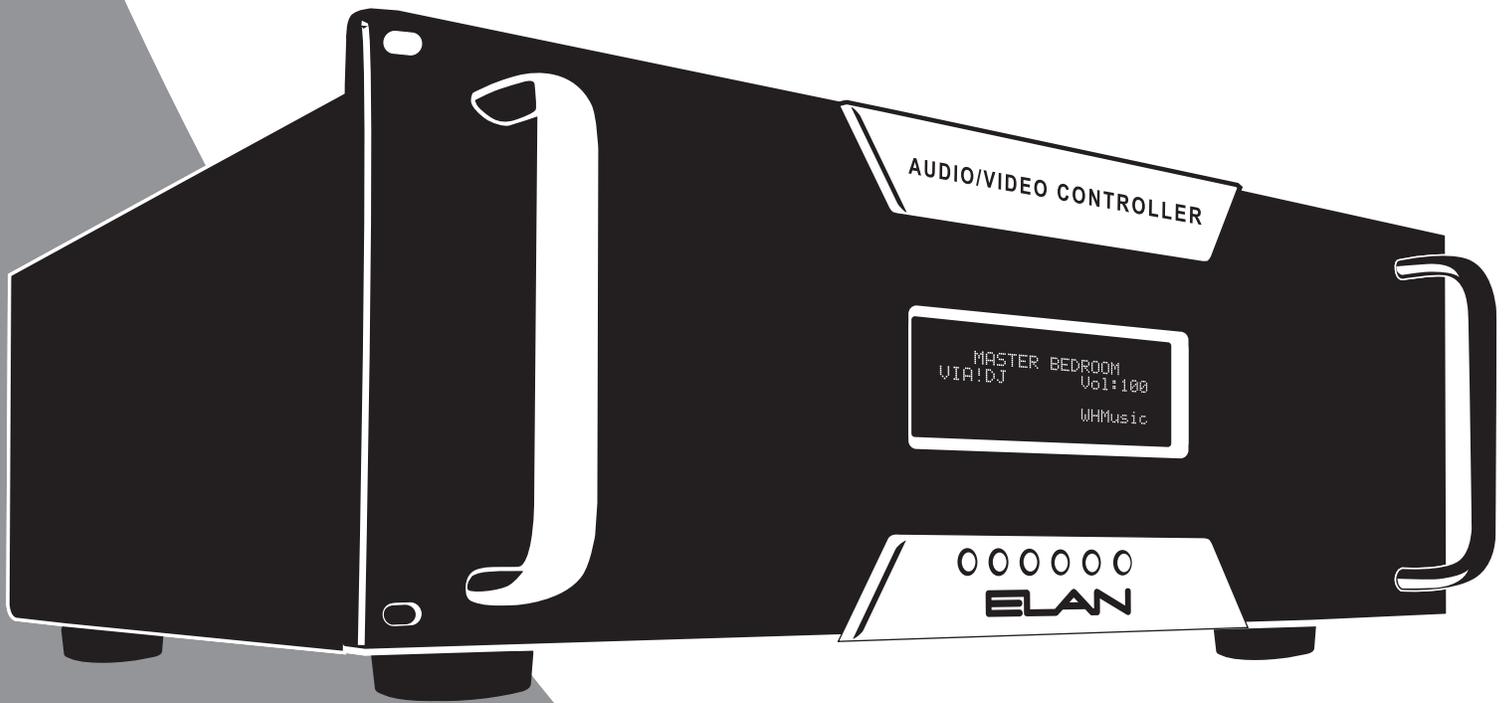




System 12

MULTI-ROOM AV CONTROLLER

INSTALLATION MANUAL AND USER'S GUIDE



 **WARNING** 
RISK OF ELECTRIC SHOCK
DO NOT OPEN!

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instruction in the literature accompanying the appliance.

WARNING: TO REDUCE THE RISK OF FIRE OR SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT SAFETY INFORMATION

Read Information—All the safety and operating information should be read before the appliance is operated.

Follow Information—All operating and use information should be followed.

Retain Information—The safety and operating information should be retained for future reference.

Heed Warnings—All warnings on the appliance and in the operating instructions should be heeded.

Wall Mounting—Mounting of this appliance should be done only by an authorized installer.

Ventilation—The appliances should be situated so that their location or position does not interfere with their proper ventilation. These appliances should never be placed near or over a radiator or heat register. These appliances should not be placed in a built-in installation such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

Non-Use Periods—Appliances that are left unattended and unused for long periods of time should be de-energized.

Power Sources—The appliances should be connected to a power supply only of the type described in the operating instructions or as marked on each appliance. If you are not sure of the type of power supply to your home, consult your authorized ELAN dealer or local power company.

Grounding or Polarization—These audio products must be connected to a grounding-type alternating-current circuit on a dedicated circuit breaker. This is a safety feature. The green safety wire from the A.C. circuit must be connected.

Water and Moisture—To reduce the risk of electric shock or fire, these appliances should not be used near water—for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool.

Power Cord Protection—A.C. Power supply circuits should be routed by a certified electrician only, in accordance with the NEC standards.

Telephones—Avoid using a telephone (other than a cordless type) during an electrical storm. There may be a remote risk of electrical shock from lightning. Do not use a telephone to report a gas leak if the leak is in the vicinity of the ELAN electronic equipment because of risk of fire or explosion.

Cleaning—Turn off the circuit breaker to this audio product before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.

Power Lines—An outdoor antenna should be located away from power lines. When installing an outside antenna system, extreme care should be taken to avoid touching power lines or circuits, as contact with them may be fatal.

Outdoor Antenna Grounding—If an outside antenna or cable system is connected to these audio products, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the U.S. National Electrical Code, and Section 54 of the Canadian Electrical Code, provide information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See the grounding diagram (right).

Overloading—Do not overload wall outlets and extension cords, as this could result in fire or electric shock.

Object and Liquid Entry—Never insert objects of any kind through the openings of these appliances, as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Care should be taken so that objects do not fall and liquids are not spilled into the appliance through openings in the enclosure.

Servicing—Do not attempt to service these appliances yourself, as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

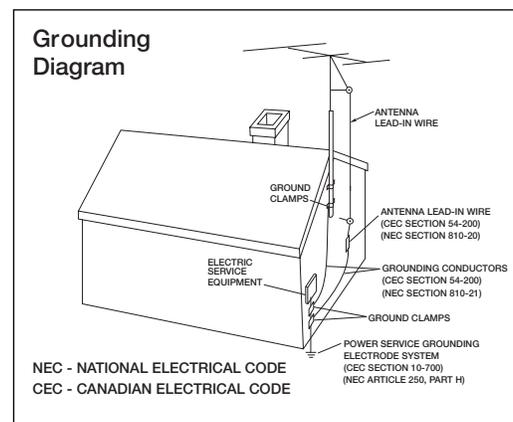
Damage Requiring Service—These appliances should be serviced by qualified service personnel when:

- A power supply connection or a plug has been damaged or
- If liquid has been spilled into the appliance or objects have fallen into the appliance or
- The appliance has been exposed to water or moisture or
- The appliance does not appear to operate normally or exhibits a marked change in performance or
- The appliance has been dropped or the enclosure damaged.

Replacement Parts—When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards. The Master Control Unit battery should be replaced only after turning the power off and only by an authorized installer.

Safety Check—Upon completion of any service or repairs to this audio product, ask the service technician to perform safety checks to determine that the audio product is in proper operating condition.

Lightning—For added protection for these audio products during an electrical storm, or when they are left unattended and unused for long periods of time, turn off the circuit breaker, and disconnect the antenna or cable system. This will prevent damage to the audio products due to lightning and power-line surges.



