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AUTOPATCH

Precis LT

Standard Video + Stereo

S-Video + Stereo

Component Video + Stereo

RGBHV / HD-15 + Stereo

July 2006
Document #37-855

High Performance Signal Routing

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Precis^{LT} Models

Applicability Notice

This manual contains specific information for the following Precis^{LT} models:

- ❑ Standard Video & Stereo
- ❑ S-Video & Stereo
- ❑ Component Video & Stereo
- ❑ RGBHV/HD-15 & Stereo

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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 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.

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Important Safety Information & Instructions

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

- Read and understand all instructions before using and installing AutoPatch products.
- Use the correct voltage range for your AutoPatch product.
- There are no user serviceable parts inside an AutoPatch product; service should only be done by qualified personnel.
- If you see smoke or smell a strange odor coming from your AutoPatch product, turn it off immediately and call AutoAssist.
- 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 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.
- Turn off and unplug an enclosure before adding or removing boards, unless otherwise specified in that product's documentation.
- To avoid shock or potential ESD (Electrostatic Discharge) damage to equipment, make sure you are properly grounded before touching components inside an AutoPatch product.

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Information et directives de sécurité importantes

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

- Lisez attentivement toutes les directives avant d'installer et d'utiliser les appareils *AutoPatch*.
- Le voltage doit être approprié à l'appareil *AutoPatch*.
- Les appareils *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 *AutoPatch*, fermez-le immédiatement et appelez le Service de soutien technique (*AutoAssist*).
- 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 *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 *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.
- Fermez et débranchez le boîtier avant d'ajouter ou d'enlever des plaquettes, à moins d'indication contraire fournie dans la documentation du appareil.
- 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 *AutoPatch*.

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

While every precaution has been taken in the preparation of this publication, AutoPatch 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.

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:

- *Reorient 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*

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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 requirements, 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 AutoPatch 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.

Trademarks

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Installing the Precis^{LT}

Welcome

The Precis^{LT} is a stand-alone routing system that fits in a broad range of audio/video environments. The Precis^{LT} is controllable from a variety of sources, including the front control panel (optional on all standard models) or any control device that can send and receive ASCII characters through an RS-232 serial cable.

Precis^{LT} features include:

- A variety of audio and video connectors in a single enclosure
- Controllable via RS-232 and an optional front control panel
- Breakaway – video and audio signals can be routed separately
- Ultra-Flat Response Certified™
- Lifetime Warranty (see Warranty, page 48)
- AutoAssist 24-hour Technical Support

Icon Legend



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.



Start of Procedure: The icon to the left indicates the start of a procedure. Procedures are usually numbered, unless only one step.

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Front View

The type and number of keys on the panels vary by model. For a description of Key functions, see pages 32 and 33.

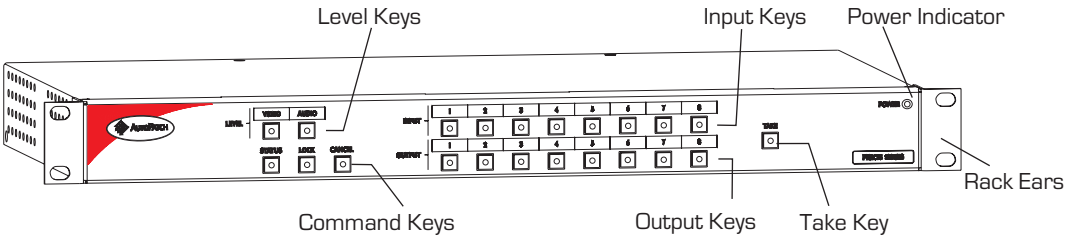


Figure 1: Front view of a Precis^{LT} with an 8x8 control panel and rack ears

Rear View

The number and type of input/output connectors depend on the model's configuration. For an illustration of your model, see the applicable model chapter.

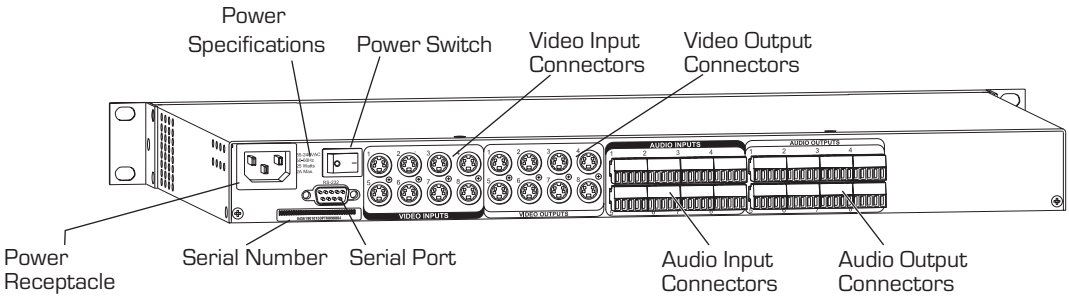


Figure 2: Rear view of a Precis^{LT} 1 RU Model 37-17 or P37-0808-615

Note: We strongly recommend recording your serial number before installing the Precis^{LT}.

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Unpacking

Before fully unpacking the Precis[LT], examine the shipping box. If there are any signs of damage, immediately notify the shipping agency and contact your AutoPatch Salesperson or Representative (see *Service & Returns Policy*, page 51). Once unpacking is complete, closely check the physical condition of the enclosure.

Note: AutoPatch is not responsible for damage caused by insufficient packing during return shipment to the factory. Upon request, AutoPatch will supply new shipping boxes free of charge.

General Specifications

Parameter	Value
Approvals	CE, UL, cUL
Operating Temperature	32° - 110° F (0° - 43° C)
Humidity	0 to 90% non-condensing
Dimensions	10.4 in. (26.42 cm) depth 19.0 in. (48.26 cm) width with mounting ears 17.4 in. (44.20 cm) width without mounting ears 2 RU Models = 3.5 in. (8.89 cm) height 1 RU Models = 1.7 in. (4.32 cm) height
Weight	2 RU Models = Approx. 10.5 lb (4.76 kg) per enclosure 1 RU Models = Approx. 7.0 lb (3.18 kg) per enclosure

AC Power Specifications

Model	AC Voltage	Power Consumption per Enclosure		Frequency
		Max.	Typical	
Standard Video & Stereo	100-240 VAC single phase	35 W	15 W	50-60 Hz
S-Video & Stereo	100-240 VAC single phase	35 W	15 W	50-60 Hz
Component Video & Stereo	100-240 VAC single phase	60 W	25 W	50-60 Hz
RGBHV/HD-15 & Stereo	100-240 VAC single phase	60 W	25 W	50-60 Hz

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Installation Recommendations

When placing the enclosure, follow the recommendations and precautions in this section to reduce potential installation and operation hazards. The Precis^{LT} ships with four rubber feet and two rack ears. Depending on the installation, you may either surface mount the enclosure or mount it in a rack.

Environmental Recommendations

- ❑ Choose a clean, dust free (preferably air-conditioned) location
- ❑ Avoid areas with direct sunlight, heat sources, or high levels of EMI (Electro-Magnetic Interference)

General Hazard Precautions

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

Elevated Operating Temperature

The maximum rated ambient temperature is 110° F (43° C).

All equipment should be installed in an environment compatible with the manufacturer's maximum rated ambient temperature. This is important because 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 in the "Airflow Restriction" paragraph below.

Airflow Restriction

To prevent airflow restriction, we recommend 3 inches (7.6 cm) of clearance around the enclosure openings. At a minimum, leave at least one empty rack unit above and below the enclosure. Avoid placing high heat-producing equipment directly above or below the enclosure. Precis^{LT} enclosures are designed to adequately dissipate the

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small amount of heat they produce under normal operating conditions; however, this design is defeated when high heat-producing equipment is placed directly above or below the enclosure(s).



Caution: We recommend 3 inches (7.6 cm) of clearance around the enclosure openings. At a minimum, leave at least one empty rack unit above and below the enclosure.

Mechanical (Rack) Loading

If 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 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: To avoid system damage, turn on all power switches for the AutoPatch equipment at the same time before applying power to its source and destination devices. We recommend attaching all power cords to a surge protector and/or an AC line conditioner.

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Installing the Precis[LT]

Items Needed for Installation:

- ❑ Enclosure
- ❑ Power cord
- ❑ Rubber feet (optional)
- ❑ A laptop computer or PC for serial control (optional)
- ❑ Surge protector (highly recommended)

Additional items for rack mounting:

- ❑ Standard EIA 19 in. (48.26 cm) rack
- ❑ Rack ears and rack ear screws
- ❑ Screwdriver
- ❑ Screws that fit your rack

Installation

Important: Do *not* apply power to the Precis[LT] before attaching cables. When applying power to the system, power the Precis[LT] before the source and destination devices.

To install the Precis[LT]

1. Unpack the Precis[LT] and gather all documentation and equipment.
2. Place all equipment, including any speakers, in their final locations.
3. Surface mounting – Attach the rubber feet (remove the adhesive back from each rubber foot and press firmly in the corners on the bottom of the enclosure). Place the enclosure in the desired location.

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Or Rack installation – On the side of the Precis^{LT}, remove the bottom two screws closest to the front panel (see Figure 3). Align the holes on one of the rack ears with the empty holes on the side of the Precis^{LT} and replace the screws (three screws for the 1 RU; four screws for the 2 RU). Repeat for the other rack ear.

