulting in damage to the circuit.*

Warning: *The icon to the left indicates text that warns readers against actions or conditions that could cause potential injury to themselves.*

Caution: *The icon to the left indicates text that cautions readers against actions that could cause potential injury to the product or the possibility of serious inconvenience.*

Overview & General Specifications

Applicability Notice

The information in this manual applies to Precis SD (Slam Dunk) systems. For other types of Precis systems, see the *Precis Instruction Manual*.

Precis SD Systems

Model	Configuration	Description
FGP37-0804-560	8x4	RGBHV (500 MHz)
FGP37-0804-567	8x4	RGBHV (500 MHz)+Stereo, DVC*
FGP37-0808-560	8x8	RGBHV (500 MHz)
FGP37-0808-567	8x8	RGBHV (500 MHz)+Stereo, DVC*
FGP37-1204-560	12x4	RGBHV (500 MHz)
FGP37-1204-567	12x4	RGBHV (500 MHz)+Stereo, DVC*
FGP37-1208-560	12x8	RGBHV (500 MHz)
FGP37-1208-567	12x8	RGBHV (500 MHz)+Stereo, DVC*

* DVC – Digital Volume Control

Product Notes

The Precis SD system is contained in a single enclosure* and pre-engineered to fit in a broad range of analog environments. All Precis SD systems have an integral Precis X/Y Control Panel, and can also be controlled from a variety of other sources (see page 12).

Note: *Because the Precis SD system is available in four configuration sizes with or without stereo audio, the illustrations in this manual may differ from the model(s) you purchased.*

Precis SD Features

- 500 MHz (+4 / -3 dB)
- PureSync™
- Superior crosstalk specifications
- Digital audio output volume control
- Digital audio input adjustments
- Complete audio breakaway capabilities
- RS-232 control port
- Groupings and macros (local and global presets)
- Supports full Device Discovery through AMX's AutoPatch Duet module (firmware v1.4.1 required)
- Optional TCP/IP control available
- Backed by AMX Warranty (see warranty at **www.amx.com** or on the *AMX AutoPatch CD*)
- 24-hour technical support

* Although primarily designed as a pre-engineered, standalone system, the Precis SD can be linked to other AMX AutoPatch Matrix Switchers. For information on linking between systems, see the instruction manual for the specific product.

Precis SD Control Features

Precis SD systems support three different protocols: BCS* (Basic Control Structure), XNNet, and TCP/IP. Several different control options are available. Multiple control methods can be used on the same system.

- Simple Touch X/Y Control Panel featuring backlit buttons
- AMX control devices (for specific control programming information, contact your AMX representative)
- APControl 3.0 software (free with all systems)
- APWeb (TCP/IP control via an external module)
- Supports AMX AutoPatch's simple BCS serial control protocol
- Supports third-party controllers

* BCS is sent as ASCII characters through the CONTROL (RS-232) port. For information on BCS commands, see the *BCS Protocol Instruction Manual* on the *AMX AutoPatch CD* or at **www.amx.com**.

Note: *Features and specifications described in this document are subject to change without notice.*

Front View

The enclosure is the structural basis of Precis SD systems. All Precis SD systems have an integral Precis X/Y Control Panel for controlling the system's switches and system attributes. The control panel can also be used for system verification, redundant control, and troubleshooting. Directions for use are provided in the "Control Panel Operations" chapter on page 35.
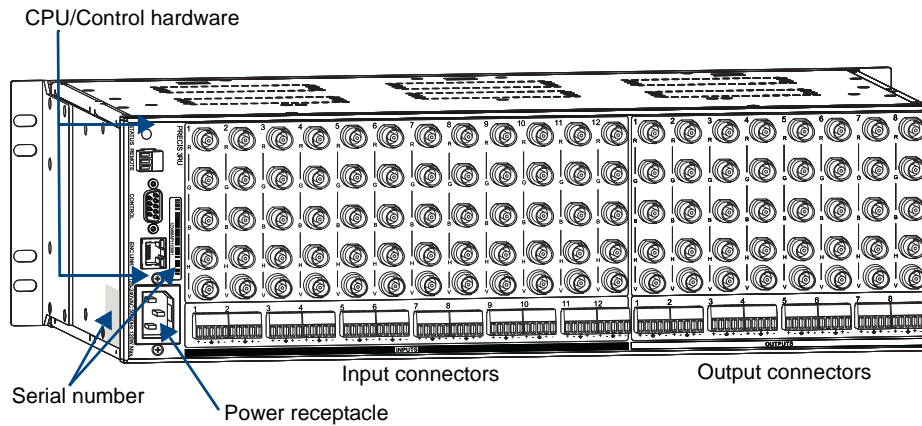
The control panel illustrated in FIG. 1 includes the option for volume control. For additional control options, see page 12.

FIG. 1 Typical Precis SD model with digital volume control

Rear View

The enclosure's appearance, as viewed from the rear, (FIG. 2) will vary depending on the configuration.

CPU/Control hardware

Input connectors   Output connectors

Serial number   Power receptacle
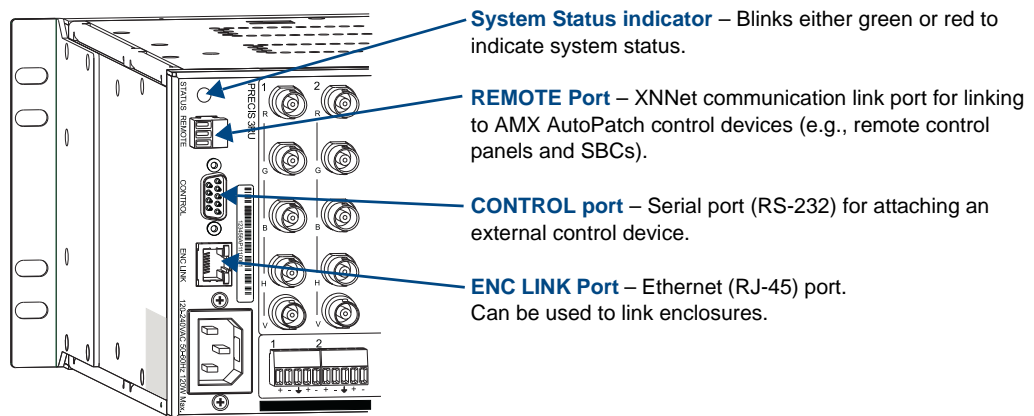
FIG. 2 Precis SD 12x8 enclosure rear view

Rear View Components

- CPU/Control hardware
- Power receptacle and specifications
- Serial number
- Input/output connectors

The following sections briefly introduce the hardware on the rear of an enclosure.

CPU/Control Hardware

The CPU is to the left of the input connectors on the rear of the enclosure (FIG. 3).

System Status indicator – Blinks either green or red to indicate system status.

REMOTE Port – XNNet communication link port for linking to AMX AutoPatch control devices (e.g., remote control panels and SBCs).

CONTROL port – Serial port (RS-232) for attaching an external control device.

ENC LINK Port – Ethernet (RJ-45) port. Can be used to link enclosures.

FIG. 3 CPU/Control hardware

Although primarily designed as a pre-engineered, standalone system, the Precis SD can be linked to other AMX AutoPatch Matrix Switchers. For information on linking between systems, see the instruction manual for the specific product.

Note: *The Comm light on the front panel indicates Ethernet traffic on the system.*

Power Receptacle & Specifications

The universal power receptacle is in the lower left hand corner on the rear of the enclosure (FIG. 4). Maximum power specifications are on the power receptacle. The power receptacle will accept all major international standard power sources. (Standard US power cords are provided for installations within the US.)

The fuse is internal and is not field serviceable. If you believe the fuse needs to be replaced, contact technical support (see page 32).

Serial number labels   Input connectors   Output connectors

Power receptacle & specifications
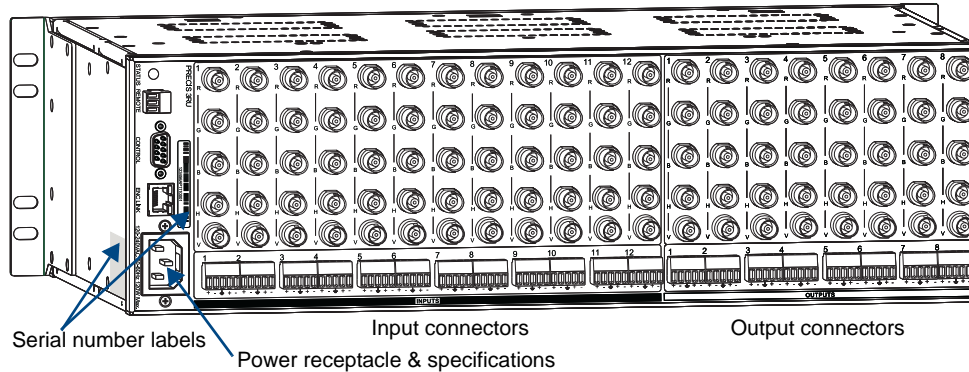
FIG. 4 Enclosure hardware

System Serial Number

The system's serial number is normally located in two places on an enclosure. When viewed from the rear, one serial number label is on the CPU (FIG. 4). The second serial number label is on the left side of the enclosure at the bottom edge (near the power receptacle). The label on the side will also have the enclosure number (referred to as the chassis number). Precis SD systems are contained in a single enclosure, labeled "Chassis 1 of 1." Before installation, we recommend recording the system's serial number in an easily accessible location.

Input & Output Connectors

Input and output connectors are the attachment points for source and destination devices that connect to the system. Viewed from the rear of the enclosure, the inputs (sources) are on the left side of the enclosure, and the outputs (destinations) are on the right side of the enclosure. The BNC connectors are color coded; the white connectors are inputs and the black connectors are outputs. Inputs and outputs are numbered separately; the numbers are above the connector on the left.

For directions on cabling/wiring the input and output connectors in your system, see "Attaching Inputs & Outputs" on page 24.

Precis SD General Specifications

General Specifications	
Parameter	**Value**
Approvals	CE, ETL, cETL
Humidity	0 to 90% non-condensing
Operational Temperature	32°F to 110° F (0°C to 43° C)
MTBF	87,600 hours
AC Power*	100 VAC to 240 VAC single phase, 50 Hz to 60 Hz
Power Consumption (max.)	80 Watts per enclosure
Power Consumption (typical)	57 Watts per enclosure
Thermal Dissipation (max.)	273 BTU/hr.
Thermal Dissipation (typical)	194 BTU/hr. per fully loaded enclosure
Dimensions 　Depth 　Width with rack ears 　Width without rack ears 　Height	 10.4 in. (26.4 cm) 18.8 in. (47.7 cm) 17.4 in. (44.2 cm) 5.2 in. (13.2 cm) 3 RU
Weight	Approximately 12 lb. (5.4 kg) per enclosure

* The fuse is internal and is not field serviceable. If you believe the fuse needs to be replaced, contact technical support (see page 32).

For information and specifications for the individual signal types, see the following:

- Ultra-Wideband (500 MHz) Signals – on page 33

- Hi-Z Sync Signals – on page 33

- Standard Audio Signals – on page 34

AMX reserves the right to modify its products and their specifications without notice.

Configuration Information & Control Options

The factory configuration of the Precis SD is constructed internally by the CPU upon initial boot up of the system and contains routing and control information for that particular model of (for model numbers and descriptions, see the "Applicability Notice" on page 7).

Configuration Information

As shipped from the factory, the Precis SD supports Device Discovery (firmware v1.4.1 required). The factory configuration contains 3 virtual matrices for switching signals: VM 0 = audio-follow-video, VM 1 = video, and VM 2 = audio.

Important: *Unless you need to modify the system, you will <u>not</u> need to use XNConnect (configuration software provided on the "AMX AutoPatch CD" shipped with each system).*

You can use XNConnect to discover the factory configuration, modify the information, save it as an .xcl file, and load the file to the system's CPU (see "Appendix A – Managing Configuration Files" on page 45). When an .xcl file is loaded to the system, it replaces the factory configuration on the CPU. Configuration file modifications include basic tasks, such as creating local presets, customizing input and output channel names for control display (e.g., in the APWeb or APControl interface), and setting the control panel password. A compatible .xcl configuration file is also provided on the CD.

Control Options

Precis SD systems support three different protocols: BCS (as ASCII characters sent through the CONTROL port), XNNet, and TCP/IP. Several different control options are available, and multiple control methods can be used on the same system.

Front Control Panel

The Precis X/Y Control Panel (standard on all Precis SD systems) controls the system's switches and attributes, as well as providing routing verification, redundant control, and troubleshooting. For more information, see the "Control Panel Operation" chapter on page 35.