1. Introduction

The System12 (S12) is the culmination of fourteen years of ELAN experience in the design and perfection of multi-source/multi-zone controllers. Incorporating the features and reliability that has made ELAN the fastest-growing manufacturer of multi-room A/V products, the S12 is ELAN's most powerful and flexible multi-source/multi-zone controller to date. The System12 is a twelve-source eight-zone preamp controller with on-board video switching. Up to four S12s can be linked for a total of thirty-two zones. The S12 can be controlled by IR or Serial commands, and works with ELAN VIA!® Touch Panels, keypads, and/or IR receivers, as well as interfacing with the VIA!®SR1 Sense/Relay Module, VIA!®SC4 System Controller, and VIA!2®SS1 System Station.

This unit has been designed with ultimate flexibility in mind. Multiple control methods combine with expandability to offer the perfect solution for larger audio/video and automation control systems. Local source inputs allow devices located in a specific zone to be heard in and controlled from that zone, while advanced trigger options allow flexible automation opportunities.

The S12 can switch Composite video, Component video, or both, simultaneously. High Definition video sources, like HDTV and Progressive Scan DVD players, can now be routed throughout the home as well as traditional Composite video sources like VCRs and CCTV cameras.

The System12 is loaded with all the features a custom installer looks for in a high-end multi-room controller, including audio/video signal sensing and system-status feedback, 12 source-specific IR ports, 2 IR 'All' ports, an External IR Input, 6 Sense inputs, 8 Trigger outputs plus a Unit Trigger output, a Music-On-Hold output, Page/Doorbell audio and Trigger jacks for easy integration with ELAN's Z•600 Communications Controller, and Serial In/Out ports for RS-232 control of the S12. The PS12 Precision Panel makes all system connections quick, neat and reliable!

The ELAN Story

Located in Lexington, KY, USA, ELAN Home Systems has designed innovative multi-room audio/video systems since 1989. ELAN systems were the first to integrate music, intercom and TV distribution features that used the homeowner's stereos, televisions and telephones to create the whole-house entertainment experience. These systems allow people to move room to room, controlling centrally located equipment with ease.

ELAN's product line includes:

- Power Amplifiers
- Zoned Pre-Amps
- Intelligent Keypads
- LCD Color Touch Panels
- In-Wall and In-Ceiling Speakers
- Outdoor Speakers
- System Controllers
- Volume Controls
- Telephone-Based Intercom Controllers
- Video Switchers
- Digital Music Management Systems
- Accessories for Home Systems Installation

ELAN has introduced nearly 300 new products in the last seven years and has been honored with nearly fifty industry awards in the past 5 years!

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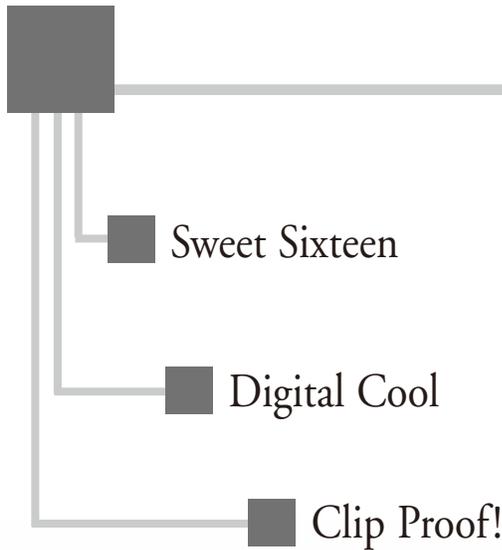
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D1650 Companion Amplifier



D1650 16-Channel Digital Amplifier

With 16 channels of digital amplification stable down to four ohms, the D1650 has all the channels and power you need for any distributed audio application – and it happens to be the perfect companion to ELAN's new 8-zone A/V controller – the System12.

Waste not - want not. Class-T digital technology means the D1650 is not wasting its energy producing heat which, in turn, won't leave you wanting for more power and better sound.

Once again, we've pulled an ACE out of our deck...ACE 'Automatic Clip Elimination', that is - a dynamic leveling circuit developed by ELAN that makes all D Series amplifiers virtually clip proof!

16 Channels of Clean, Cool Power ■

More Channels

The latest in the D Series line of Digital Power Amplifiers, the D1650 has 16 channels of amplification rated at 60 WPC RMS into 4 Ohms and 45 WPC RMS into 8 Ohms. These 16 channels can be configured to power up to 8 stereo zones, 16 monaural zones, or any combination of the two – making it the ideal amplifier for the System12, ELAN's new 8-zone multi-room A/V controller. Of course, with 16 channels of great sound, the D1650 also happens to be the ideal amplifier for just about any distributed audio system.

Wonderfully Flexible

The D1650 allows for easy configuration of its inputs and outputs. A and B Stereo Busses allow you to route one set of inputs to other inputs without

the use of additional cables. Buffered loop outputs for each channel make it easy to configure multi-room listening areas in either stereo or mono. Eight 12VDC Trigger Inputs allow each pair of channels to be powered up and muted independently. A 12VDC Trigger Output can be used to turn on or mute additional amplifiers.

Runs Cool

Class-T Digital Technology gives the D1650 an 85% efficiency rating – a spec unreachable by traditional Class-A/B amplifiers. Class-T also has a THD + Noise specification of less than 0.04% - a spec unattainable by Class-D amplifiers. This low-heat/high-efficiency design, combined with an ultra-high-efficiency toroidal transformer and 200,000 uF bulk storage capacitance, ensures that

all 16 channels can deliver their full-rated power at the same time. Even when it's running all-out, the D1650 remains cool and sounds clean.

Looks Cool

The D1650 has a Vacuum Florescent Display (VFD) with cool-blue lighting that shows the level settings for each channel. Channel levels can be individually adjusted via front panel buttons, and the 'lockout' feature ensures that finely tuned level settings cannot be inadvertently changed. Sixteen blue LEDs indicate signal presence for each channel. Sixteen red LEDs indicate clipping and the automatic activation of the ACE™ circuitry. Very cool indeed.



Sixteen Channels of Digital Cool.
www.elanhomesystems.com



System12 Features

■ More Sources

• 12 Audio Inputs

Connect up to 12 audio or A/V components!

• 16 Video Inputs/16 Video Outputs

- Switch independently or in synchronization w/ audio.
- Switch Composite video, Component video, High-Definition video or a combination.

• 8 Local Source Inputs

Connect a 'private' local source from each zone and control it with that zone's keypad or touch panel.

■ 32 Zone Capability

Link up to 4 S12s to independently control up to 8, 16, 24, or 32 zones.

■ Buffered Loop Outputs

Easily share sources w/ Home Theaters, etc.

■ Variable & Fixed Zone Preamp Outputs

Each zone has both Variable and Fixed outputs for flexible system configuration.

■ Independent Bass, Treble, Page Volume, & Max Volume for Each Zone

Customize the sound for each zone.

■ Volume and EQ Memory Retention

Keep custom settings for each zone.

■ Dynamic Range Compression

Dynamic Range Compression (DRC) makes loud audio passages quieter and quiet passages louder. Ideal for night-time listening and Classical music. Available independently for each zone.

■ Audio & Video Source-Sensing for System Feedback

Advanced signal sensing for source and zone status feedback and automated sequences.

■ +/- 6dB Source-Leveling

Optimize the input level of each source (including Local source) for smooth source switching. 1 dB steps for fine-tuning.