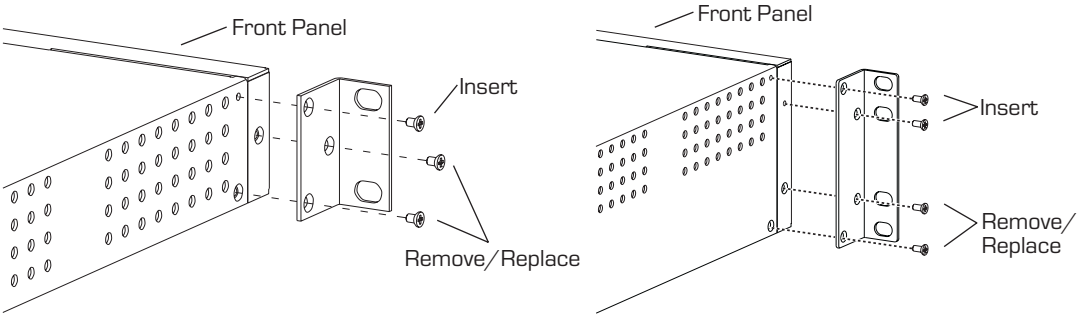


Figure 3: Attach rack ears to the sides of the Precis^{LT}

4. Place the enclosure in the rack and attach front-mounting screws to hold it firmly in place (see Figure 4).

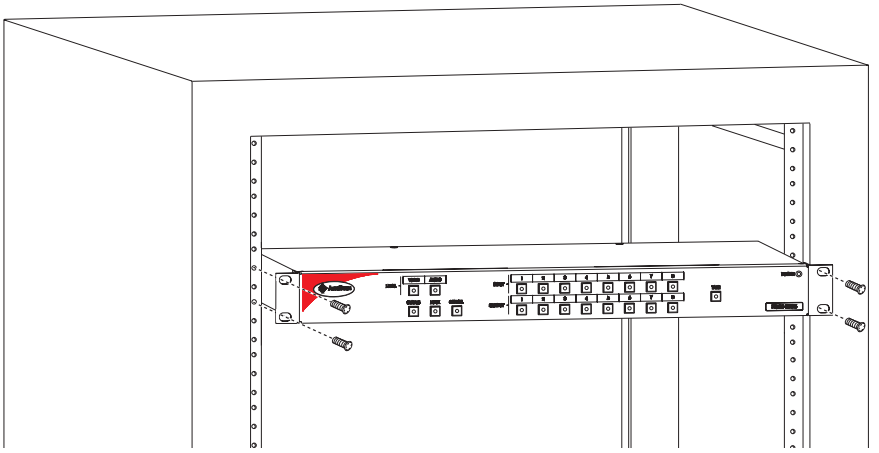


Figure 4: Place in rack and fasten with mounting screws

5. Attach the source and destination devices. For information on attaching cables and wires, see pages 8-13.

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Attaching Video Cables

Important: Do *not* apply power to the Precis ^{LT} before attaching the cables. When applying power to the system, power the Precis^{LT} before applying power to the source and destination devices.

Standard Video

To connect video inputs and outputs, fasten the cable connectors onto the input and output BNC connectors (see Figure 5).

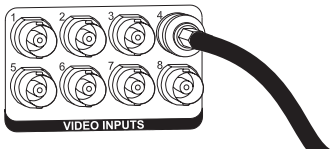


Figure 5: Fasten the cable connector onto the BNC connector

S-Video

The S-Video and Stereo Precis^{LT} Model is equipped with locking S-Video connectors. When used in conjunction with AutoPatch manufactured S-Video cables, the cable connectors lock into the Precis^{LT} connectors. Cables with standard S-Video connectors may be used, but will not lock.

To connect S-Video inputs and outputs, fasten the cable connectors onto the input and output S-Video connectors (see Figure 6).

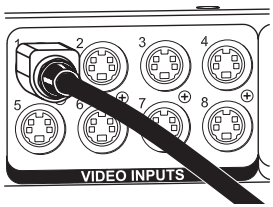


Figure 6: Fasten the cable connector to the S-Video connector

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To fasten a locking S-Video connector, either hold the connector at a slight angle to the right while pushing in, or pull back on the housing of the connector (see Figure 7) while pushing the connector in.

To remove a locking S-Video connector, pull back on the housing of the connector.

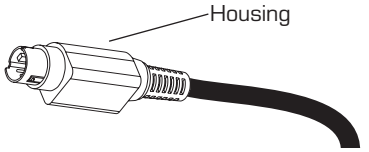


Figure 7: Pull back the housing to fasten or unfasten a locking S-Video connector

Caution: The connector or the Precis^{LT} may be damaged by pulling on the cable instead of the housing to remove a locking S-Video connector.

Component Video (BNC)

The example in Figure 8 shows BNC cables attached for routing an RGsB source signal as Input 1.

To attach BNC cables, fasten the cable connectors onto the BNC connectors according to the labels on the enclosure (see Figure 8).

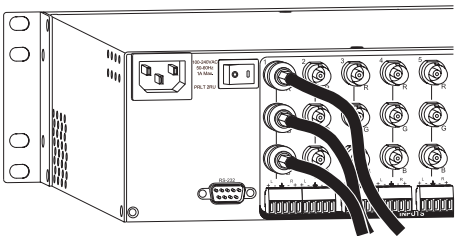


Figure 8: Fasten the cable connectors onto the BNC connectors

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RGBHV Video

To connect HD-15 inputs and outputs, fasten the cables onto the input and output HD-15 connectors (see Figure 9).

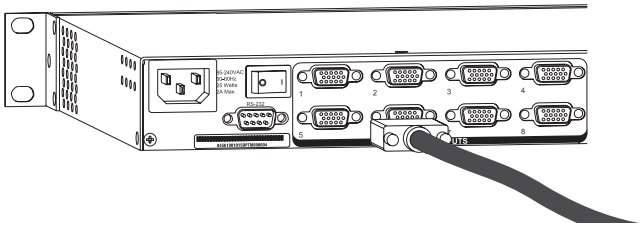


Figure 9: Fasten the cables onto the HD-15 connectors

HD-15 Pinout

For HD-15 board connector pinout information, see Figure 10.

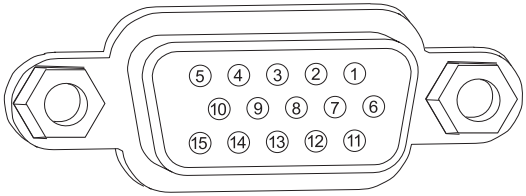


Figure 10: HD-15 board connector pinout

Input (VESA DDC Compliant)

1. Red	6. Red GND	11. ID Bit
2. Green	7. Green GND	12. DDC Serial Data
3. Blue	8. Blue GND	13. Horizontal sync
4. ID Bit	9. +5V in DDC	14. Vertical sync
5. GND	10. GND	15. DDC Serial Clock

Output

1. Red	6. Red GND	11. ID Bit
2. Green	7. Green GND	12. ID Bit
3. Blue	8. Blue GND	13. Horizontal sync
4. ID Bit	9. NC (no connect)	14. Vertical sync
5. GND	10. GND	15. ID Bit

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Attaching Audio Wires

Wiring Sources & Destinations

Source and destination devices will require either balanced (differential) or unbalanced (single-ended) connections. Figures 11 and 12 illustrate the options for wiring between the sources and the input connectors and between the output connectors and the destinations. More than one of these options can be used in the same system. For balanced and unbalanced wiring details, see page 12.

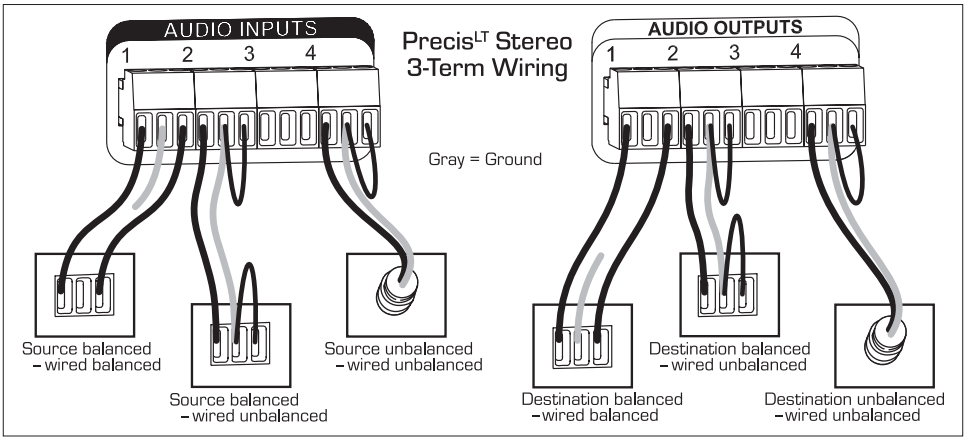


Figure 11: Options for source-to-Precis[LT]-to-destination 3-Term wiring

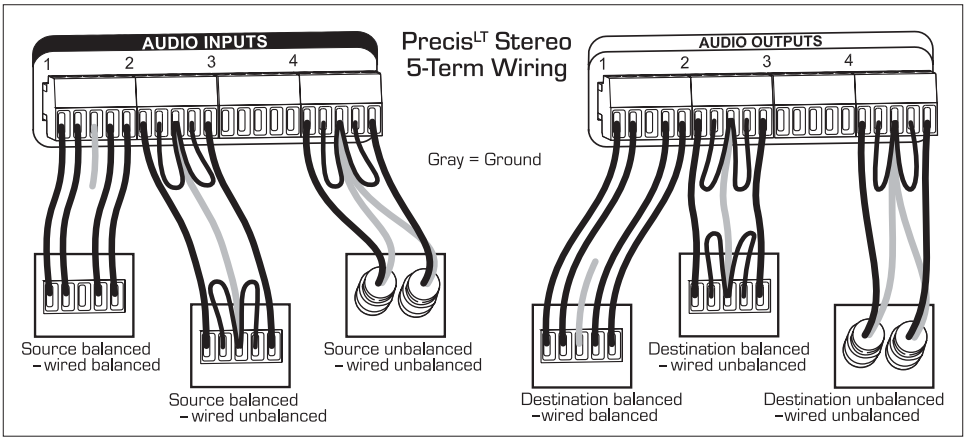


Figure 12: Options for source-to-Precis[LT]-to-destination 5-Term wiring

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Stereo Audio 3-Term

To attach stereo audio input and output wires:

1. Unscrew the clamps on the audio connector.
2. Insert the wires (see Figure 13 for wire placement for single-ended stereo) and firmly re-tighten the clamps to make secure connections.