AMX Control Devices

The Precis SD is compatible with a number of AMX control devices. For specific control programming information, contact your AMX representative.

AMX Control Software

Precis SD enclosures can be controlled using AMX AutoPatch software:

- APControl 3.0 – for control and scheduling
  - Uses CONTROL (serial) port located on the CPU
  - Runs on a PC connected to the CONTROL port
  - Download* from the *AMX AutoPatch CD*
- APWeb Server (TCP/IP) – for control, diagnostics, and third-party access
  - Uses the CONTROL port located on the CPU for connecting to an APWeb Server Module
  - Accessed through a TCP/IP interface, such as, a web browser (e.g., Internet Explorer)
  - Contact AMX regarding limitations and conditions for operating a Precis SD on a company LAN (Local Area Network)

* If your AMX account has the required permissions, you can download APControl from **www.amx.com.**

BCS Serial Control Protocol

The Precis SD can be controlled with an external serial controller that sends and receives ASCII characters via the CONTROL port. AMX AutoPatch has developed a command language, BCS (Basic Control Structure) protocol, for programming control operations and for diagnostic purposes. BCS commands can be entered into a terminal emulation program (such as, HyperTerminal) running on a PC. For information on BCS commands, see the *BCS Protocol Instruction Manual* on the *AMX AutoPatch CD* or at **www.amx.com**.

Third-Party Controllers

A third-party controller can also be attached to a Precis SD enclosure. If using a third-party controller, see the controller documentation for operating instructions.

Installation & Setup

Site Recommendations

When placing the enclosure, follow the recommendations and precautions in this chapter to reduce potential installation and operation hazards.

Environment

- Choose a clean, dust free, (preferably) air-conditioned location.
- Avoid areas with direct sunlight, heat sources, or high levels of EMI (Electromagnetic Interference).
- To make control panel operations easier, mount the enclosure with the control panel in the rack at eye level.

Chassis Accessibility

Make sure the front and rear panels of the enclosure are accessible, so that you can monitor the LED indicators. Leaving adequate clearance at the rear will also allow for easier cabling and service.

Power

The source's electrical outlet should be installed near the router, easily accessible, and properly grounded. Power should come from a building branch circuit. We recommend using a dedicated line for the system's power. Use a minimum breaker current rating of 15 A for 110 V or 30 A for 230 V. To avoid an overload, note the power consumption rating of all the equipment connected to the circuit breaker before applying power.

General Hazard Precautions

These recommendations address potential hazards that are common to all installations:

Elevated Operating Temperature

The maximum rated ambient temperature for Precis SD enclosures is 110° F (43° C).

All equipment should be installed in an environment compatible with the manufacturer's maximum rated ambient temperature. In a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than the ambient room temperature.

Caution: *To protect the equipment from overheating, do not operate in an area that exceeds 110°F (43° C) and follow the clearance recommendation below for adequate airflow.*

Airflow Restriction

Precis SD enclosures are designed to adequately dissipate the heat they produce under normal operating conditions; however, this design is defeated when high heat producing equipment is placed directly above or below an enclosure.

Caution: *To prevent overheating, avoid placing high heat producing equipment directly above or below the enclosure. The system requires a minimum of one empty rack unit above and below (three empty rack units are recommended).*

Mechanical (Rack) Loading

When installing equipment in a rack, distribute the weight to avoid uneven mechanical loading.

Circuit Overloading

When connecting the equipment to the supply circuits, be aware of the effect that overloading the circuits might have on over-current protection and supply wiring.

Reliable Earthing (Grounding)

Reliable earthing of rack-mounted equipment should be maintained. If not using a direct connection to the branch circuit (e.g., plugging into a power strip), pay particular attention to supply connections.

Caution: *For proper start up, turn on all power switches for the AMX AutoPatch equipment at the same time before applying power to the source and destination devices. We recommend attaching all power cords to a single surge protector and/or an AC line conditioner.*

Unpacking

The Precis SD is shipped with one enclosure per shipping box. The invoice is sent separately; a packing list is attached to the outside of the box. Each box contains the following items:

❏ Enclosure

❏ Standard US power cord (if shipped within the US)

❏ Rack ears (with 8 screws)

❏ Other enclosure products as needed

The documentation in the box includes:

❏ AMX AutoPatch Precis SD Quick Start Guide

❏ *AMX AutoPatch CD*

The shipping boxes are marked as "Chassis __ of __," where the first blank is the box number and the second blank is the total number of boxes in the shipment.

Unpacking Tips

❏ Before fully unpacking the enclosure(s), *inspect the shipping box(es) for any signs of damage*. If a box is partially crushed or any sides have been broken open, notify the shipping agency immediately and contact your AMX representative (see the warranty on the *AMX AutoPatch CD* or at **www.amx.com**).

❏ Once unpacking is complete, closely check the physical condition of the enclosure.

❏ Collect all documentation.

Note: *Please save the original shipping container and packing materials. AMX is not responsible for damage caused by insufficient packing during return shipment to the factory. Shipping boxes are available; contact your AMX representative for details.*

Rack Installation & System Setup

The Precis SD Distribution Matrix enclosure can be mounted in a standard EIA 19 in. (48.26 cm) rack. Rack installation ears are included, and directions for attaching the rack ears are included in the rack installation instructions (page 18).

Important: *The system requires at least one empty rack unit above and below the enclosure to allow adequate airflow; three empty rack units are recommended.*

Required items for rack installation:

- ❏ Enclosure
- ❏ Standard EIA 19 in. (48.26 cm) rack
- ❏ Rack ears (with 8 screws per set)
- ❏ Screwdriver
- ❏ Screws that fit your rack for mounting the enclosure(s)
- ❏ Power cord

Optional items for rack installation:

- ❏ Surge-protector – highly recommended
- ❏ A laptop computer or PC with a null modem cable
  (for communication with the Precis SD via its CONTROL port)

Installation Recommendations

- ● Write the system's serial number in an easily accessible location before installing the Precis SD in a rack. The system's serial number is located in two places on the enclosure; on the left rear and on the left side of the enclosure (near the power receptacle).
- ● Use an earth-grounded power cord / system with the Precis SD.
- ● Attach all power cords to a single surge protector and/or an AC line conditioner.
- ● Apply power to the Precis SD enclosure before applying power to the system's source and destination devices.

Installation Procedure

A flow chart showing the installation sequence is in FIG. 5. The procedure following provides general steps with references to detailed information found later in this manual.
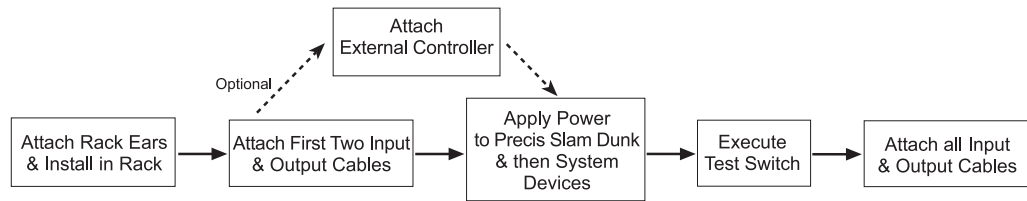

FIG. 5 Installation procedure

Caution: *To prevent overheating and airflow restriction, avoid placing high heat producing equipment directly above or below the enclosure. The system requires a minimum of one empty rack unit above and below (three empty rack units are recommended).*

To install and set up a Precis SD system in a rack:

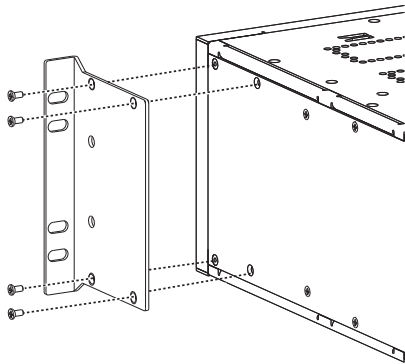1. Attach the rack ears per FIG. 6.

FIG. 6 Attach rack ears to sides of enclosure

2. Place the enclosure in the rack and attach front-mounting screws to hold it firmly in place (FIG. 7).
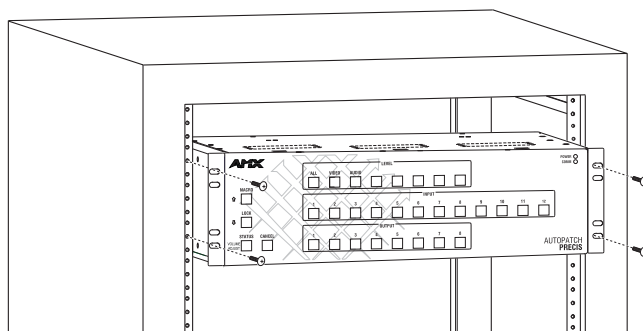

FIG. 7 Place in rack and fasten with mounting screws

Tip: *When placing enclosures, keep in mind that the optimal viewing angle for a control panel is eye level.*

3. Optional – Establish communication with an external control device/system; see "Attaching External Controllers" on page 20.

4. Attach *only* the first two source and destination devices; see "Attaching Inputs & Outputs" on page 24.

  Do not apply power to the devices until after the Precis SD has power (Step 5).

5. Apply power to the system according to the power-up procedure; see "Applying Power & Startup" on page 27.

Note: *We recommend using surge protectors and/or AC line conditioners.*

6. Execute a test switch to ensure the system is working properly; see "Executing a Test Switch" on page 29.

7. When the test switch works correctly, attach the remaining source and destination devices.

Additional Installation Options

Additional installation tasks may include the following:

- Creating custom channel names – See page 50 in "Appendix A – Managing Configuration Files."

- Setting a control panel password – See page 51 in "Appendix A – Managing Configuration Files."

- Creating / Defining local presets for macros – See page 52 in "Appendix A – Managing Configuration Files."

- Creating global presets – See the *BCS Protocol Instruction Manual* on the *AMX AutoPatch CD* or at **www.amx.com**.

Attaching External Controllers

The Precis SD can be controlled by attaching an external control device that uses one of the communication protocols listed below:

- **BCS (Serial)** – ASCII sent over a null modem serial cable via the CONTROL port

- **XNNet** – AMX AutoPatch protocol via all ports (including serial); AMX AutoPatch control and accessory devices usually connect via the REMOTE port

Important: *The ENC LINK (Ethernet RJ-45) connector on the CPU is not a TCP/IP interface and is used for linking enclosures. The Precis SD is primarily designed as a standalone system, but can be linked to other AMX AutoPatch Matrix Switchers (Optima, Optima SD, Modula, Epica-128, Epica-256, and Epica DG; see the instruction manual for the specific product).*

Control Options

The communication protocols listed above are used for these control options:

AMX Control Devices

The Precis SD is compatible with a number of AMX control devices. For specific control programming information, contact your AMX representative.

AMX AutoPatch Remote Control Panels & SBCs

AMX AutoPatch remote control panels and other AMX AutoPatch control devices (SBCs, and Preset SBCs) usually connect to the REMOTE port on the CPU. For instructions for attaching an external controller to the REMOTE port, see page 20. For specific information on the remote control device, see its product documentation.

APControl 3.0 (Serial)

APControl 3.0 software (for control and scheduling) runs on a PC connected to a Precis SD via the CONTROL port and is available on the *AMX AutoPatch CD*.

APWeb (TCP/IP)

The APWeb Server (for control, diagnostics, and third-party access) is accessed through a TCP/IP interface, such as, a web browser (e.g., Internet Explorer). An APWeb Server Module is required for APWeb. For setup and operation information, see the APWeb Server Module's documentation on the *AMX AutoPatch CD* and at **www.amx.com**.

Important: *Contact AMX regarding limitations and conditions for operating a Precis SD on a company LAN.*

XNNet Protocol (Serial)

Advanced programmers who want to design their own control programs can use AMX AutoPatch XNNet protocol. The *AMX AutoPatch CD* includes the XNNet Communication Library, an interface library that supports C, Java, and Visual Basic and has examples of the XNNet protocol in use.

BCS (Serial) Control

AMX AutoPatch has developed a command language, BCS (Basic Control Structure), for executing control operations and for diagnostic purposes. BCS commands are issued via a terminal emulation program, such as Windows® HyperTerminal. For information on BCS commands, see the *BCS Protocol Instruction Manual* on the *AMX AutoPatch CD* or at **www.amx.com**.

Third-Party Controllers (Serial)

Third-party controllers connect to the CONTROL port (RS-232) on the CPU. If using a third-party controller, see the controller documentation for setup and operating instructions.