■ Advanced IR Routing

- 12 Source-specific IR Output ports
- 2 IR 'ALL' Output ports
- 1 External IR IN port can be routed out any or all IR Output ports

■ Blue Vacuum Fluorescent Front Panel Display

- Shows zones/sources selected, EQ, Do-Not Disturb/ Whole-House Music settings, etc.
- Display timeout & configurable Brightness

■ Full ELAN Control Capability

- Use with any ELAN keypad or touch panel!
- IR or RS-232 Control
- Uses VIA!®TOOLS setup software for all programming!

■ Do-Not-Disturb

Temporarily disable Page, Doorbell, WHM, and Groups in any zone.

■ Whole-House Music

Play one source throughout the house with the touch of a button.

■ Groups

Link zones into one of four Groups per chassis!

■ 6 Sense Inputs

Trigger complex IR sequences and automated functions using VIA® Touch Panels!

■ 8 Zone-Specific Triggers/1 Unit Trigger

Turn on a specific amp channel when a zone is activated or turn on the whole amp!

■ Rear Panel Expansion Ports

Easily route IR and RS-485 data between multiple S12s.

■ Rack-Mount Unit (S12R) Available

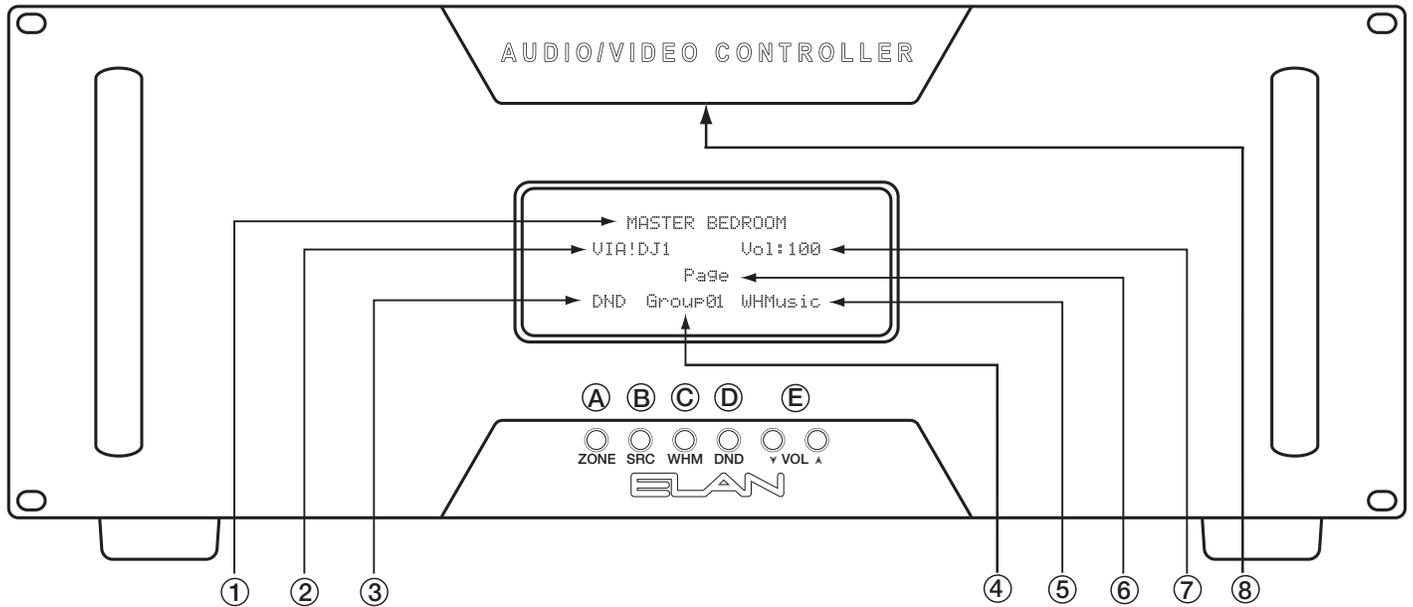
With removable brushed aluminum handles!

■ Available in 240 Volt

For export: Model S12240 and S12R240

■ ETL® Listed and CE® Approved

S12 Front Panel (S12R rack-mount unit shown. Handles not available on S12 shelf model.)



Front Panel Buttons:

- A ZONE**
Press to select a zone to be controlled
- B SRC (Source)**
Press to select a source to play in the selected zone
- C WHM (Whole House Music)**
Press to enable/disable Whole-House Music
- D DND (Do-Not-Disturb)**
Press to enable/disable Do-Not-Disturb for the selected zone
- E V (Volume Adjust)**
Left V button reduces volume, Right V button increases volume in selected zone

Display:

- 1 Zone Selected**
Displays which zone is currently selected
- 2 Source Selection**
Displays source currently selected in a zone
- 3 DND**
DND displayed if selected zone is in Do-Not-Disturb
- 4 Group Status**
Displays if a zone is currently in Group Mode
- 5 WHM**
WHM is displayed if the selected zone is in Whole-House Music mode
- 6 Page/Doorbell**
Displays Paging and Doorbell activity
- 7 Volume Status**
Displays a Zone's Volume settings
- 8 Downward-Firing Illumination LEDs**
Adjustable brightness

Additional Functions:

- **System Off**-Press and hold ZONE button for 1.25 seconds
- **Zone Off**-Press and hold SRC button for 1.25 seconds
- **Diagnostics**-Press and hold DND button for 2.5 seconds

Feature Definitions

Whole-House Music (WHM)

After selecting a source in a zone, activating the WHOLE-HOUSE MUSIC feature (WHM Link) will turn on all the other zones in the house to the source you have selected.

When in WHM mode, all the zones are “grouped”. Change source selection in one zone, and all the other zones will follow; change tracks or radio stations in one zone, and all the other zones will follow. Volume control and EQ in each zone remain independent.

Deactivating the WHM feature (WHM Unlink) simply “un-groups” all zones, permitting each zone to once again act independently of each other. WHM Unlink does not “turn off” any of the zones, it just deactivates the Whole-House Music feature.

Do-Not-Disturb (DND)

If your system includes an ELAN Z•600 Communications Controller, placing a zone in DND will temporarily eliminate Page & Door Chime audio from playing in that zone. It will also disable the WHM feature for that zone. Each zone can be independently placed in DND.

Grouping

Zones can be grouped together so that they track the same source. Each S12 can support four groups of any number of zones. A zones cannot be part of more than one group. In multi-S12 systems, groups cannot span chassis, i.e., Zone 1 and Zone 9 cannot be part of the same group.

Group assignment is done in VIA!TOOLS setup software. Once zones have been placed in groups, use the Group Link and Group Unlink IR or serial commands to enable or disable group functionality.

Dynamic Range Compression (DRC)

Dynamic Range Compression reduces the volume of loud audio passages and increases the volume of soft passages. This feature is ideal for classical music or night-time listening.

DRC can be enabled through VIA!TOOLS software (a zone can be programmed to turn on with DRC enabled), or through IR or serial commands sent from an IR or serial zone controller.