Figure 13: Insert the wires and re-tighten clamps

Stereo Audio 5-Term

To attach stereo audio input and output wires:

1. Unscrew the clamps on the audio connector.
2. Insert the wires (see Figure 14 for wire placement for balanced and unbalanced audio) and firmly re-tighten the clamps to make secure connections.

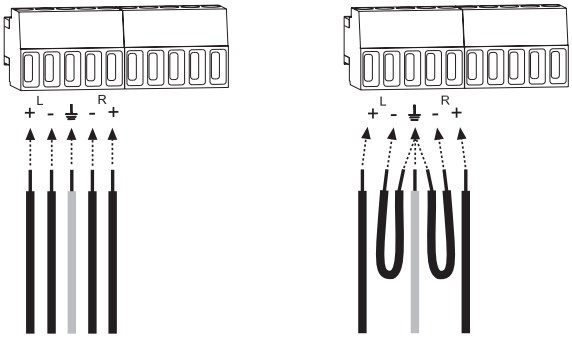


Figure 14: Balanced audio Unbalanced audio

Note: When using twisted pair wire, connect the shield (ground) at one end only (recommend receiving end) to minimize low frequency noise (see Figure 12).

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Attaching Video & Audio RCA Cables

The example in Figure 15 shows RCA jacks attached for routing Y/Pb/Pr and stereo audio source signals as Input 1.

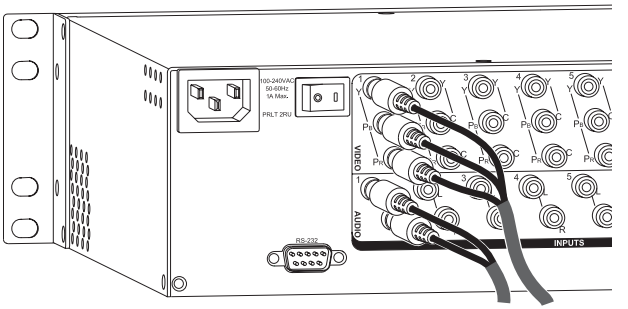


Figure 15: Insert the RCA plugs into the RCA jacks

Component Video (RCA)

To attach RCA video cables, insert the RCA plugs into the RCA jacks according to the labels on the enclosure (see Figure 15).

Stereo Audio, Unbalanced (RCA)

To attach RCA stereo audio cables, insert the RCA plugs into the RCA jacks (see Figure 15).

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Attaching an External Controller

The Precis[LT] Distribution Matrix can be controlled by attaching an external controller (computer, AMX, Crestron, etc.) to the Precis[LT] using the RS-232 serial port (DB-9 connector). An external controller is any device that can send and receive ASCII code via RS-232. The steps below are specifically for establishing external control using a personal computer (PC) and HyperTerminal software; however, other external devices and terminal emulation programs can be used.

The Precis[LT] does not allow for hardware flow control. The pinout for the null modem cable is illustrated in Figure 16.

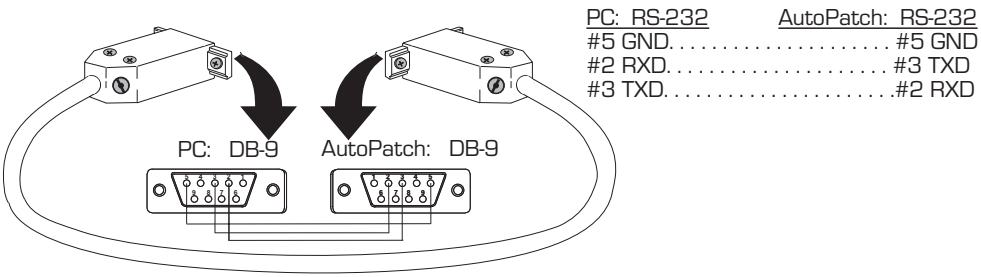


Figure 16: RS-232 pin diagram (no hardware flow control)

To establish serial communication:

1. Plug one end of the null modem cable into the RS-232 (DB-9) serial port on the Precis[LT] (see Figure 17).

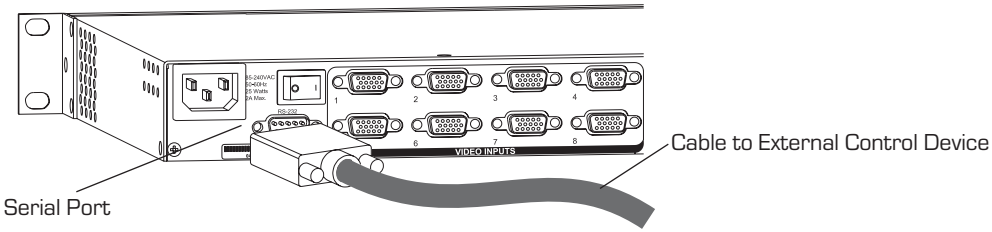


Figure 17: Connect the null modem cable to the serial port

2. Plug the other end of the null modem cable into the serial port on the PC.

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3. Open HyperTerminal. Check to be sure the Communication Port option is set for the port that the null modem cable is plugged into and that the settings match those in the Port Settings table below.

4. Apply power to the Precis^{LT} according to the instructions on page 16. The HyperTerminal splash screen displays information* for your Precis^{LT} model (see Figure 18).

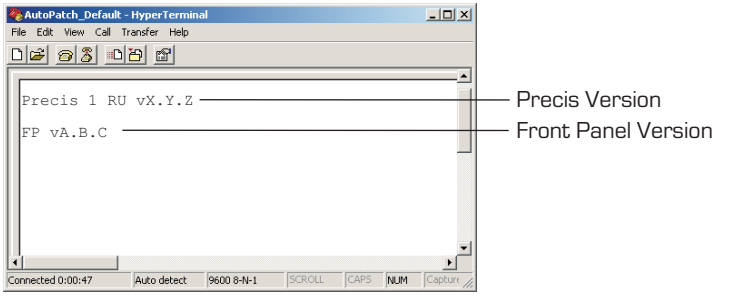


Figure 18: Typical startup splash screen in HyperTerminal

Note: Each system ships from the factory with a default switch that automatically routes Input 1 to all outputs the first time power is applied. While this is not reflected in HyperTerminal, the signal from Input 1 is routed to all outputs.

5. Perform the test switch sequence on page 17 to clear the factory default switch and to ensure the Precis^{LT} is working correctly.

The only baud rate the Precis^{LT} accepts is 9600. When controlling the system with a PC, use serial communication software and make sure the PC's port settings match those in the Precis^{LT} Serial Port Settings table.

Precis^{LT} Serial Port Settings	
Baud	9600
Data Bits	8
Stop Bit	1
Parity	None
Flow Control	None

* AutoPatch reserves the right to change the contents and/or formatting of the splash screen at any time, without notice.

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Applying Power

Your Precis^{LT} ships with a power cord that is compatible with your country's power sources. The enclosure's universal power receptacle accepts all major international standard power sources. Power consumption varies by model; maximum power specifications are located to the right of the power receptacle. For detailed power specifications, see page 3.

WE RECOMMEND USING A SURGE PROTECTOR AND/OR
AN AC LINE CONDITIONER.

Note: We recommend applying power to the Precis^{LT} before applying power to its source and destination devices.

To apply power to the Precis^{LT}:

1. Attach the cables from the source and destination devices to the input and output connectors on the rear of the enclosure (see applicable section for your model). *Do not* apply power to the source and destination devices until after Step 3 has been completed.
2. Optional – Attach an external controller.
3. Apply power to the Precis^{LT}.
   The power indicator on the front of the enclosure illuminates.
4. Apply power to the source and destination devices.
   The system is ready for a test switch (see page 17).

After the system is powered down and power is reapplied, the routing state (inputs to outputs) is recalled as long as it had been stable for several seconds prior to powering down.

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Executing a Test Switch

The Precis^{LT} ships from the factory with a default switch that routes the signal from Input 1 to all outputs on both levels. Before using the system for normal operations, the default switch should be disconnected and a test switch executed to verify that the system is working correctly.

If you are using an external controller, follow the test switch sequence below to disconnect the factory default switch and route a test switch from Input 2 to Output 2 on both levels (this sequence only applies to new system installations). The level designation is not required and is therefore omitted.

To disconnect the default switch, enter the following command line:

`DI1T`

When `DI1T` appears, the command is successfully executed. If any other character appears, the command was not successful. Regardless of the system response, execute the test switch according to the following instructions.