Attaching Serial Controllers

An external serial controller is any device that can send and receive ASCII code over an RS-232 (null modem) serial cable attached to the CONTROL port on the enclosure's CPU. PCs are common serial controllers. Once a PC is attached to the Precis SD, the system can be controlled by running APControl software on the attached PC (see the *AMX AutoPatch CD*). The system can also be controlled by entering BCS commands into a terminal emulation program (e.g., HyperTerminal). For information on BCS commands, see the *BCS Protocol Instruction Manual* on the *AMX Autopatch CD* or at **www.amx.com**.

PC Requirements for APControl 3.0

❏ Windows XP Professional® or Windows 2000®

❏ Java Runtime Environment (JRE): v1.4.2 or the latest version

❏ Minimum Hardware: 166 MHz, 128 MB RAM, 20 MB free disk space, 800x600 display

❏ Recommended Hardware: 2.0 GHz, 512 MB RAM, 20 MB free disk space, 1280x1024 display

❏ Serial port

PC Requirements for BCS

❏ Windows XP Professional® or Windows 2000®

❏ Terminal emulation program (e.g., HyperTerminal)

❏ Serial port
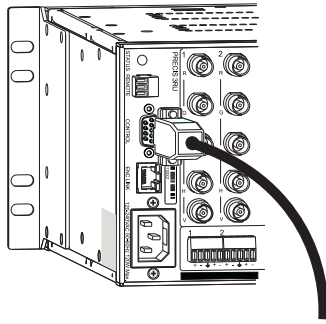
RS-232 Pin Diagram
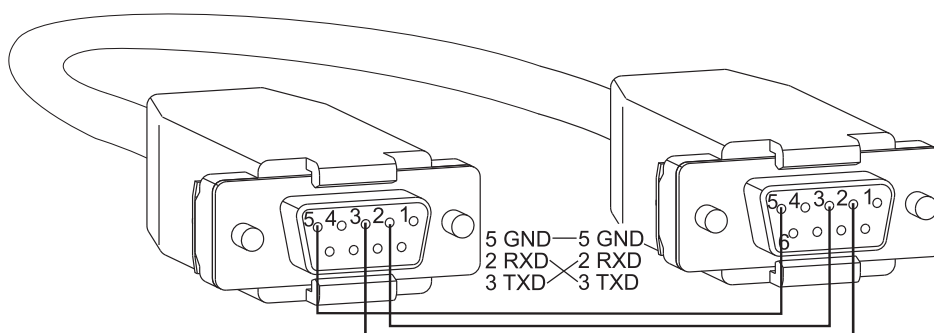
FIG. 8 RS-232 null modem pin diagram, no hardware flow control

To establish external serial control:

1. Use a null modem cable that matches the pin diagram in FIG. 8 for RS-232 without hardware flow control. AMX AutoPatch equipment requires pins 2, 3, and 5 only.

2. Plug one end of the null modem serial cable into the CONTROL port on the enclosure (FIG. 9).

FIG. 9 Attach null modem serial cable to CONTROL port

3. Plug the other end of the serial cable into the serial port on the serial controller/device.

4. Open the serial communication software on the PC and set the PC's port settings to match the Precis SD default settings (see table to the right). In addition to the default baud rate of 9600, Precis SD enclosures support baud rates of 19200, 38400, and 57600. The settings on the PC serial communication software and the enclosure *must* correspond to each other. If a change is required to make them match, changing the PC's settings is preferable. If you decide to change the enclosure's settings instead, use XNConnect (see the Help file).

Precis SD CONTROL Port Settings	
Baud Rate	9600
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

Caution: *To avoid system damage, follow the power-up sequence on page 27. We recommend attaching all power cords to a surge protector and/or AC line conditioner.*

5. If not already on, apply power first to the Precis SD enclosure and then to the source and destination devices (see "Applying Power & Startup" on page 27).

6. Set up and run the desired method of control:

- **AMX control devices** – For specific control programming information, contact your AMX representative.

- **APControl 3.0** – Install and open the program from the *AMX AutoPatch CD* (if your AMX account has the required permissions, the program can be downloaded from **www.amx.com**). Follow the setup wizard and open the APControl Launchbar.

- **Terminal emulation (e.g., HyperTerminal)** – Open the program, select the COM port, and check that the settings match those in the Precis SD CONTROL Port Settings table (see above).
  Click OK.
  A short splash screen appears.

7. Execute a test switch to ensure the Precis SD is working properly (see "Executing a Test Switch" on page 29).

Attaching External XNNet Controllers

An XNNet device is any device that sends and receives XNNet protocol over the REMOTE port.
AMX AutoPatch XNNet control devices include remote control panels, Single Bus Controllers (SBCs),
and Preset SBCs.

The instructions below are for attaching a device to the REMOTE port, found on the CPU. For specific
product information, see the individual device's documentation.

Communication Cable Requirements

❑ A two-conductor, 20 AWG, 7/28 strand cable with a drain wire or shield, such as Alpha 2412C
    (customer supplied)

❑ Maximum length of cable: 1,000 ft. (305 m) total, including linked panels

To establish a REMOTE port connection with an XNNet device:

1. Attach one end of the XNNet link cable to the corresponding port on the device (see the individual
    product documentation).

2. On the enclosure's CPU, unplug the REMOTE (XNNet) connector.

3. Loosen the screws on the REMOTE connector.

4. Insert the two wires of the XNNet link cable from the device into the REMOTE connector leaving
    the center slot empty (FIG. 10).
    Note that either wire can be inserted into either of the outer slots.
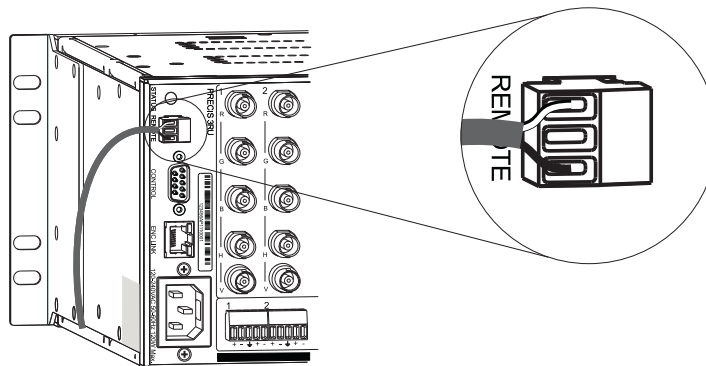
**FIG. 10** Insert wires into REMOTE port on CPU

5. Tighten both screws and plug the connector back into the CPU.

6. If not already on, apply power first to the Precis SD enclosure before applying power to the XNNet
    device (see "Applying Power & Startup," page 27).

7. Execute a test switch to ensure the Precis SD is working properly (see "Executing a Test Switch,"
    page 29).

Attaching Inputs & Outputs

Input and output connectors are the attachment points for source and destination devices that connect to the system. Viewed from the rear of a Precis SD enclosure, the inputs (for sources) are on the left side of the enclosure, and the outputs (for destinations) are on the right side.

The number and type of connectors depend on the signal type and system configuration. Input and output connectors are numbered separately. The connector numbers are either directly above or below the connector (or connector set) and read left to right.

Before connecting all input and output cables/wires, attach only the first two inputs and outputs and execute a test switch (see page 29). When the test switch is successful, attach the rest of the input and output cables and wires.
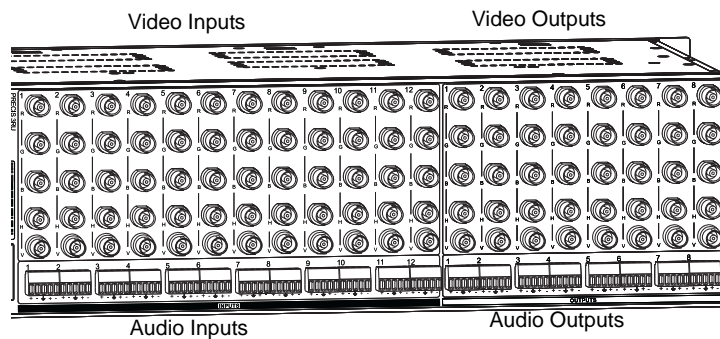
FIG. 11 Numbering starts at left for each input & output section

Signal Types & Connectors

The signal types and connectors for an Precis SD system are:

- Ultra-wideband video (500 MHz) over BNC connectors
- Hi-Z sync over BNC connectors
- Stereo audio (balanced or unbalanced) over pluggable 5-position terminal block connectors
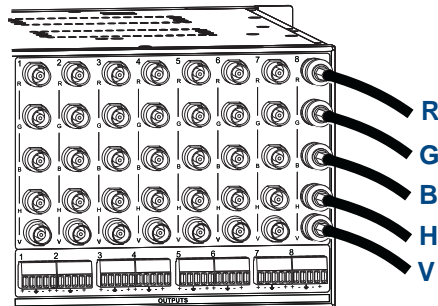
For specifications for specific signals, see "Signal Specifications" on page 33.

Cabling Video Connectors

The video connectors are color coded; the white BNC connectors are inputs and the black BNC connectors are outputs.

Tip: *Using lacer bars or some other type of cable management system lessens the strain from cable weight on the connectors and makes servicing the enclosures easier.*

For RGBHV signals, you need to attach corresponding input and output connectors on five connectors to route the entire signal. FIG. 12 shows the 5 BNC cable connectors attached for routing the R, G, B, H, and V signals through Output 8.

FIG. 12 Five BNC connectors are required for RGBHV signal

To connect video inputs and outputs:

1.   Fasten the cable connectors onto the input and output BNC connectors.

For ultra-wideband video and sync specifications, see "Signal Specifications" on page 33.

Wiring Audio Connectors

The stereo audio connectors for the Precis SD are pluggable 5-position terminal block that can be wired for balanced (differential) or unbalanced (single-ended) audio (FIG. 14).

Wiring Sources & Destinations

Source and destination devices require either balanced (differential) or unbalanced (single-ended) connections. FIG. 13 illustrates options for wiring between sources and input connectors and between output connectors and the destinations. More than one option can be use in the same system. For balanced and unbalanced wiring details, see FIG. 14.
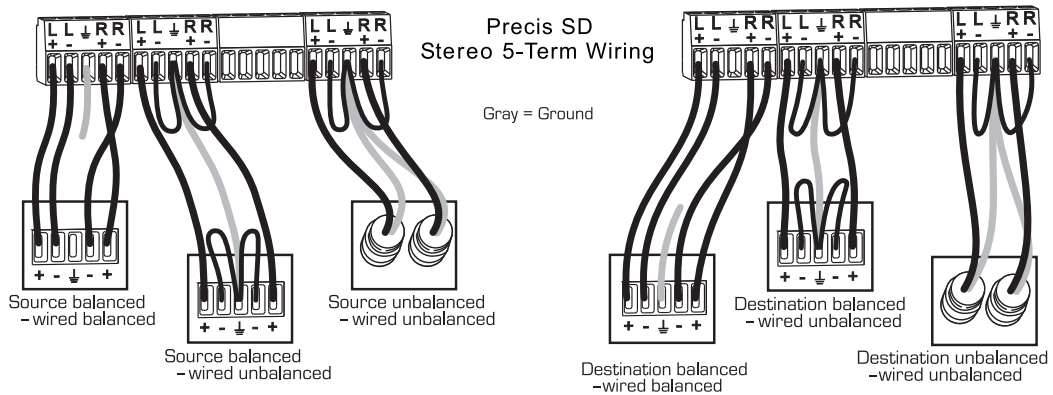

FIG. 13 Options for source-to-Precis SD-to-destination 5-Term wiring
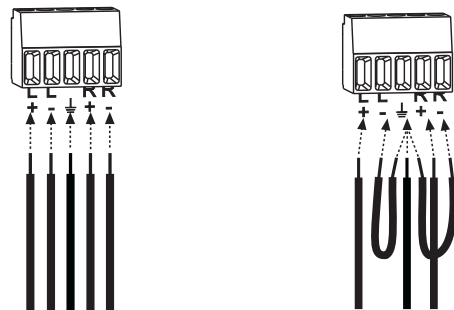
Attaching Wires

FIG. 14 Balanced audio   Unbalanced audio

To attach stereo audio input and output wires:

1. Unscrew the clamps on the audio connector.

2. Insert the wires and firmly re-tighten the clamps to make secure connections.
    For balanced audio wire placement, see the left wiring diagram in FIG. 14.
    For unbalanced audio wire placement, see the right wiring diagram in FIG. 14.

Note: *For stereo audio signals using twisted pair wire, connect the shield (ground) only at one end (recommend receiving end) to minimize low frequency noise.*

For stereo audio signal specifications, see "Signal Specifications" on page 34.