Specifications

System..... Multi-Source/Multi-Zone Controller

Source Inputs

Input Sensitivity 0-2V RMS
Input Impedance: 47K Ohms

Preamp Outputs

Volume Adjustment Range: -70dB to +6dB
Frequency Response: 20Hz to 20kHz, +/-0.5dB
THD+Noise(@1kHz): < 0.02%
Signal-to-Noise (A Weighted): 83dB
Crosstalk (Zone to Zone): >70dB
Output Impedance: 600 Ohms

Music on Hold Output

Output Impedance: 600 Ohms
Max Output Level: +6dB

Page & Doorbell Input

Input Sensitivity: 0-2V RMS
Input Impedance: 47k Ohms

Video

Gain: Unity

Bandwidth (-3dB): 125MHz

Gain Flatness (0.1dB): 40MHz

Input Impedance: 75 Ohms

Output Impedance: 75 Ohms

Crosstalk: >64dB@5MHz

General

Trigger Outputs: +12VDC @ 100mA each

Keypad Power: 300mA per zone

Power Requirements: 120VAC 50/60Hz
(S12240) 230~240VAC 50/60Hz

Power Consumption: 125W

Dimensions:

Shelf:17" (W) x 7 1/2" (H) x 15" (D)

43.18cm (W) x 17.78cm (H) x 38.1cm (D)

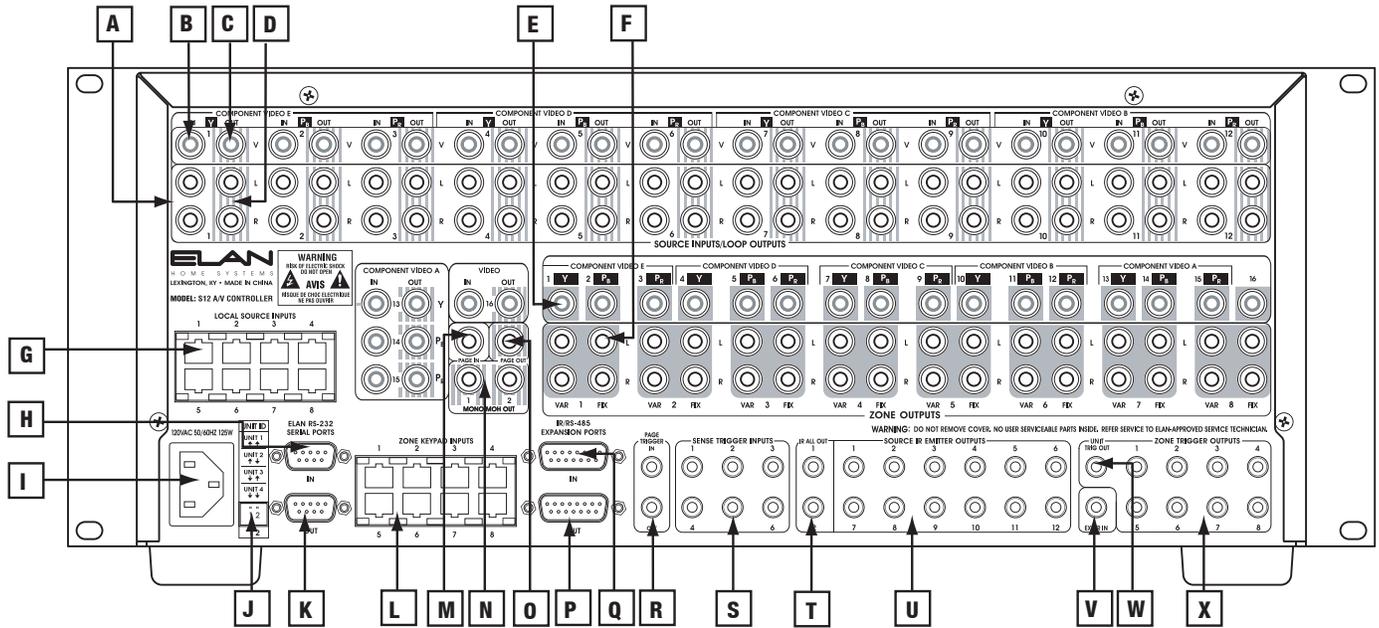
Rack:19" (W) x 7" (H) x 15" (D)

48.26cm (W) x 17.78cm (H) x 38.1cm (D)

Weight:.....31 lbs/14 kgs

ETL® Listed and CE® Approved

S12 Rear Panel



- A Source Audio Inputs**
Connect source audio
- B Source Video Inputs**
Connect source Composite video
- C Source Video Loop Outputs**
Use for shared video components or linked chassis
- D Source Audio Loop Outputs**
Used for shared audio sources or linked chassis
- E Zone Video Outputs**
Connect to TVs, VIA! Touch Panels, etc.
- F Zone Audio Outputs**
Connect to system Amplifier. Fixed and Variable Outputs available
- G Local Source Inputs**
Connect remotely located "Local" sources
- H ELAN RS-232 Input**
Connect a VIA!2 SS1 System Station or SC4. Also for downloading VIA!TOOLS program files
- I AC Power**
Connect to AC Power
- J Unit ID Dipswitches**
Configure Unit identity 1-4
- K ELAN RS-232 Output**
Connect to additional S12 Chassis
- L Zone Keypad Inputs**
Connect ELAN Keypads, VIA!s, or IR Receivers
- M Page Input**
Connect PG/DB Output from Z•600 Communications Controller
- N MOH Output**
Connect to Z•600 MOH (Music On Hold) Input
- O Page Output**
Connect to additional S12s
- P IR/RS-485 Expansion Out**
Connect to VIA!2SS1 or additional S12s
- Q IR/RS-485 Expansion In**
Connect Expansion Port Out to Expansion Port In if using multiple S12s
- R Page Trigger In/Out**
PG Trigger In from Z•600
PG Trigger Out to additional S12s
- S Sense Trigger Inputs**
Connect ELAN™SENSE Sensors for automated functions
- T IR All Out**
Connect IR to system sources that do not require source-specific IR
- U Source IR Emitter Outputs**
Source-specific IR Outputs
- V External IR Input**
Connect non-system keypads or IR receivers to control system sources
- W Chassis Trigger Output**
Sends a 12 VDC Trigger whenever any zone of chassis is active
- X Zone Trigger Outputs**
Sends a 12 VDC Trigger when a specific zone is active

2. System Design & Applications

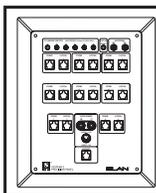
System Design

The first step to a good design is to map the system. It is advisable to mark up a copy of the house floor plan with speaker, keypad, touch panel, volume control, and equipment locations etc. Make sure that all locations are decided upon before pre-wiring commences so that all necessary wiring and installation hardware is in place. This unit will be interfacing with other components such as amplifiers, source components, communications controllers, serial controllers, and user interfaces, so it is essential that ALL system components are accounted for prior to the pre-wire stage.

Secondly, make a detailed list of all components. Include source equipment, keypads, touch panels, volume controls, amplifiers, communications gear and the S12 itself. Be sure to include necessary electrical boxes, structured wiring enclosures, telephone lines, rough-in brackets, patch cords, power supplies, etc.

Pre-Wire

This section will explain the specifics of pre-wiring for an S12 system. Care should be taken at this stage to ensure a properly operational system. Most system wiring is "home-run" from the device being installed (a keypad, for example) back to the equipment location, or "head-end". Make sure to plan for the future when pre-wiring! It is often advantageous to pull coax along with Cat-5 to facilitate an upgrade from keypads to VIA!® Touch Panels.



ELAN Precision Panels save time and make sense out of complex wiring jobs!

VIA!® Touch Panels

- Cat-5
- 16-18 AWG 2 conductor wire
- RG-6 or RG-59 coaxial cable

ELAN Keypads

- Cat-5

IR Receivers

- Cat-5

Volume Controls

- Cat-5
 - 16-18 AWG speaker wire
- Use stranded, twisted pair speaker wire between amplifiers and volume controls, and between volume controls and speakers. Use Cat-5 to power electronic volume controls and for volume control override when used with a Z•600 Communications Controller.

Speakers

- 16-18 AWG speaker wire
- Use stranded, twisted pair speaker wire between amplifiers and speakers.

Local Source/LSWP

- Cat-5
- Local Sources connect to the S12 using an LSWP Local Source Wall Plate with Cat-5 (see page 23).