Note: `O` is the letter O, not the number zero (0).

To execute the test switch, enter the following command line:

`CI2O2T`

When `CI2O2T` appears, the command is successfully executed. If any other character appears, the command was not successful. For troubleshooting tips, see page 46.

A test switch can be executed from either an external controller or a front control panel. If using an external controller, see page 14 for more information. If you prefer to use the control panel to execute the test switch, see page 33.

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Standard Video & Stereo Models

Applicability Notice

This chapter contains specific information for the following Precis^{LT} Models.*

Standard Video & Stereo (5-Term)			
Front Control Panel		Blank Panel	
4x4	P37-0404-115	4x4	37-96
4x8	P37-0408-115	4x8	37-99
8x4	P37-0804-115	8x4	37-02
8x8	P37-0808-115	8x8	37-05

* The Standard Video and Stereo Model comes in a variety of configurations. For information on model configurations not listed, contact your authorized AutoPatch Dealer.

Overview

Standard Video and Stereo Models can route audio and video signals simultaneously or separately. For information on levels and control, see *Control Panel Operations* on page 32 or *BCS Serial Control Protocol* on page 40.

The Standard Video and Stereo Models have BNC connectors (see page 8) for routing composite video signals. They also have 5-Term stereo audio connectors (see pages 11-12) to route audio, either balanced or unbalanced depending on the wiring.

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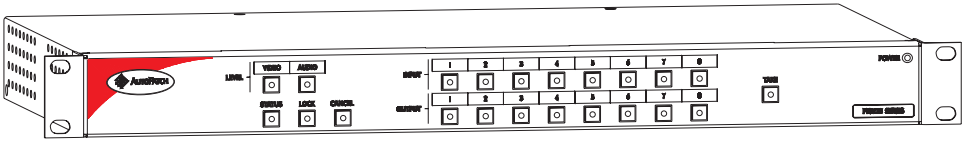


Figure 19: Front view of Precis^{LT} Model P37-0808-115

Note: The number of input and output keys vary depending on the configuration.

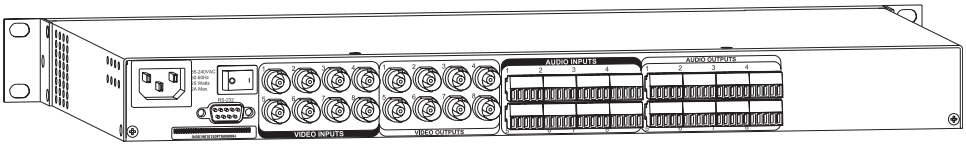


Figure 20: Rear view of Precis^{LT} Model 37-05 or P37-0808-115

Product Specifications

Applies to Precis^{LT} Standard Video & Stereo Models (5-Term)				
Blank Panels	37-96	37-99	37-02	37-05
Front Control Panels	P37-0404-115	P37-0408-115	P37-0804-115	P37-0808-115

For General and AC Power Specifications, see page 3.

	Parameter	Conditions	Value
Standard Video Throughput	Frequency Response	1 to All	+/-3 dB to 50 MHz or better +/-1 dB to 15 MHz or better
	Differential Gain*	f = 3.58 MHz, 10 to 90% APL	<0.2% or better
	Differential Phase*	f = 3.58 MHz, 10 to 90% APL	<0.2° or better
	Crosstalk (adjacent channel)	f = 5 MHz	<-65 dB
	Signal to Noise Ratio (SNR)	Vin = 0.7 V, 100% IRE	>65 dB

* Differential gain and phase measurements are performed with a standard 5-step modulated staircase test signal.

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	Parameter	Conditions	Value
Standard Video Input	Level (max.)		+/-1.9 V
	Impedance		75 ohms
	Return Loss	f = 5 MHz	<-40 dB
	Connector Type		BNC
Standard Video Output	Level (max.)		+/-1.9 V
	Impedance		75 ohms
	Return Loss	f = 5 MHz	-40 dB
	Connector Type		BNC

	Parameter	Conditions	Value
Stereo Audio Throughput	Frequency Response	f = 20 Hz to 20 KHz	<+/-0.1 dBr
	THD + Noise	f = 20 Hz to 20 KHz Vin = -10 to +14 dB	<0.025%
	Crosstalk (adjacent channel)	f = 1kHz Vin = +2 dBu	<-105 dB
	Signal to Noise Ratio (SNR)	f = 20 Hz to 20 kHz Vin = +14 dBu	>105 dB
	CMRR	f = 20 Hz to 20 kHz	>80 dB
Stereo Audio Input	Level (max.)		+14 dBu, balanced
	Impedance		18 kohms
	Gain Adjustment Range	Potentiometer adjustment	+6 dB to -6 dB
	Type		Balanced or Unbalanced
	Connector Type		Pluggable 5-position terminal block
Stereo Audio Output	Level (max.)		+14 dBu, balanced
	Impedance		50 ohms
	Connector Type		Pluggable 5-position terminal block

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S-Video & Stereo Models

Applicability Notice

This chapter contains specific information for the following Precis^{LT} Models.*

S-Video & Stereo (5-Term)			
Front Control Panel		Blank Panel	
4x4	P37-0404-615	4x4	37-08
4x8	P37-0408-615	4x8	37-11
8x4	P37-0804-615	8x4	37-14
8x8	P37-0808-615	8x8	37-17

* The S-Video and Stereo Model comes in a variety of configurations. For information on model configurations not listed, contact your authorized AutoPatch Dealer.

Overview

S-Video and Stereo Models can route audio and video signals simultaneously or separately. For information on levels and control, see *Control Panel Operations* on page 32 or *BCS Serial Control Protocol* on page 40.

The S-Video and Stereo Models have locking S-Video connectors (see page 8) for routing S-Video signals and 5-Term stereo audio connectors (see pages 11-12) for routing balanced or unbalanced audio, depending on the wiring.

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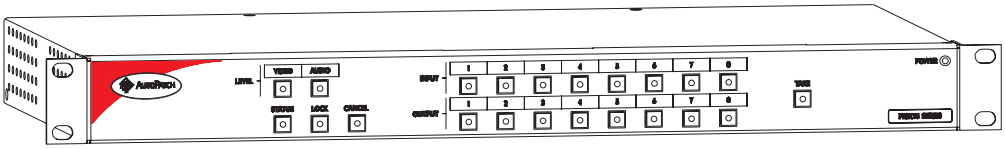


Figure 21: Front view of Precis[LT] Model P37-0808-615

Note: The number of input and output keys vary depending on the configuration.

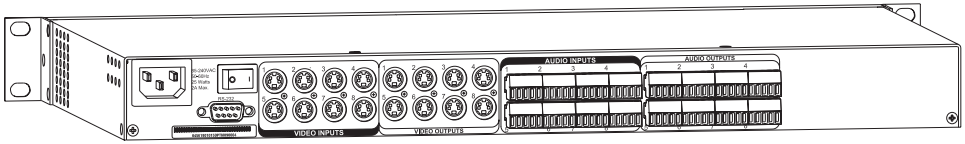


Figure 22: Rear view of Precis[LT] Model 37-17 or Model P34-0808-615

Product Specifications

For General and AC Power Specifications, see page 3.

Applies to Precis[LT] S-Video & Stereo Models (5-Term)				
Blank Panels	37-08	37-11	37-14	37-17
Front Control Panels	P37-0404-615	P37-0408-615	P37-0804-615	P37-0808-615

	Parameter	Conditions	Value
S-Video Throughput	Frequency Response	1 to All	+/-3 dB to 50 MHz or better +/-1 dB to 15 MHz or better
	Differential Gain	f = 3.58 MHz	< 0.2% or better
	Differential Phase	f = 3.58 MHz	< 0.2° or better
	Y vs Y Crosstalk (adjacent channel)	f = 5 MHz	<-65 dB
	Y vs C Channel Separation	f = 5 MHz	>60 dB
	Signal to Noise Ratio (SNR)	Vin = 0.7 V, 100% IRE	>65 dB

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	Parameter	Conditions	Value
S- Video Input	Level (max.)		+/-1.9 V
	Impedance		75 ohms
	Return Loss	f = 5 MHz	<-35 dB
	Connector Type		S-Video/ Locking S-Video
S- Video Output	Level (max.)		+/-1.9 V
	Impedance		75 ohms
	Return Loss	f = 5 MHz	<-35 dB
	Connector Type		S-Video/ Locking S-Video

	Parameter	Conditions	Value
Stereo Audio Throughput	Frequency Response	f = 20 Hz to 20 KHz	<+/-0.1 dB
	THD + Noise	f = 20 Hz to 20 KHz Vin = -10 to +14 dB	<0.025%
	Crosstalk (adjacent channel)	f = 1kHz, Vin = +2 dBu	<-105 dB
	Channel Separation	f = 1kHz, Vin = +2 dBu	>-105 dB
	Signal to Noise Ratio (SNR)	f = 20 Hz to 20 kHz Vin = +14 dBu	>105 dB
	CMRR	f = 20 Hz to 20 kHz	>80 dB
Stereo Audio Input	Level (max.)		+14 dBu, balanced
	Impedance		18 kohms
	Gain Adjustment Range	Potentiometer adjustment	+6 dB to -6 dB
	Type		Balanced or unbalanced
	Connector Type		Pluggable 5-position terminal block
Stereo Audio Output	Level (max.)		+14 dBu, balanced
	Impedance		50 ohms
	Type		Balanced or unbalanced
	Connector Type		Pluggable 5-position terminal block

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Component Video & Stereo Models

Applicability Notice

This chapter contains specific information for the following Precis^{LT} Models.*

* The Component Video and Stereo Models come in a variety of configurations. For information on model configurations not listed, contact your authorized AutoPatch Dealer.