Applying Power & Startup

The enclosure's universal power receptacles will accept all major international standard power sources. Standard US power cords are provided for installations within the US. Maximum power specifications are on the power receptacle (also listed on page 11). Always use an earth-grounded power cord / system with a Precis SD.

The source electrical outlet should be installed near the Precis SD, easily accessible, and properly grounded. Power should come from a building branch circuit. We strongly recommend using a dedicated line for the system's power. Use a minimum breaker current rating of 15 A for 110 V or 30 A for 230 V. To avoid an overload, note the power consumption rating of all the equipment connected to the circuit breaker before applying power.

Caution: *To avoid system damage, turn on <u>all power switches</u> for the AMX AutoPatch equipment <u>at the same time</u> before applying power to the system's source and destination devices. <u>We recommend attaching all power cords to a surge protector and/or an AC line conditioner</u>.*

Power-Up Sequence

To apply power:

1. Attach the first two source and destination devices (see "Attaching Inputs & Outputs," page 24). *Do not apply power* to the source and destination devices until Step 7.

2. Optional – Attach an external controller (see "Attaching External Controllers," page 20).

3. Plug the power cord into the power receptacle on the enclosure.

4. Plug the other end of the power cord(s) into a power strip (we recommend a 30 A power strip) *that is turned off*.

5. Turn on the power strip.
    The Power Indicator on the front of the enclosure illuminates (FIG. 15).

Power indicator
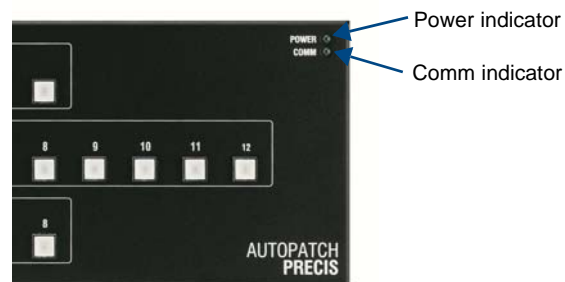
Comm indicator

FIG. 15 Power indicator on enclosure front

6. Optional – Apply power to any external control device/system.

7. Apply power to the source and destination devices.
    The Comm indicator on the front of the enclosure (FIG. 15) blinks green to indicate Ethernet traffic on the system.

For startup information on specific types of control *before* executing a test switch, see page 20.
The system is ready for a test switch (see "Executing A Test Switch" on page 29).

Note: *For information on checking the software and hardware versions, see page 57.*

Serial Control Device Startup

If you have not already done so, attach the serial control device to the CONTROL port on the enclosure (see page 20) and open the control program.

AMX Control Devices

The Precis SD is compatible with a number of AMX control devices. For specific control programming information, contact your AMX representative.

APControl 3.0

If you are using APControl 3.0, install and open the program. Follow the directions in the setup wizard. From the Launchbar menu, select Views / CrossBar and click on the crosspoints to execute switches.

APWeb

For startup information, see the *APWeb Server Module* documentation.

HyperTerminal

When power is applied to the enclosure, HyperTerminal displays a short splash screen followed by "Ready" (FIG. 16). The system is ready to disconnect the factory default switch and to execute a test switch (see page 31). FIG. 16 shows an example of a short splash screen on power-up.
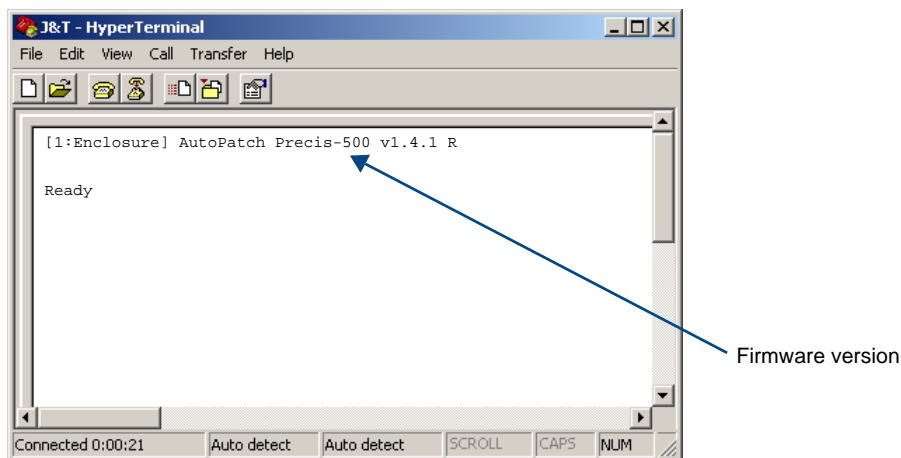
FIG. 16 Power-up splash screen in HyperTerminal

Precis SD models display advanced system information when the command ~scr! is entered (see Appendix B on page 55).

For additional information on checking the firmware version, see page 57.

Note: *AMX reserves the right to add to the contents of the splash screen at any time, without notice.*

Executing a Test Switch

Execute a test switch to verify the system is working properly before attaching *all* inputs and outputs. Aside from having signal cables (and a controller if applicable) attached, the system is ready to execute switches when it ships from the factory.

Important: *The Precis SD ships from the factory with a default switch of Input 1 to all outputs. Before executing the test switch, you will need to disconnect the factory default switch.*

The first two source and destination devices must be attached to the input and output connectors. (For specific connector information, see "Attaching Inputs & Outputs" on page 24). After the devices are connected, power *must* be applied to the enclosure first and then to the devices before executing a test switch.

You can execute a test switch from the following:

- Control panel
- AMX control device
- Control software such as APControl 3.0 or APWeb
- BCS (Basic Control Structure) commands over an external controller
- An external third-party controller

Executing a Test Switch

Before executing the test switch, make sure the first two source devices and the first two destination devices are connected to the correct input and output connectors.

Important: *RGBHV signals require multiple input or output connectors (see page 25). All of the signal cables for an RGBHV signal (and audio if applicable) must be attached before executing the test switch.*
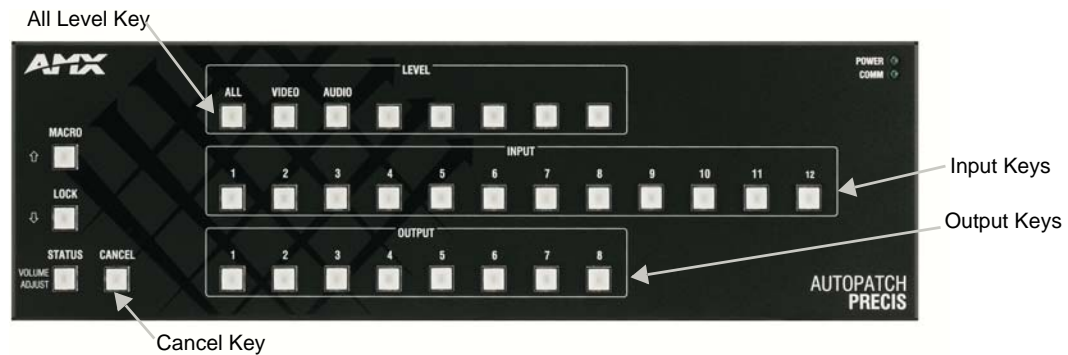
Control Panel

All Level Key

Input Keys

Output Keys

Cancel Key

FIG. 17 Precis SD 12x8 control panel

To disconnect the factory default switch using the control panel:

1. Press the Cancel Key to place the panel in Switch mode.
All the lights on the control panel turn off.
The control panel is in Switch mode.

2. Press the All Level Key.
The All Level Key illuminates.

3. Press Input Key 1.
Input Key 1 flashes.
After a moment, all the Output Keys illuminate.

4. Press each Output Key.
The Output Keys each disconnect (turn off) when pressed.

When executing a test switch, we suggest routing Input (source) 1 to Output (destination) 2 on Level 0 (audio-follow-video or All).

To execute a test switch using the control panel:

1. Press the Cancel Key to place the panel in Switch mode.

2. Press the All Level Key.
The All Level Key illuminates.

3. Press Input Key 1.
Input Key 1 flashes.

4. Press Output Key 2.
When Output Key 2 illuminates, the switch is successful.
Verify that the source signal is present (visible and/or audible) at the destination.

AMX Control Device

For executing and disconnecting switches using an AMX control device, see the specific control device documentation.

APControl 3.0 or APWeb

Directions for executing and disconnecting switches using APControl 3.0 are found in its Help file.
For directions for executing switches using APWeb, see the *APWeb* documentation.

BCS Commands

To enter BCS commands, the system must be attached to a serial control device (see "Attaching External Controllers," on page 20) running a terminal emulation program such as Windows® HyperTerminal. The settings on the PC serial communication software and the enclosure *must* correspond to each other. For settings information, see the table on page 22.

When using HyperTerminal, command characters are entered and sent to the enclosure's CPU (the command characters appear in HyperTerminal when the enclosure responds). When all of the entered characters appear in HyperTerminal, the command has been successfully executed.

To disconnect the factory default switch using BCS commands:

1. Enter the following BCS command line:
   DL0I1T

When the "T" appears, the system has successfully executed the command.

The following test switch routes Input 1 to Output 2 on Level 0.

To execute a test switch using BCS commands:

1. Enter the following BCS command line:
   CL0I1O2T

When the "T" appears, the system has successfully executed the command. If any other characters appear, the command was not successful. Verify that the source signal is present (visible and/or audible) at the destination.

For a complete list of BCS commands and responses, see the *BCS Protocol Instruction Manual* on the *AMX AutoPatch CD* or at **www.amx.com**.

Troubleshooting

If the test switch did not execute correctly:

❏ Check the power indicator on the front of the enclosure.
   If it is not illuminated, check the power cords.

❏ Verify the status of the test switch.
   If using BCS commands, enter "SL0O2T".
   If "SL0O2T(1)" appears, the test switch is routed.
   If the status returns as routed correctly, the system established a connection between the specified input and output connectors within the enclosure.

❏ Check all link and signal connections on the rear of the enclosure(s) to make sure everything is physically set up correctly.

❏ Check all power switches on the source and destination devices to make sure they are all turned on.

❏ Isolate source and destination equipment and cable problems by patching around the router using barrel connectors to check the overall signal path.

❏ Attempt the switch again.
   If the switch still does not work, contact technical support (see page 32).

Technical Support

Before contacting technical support with a question, please consult this manual. If you still have questions, contact your AMX representative or technical support. Have your system's serial number ready. The system's serial number is normally located in two places on the enclosure; on the left rear and on the left side (near the power receptacle).

We recommend recording your system's serial number in an easily accessible location.

AMX Contact Information

- 3000 Research Drive, Richardson, TX 75082
- 800.222.0193
- 469.624.8000
- Fax 469.624.7153
- Technical Support 800.932.6993
- www.amx.com

Signal Specifications

This chapter contains the specifications for the video and audio signals routed by the Precis SD system. For information on cabling and wiring video and audio connectors, see "Attaching Inputs & Outputs" on page 24.

Ultra-Wideband (500 MHz) Specifications

Ultra-Wideband (500 MHz) Signal Specifications		
Parameter	**Conditions**	**Value**
Frequency Response		±3 dB to 500 MHz or better
Crosstalk (adjacent channel)	f = 5 MHz	<-60 dB
Signal to Noise Ratio (SNR)	Vin = 0.7 V, 100 IRE	>65 dB
Return Loss	f = 5 MHz	<-45 dB
Input Level (max.)		±1.25 V
Input Impedance		75 ohms
Output Level (max.)		±1.25 V
Output Impedance		75 ohms
Connectors		BNC

Sync Specifications

Sync Signal Specifications		
Parameter	**Conditions**	**Value**
Input Level (max.)		±5 V
Input Impedance (Hi-Z)		22 kohms
Output Level (max.)		±5 V
Output Impedance		75 ohms
Connectors		BNC

Standard Audio Specifications

Standard Audio Signal Specifications		
Parameter	**Conditions**	**Value**
Frequency Response	20 Hz to 20 kHz	<±0.1 dB
THD + Noise	20 Hz to 20 kHz, Vin = -10 dBu to +20 dBu	<0.1%
Crosstalk	f = 1 kHz, Vin = +14 dBu	<-90 dB
Signal to Noise Ratio (SNR)	20 Hz to 20 kHz, Vin = +10 dBu	>80 dB
Input Level (max.)	Balanced	+27 dBu
Input Impedance		18 kohms
Input Gain Adjustment Range	Control panel or serial control adjustment	+10 dB to -10 dB
Output Level (max.)	Balanced	+27 dBu
Output Impedance		50 ohms
Output Volume Control Adjustment Range (digital)*	Control panel or serial control adjustment	+10 dB to -70 dB
Type		Balanced or unbalanced
Connectors		Pluggable 5-position terminal block

* Total of input gain plus output gain cannot exceed +10 dB.