Remotely Located Sources

- Cat-5
 - RG6 or RG59 coax (if necessary)
- Remotely located sources connect to the S12 using an ELAN IRAVWP with Cat-5.

Z•600 Communications Controller

- Cat-5
 - 22-24 AWG 4 Twisted-Pair w/ Drain
- When using an ELAN Z•600 Communications Controller, run Cat-5 for telephones. Run 4 twisted-pair wire w/ drain for Door Stations. See the Z•600 manual for details.

Serial Devices

- Cat-5 or Serial Cable
- Run Cat-5 or serial cables between RS-232 controllers and the S12.

Sense Inputs

- Cat-5 (3 conductors used)
- Use Cat-5 to extend sensor leads, if necessary.

System Video

- RG-6 coax for RF or base-band video.
 - RG-59 coax for base-band video only.
- Use coaxial cable to distribute video to TVs and VIA! Touch Panels throughout the house.

System Audio

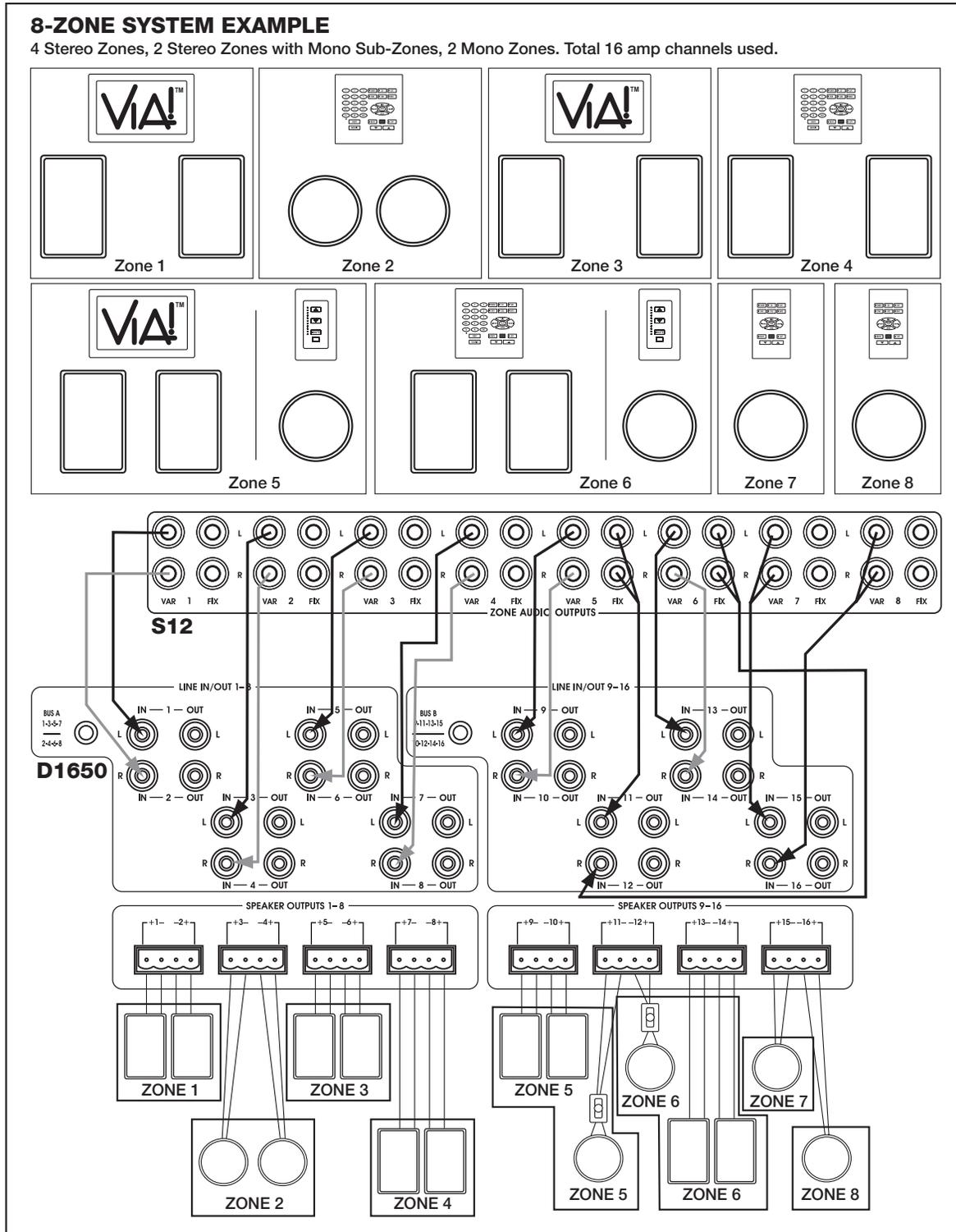
- RCA Interconnect Cables

Applications

This section describes typical applications using the S12 in audio/video/automation installations. These are all basic in nature and should be used for guideline purposes only. Each application can be augmented as needed for individual circumstances.

Zone/Sub-Zone Definitions

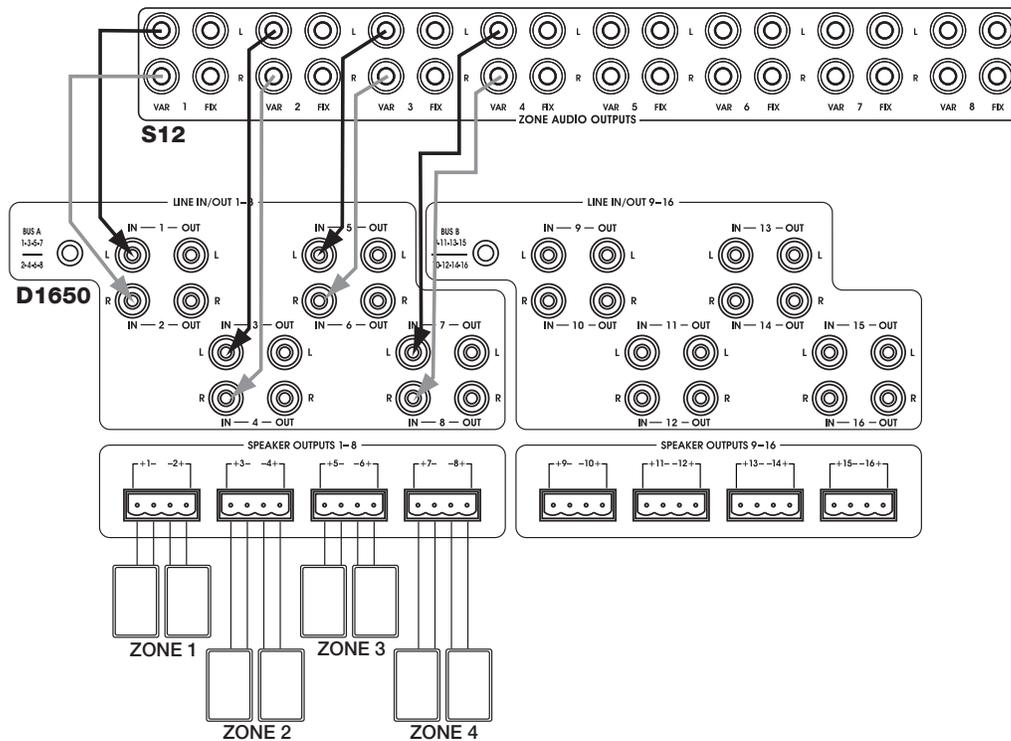
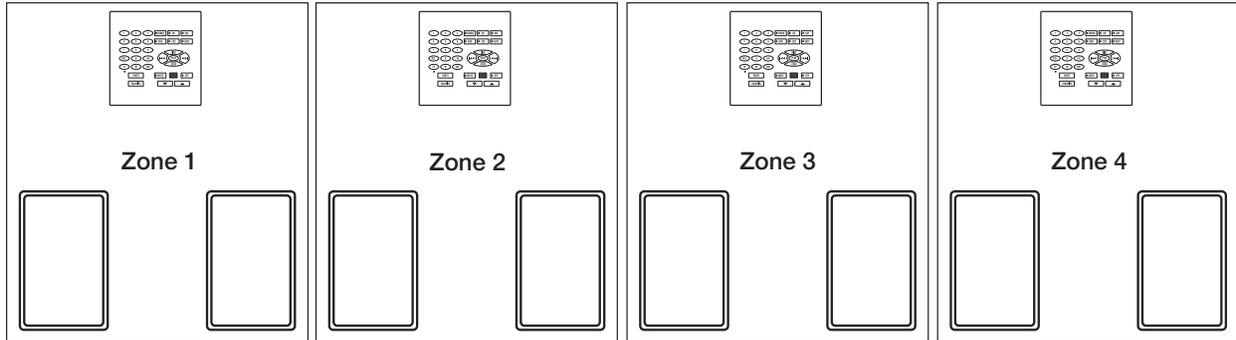
A zone is defined as an area within a system that has independent source selection ability. A zone may be one room, or several combined areas. A sub-zone is a part of a zone - it shares source selection - but is not independent. Typically, sub-zones use volume controls for volume up/down.