Component Video & Stereo (BNC/5-Term)			
Front Control Panel		Blank Panel	
4x4	P37-0404-345	4x4	37-68
4x8	P37-0408-345	4x8	37-71
8x4	P37-0804-345	8x4	37-74
8x8	P37-0808-345	8x8	37-77

Component Video & Stereo (RCA/RCA)			
Front Control Panel		Blank Panel	
4x4	P37-0404-A43	4x4	37-56
4x8	P37-0408-A43	4x8	37-59
8x4	P37-0804-A43	8x4	37-62
8x8	P37-0808-A43	8x8	37-65

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Overview

Component Video and Stereo Models can route audio and video signals simultaneously or separately. For information on levels and control, see *Control Panel Operations* on page 32 or *BCS Serial Control Protocol* on page 40.

The Precis^{LT} Component Video and Stereo Models have two connector options. In one option, BNC connectors (see page 8) route component video signals and 5-Term stereo audio connectors route either balanced or unbalanced audio, depending on wiring. For information on audio wiring, see pages 11-12. In the second option, RCA jacks (see page 13) route both component video and unbalanced stereo audio signals.

Video Routing Options

Both models can be cabled to route any one of the following video signals over each input or output:

- Three component RGsB video signals (attach cables to all three of the video connectors)
- Three component Y/Pb/Pr video signals (attach cables to all three of the video connectors
- Y/c signals (attach cables to the top two video connectors)
- A single composite signal (attach cable to the bottom video connector)

Note: The Precis^{LT} *cannot* route Y/c and composite signals or more than one composite signal for a single input or output.

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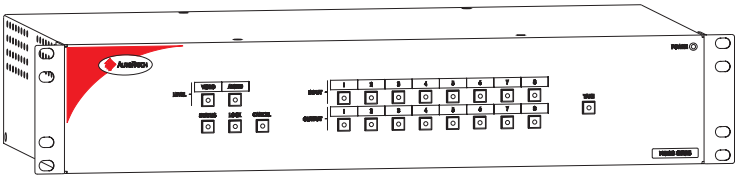


Figure 23: Front view of Precis^{LT} Model P37-0808-345 or P37-0808-A43

Note: The number of input and output keys vary depending on the configuration.

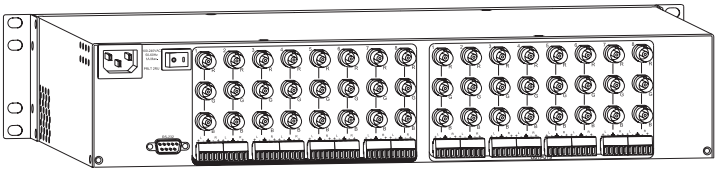


Figure 24: Rear view of Precis^{LT} Model 37-77 or P37-0808-345

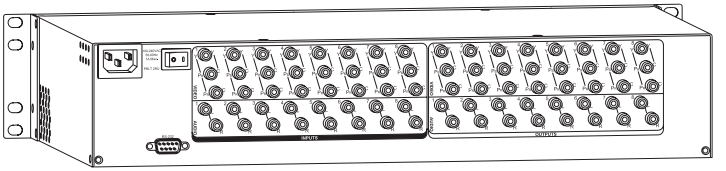


Figure 25: Rear view of Precis^{LT} Model 37-65 or P37-0808-A43

Product Specifications

For General and AC Power Specifications, see page 3.

Applies to Precis^{LT} Component Video & Stereo Models (BNC/5-Term)				
Blank Panels	37-68	37-71	37-74	37-77
Front Control Panels	P37-0404-345	P37-0408-345	P37-0804-345	P37-0808-345

Applies to the Precis^{LT} Component Video & Stereo Models (RCA/RCA)				
Blank Panels	37-56	37-59	37-62	37-65
Front Control Panels	P37-0404-A43	P37-0408-A43	P37-0804-A43	P37-0808-A43

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	Parameter	Conditions	Value
Component Video Throughput	Frequency Response	1 to All	+/-3 dB to 300 MHz or better +/-1.5 dB to 100 MHz or better
	Differential Gain*	f = 3.58 MHz 10 to 90% APL	<0.2% or better
	Differential Phase*	f = 3.58 MHz 10 to 90% APL	<0.2° or better
	Crosstalk (adjacent channel)	f = 5 MHz f = 30 MHz f = 150 MHz	<-70 dB <-60 dB <-35 dB
	Signal to Noise Ratio (SNR)	Vin = 0.7 V, 100% IRE	>65 dB

* Differential gain and phase measurements are preformed with a standard 5-step modulated staircase test signal.

	Parameter	Conditions	Value
Component Video Input	Level (max.)		+/-1.5 V
	Impedance		75 ohms
	Return Loss (BNC)	f = 5 MHz	<-45 dB
	Return Loss (RCA)	f = 5 MHz	<-42 dB
	Connector Types		BNC & RCA
Component Video Output	Level (max.)		+/-1.5 V
	Impedance		75 ohms
	Connector Types		BNC & RCA

	Parameter	Conditions	Value
Stereo Audio Throughput	Frequency Response	f = 20 Hz to 20 KHz	<+/-0.1dB
	THD + Noise	f = 20 Hz to 20 KHz Vin = -10 to +14 dB	<0.025%
	Crosstalk (adjacent channel)	f = 1 kHz Vin = +2 dBu	<-105 dB
	Signal to Noise Ratio (SNR)	f = 20 Hz to 20 kHz Vin = +14 dBu	>105 dB
	CMRR	f = 20 Hz to 20 kHz	>80 dB
	Connector Types		Pluggable 5-position terminal block & RCA

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	Parameter	Conditions	Value
Stereo Audio, Balanced & Unbalanced Input	Level (max.)		+14 dBu
	Impedance		18 kohms
	Gain Adjustment Range	Potentiometer adjustment	+6 dB to -6 dB
	Type		Balanced (5-Term) or unbalanced (RCA or 5-Term)
	Connector Types		Pluggable 5-position terminal block & RCA
Stereo Audio, Balanced & Unbalanced Output	Level (max.)		+14 dBu
	Impedance		50 ohms
	Type		Pluggable 5-position terminal block & RCA
	Connector Types		Pluggable 5-position terminal block & RCA

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RGBHV/HD-15 & Stereo Models

Applicability Notice

This chapter contains specific information for the following Precis^{LT} Models.*

RGBHV/HD-15 & Stereo Models (3-Term)			
Front Control Panel		Blank Panel	
4x4	P37-0404-844	4x4	37-20
4x8	P37-0408-844	4x8	37-23
8x4	P37-0804-844	8x4	37-26
8x8	P37-0808-844	8x8	37-29

* The RGBHV/HD-15 and Stereo Model comes in a variety of configurations. For information on model configurations not listed, contact your authorized AutoPatch Dealer.

Overview

RGBHV/HD-15 and Stereo Models can route audio and video signals simultaneously or separately. For information on levels and control, see *Control Panel Operations* on page 32 or *BCS Serial Control Protocol* on page 40.

The RGBHV/HD-15 and Stereo Models have HD-15 connectors (see page 10) for routing RGBHV signals and 3-term audio connectors (see pages 11-12) for routing single-ended (unbalanced) stereo audio.

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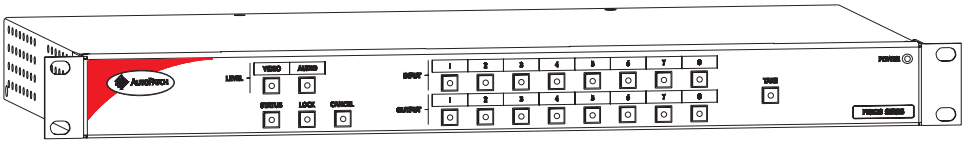


Figure 26: Front view of Precis[LT] Model P37-0808-844

Note: The number of input and output keys vary depending on the configuration.

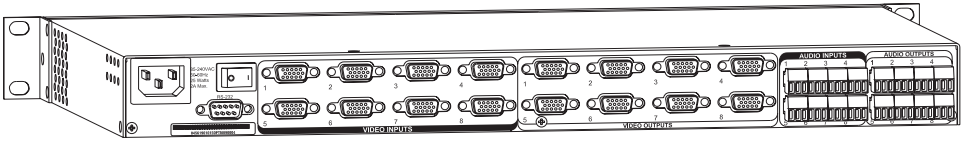


Figure 27: Rear view of Precis[LT] Model 37-29 or Model P37-0808-844

Product Specifications

For General and AC Power Specifications, see page 3.