AMX reserves the right to modify its products and their specifications without notice.

Precis SD Control Panel Operation

Overview

All Precis SD systems have an integral Precis X/Y Control Panel for controlling the system's switches and system attributes. The control panel can also be used for system verification, redundant control, and troubleshooting.

FIG. 18 illustrates a Precis SD 12x8 with digital volume control. Other models may vary slightly in appearance.
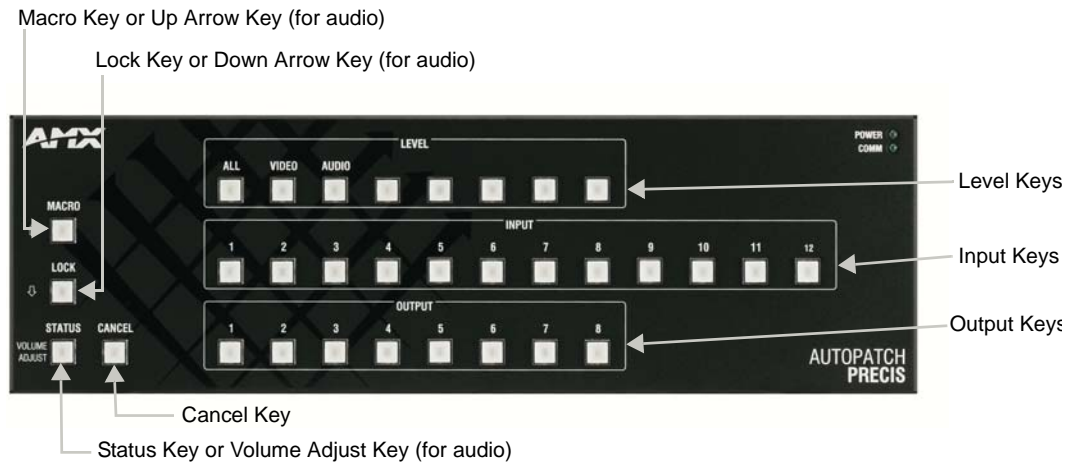

FIG. 18 Precis SD 12x8 control panel (with digital volume control)

Note: *AMX AutoPatch enclosures can also be controlled using BCS (Basic Control Structure) commands transmitted through an external controller; for more information, see the "BCS Protocol Instruction Manual" on the "AMX AutoPatch CD" or at* **www.amx.com**.

Control Keys

Macro Key or Up Arrow Key (for audio)

Lock Key or Down Arrow Key (for audio)

Level Keys

Input Keys

Output Keys

Cancel Key

Status Key or Volume Adjust Key (for audio)

FIG. 19 Precis SD control panel keys (dual-labeled keys can adjust audio)

Modes of Operation

A Precis SD Control Panel works in three standard modes:

- Switch (default) – use to execute switches
- Status – use to verify signal status
- Macro – use to execute a macro (local presets are defined in XNConnect)

Virtual Matrices (Levels)

Precis SD models operate on three virtual matrices (VMs):

- VM 0 (audio-follow-video, or All)
- VM 1 (video)
- VM 2 (audio)

Keys & Functions

- Macro Key – places the control panel in execute Macro mode
- Lock Key – locks and unlocks the control panel (password required)
- Status Key – places the control panel in Status mode
- Cancel Key – cancels an incomplete command and returns the control panel to Switch mode
- Level Keys – activates levels for switches or status queries, also used for entering macros and the password
- Input (source) Keys – selects an input on the specified level, also used for entering macros
- Output (destination) Keys – selects an output on the selected level, also used for entering macros

Audio Adjust Keys (optional)

For Precis SD systems with audio, these dual-function keys can be used to adjust audio:

- Status Key = Volume Adjust Key, use to place system in Volume Adjust mode
- Macro Key = Up Arrow Key, use to increase volume
- Lock Key = Down Arrow Key, use to decrease volume

Executing & Disconnecting Switches

A switch is an active connection between an input (source) device and one or more output (destination) devices. The signals routed in a switching operation are individual signals or groups of individual signals coming through the connectors on the rear of an enclosure. You can execute switches from the Control Panel using the steps below or by executing a local preset / macro (see page 40).

Switching Level

All switches are executed on a specific level (virtual matrix). Unless otherwise specified, switches are executed using the factory designated default level of All (audio-follow-video) which is associated with the farthest left Level Key. When using the default, you do not need to press a Level Key.

When executing a switch on a level other than the default, you *must* press the desired Level Key (be sure the level includes all the signals you want to route).

The Level Key for the level currently in use will illuminate when you press an Input Key or an Output Key. The level can be changed by pressing the desired Level Key either before or after you press an Input Key or an Output Key.

Description of Switching / Disconnecting Operations in Switch Mode

Pressing the Cancel Key puts the control panel in Switch mode, which defaults to switching on the All (audio-follow-video) level. For information on changing the level, see "Switching Level" above.

- When an Input Key is pressed first, it flashes and will be used as the source for switching. A single Output Key can then be pressed (the key will illuminate) to execute the switch (and can be pressed again to disconnect the switch – the key will turn off) or multiple Output Keys can be pressed to receive the same Input (each can be pressed again to disconnect them). Additional switches and disconnects can be executed while in Switch mode.

- When an Output Key is pressed first, it flashes and is ready to accept an input signal. Press the Input Key to execute the switch. This switch remains in effect until the Input Key is pressed again (disconnecting the output from it) or another Input Key is pressed (the output receives an input signal from another source).
  Additional switches and disconnects can be executed while in Switch mode.

Executing a Switch

When executing switches, the flashing key is the "hot" key; all other commands center around that key until you change mode (press the Cancel key), level, or select a different Input or Output Key (*must* be same type of key as the "hot" key).

Be sure to read the information on "Switching Level" above.

You can return to the Switch mode at any time by pressing the Cancel Key. Pressing the Cancel Key does not cancel any completed operations.

To execute a switch selecting input (source) first:

1. Press the Cancel Key.
   All the lights on the control panel turn off.
   The control panel is in Switch mode.

2. Press a Level Key to select a level (can be omitted when switching on the default level).
   The Level Key illuminates.

3. Press an Input Key to select an input.
   The Input Key flashes, and after a moment any Output Key(s) to which that signal is already routed illuminates.

4. Press an Output Key(s) to select an output(s).
   The selected key illuminates as the switch is executed.

Note: *Only one input signal can be routed to any given output.*

To execute a switch selecting output (destination) first:

1. Press the Cancel Key.
   All the lights on the control panel turn off.
   The control panel is in Switch mode.

2. Press a Level Key to select a level (can be omitted when switching on the default level).
   The Level Key illuminates.

3. Press an Output Key to select an output.
   The Output Key flashes, and after a moment if an Input Key is already routed to it, the Input Key illuminates.

4. Press an Input Key to select an input.
   The selected key illuminates as the switch is executed.

Disconnecting Outputs

Disconnecting a switch deactivates the connection between an output (destination) device and the input (source) signal that is routed to it. An output can only be connected to one input; therefore, disconnecting an output only disconnects that connection; if the input is routed to additional outputs, those connections remain routed.

Be sure to read the information on "Switching Level" on page 37.

You can return to the Switch mode at any time by pressing the Cancel Key. Pressing the Cancel Key does not cancel any of the disconnects that were just completed.

Note: *To disconnect multiple outputs from an input, use the "Press an Input Key" option in Step 3 below.*

To disconnect an output:

1. Press the Cancel Key.
   All the lights on the control panel turn off.
   The control panel is in Switch mode.

2. Press a Level Key to select a level (can be omitted when switching on the default level).
   The Level Key illuminates.

3. Press an Input Key.
   The Input Key flashes, and all Output Keys the input is routed to illuminate.
   Press an illuminated Output Key(s) to disconnect the output(s) from the input.
   The Input Key continues flashing, and the output is disconnected from the input (if additional outputs are connected, they remain connected to the input until pressed).
   Or
   Press an Output Key.
   The Output Key flashes, and the Input Key it is receiving a signal from illuminates.
   Press the Input Key.
   The Output Key continues flashing, and the output is disconnected from the input (the Input Key goes out). (Additional outputs may still be connected to the input.)

Verifying Signal Status

Signal status can be verified to confirm that a switch has executed properly or to confirm correct routing to multiple outputs (destinations) without accidently executing or disconnecting switches. Input status and output status both function on the Precis SD Control Panel. An output can only be connected to one input (source); therefore, verifying the status of an output will illuminate only the one input it is currently connected to. Verifying an input will illuminate all outputs currently receiving the input's signal.

If you do not select a level, the system uses the level associated with the farthest left Level Key (default is audio-follow-video).

You can return to Switch mode at any time by pressing the Cancel Key.

To verify the status of a signal:

1. Press the Status Key to put the control panel in Status mode.
   The Status Key illuminates and all other keys on the control panel turn off.

2. Press a Level Key to select a level.
   The Level Key illuminates.

3. Press an Input Key that corresponds to the input you want to check.
   The selected Input Key illuminates and the Output Keys for the outputs receiving that input signal illuminate.
   If no Output Keys illuminate, the signal is not routed or is not available on that level.
   Or
   Press an Output Key that corresponds to the output you want to check.
   The Output Key illuminates, and the Input Key for the input currently routed to that output illuminates.
   If no Input Key illuminates, the signal is not routed or is not available on that level.

4. Verify the status of additional signals.
   Or
   Press the Cancel Key to return to Switch mode.
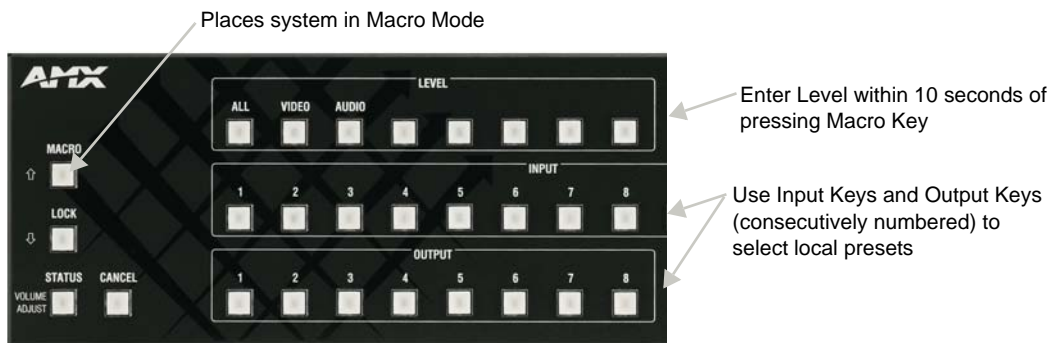
Executing Macros (Local Presets)

Note: *For Precis SD systems, the terms "macro" and "local preset" are interchangeable.*

A macro (local preset) is a predetermined set of switches on a particular level (virtual matrix) that are routed simultaneously. A Precis SD can execute as many macros per level as there are Input and Output Keys. A 12x8 model can execute 20 local presets per level, an 8x8 model can execute 16 local presets per level, and an 8x4 model can execute 12 local presets per level.

Note: *A Precis SD can store additional local presets up to a total of 64; however, the additional local presets <u>must</u> be accessed from a serial control device.*

Local presets are not programmed (defined) at the factory. To program local presets, use XNConnect (see "Appendix A – Managing Configuration Files" on page 45 and the Help file) or contact your AMX representative (for contact information, see page 32). Once the local presets have been defined as part of the configuration file, local presets can be executed at any time during normal operation.

To execute a macro, the Control Panel must be in Macro mode with the appropriate level selected. Select a macro by pressing the Input or Output Key that corresponds to the number assigned to the local preset in XNConnect. After you have selected a macro, the Control Panel returns to Switch mode and must be returned to Macro mode before executing another macro.

FIG. 20 The Macro Key is used with a Level Key and an Input or Output Key

The following general steps incorporate the specific example in parenthesis of executing local preset 13 on Level 2 using an 8x8 Precis SD.

To execute a local preset (local preset 13 on level 2 on an 8x8 Precis SD):

1. Press the Macro Key.
   The Macro Key flashes, and all the other lights on the panel turn off.
   When the Macro Key starts flashing, you have 10 seconds to enter a level and a local preset before the control panel reverts to Switch mode.

2. Press the Level Key that corresponds to the level where the local preset resides.
   (The first Level Key selects Level 0; for Level 2, press the third Level Key from the left.)
   The Level Key illuminates.