Applications (continued)
Stereo Zones

To create an independent stereo zone, simply connect the S12's Variable Zone Audio Outputs to a pair of amplifier channels. Volume will be controlled using IR or RS-232 commands at pre-amp level. Any and all speakers connected to these channels will ramp

volume up/down together. Use a VIA!® Touch Panel, keypad, or hand-held remote control to control functions (including volume) in zones with this configuration.



Applications (continued)

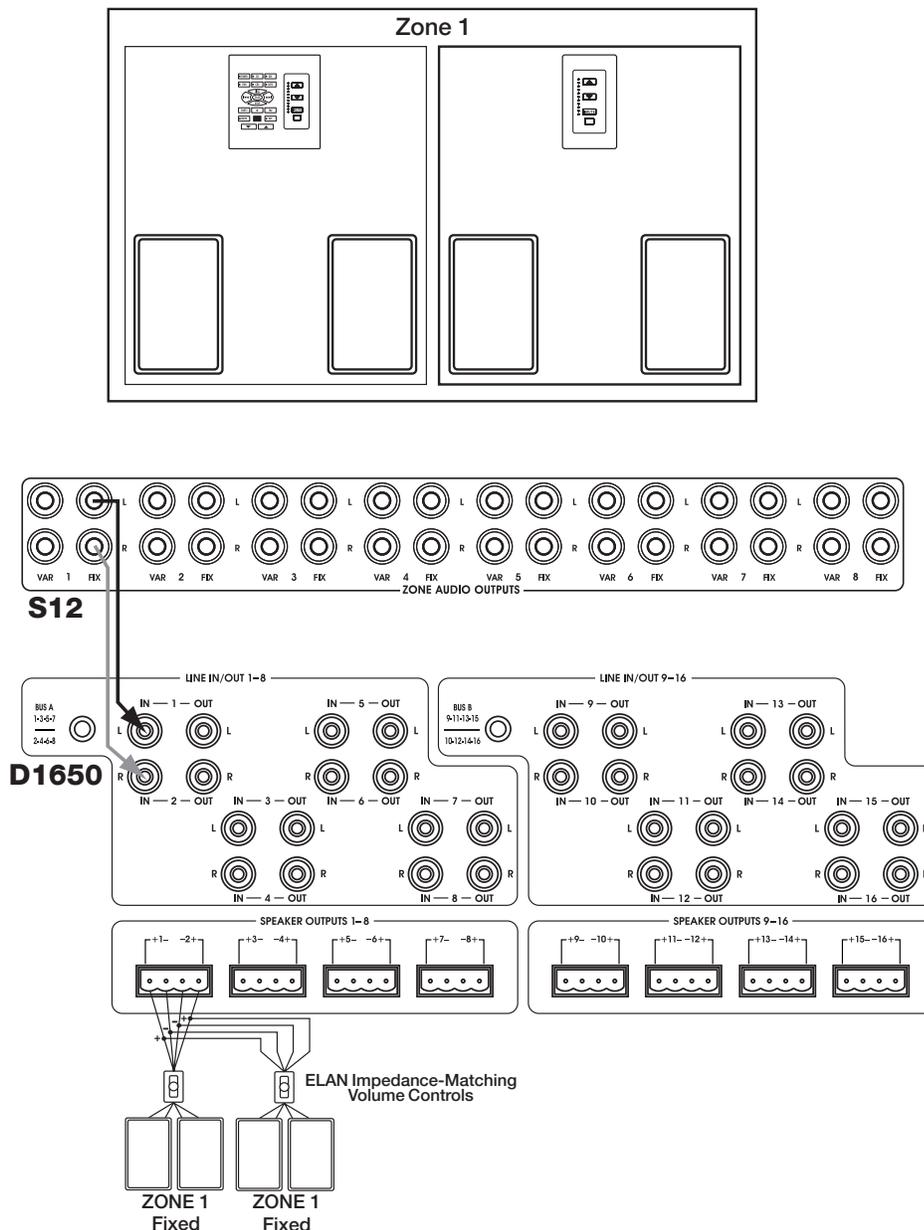
Stereo Zone w/ Stereo Sub-Zone Fixed Output

Many areas of the home are ideal for zone/sub-zone configuration. Examples include Master Bedroom/Master Bath or Kitchen/Dining Area. In this application, only two amp channels are used.

Connect the Fixed Zone Audio Output to a pair of amp channels. Use two impedance matching volume controls on the amplifier's speaker outputs to maintain independent volume control capabilities in each room.

At least one controlling device (keypad, touch panel) must be installed to control the zone. Volume up/down will be controlled with the volume control located in each part of the zone. If using ELAN electronic volume controls, system and source control is possible using a hand-held remotecontrol. This application uses the least amount of amplifier channels possible.

Note: Fixed Zone Audio Outputs do not have DRC or EQ capabilities.