Applies to Precis[LT] RGBHV/HD-15 & Stereo Models (3-Term)				
Blank Panels	37-20	37-23	37-26	37-29
Front Control Panels	P37-0404-844	P37-0408-844	P37-0804-844	P37-0808-844

	Parameter	Conditions	Value
Video Throughput	Frequency Response	1 to All	+/-3 dB to 300 MHz or better +/-1.5 dB to 100 MHz or better
	Crosstalk (adjacent channel)	f = 5 MHz f = 30 MHz f = 150 MHz	<-67 dB <-50 dB <-40 dB
	Signal to Noise Ratio (SNR)	Vin = 0.7 V, 100% IRE	>65 dB

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	Parameter	Conditions	Value
Video Input	Level (RGB) (max.)		+/-1.5 V
	Impedance (RGB)		75 ohms
	Level (HV) (max.)		+/-5 V
	Impedance (HV)		22 kohms
	Return Loss	f = 5 MHz	<-42 dB
	Connector Type		HD-15
Video Output	Level (RGB) (max.)		+/-1.5 V
	Impedance (RGB)		75 ohms
	Level (HV)	Follows input	+/-5 V
	Impedance (HV)		75 ohms
	Connector Type		HD-15

	Parameter	Conditions	Value
Stereo Audio, Unbalanced Throughput	Frequency Response	f = 20 Hz to 20 KHz	<+/-0.1 dB
	THD + Noise	f = 20 Hz to 20 KHz Vin = -10 to +14 dB	<0.025%
	Crosstalk (adjacent channel)	f = 1kHz, Vin = +2 dBu	<-105 dB
	Signal to Noise Ratio (SNR)	f = 20 Hz to 20 kHz Vin = +14 dBu	>105 dB
Stereo Audio, Unbalanced Input	Level (max.)		+14 dBu, unbalanced
	Impedance		18 kohms
	Gain Adjustment Range	Potentiometer adjustment	+6 dB to -6 dB
	Type		Unbalanced
	Connector Type		Pluggable 3-position terminal block
Stereo Audio, Unbalanced Output	Level (max.)		+14 dBu, unbalanced
	Type		Unbalanced
	Impedance		50 ohms
	Connector Type		Pluggable 3-position terminal block

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Control Panel Operations

Figure 28 features a typical Precis[LT] control panel. The number of input/output keys on your model may vary depending on the configuration.

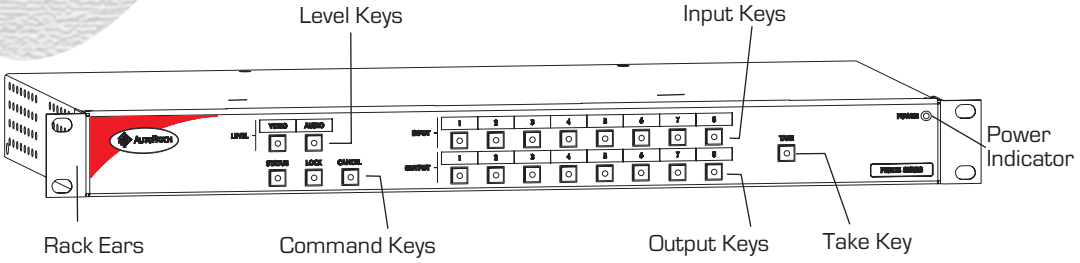


Figure 28: An 8x8 control panel on a Precis[LT]

Key Functions

Status Key: Places panel in Status Mode. Used to query the system for signal routing information and switch verification.

Lock Key: Places panel in Lock Mode. Enter a password (a five digit sequence of input and/or output keys) to lock/unlock access to the panel.

Cancel Key: Returns panel to Switch Mode (ready to execute/disconnect switches). Cancels a partially entered command. *Cannot* undo a completed operation, i.e., an operation followed by the pressing of the Take Key.

Video Level Key: When illuminated, the video level is selected and only video signals are routed.

Audio Level Key: When illuminated, the audio level is selected and only audio signals are routed**.**

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Both Audio and Video Level Keys: When both keys are illuminated, both levels are selected, and audio and video signals are simultaneously routed.

Input and Output Keys: Selects inputs or outputs. Used to enter the password while in Lock Mode.

Take Key: Much like the "Enter" key on a computer. Does not illuminate when pressed.

Executing a Test Switch

The Precis^{LT} ships from the factory with a default switch routing the signal from Input 1 to all outputs on both levels. Before using the system, disconnect the default switch and a perform a test switch to verify the system is working correctly.

Note: A test switch can also be executed from an external controller via BCS commands (see page 44).

Executing a Test Switch (Applicable to New System Installations Only)

The following sequence disconnects the default switch and routes a test switch from Input 2 to Output 2 on both levels. Both Level Keys must be illuminated in order to disconnect the default switch and execute the test switch on both levels.

Before executing a test switch, ensure the source and destination devices are attached to the enclosure.

To disconnect the default switch:

1. Press Input Key 1.
   The Video and Audio Level Keys illuminate. Input Key 1 blinks and all of the output keys illuminate. (If none of the output keys illuminate, press Cancel and proceed to the execute test switch instructions below.)
2. Press each Output Key.
   Each Output Key light turns off when pressed.

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3. Press the Take Key.
   All the illuminated keys turn off.
   Input 1 is disconnected from all the outputs on both levels.

   If all the illuminated keys on the panel do not turn off, or if the Cancel Key flashes, the command was not successful. Press the Cancel Key to clear. Regardless of the system response, execute the test switch.

To execute the test switch:

1. Press Input Key 2.
   Both the Video and Audio Level Keys illuminate and Input Key 2 blinks.
2. Press Output Key 2.
   Output Key 2 illuminates, indicating that it is ready to accept the switch.
3. Press the Take Key.
   All the illuminated keys turn off.
   Input 2 is routed to Output 2 on both levels.
   If all the illuminated keys on the panel do not turn off, or if the Cancel Key flashes, the command was not successful. For troubleshooting tips, see page 46.

Executing & Disconnecting Switches

A switch is an active connection between an input (source) signal and one or more output (destination) devices. The signals routed in a switch are groups of individual signals coming through the connectors on the rear of the enclosure. The control panel must be in Switch Mode to either execute or disconnect a switch. If you are unsure which mode the panel is in, press the Cancel Key to revert to Switch Mode.

All switches are executed and disconnected on one or more levels.

When the following Level Keys are selected (illuminated):

- **Video Level Key –** Video signals are routed separately
- **Audio Level Key –** Audio signals are routed separately
- **Audio & Video Level Keys –** Audio and video signals are routed simultaneously on both levels

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Executing Switches

When executing a switch with one output, either the Input Key or the Output Key may be selected first. To route an input to multiple outputs, the Input Key *must* be selected before the Output Key.

This example routes Input 2 to Output 1 on both levels.

To execute a switch:

1. Press Input Key 2.
   Both the Video and Audio Level Keys illuminate.

   Input Key 2 blinks, indicating that it is ready to be routed.
   Any outputs currently receiving the signal from Input 2 on both levels will illuminate. Any outputs receiving the signal *only* on the Video or the Audio Level will not illuminate.

2. Press Output Key 1.
   Output Key 1 illuminates, indicating that it is ready to accept the signal from Input 2.

3. Press the Take Key.
   All the illuminated keys turn off.
   Input 2 switches to Output 1 on both levels.
   The panel remains in Switch Mode.

Note: When executing a switch, you can select multiple outputs, but only one input. The input must be selected first to select multiple outputs.

Disconnecting Switches

You can disconnect either a single switch or multiple switches routed from the same input. To disconnect a single switch, select either the Input Key or Output Key. The first key selected will blink and the other key will illuminate. Select the illuminated key and then press the Take Key to disconnect the switch. To disconnect multiple switches, all the outputs must be routed from the same input. Select the input first. When selected, the Input Key will blink and all connected outputs will illuminate.

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Select the outputs that you want to disconnect and then press the Take Key. Any output keys that remain illuminated are still connected.

To disconnect a single switch: (Input 4 is routed to Output 1 on the Video Level)

1. Press the Video Level Key.
   The Video Level Key is the *only* key illuminated.
2. Press Output Key 1.
   Output Key 1 blinks and Input Key 4 illuminates, indicating that a signal is routed between them.
3. Press Input Key 4.
4. Press the Take Key.
   All the illuminated keys turn off.
   Output 1 is disconnected from Input 4 on the Video Level.
   The panel remains in Switch mode.

To disconnect multiple switches: (Input 3 is routed to Outputs 2 and 4 on the Audio Level)

1. Press the Audio Level Key.
   The Audio Level Key is the *only* key illuminated.
2. Press Input Key 3.
   Input Key 3 blinks and Output Keys 2 and 4 illuminate, indicating that the signal from Input 1 is routed to each of them.
3. Press Output Keys 2 and 4.
   Output Keys 2 and 4 are no longer illuminated.
4. Press the Take Key.
   All the illuminated keys turn off.
   Input 3 is disconnected from Outputs 2 and 4 on the Audio Level.
   All other outputs receiving a signal from Input 3 are not affected.
   The panel remains in Switch Mode.

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Verifying Signal Status

You can verify signal status to confirm that a switch has executed correctly, or that multiple outputs are correctly routed.

An output can only receive a signal from one input; so verifying the status of an output will only illuminate the key of its one current input. Verifying output status *will not* show other outputs that are also connected to the same input.

If no signals are connected to the input or output in question, only the input or output key being checked will illuminate.

The system *will not* verify the status for a video and an audio signal simultaneously. To verify that a signal is being routed on both levels, verify the switch on each level independently. Signal status must be checked on the level that switches its signal type, e.g., a video signal can only be verified on the Video Level. Check that the system is on the same level as the signal being verified by illuminating the corresponding Level Key:

- **Video Level Key** – verifies routing status for video signals.
- **Audio Level Key** – verifies routing status for audio signals.

To verify the status of an input: (for the following example, Input 4 must be routed to Outputs 1 and 2 on the Audio Level.

1. Press the Status Key.
   The Status Key illuminates, indicating the system is in Status Mode.
2. Press the Audio Level Key.
   The Audio Level Key is the *only* key illuminated.
3. Press Input Key 4.
   Input Key 4 illuminates.
   Output Keys 1 and 2 also illuminate, confirming the connection.
4. Select another input or output to verify, or press the Cancel Key to return to Switch Mode (ready to execute or disconnect switches).