3. Press the Input or Output Key – counted consecutively – associated with the desired local preset.
   (To select local preset 13, press Output Key 5; the 8 Input Keys plus the first 5 Output Keys equals the 13th key for the local preset assigned number 13 on Level 2 in XNConnect).
   The Macro Key stops flashing, and all control panel lights turn off
   The switches/disconnects contained in the macro (Macro 13) are executed.
   The control panel returns to Switch mode.

4. Repeat Steps 1 through 3 to execute additional local presets.

Note: *Executing a local preset does not change any system routings that are not part of the preset.*

Adjusting Audio

Some Precis SD systems offer optional volume control and digital input gain adjustment features. If your system supports audio adjustments, output volume or digital input gain can be adjusted using either the control panel or BCS commands sent through a serial controller. (For information on audio adjustment using BCS commands, see the *BCS Protocol Instruction Manual*.)

Note: *The status of audio signals can be checked only from an external serial controller via BCS commands.*

When volume or digital input gain is adjusted for a device on one level, the adjustment remains in effect for that device on all levels switching audio signals.

Important: *For AMX AutoPatch systems, the total through-system gain (the amount of input gain plus the amount of output gain) specified for any input/output routing path cannot exceed 10 dBr. If you enter a volume (gain) command that exceeds 10 dBr when it is combined with the gain of an input, the command will be accepted (and will be indicated in status results) but will not result in an audible difference of more than 10 dBr.*

Adjusting Output Volume

If your system has volume control, adjustments (within the volume range for the specific audio output connectors) can be made at any time during normal operation. When audio is adjusted for a device on one level, the adjustment remains in effect for that device on all levels switching audio signals.

The Control Panel must be in Switch Mode to make audio adjustments. Follow the steps below to adjust the output volume. Each press of an arrow key increases or decreases output volume by 1 dB if the volume is below -30 dBu, and by 0.5 dB if the volume is above -30 dBu.

You can return to Switch mode at any time by pressing the Cancel Key.

Dual-labeled keys adjust audio

Places system in Volume Adjust Mode

Returns system to Switch Mode
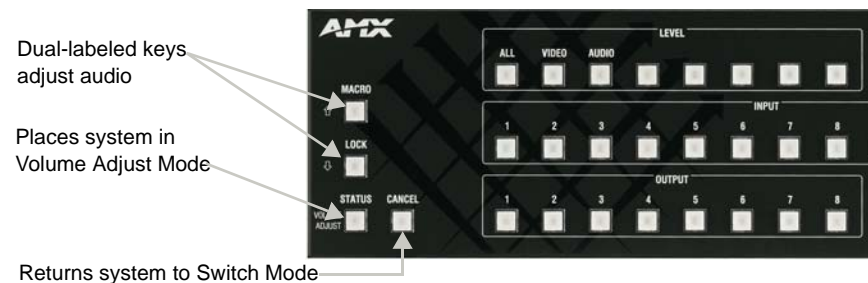
FIG. 21 Audio adjustment keys (dual-labeled keys can adjust audio)

To adjust output volume:

1. Press the Cancel Key to put the panel into Switch mode.
    All the control panel lights turn off.

2. Press and hold the Volume Adjust Key for at least 2 seconds.
    The Volume Adjust Key illuminates and then flashes.
    The control panel is in Volume Adjust mode.

3. Press an Output Key to select the output that needs volume adjustment.
    The selected Output Key illuminates, along with the Up Arrow (Macro) and Down Arrow (Lock) Keys.

4. Press and release the Up Arrow (Macro) Key to increase the volume.
    Or
    Press and release the Down Arrow (Lock) Key to decrease the volume.
    The pressed key flashes and then stays illuminated.

5. Repeat Step 4 until the desired volume level is reached.

6. Press the Cancel Key to return to the Switch mode.

Note: *Pressing the Cancel Key does not cancel the volume adjustments that were just entered*

Adjusting Digital Input Gain

If your system has digital input gain control, adjustments (within the gain range for the specific audio inputs) can be made at any time during normal operation. When audio is adjusted for a device on one level, the adjustment remains in effect for that device on all levels switching audio signals.

Caution: *We strongly recommend that digital input gain adjustments be made only by a qualified dealer or installer.*

Purpose & Uses of Input Gain

The purpose of controlling input gain (the nominal level of the signal from the source device) is to allow source signals of various amplitudes to be equalized before they are routed and the volume is adjusted. Equalizing source levels provides a consistent reference for volume adjustments and eliminates jumps when routing a new source to a destination.

Typical uses for input gain include switching consumer and professional grade audio equipment (whose levels can vary noticeably) in the same matrix switcher. Input gain adjustment is also used for equalizing amplitudes between balanced and unbalanced sources.

To adjust digital input gain to equalize input levels:

1. Route an input to the first output.

2. Adjust the digital input gain for the input to a specific dB level (see instructions below).

3. Repeat for all inputs that will be routed to the same output.

Dual-labeled keys adjust audio

Places system in Volume Adjust Mode

Returns system to Switch Mode
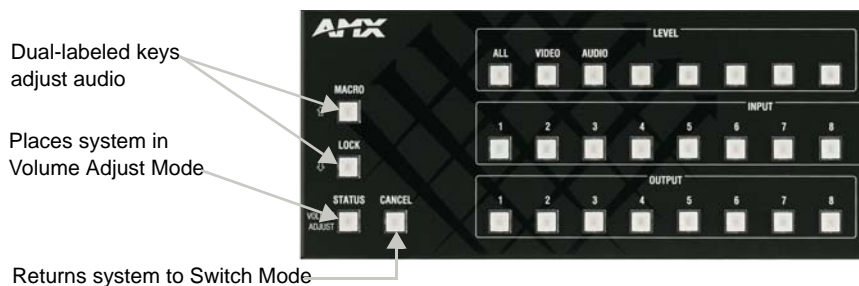
FIG. 22 Audio adjustments keys (dual-labeled keys can adjust audio)

To adjust digital input gain:

1. Press the Cancel Key to put the panel into Switch mode.
    All the control panel lights turn off.

2. Press and hold the Volume Adjust Key for at least 2 seconds.
    The Volume Adjust Key illuminates and then flashes.
    The control panel is in Volume Adjust mode.

3. Press an Input Key to select the input that needs digital input gain adjustment.
    The selected Input Key illuminates, along with the Up Arrow (Macro) and Down Arrow (Lock) Keys.

4. Press and release the Up Arrow Key to increase the digital input gain.
    Or
    Press and release the Down Arrow Key to decrease the digital input gain.
    The pressed key flashes and then stays illuminated.

5. Repeat Step 4 until the desired input gain level is reached.

6. Press the Cancel Key to return to the Switch mode.

Note: *Pressing the Cancel Key does not cancel any of the input gain adjustments that were just entered.*

Locking & Unlocking the Control Panel

The Precis SD Control Panel can be locked by pressing a sequence of Level Keys. Locking the panel prohibits access to the system and can prevent accidental switching. The password can be any combination of the first five Level Keys. The factory default password is the first five Level Keys, going from left to right. The password can be changed using XNConnect (see page 51).

While the control panel is locked, BCS commands still work; however, they cannot be used to unlock the panel. The panel remains locked if the power is cycled. If the password is lost while the system is locked, contact technical support (see page 32).

After you press the Lock Key, you have 10 seconds to enter the password before the control panel reverts to its previous mode (Locked or Switch mode). If you enter the wrong password, press the Lock Key again and enter the correct password.
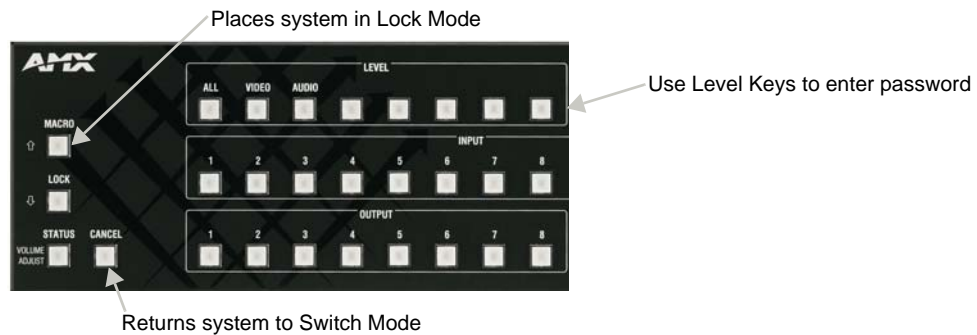
FIG. 23 Lock Key and Level Key

To lock the control panel:

1. Press the Lock Key.
    The Lock Key flashes for 10 seconds, and all the other lights on the control panel turn off.
    The panel is in Lock mode.

2. While the Lock Key is flashing, enter the password using the Level Keys.
    The Lock Key stops flashing and remains illuminated. All the other lights on the panel are turned off.
    The control panel is locked.

To unlock the control panel:

1. Press the Lock Key.
    The Lock Key flashes for 10 seconds.
    The panel is in Lock mode.

2. While the Lock Key is flashing, enter the password using the Level Keys.
    The Lock Key turns off. Any lights previously illuminated on the control panel turn back on.
    The control panel is unlocked and in Switch mode.

Appendix A – Managing Configuration Files

Applicability Notice

This appendix applies to XNConnect version 2.8.0. (XNConnect's version number is found under its Help menu.) Version 2.8.0 supports Device Discovery (firmware v1.4.1 is required).

The appendix covers the following general information on using XNConnect (configuration software) and basic modifications for customizing the configuration:

- Installing & launching XNConnect (see page 46)
- Discovering a system (see page 47)
- Opening an .xcl configuration file (see page 48)
- Navigating the interface (see page 49)
- Customizing channel names / labels (see page 50)
- Setting the control panel password (see page 51)
- Creating local presets / macros (see page 52)
- Loading an .xcl configuration file (see page 54)
- Device Discovery Support (see page 54)

For information on advanced configuration modifications, see the XNConnect Help file.

Overview

The factory configuration contains 3 virtual matrices for switching signals: VM 0 = audio-follow-video, VM 1 = video, and VM 2 = audio. The factory configuration is constructed internally by the CPU upon initial boot up, rather than being programmed with the XNConnect configuration software.

Important: *Unless you need to modify the system, you do <u>not</u> need to use XNConnect.*

XNConnect is provided on the AMX AutoPatch CD that ships with each system* and graphically displays the system and its control configuration.

XNConnect can be used to discover the factory configuration, modify the information, save it as an .xcl file, and load the file to the system's CPU. When an .xcl file is loaded to the system, it replaces the factory configuration on the CPU.

Configuration file modifications include basic tasks, such as creating local presets, customizing input and output channel names for control display (e.g., in the APWeb or APControl interface), and setting the control panel password.

In addition, an .xcl configuration file (that is compatible with your system) is provided on the CD and can be modified and loaded to the system, replacing the factory configuration.

Caution: *Use XNConnect <u>only</u> if you need to load or reload the .xcl configuration file, to set the control panel password, or to modify your system's configuration from the original specifications. Make a copy of the current .xcl file every time the file is modified.*

* If you cannot locate the *AMX AutoPatch CD* that shipped with your system and your AMX account has the required permissions, you can download the newest version of XNConnect from **www.amx.com**. (An INI file Updater for updating XNConnect is available on the AMX website under AutoPatch Tools; an account is not required.) If you need an .xcl configuration file that is compatible with your system, contact technical support (see page 32) and provide your system's serial number.

Installing & Launching XNConnect

Use XNConnect software *only* if you need to customize or change the configuration information from the original specification.

Even if XNConnect is already on your PC, install the newest version that shipped on the CD that shipped with your system. We *strongly* recommend uninstalling the old version of XNConnect before installing a new version.

If you cannot locate the *AMX AutoPatch CD* that shipped with your system, contact technical support (see page 32).

System Requirements

- Windows 2000®, Windows NT®, or Windows XP Professional®
- 233 MHz processor
- Minimum of 128 MB of RAM
- 20 MB of available hard drive space
- 800x600 screen resolution (1024x768 is recommended)
- Serial port and RS-232 null modem cable

To install XNConnect from the AMX AutoPatch CD:

1. Close all other applications currently running on your PC.
2. Insert the *AMX AutoPatch CD* into your CD drive to start automatically.
   If the CD does not autorun, explore the CD folder and double-click the Index.html file.
3. Select Software and find XNConnect.
4. Optional – Select Release Notes to read about the software before installation.
5. Select Install.
6. Follow the directions in the subsequent dialog boxes.

Note: *If your AMX account has the required permissions, you can download the newest version of XNConnect from www.amx.com. An INI file Updater for updating XNConnect is available on the AMX website under AutoPatch Tools (an account is not required).*

To launch XNConnect:

1. From the Start menu, select Programs.
2. Select AutoPatch Applications (or other file group you specified during the installation).
3. Select the XNConnect folder.