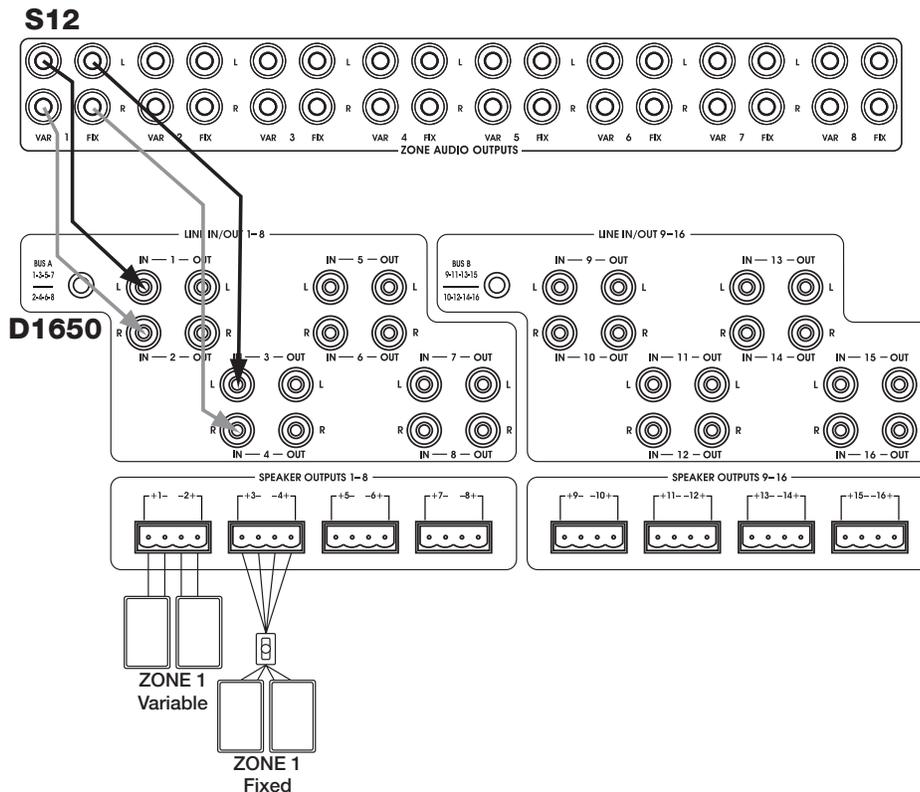
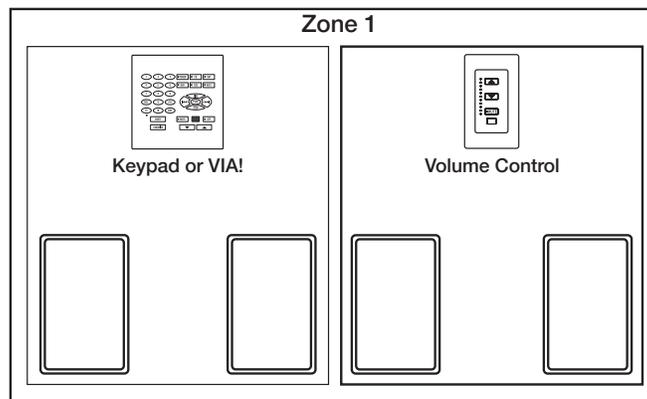


Applications (continued)

Stereo Zone w/ Stereo Sub-Zone Fixed and Variable Output

This application takes full advantage of the S12's Fixed and Variable Zone Audio Outputs. The main zone utilizes the Variable outputs. A keypad or VIA!® Touch Panel controls source selection, source control, etc. and volume up/down in the main zone.

The sub-zone uses a volume control to ramp volume up/down independently from the main zone, however, it always shares the same source. If using an ELAN electronic volume control in the sub-zone, system and source control is possible using a hand-held remote control. This application uses more amp channels than the previous example, but only uses one volume control in the sub-zone.



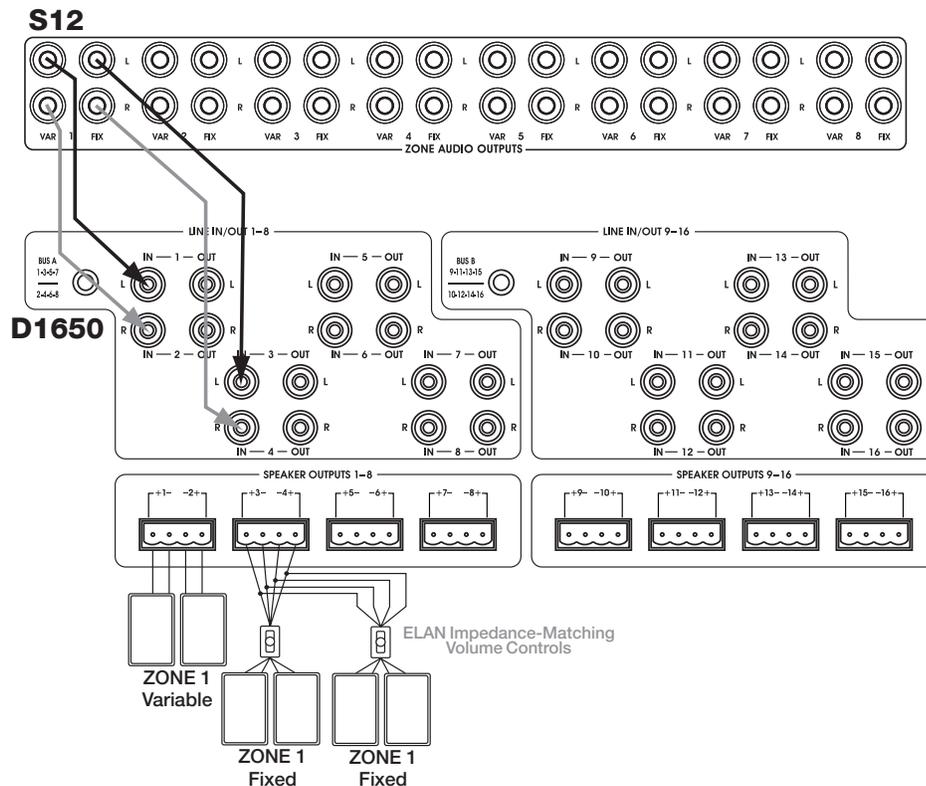
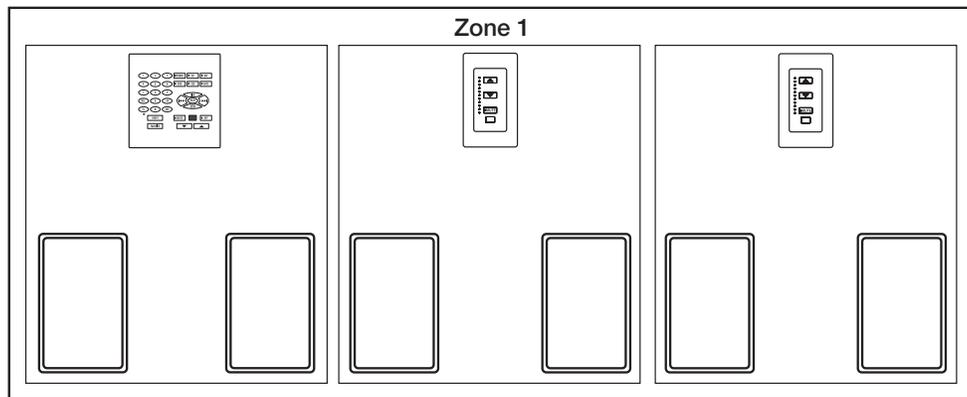
Applications (continued) Stereo Zone w/Two Stereo Sub-Zones

This application is ideal for large areas where independent volume control is needed. Volume is controlled in a variable zone using keypads or touch panels. Sources for the entire zone are selected and controlled from this same keypad or touch panel.

Connect the Fixed Zone Audio Outputs to two impedance matching volume controls, then to two pairs of speakers. The volume controls will ramp volume up/down for only the speakers that they are connected to, giving separate volume control in all areas of the zone.

If using electronic volume controls, a hand-held IR remote control can be used for source select and control in the sub-zone areas. If using rotary volume controls, all source selection and control must be done from the keypad or touch panel.