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To verify the status of an output: (For the following example, Output 3 must be receiving a signal from Input 1 on the Video Level).

1. Press the Status Key.
   The Status Key illuminates, indicating the system is in Status Mode.
2. Press the Video Level Key.
   The Video Level Key is the *only* key illuminated.
3. Press Output Key 3.
   Output Key 3 illuminates.
   Input Key 1 also illuminates, confirming the connection.
4. Select another input or output to verify, or press the Cancel Key to return to Switch Mode (ready to execute or disconnect switches).

Note: Checking the status of an output will only illuminate its current input. It will not show other outputs connected to the same input.

Locking & Unlocking

The control panel is locked and unlocked using the Lock Key and a password. The password is a five digit number using any combination of Input and/or Output Keys.

Note: Although a new password could be used each time, we recommend using the same password and keeping a written record of in a convenient place.

Pressing the Lock Key places the control panel in Lock Mode. You have ten (10) seconds to enter the password before the panel reverts to its previous state. If power is turned off while the panel is locked, all password information will be lost. When power is reapplied, the panel will be unlocked.

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For the following examples, the password is " 1 3 1 2 2" using Input Keys.

To lock the control panel

1. Press the Lock Key.
   The Lock Key flashes for 10 seconds. You *must* enter the password before the Lock Key stops flashing.
2. Press the Input Keys in this order: 1, 3, 1, 2, 2.
3. Press the Take Key.
   The Lock Key stops flashing but remains illuminated.
   The panel is locked.

To unlock the control panel

The password entered to lock the panel *must* be used to unlock it.

1. Press the Lock Key.
   The Lock Key flashes for 10 seconds. You *must* enter the password before the Lock Key stops flashing.
2. Press the Input Keys in this order: 1, 3, 1, 2, 2.
3. Press the Take Key.
   The Lock Key light turns off.
   The panel returns to Switch Mode.

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7 BCS Serial Control Protocol

AutoPatch has developed a command language, BCS (Basic Control Structure), for operating the system through an external device and for diagnosing problems. The Precis^{LT} uses a subset of this language for switching, disconnecting, and verifying status of commands. BCS command lines are entered into a terminal emulation program (e.g., Windows HyperTerminal) from an external control device which sends commands to the system. Control devices must be able to send and receive ASCII code via an RS-232 port. For more information on external control devices, see page 14.

Getting Started

General Rules for Using BCS Commands

- Command lines are not case sensitive.
- All command lines must end with the Take command "T" which tells the system to execute the command.
- Command lines cannot be edited. If you make a mistake, enter an "X" and then reenter the command.
- Entering "X" at any point in the command line cancels a command. A command cannot be canceled after the "T" has been entered.
- If the level "L" designation is omitted, the command is performed on the default level which is Level 0 for Precis^{LT} models.
- To designate multiple inputs or outputs, enter a space between each number.
- Only disconnect commands accept multiple inputs; however, you cannot enter multiple inputs and multiple outputs in the same command line.
- When verifying signal status, if a signal is only routed on one level, checking the status on both levels will show the signal as not routed.

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BCS Command Table

The table below shows BCS command characters (keys) used to generate control commands, their functions, and short function descriptions.

Key	Function	Description
C	Change	Initiates a Change (Execute switch) command; this must precede the level, input, and output specification
D	Disconnect	Initiates a Disconnect switch command; this must precede the level and input or output specification
S	Status	Initiates a Status command; this must precede the level and input or output specification
L	Level	Indicates the number following is the level
"0" - "9"	Number	Identifies input, output, preset, and level; combine the digits to form larger numbers
I	Input	Indicates the number following is an input (source)
O	Output	Indicates the number(s) following is an output(s) (destination) **Note:** O is the letter O, not the number zero (0)
" "	Space	Separates numbers in entries containing multiple numbers
T	Take	Executes a command
X	Exit	Exits, or cancels, the command being entered

Command Line Format Overview

A command line is a series of alphanumeric characters used to send commands to the system. Other characters indicate inputs, outputs, or levels (e.g., "I" and the number following it designate an "input number").

# = any valid level, input (source), or output (destination) number
O = the letter O (for output), not the number zero (0)

Precis^{LT} systems use Level 1 for video and Level 2 for audio. When entering BCS commands, enter "L1" (Level 1) for video only or "L2" (Level 2) for audio only. To route both levels together, enter both level numbers with a space between 1 and 2 (e.g., CL1 2I3O8T) or omit the level command (e.g., CI3O8T).

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Command lines begin with the applicable command character, followed by the characters and numbers indicating levels, inputs, and outputs. Command lines must always end with "T" (Take) command, which tells the system to execute the command.

Example of a command line: CL1I2O3T

(C) Change on (L1) Level 1, (I2) Input 2 to (O3) Output 3, (T) Take to execute the command.

Generating Commands (Execute, Disconnect, Status)

Executing a switch (Change command) enables the connection between an input (source) signal and one or more output (destination) devices. Disconnecting a switch deactivates that connection. The Status command verifies that a switch has executed correctly or that a signal has been correctly routed to multiple outputs.

Note: If your Precis^{LT} has a control panel, BCS commands will work even if the control panel is locked, but cannot be used to unlock the control panel.

Command Line Formats Quick Reference

Note: The formats and examples below all omit the Level command.

Function	Command	Example
Execute a switch	CI#O#T or CO#I#T	CI1O1 2T routes Input 1 to Outputs 1 and 2
Disconnect a switch	DO#T or DI#T	DO7T disconnects Output 7 DI15T disconnects Input 15 and all outputs connected to it
Verify switch status (result appears in parenthesis)	SO#T or SI#T	SO6T(7) verifies Output 6 as routed from Input 7 SI1T(1 2) verifies Input 1 as routed to Outputs 1 & 2 SI3T( ) verifies Input 3 is not routed SO1T( ) verifies Output 1 is not receiving a signal from an input

Execute Commands

Execute commands begin with "C" initiating a Change command for routing a switch. The characters and numbers that follow the "C" command tell the system which level(s) to use and which inputs and outputs to connect. The last character is "T" (Take) which tells the system to execute the command.

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Example: CI2O3T Change on both levels, (I2O3) Input 2 to Output 3, (T) Take to execute the command.

Disconnect Commands

Disconnect command lines begin with "D" and specify an input or output, followed by the Take command.

Example: DL2O3T (DL2) Disconnect on Level 2, (O3) Output 3, (T) Take to execute the command.

- To designate multiple inputs or multiple outputs, insert a space between each number.
- A command line cannot contain both multiple inputs and multiple outputs.
- Disconnecting one output does not affect any other outputs routed to the same input. Disconnecting an input disconnects all outputs receiving that input signal.

Status Commands

Status command lines begin with "S" and follow the same format as Disconnect commands. The result appears in parenthesis ( ).

Example: SL2O3T (SL2) Status on Level 2, (O3) Output 3, (T) Take to execute the command.

The Status command can verify signal status to confirm that a switch has executed correctly or that a signal has correctly routed to multiple outputs.

- An input can route signals to one or more outputs. Verifying input status shows all outputs.
- An output can receive a signal from only one input at a time. Verifying output status shows the one input. Output status will *not* show other outputs also receiving the same input.

In a Status command, the routing of a signal can be verified on both levels or on a single level. To verify on both levels, omit the level command. To verify video signals, enter Level 1. To verify audio signals, enter Level 2. If a signal is only routed on one level, checking the status on both levels will show the signal as not routed.

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Command Line Responses

Command characters and numbers appear on the screen when the system accepts them. A command line has successfully executed when the entered "T" command appears. If a command or number is not accepted, a different character appears and the command is not executed. See the following table for command line responses and their meanings.

Response	Meaning	Description
?	Format Error	Indicates an error in the entry of the command line format
X	General Error	Indicates all or part of the command was rejected
E	Communication Error	Indicates a communication problem with the control panel

BCS Command Entered	Appears in the Terminal Emulation Program	Explanation of Result
CL2I3O2T	CL2I3O2T	The command was successfully executed
CL2I2T	CL2I2?	The command was not executed because the output and its number were not included
CL2I3O22T	CL2I3O22X	The command was not executed because the Precis^{LT} does not have an Output 22
CL2I3O2T	CL2I3O2E	The command was not executed because a communication failure occurred

Executing a Test Switch

The Precis^{LT} ships from the factory with a default switch routing the signal from Input 1 to all outputs on both levels. Before you use the system for normal operations, disconnect the default switch and execute a test switch to verify that the system is working correctly. Before executing a test switch, attach the source and destination devices to the enclosure (see Attaching Video Cables on page 8 and Attaching Audio Wires on page 11), apply power to the enclosure (see page 16), and then apply power to the source and destination devices.

You can use BCS commands to execute a test switch even if your enclosure has a control panel, as long as an external controller is attached.

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All command characters appear when accepted by the system. When a command is successfully executed, all of the characters appear as entered. If a command character or a number is not accepted, a different character appears indicating that the command did not execute. For a list of BCS commands used by the Precis^{LT}, see page 41. This test switch sequence disconnects the factory default switch (only applies to new system installations) and routes a test switch from Input 2 to Output 2 on both levels. The level designation is not required and is therefore omitted.

To disconnect the default switch, enter the following command line:

```
DI1T
```

When "DI1T" appears, the command is successfully executed. If any other character appears, the command was not successful. Regardless of the system response, execute the test switch according to the following instructions.