4. Select XNConnect.

The XNConnect program opens.

Getting Started dialog box
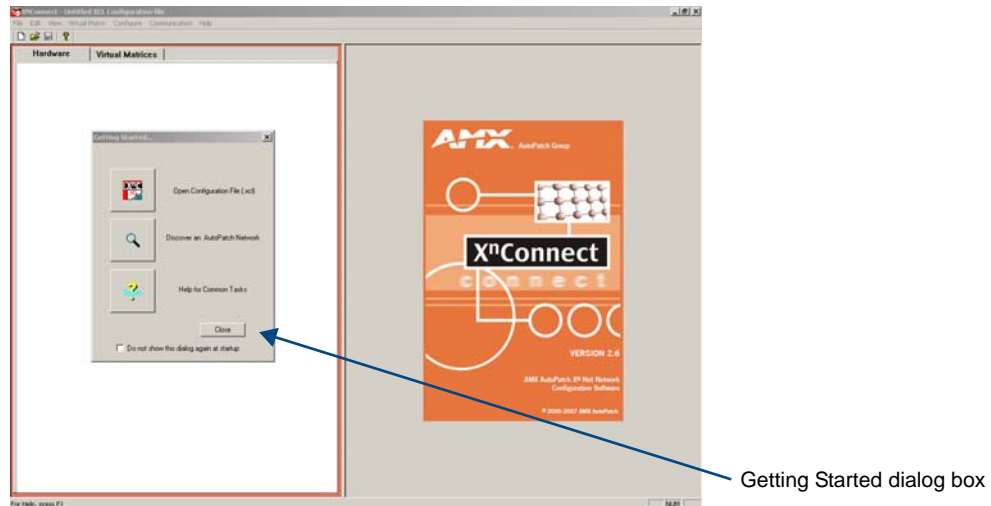
When XNConnect is open, you can do either of the following:

- Discover the system (recommended); see below.

- Open an .xcl file that is compatible with the system (located on the *AMX AutoPatch CD)*; see page 48.

Discovering a System

The discovery process queries the attached system for configuration information and properties, including information regarding assigned signals and virtual matrix (level) definitions. The discovery process may take several minutes to complete.

We recommend disconnecting any third-party control devices from the enclosure's serial ports *before* starting the discovery process.

To discover a system:

1. Disconnect any third-party control devices from the enclosure's CONTROL (DB-9) port.

2. Connect the enclosure to the PC (see page 20).

3. (If not already open) launch XNConnect (see page 46).

4. Open the Communication menu; select Serial Port.

5. Open the Communication menu again; select Change Comm Settings. Check the settings for the selected port (the default is Com 1, baud rate 9600) and adjust if necessary.

6. Optional – Click the Test button to verify that communication has been established with the Precis SD system. Click OK.

7. From the File menu, select Discover System (the discovery may take a few minutes).

8. From the File menu, select Save to save the discovered configuration information as an .xcl file to the PC.

9. From the File menu, select Save As and make a duplicate copy of the file with a new name and save it to the PC. (We *strongly* recommend making a duplicate copy every time the file is modified.)

The new configuration file is ready to be modified. Whenever changes are made, the new file *must* be loaded onto the system to implement the changes (see page 54).

Opening an .xcl Configuration File

The process of modifying an .xcl configuration file starts by opening it with XNConnect. After the modifications are complete, the new configuration information *must* be loaded onto the system to implement the changes.

Important: *Even if XNConnect is already on your PC, install the newest version that shipped on the same CD as the .xcl configuration file. We <u>strongly</u> recommend uninstalling the old version of XNConnect before installing a new version.*

If you cannot locate the compatible .xcl configuration file for your system, contact technical support (see page 32).

Caution: *Use XNConnect <u>only</u> if you need to load or reload the .xcl configuration file or modify your system's configuration from the original specification. Make a copy of the .xcl file every time it is modified.*

To open an .xcl file:

1. Launch XNConnect (see page 46).

2. From the Getting Started dialog box, click Open Configuration File.
    (If the dialog box does not appear, from the File menu select Open.)

3. Use the standard Open dialog box to locate and open a compatible configuration file (the file extension is .xcl).
    The default location is in the APConfig/XCL Samples folder on the *AMX AutoPatch CD*.

4. From the File menu, select Save As, make a duplicate copy of the file with a new name, and save it to the PC. (We *strongly* recommend making a duplicate copy every time the file is modified.)

The .xcl file is ready to be modified. After changes are made, the new file *must* be loaded onto the system to implement the changes (see page 54).

Navigating the Interface

XNConnect displays configuration information in two panes. The graphics are located in the left pane, and the properties of the currently selected graphic are in the right pane. At the top of the left pane are two tabs, Hardware and Virtual Matrices, for accessing the Hardware and Virtual Matrix (level) views (see below). To see the details and components of a device or a virtual matrix, click the plus "+" symbol to the left of the device or the virtual matrix.

Most configuration file modifications involve entering information in a series of dialog boxes that are accessed by right-clicking a hardware device or virtual matrix icon and selecting an option from the shortcut menu. If you have a question regarding an open dialog box, press the F1 key for Help.

Hardware View

The Hardware view displays the system's hardware, such as enclosures and serial ports. This is the view used when setting the control panel password.

Virtual Matrix View

The Virtual Matrix view displays properties of the existing virtual matrices (levels). Most common tasks are conducted from this view, including customizing channel names and creating local presets.

Note: *XNConnect refers to the levels in a Precis SD as virtual matrices.*

Hardware tab   Virtual Matrices tab   Highlighted device

Primary device   Components of the primary device   Properties of highlighted device

View of all AMX AutoPatch devices

View of all

Communication settings
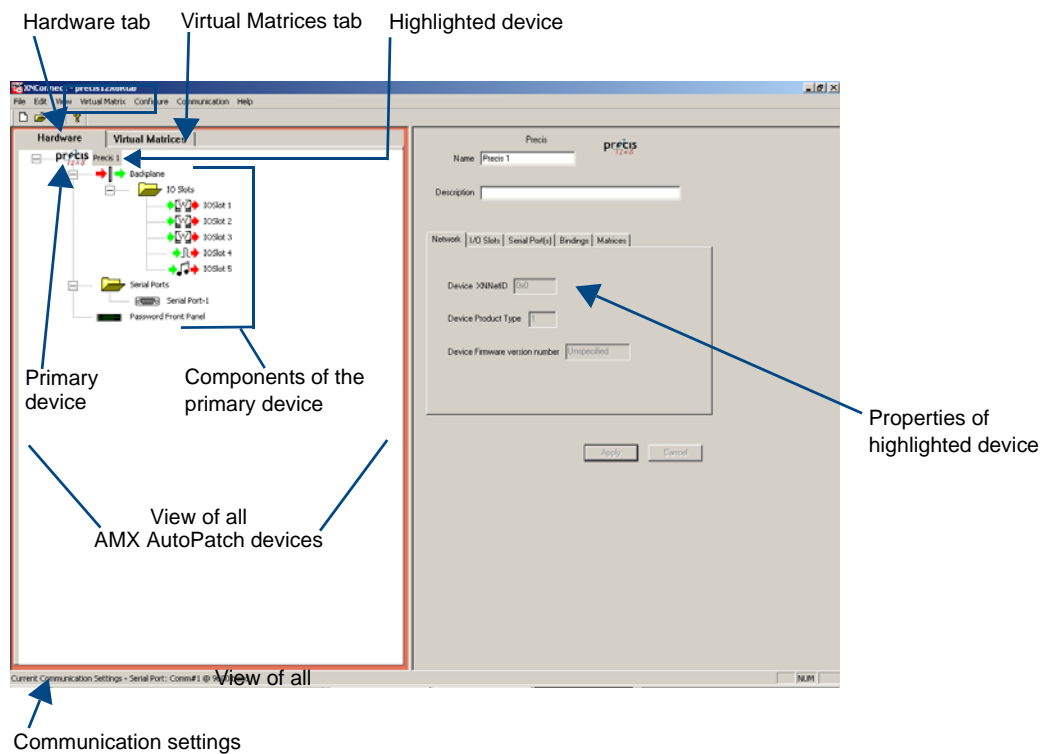
FIG. 24 XNConnect interface showing Hardware view

Modifying an .xcl Configuration File

Modifying an .xcl configuration file with XNConnect involves entering information in a field or in a series of dialog boxes. A brief look at the contents in the Help file provides a quick overview of the possible modifications.

This section provides instructions for three common tasks: modifying channel names, configuring local presets, and setting the control panel password. For complete coverage of configuration related tasks, see the XNConnect Help file.

Modifying Source & Destination Channel Names

If the system is using APWeb or APControl for control, the names for the source and destination channels displayed in the XBar or CrossBar (respectively) can be customized in XNConnect. The custom names (labels) can be up to 23 characters and cannot contain the following characters: ' " \ = ? < >

To customize the channel names:

1. In the Virtual Matrices view, click the "+" to the left of the Virtual Matrix.

2. Click the "+" to the left of the Sources or Destinations folder.

3. Right-click the channel you want to rename and select Change Name from the shortcut menu.

4. Enter the new name in the Input Text dialog box and click OK.
   The new channel name appears in the Name field.
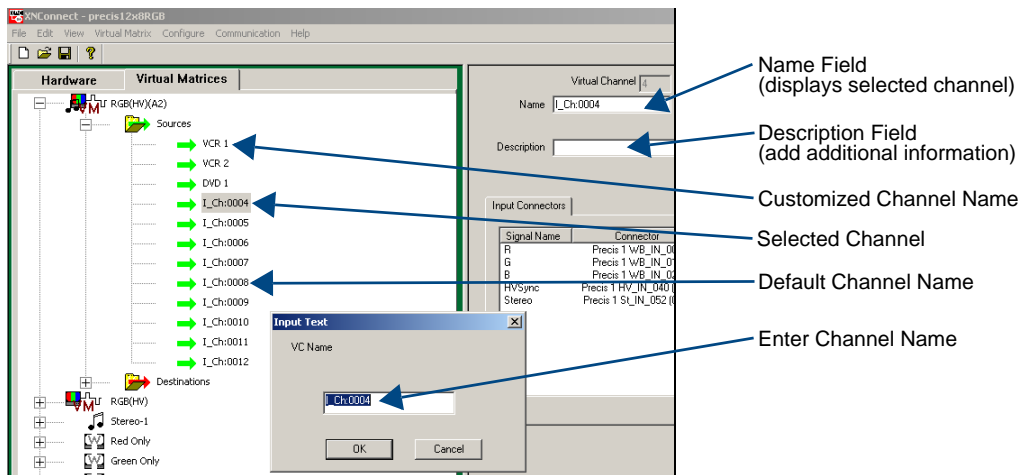
Note: *If a channel is in more than one VM (virtual matrix), you must repeat Step 4 for the channel in each of the VMs.*

5. Customize additional channels by repeating Steps 3 and 4.

6. Load the .xcl configuration file onto the system (see page 54).

7. Using Save As (under the File menu), make a duplicate copy of the modified file with a new name and save it to the PC. (We *strongly* recommend making a duplicate copy every time the file is modified.)

Caution: *The system must <u>not</u> be actively switching when loading this information onto the system.*

Setting the Control Panel Password

Important: *The control panel password can be set without loading the entire .xcl configuration file to the system, thereby retaining the factory configuration with the Device Discovery feature.*

For Precis SD control panels, the numbers in the password correspond to the Level Keys (in order from left to right, the level Keys represent the numbers "0" to "7"). The Level Keys are used to enter the password for locking and unlocking the control panel. Locking the Precis SD control panel can prevent accidental switching by disabling control access.

The factory default password is the first five Level Keys (corresponding to the digits, 0, 1, 2, 3, and 4), going from left to right.

Using XNConnect, you can customize a password consisting of five digits between 0 and 7 that are entered on the control panel using the Level Keys.

For information on using the password to lock and unlock the control panel, see page 43.

The system *must* be connected to the PC running XNConnect before the password can be loaded to the control panel. If not already connected, complete the first five steps of the instructions under "Discovering a System" on page 47.

To set the control panel password:

1. In the Hardware View, right-click the appropriate front panel icon.
   (If the front panel icon is not displayed, double-click the Precis icon.)

2. Select Set Password from the drop-down menu.
   The Set Control Panel Password dialog box opens.
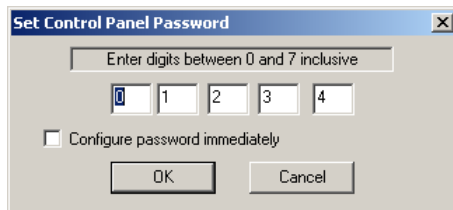
3. Enter a single digit between zero and seven (inclusive) in each field.