To execute the test switch, enter the following command line:

```
CI2O2T
```

When "CI2O2T" appears, the command is successfully executed. If any other character appears, the command was not successful. For troubleshooting tips, see page 46. A test switch can also be executed from a front control panel. For information on using the control panel to execute the test switch, see page 33.

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Troubleshooting & Technical Support

Troubleshooting a Test Switch

If the test switch did not execute correctly:

Start with . . .

- ❑ Check the power indicator on the front of the enclosure. If it is not illuminated, check the power switches and the power cords on the enclosure and on the source and destination devices.

Next try . . .

Control Panel

- ❑ Reenter the command to see if the error was simply a timeout error.
- ❑ Verify the status of the switch. Press the Status Key, the Video Level Key, and Input Key 2. If Output Key 2 illuminates, the control panel has established an internal connection between the input and the output connectors.

BCS

- ❑ Check the command and reenter it.*
- ❑ Verify the status of the switch by entering SI2T. If SI2T (2) appears, the system established a connection between the input and the output connectors within the Precis^{LT} enclosure.

* Often the command has simply been entered incorrectly (e.g., omitting an output in a Change command), or the command has specified a value that is not valid (e.g., entering an input or output number not available on the system).

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Follow up with . . .

- ❑ Check all input and output cable connections on the rear of the enclosure and on the devices to ensure all connections are correct and secure.
- ❑ Attempt the switch again.
- ❑ Isolate source and destination equipment and cable problems by patching around the switcher using barrel connectors to check the overall signal path.
- ❑ Reconnect cables to the Precis^{LT} and attempt the switch again.

Still need help?

- ❑ If the switch still does not work, contact AutoAssist (see below).

Technical Support

AutoPatch provides technical support 24 hours a day, 7 days a week (except for US holidays). Before calling technical support with a question, please review the information in this manual. If you still have questions, contact your authorized AutoPatch Dealer or AutoPatch AutoAssist. *Have your serial number ready.* The number is normally located on the rear of the enclosure.

AutoAssist Contact Information

- ➤ Toll-free US and Canada – **800-622-0246**
- ➤ International – **509-235-2636**
- ➤ Website – **www.autopatch.com**
- ➤ Email – **support@autopatch.com**



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AutoPatch
Statement of Warranty

1. **Warranty.** AutoPatch, a division of X^N Technologies, Inc., Cheney, Washington, warrants that its products will be free of defects in materials and manufacture at the time of sale and will remain in good working order for a period of five (5) years following the date of the original sales invoice from AutoPatch. The five-year warranty period will be extended to the life of the product (Lifetime warranty), as defined below in Section 2, but only if the warranty card is filled out by the Dealer and returned to AutoPatch so that AutoPatch receives it within thirty (30) days of the installation of equipment but no later than one (1) year from original AutoPatch sales invoice date. A warranty certificate will be returned to the Dealer to verify the warranty period.

2. **Life of the Product for Lifetime Warranty.** The life of the product extends until ten (10) years after AutoPatch ceases manufacturing the product model. The Lifetime warranty applies to products in their original installation only. If a product is moved to a different installation, the Lifetime warranty will no longer apply, and the product warranty will instead be the five (5) year warranty described in Section 1.

3. **What This Warranty Does Not Cover.** This warranty does not apply to
(a) any AutoPatch product that has been modified, altered or repaired by an unauthorized agent or improperly transported, stored, installed, used, or maintained;
(b) damage caused by acts of nature, including flood, erosion, or earthquake;
(c) damage caused by a sustained low or high voltage situation or by a low or high voltage disturbance, including brownouts, sags, spikes, or power outages; or
(d) damage caused by war, vandalism, theft, depletion, or obsolescence.

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4. **Disclaimer of Other Warranties.** The warranties contained in Section 1 are the exclusive warranties given by AutoPatch and supersede any prior, contrary or additional representations, whether oral or written. **AUTOPATCH DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES – WHETHER EXPRESS, IMPLIED, OR STATUTORY – INCLUDING ANY WARRANTY OF MERCHANTABILITY, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE,** and any implied warranties otherwise arising from course of dealing, course of performance or usage of trade.

5. **Buyer's Exclusive Remedies for Any Nonconformity.** If an AutoPatch product fails to conform to the warranties in Section 1, Buyer must notify AutoPatch within a reasonable time and in no event more than thirty (30) days after the discovery of the nonconformity, and AutoPatch will repair any nonconforming products or components. Warranty repairs are accomplished by returning the subassembly to AutoPatch for repair in accordance with the "AutoPatch Service & Returns Policy". Alternatively, AutoPatch may, at its option, provide a replacement unit, as described in that Policy. THE REMEDY SELECTED BY AUTOPATCH IN ACCORDANCE WITH THIS SECTION SHALL BE THE EXCLUSIVE AND SOLE REMEDY OF BUYER FOR ANY BREACH OF WARRANTY.

6. **Exclusion of Consequential and Incidental Damages.** AUTOPATCH SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR CONSEQUENTIAL OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, LABOR COSTS OR LOSS OF PROFITS ARISING IN CONNECTION WITH THE USE OF OR THE INABILITY TO USE AUTOPATCH PRODUCTS.

7. **Transport Damage.** AutoPatch will not be responsible for items damaged during shipment to or from AutoPatch. The shipping carrier is responsible for items damaged during shipment.

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8. **No Modifications.** This warranty may not be modified except in writing by an authorized AutoPatch officer.

9. **Severability.** If any provision of this warranty is found to be invalid or unenforceable, then the remainder shall have full force and effect, and the invalid provision shall be partially enforced to the maximum extent permitted by law to effectuate the purpose of the agreement.

10. **Applicable Law.** This Warranty will be interpreted, construed, and enforced in all respects in accordance with the laws of the State of Washington, without reference to its choice of law principles. The U.N. Convention on Contracts for the International Sale of Goods will not apply to this Warranty.

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AutoPatch
Service & Returns Policy

Service

AutoPatch products are to be serviced only by AutoPatch authorized service agents.

Return Authorizations

Except for warranty claims, merchandise will not be accepted for return or exchange after the first thirty (30) days following the invoice date.

Returned items must be shipped prepaid and insured in their original packing containers (if possible). When returning merchandise, first obtain a Return Materials Authorization (RMA) number, as described below, and clearly show the RMA number on the outside of each carton. Merchandise will not be accepted for any reason without an RMA number.

Products and parts returned or exchanged for any reason other than warranty purposes are subject to a restocking fee not greater than twenty percent (20%) of the invoiced price, if returned in unused condition.

Claims for Shipping Damages

Unless otherwise specified, merchandise is normally shipped by Federal Express Economy service; however, AutoPatch reserves the right to select the final method and carrier for any shipment.

Although we take special care to ensure the safe arrival of all orders, shipping accidents and damage can occur. Shipments are transferred to the appointed carrier in good condition, and AutoPatch's liability for the product ceases when the transfer to

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the carrier is complete. Therefore, claims for damages and shortages must be filed with the transporting company by the receiving company in accordance with the transporting company's procedures. Visible damage and shortages must be noted on the freight bill; packaging and contents must be retained for inspection.

Replacement Policies and Procedures

During the warranty period:

1. Describe the problem to an AutoPatch Dealer, regional representative, or the AutoPatch customer service department.
2. Upon verification of a problem that requires factory repairs, an AutoPatch customer service representative will issue a Return Materials Authorization (RMA) number. The Dealer is required to send a purchase order for the cost of the replacement parts. (If the Dealer is no longer involved, the consumer can provide a credit card on which AutoPatch will place a hold until the defective parts are returned.) AutoPatch will, at no cost, repair or replace the part(s) returned to the factory and return the part(s) to the sending party. If conditions do not permit this procedure, we will invoice new or reconditioned (at AutoPatch's option) replacement part(s) to the Dealer and ship the part(s) to the Dealer or to the consumer if so directed by written order from the Dealer. Unless otherwise instructed in writing by an AutoPatch customer service representative, part(s) replaced under this warranty must be returned to the factory:

   a) within thirty (30) days;

   b) with shipping and insurance costs prepaid;

   c) with the RMA number clearly indicated on the outside of each container;

   d) in the original shipping container(s), if possible;

   e) with a written description of problem. If the replaced part(s) are returned within thirty (30) days, we will apply credit to the Dealer's account for the total value of part(s) determined defective, plus return shipping costs. Any part(s) received after thirty (30) days or otherwise not in compliance with these requirements may be refused, and credit will not be issued.

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3. Repaired or replaced part(s) will be warranted for the remainder of the original system warranty, or we will extend the original warranty period by the period of verifiable downtime, whichever provides the greatest benefit.

Following warranty expiration:

1. Call your AutoPatch Dealer, area representative, or the AutoPatch customer service department with a description of the problem.
2. Upon verification of a problem that requires factory repairs, an AutoPatch customer service representative will issue a Return Materials Authorization (RMA) number. We will, at nominal cost, invoice the sending party, repair or replace the part(s) returned to the factory and return those part(s) to the sending party. If conditions do not permit this procedure, we will invoice and ship new or reconditioned (at AutoPatch's option) replacement part(s) to the Dealer or to the consumer if so directed by written order from the Dealer.
3. Post warranty repairs and replacements are warranted for the first thirty (30) days following invoice date.

Special Notice

AutoPatch reserves the right to modify or discontinue designs, specifications, warranties, prices, and policies without notice.

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