4. Check the box for Configure Password Immediately.

Important: *If you use the Configure menu instead of checking the box, the only configuration option that will load password information is Configure Special - Hardware / Configure All Passwords.*

5. Click OK.
   The updated password information is immediately loaded to the control panel, and the new password sequence *must* be used to lock and unlock the control panel.

6. Using Save As (under the File menu), make a duplicate copy of the modified file with a new name and save it to the PC. (We *strongly* recommend making a duplicate copy every time the file is modified.)

Creating Local Presets (Macros)

A local preset is a predetermined collection of switches on the same virtual matrix (level) to be routed simultaneously. Executing a local preset affects only those inputs and outputs specified, not the whole system. Local presets are defined using XNConnect and can be executed using the control panel or using BCS commands entered as part of a macro in APControl 3.0 or APWeb or entered in a terminal emulation program. The process for creating local presets involves three dialog boxes that cover managing, naming, and modifying presets.

The instructions below are for creating a local preset. For detailed information on modifying and deleting local presets, see the XNConnect Help file.

To create a new local preset:

1. In the Virtual Matrices view, right-click the virtual matrix (level) the preset will be created for and select Manage Local Presets from the shortcut menu.
    The Manage Local Presets dialog box opens.
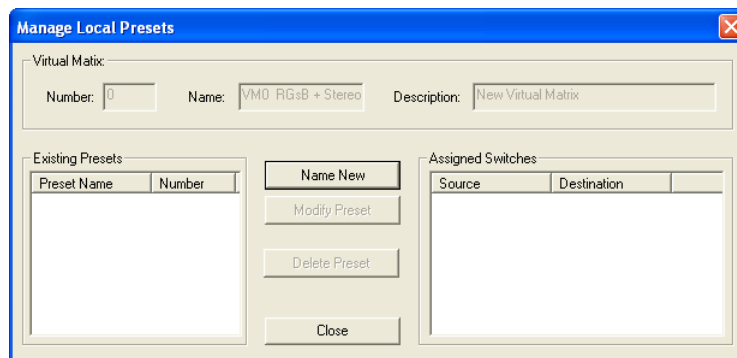
2. Click the Name New button.
    The Name New Preset dialog box opens.
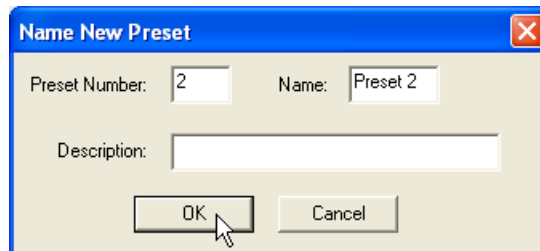
3. Optional – Enter a different preset number (local presets do not need to be numbered sequentially).

4. Enter a name for the new preset.

5. Optional – Enter a description.

6. Click OK.
    The Modify Preset dialog box opens.

7. For the first switch, click the source channel (input) and one or more destination channels (outputs). Select multiple destination channels by holding down the Control key while selecting the channels.

The Assignment column shows three switches that will be executed as part of Preset 2:

Input 2 to Output 5

Input 3 to Output 6

Input 7 to Output 8

The Disconnected Channels box shows that Output 1 will be disconnected as part of Preset 2.

8. Click the Assign Switch button.
The input appears in the Assignment column of the Destination Channels list; the switch will execute when the local preset is executed.

9. Disconnect inputs* or outputs as part of the local preset by selecting either the source or destination channel and clicking the Disconnect button.
The input or output appears in its corresponding Disconnected Channels list; the input or output will be disconnected when the local preset is executed.

10. Repeat Steps 7, 8, and 9 for all switches and/or disconnects to be included in the preset.

Note: *For information on the other buttons and preset modifications, press F1 while the Manage Local Presets dialog box is open.*

11. After all switches for the preset have been assigned, click OK and then close the Manage Local Presets dialog box.

12. Define additional local presets by repeating the steps.

13. Load the .xcl configuration file onto the system (see page 54): see Caution below.
If the .xcl configuration file has already been loaded to the system and local presets are the only modifications that have been made to the .xcl file, select "Configure All VM Local Presets" (found under Configure \ Configure Special – Virtual Matrix).

14. Using Save As (under the File menu), make a duplicate copy of the modified file with a new name and save it to the PC. (We *strongly* recommend making a duplicate copy every time the file is modified.)

✋ **Caution**: *The system must <u>not</u> be actively switching when loading this information onto the system.*

* Disconnecting an input will disconnect *all* outputs it is connected to.

Loading an .xcl Configuration File

Once modifications have been made to the .xcl configuration file, the file must be loaded onto the system's CPU for the changes to be implemented.

When loading the.xcl configuration file, the matrix switcher must not be actively switching. You may want to disconnect any external controllers to ensure that no switches are executed during the loading of the file.

Caution: *Using the "Configure All" option will erase any global presets (see the "BCS Protocol Instruction Manual' on the "AMX AutoPatch CD" or at **www.amx.com**) that have already been defined for the system.*

To load an .xcl configuration file from XNConnect to enclosure's CPU:

1. Disconnect external controllers to ensure that no switches are executed during the loading of the file. *The matrix switcher must not be actively switching when loading an .xcl configuration file.*

2. Using Save As (under the File menu), make a duplicate copy of the file with a new name and save it to the PC. (We *strongly* recommend making a duplicate copy every time the file is modified.)

3. Connect the Precis SD enclosure to the PC (see page 20).

4. In XNConnect, open the Communication menu and select Serial Port.

5. Open the Communication menu again and select Change Comm Settings. Check the settings for the selected port and adjust if necessary (the default is Com 1, baud rate 9600).

6. Optional – Click the Test button to verify that communication has been established with the Precis SD.
    Click OK.

7. From the Configure menu, select Configure All.*

* The Configure All option will <u>not</u> load password information. For instructions on loading password information, see page 51.

Restoring the Factory Configuration

Caution: Restoring the factory configuration will result in the loss of all custom .xcl configuration file modifications (custom channel names, local presets, etc.).

To restore the factory configuration:

1. Connect the system to a PC (see page 21).

2. Open a terminal emulation program (such as HyperTerminal).

3. Enter: `~def!`

Device Discovery Support

XNConnect v2.8.0 supports Device Discovery (firmware v1.4.1 is required). Typically the default configuration string generated by XNConnect is all that is necessary. However, certain conditions may warrant a custom string, such as the need to limit the VMs that are available for control by the AMX control system. Or a need may exist to limit the features available for a system, e.g., omitting the ability to adjust input gain, but leaving support for output volume. To customize the configuration string, see the XNConnect Help file topic "Device Discovery Config String Input."

Appendix B – Programmer's Interface for System Diagnostics

System Component Information

The Precis SD displays system information in its splash screen* for diagnostic purposes. The information indicates the current status and well-being of the system components.

Command entered to display minimal information for all system components

The system components' identity numbers are to the left of each component

FIG. 25 Example of a Precis SD splash screen

The splash screen can be accessed using a terminal emulation program, such as HyperTerminal (see page 21). One of four verbosity** settings is specified to provide a level of detail for information on five system components. Only one verbosity setting and one component setting can be entered in a command. The order in which these two settings are entered is interchangeable.

Note: *In a multi-enclosure system, the splash screen displays information only for the enclosure that is connected directly to the PC.*

* AMX reserves the right to add to the contents of the splash screen at any time, without notice.

** Verbosity (i.e., wordiness) refers to the amount of information provided; the higher the verbosity setting, the more information is displayed.

Verbosity Settings

The verbosity (`v`) settings (`v0`, `v1`, `v2`, `v3`) correspond to the level of detail that will be displayed, with `v0` being the lowest level of detail and `v3` being the highest level.

Component Settings

Detailed information for a single system component can be specified by using its identity (`i`) number setting (`i0` through `i5`) in the following table.

Component	ID Number
All Components	`i0`
Enclosure	`i1`
Storage Blocks	`i2`
Communication Interfaces	`i3`
Hardware & Boards	`i4`
VM Configuration	`i5`

Default Settings

- At system boot, the `~scrv0i1!` setting is displayed (see FIG. 16 on page 28).
- If the verbosity setting is omitted, the verbosity level will be the lowest (`v0`).
- The component setting must be included; otherwise, entering any of the verbosity settings alone will result in a display equivalent to `v0i0`.
- If both settings are omitted during a query (`~scr!`), the information displayed will be at the lowest verbosity level for all components (`v0i0`) (FIG. 25 on page 55).

Using BCS to Access System Diagnostic Information

Instructions are provided for accessing the lowest level of verbosity for all components and for accessing a specific level of verbosity for a specific component.

To access the lowest level of verbosity for all components:

1. Enter `~scr!` or `~scrv0i0!`

Note: *Either of these commands provides a "menu" of the identity numbers and their corresponding components (FIG. 25 on page 55).*

Only one verbosity setting and one component setting can be entered in a command. The order in which these two settings are entered is interchangeable.

To access a specific level of verbosity for a specific component:
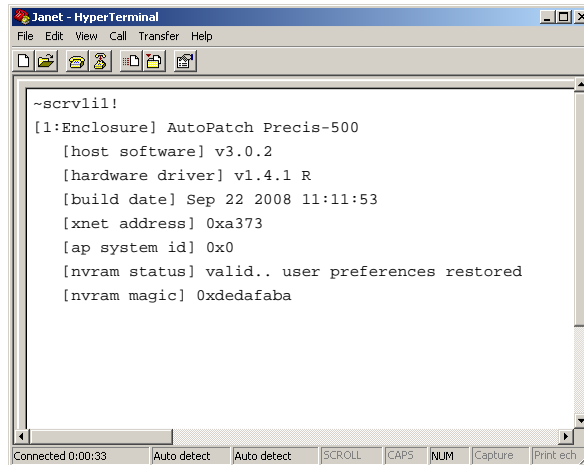
1. Enter `~scr` (to access the splash screen).
2. Enter the verbosity level setting `v#` and the component (index) setting `i#`.
   Either may be specified first.
3. Enter `!` (to send the command).

Example

`~scrv3i5!` or `~scri5v3!` (displays the highest level of detail for the VM Configuration)

Splash Screen Examples

Following are four examples of splash screen information that could be displayed when different verbosity/component settings are specified. Depending on the amount of detail provided, you may need to scroll to see the entire display. Use the first example to check the host software (IOS) version and the hardware driver (appcode) version.
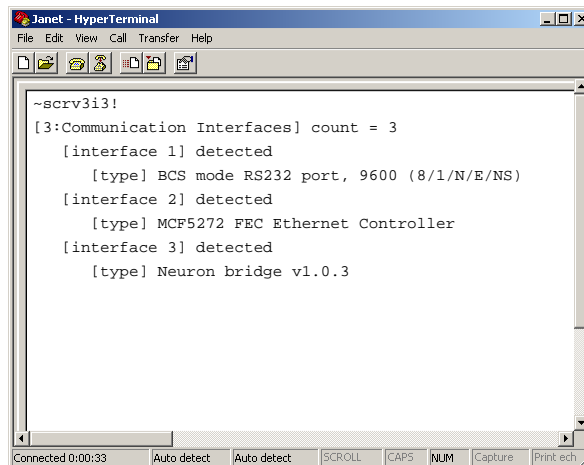

FIG. 26 Display for v1i1 (verbosity 1, component 1)
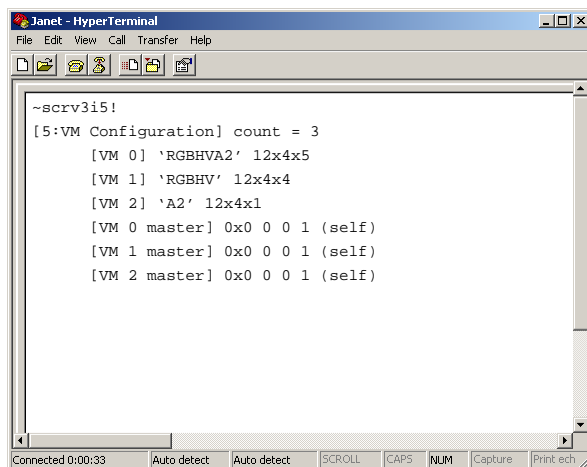
FIG. 27 Display for v3i3 (verbosity 3, component3)

Appendix B – Programmer's Interface for System Diagnostics

FIG. 28 Display for v3i4 (verbosity 3, component 4)

FIG. 29 Display for v3i5 (verbosity 3, component 5)

58

Precis SD Instruction Manual

AMX

It's Your World - Take Control™