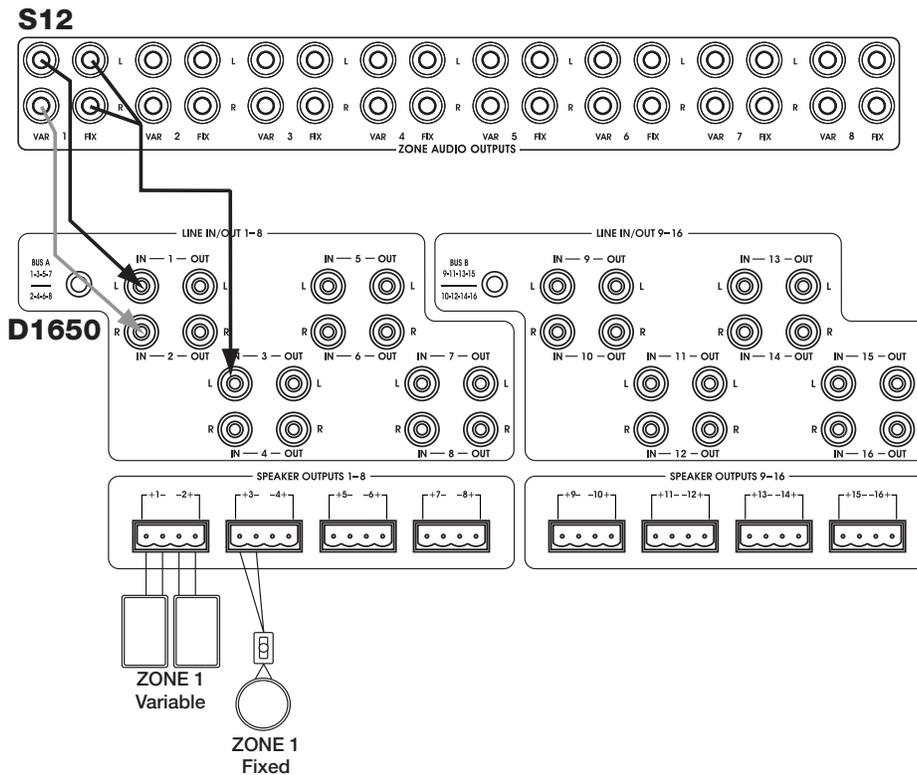
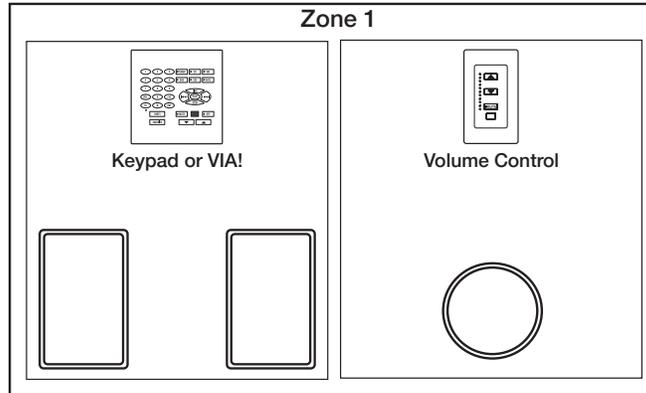
This application has cost-saving advantages. Only two pairs of amp channels are needed. If using electronic volume controls, independent volume up/down is available as well as source selection and control. In this application, separate source selection is only available in one area.



Applications (continued)

Stereo Zone w/ Mono Sub-Zone

Mono speakers are often used in areas that do not have a distinct listening area such as a basement or kitchen. This application provides source selection, source control and volume up/down from a keypad or touch panel in the main zone, and volume up/down in the sub-zone. If using an electronic volume control in the sub-zone, source select and zone control are available by using a hand-held IR remote control.

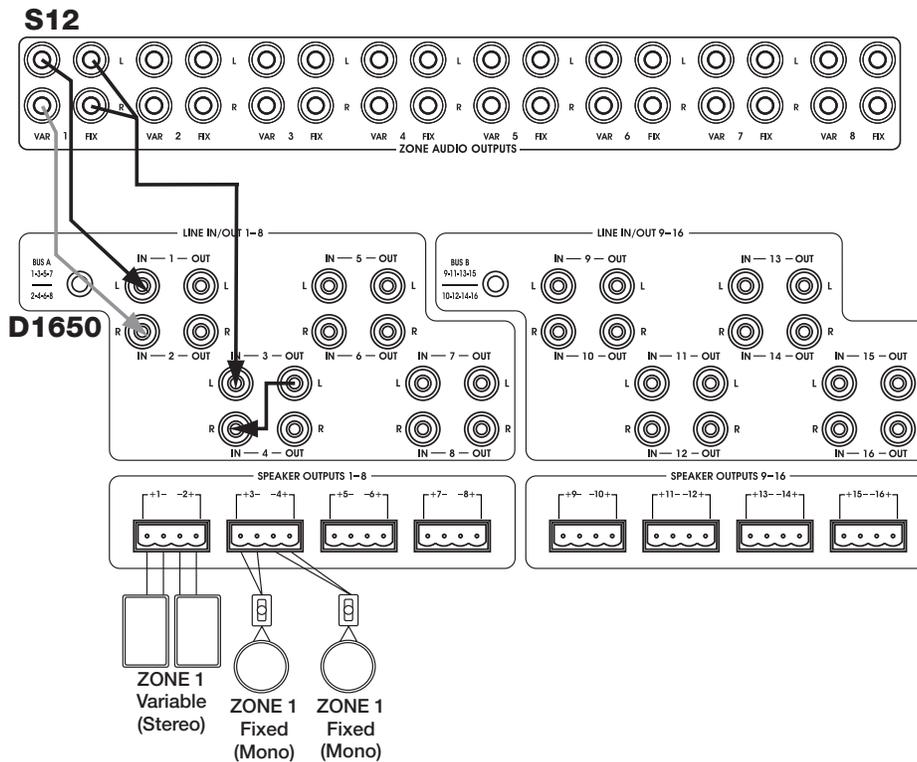
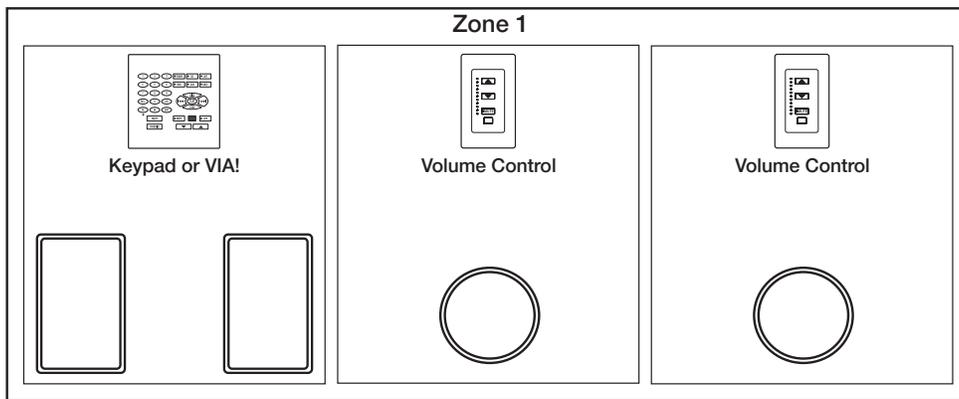


Applications (continued)

Stereo Zone w/Two Mono Sub-Zones

Expanding zones by using mono sub-zones is a great way to save money and amplifier channels. This application uses a total of four amp channels to create three separate areas with independent volume control. As in previous examples, a source can be selected and controlled from the keypad or touch panel in the main zone. Volume up/down in the main zone is controlled the same way. Sub-zone volume is controlled from the individual volume controls in each sub-zone. Sources can be controlled from a hand-held IR remote control if using electronic volume controls in the sub-zone.

Please note the RCA 'Y' cable used from the zone's Fixed Zone Audio Output to Input 3 of an ELAN D1650. This cable creates a mono signal. Connect Output 3 of the amp to Input 4. Now, the same audio plays out of Speaker Output 3 and Speaker Output 4. A mono volume control is connected to each of these speaker outputs to create two mono sub-zones.



3. Connections

System Control

System control connections are comprised of IR Inputs, IR Emitter Outputs, IR/RS485 Expansion ports, RS232 ports, and Triggers. These various control methods can be combined and integrated to create hundreds of possible control schemes for customized functionality.

PS12 Precision Panel

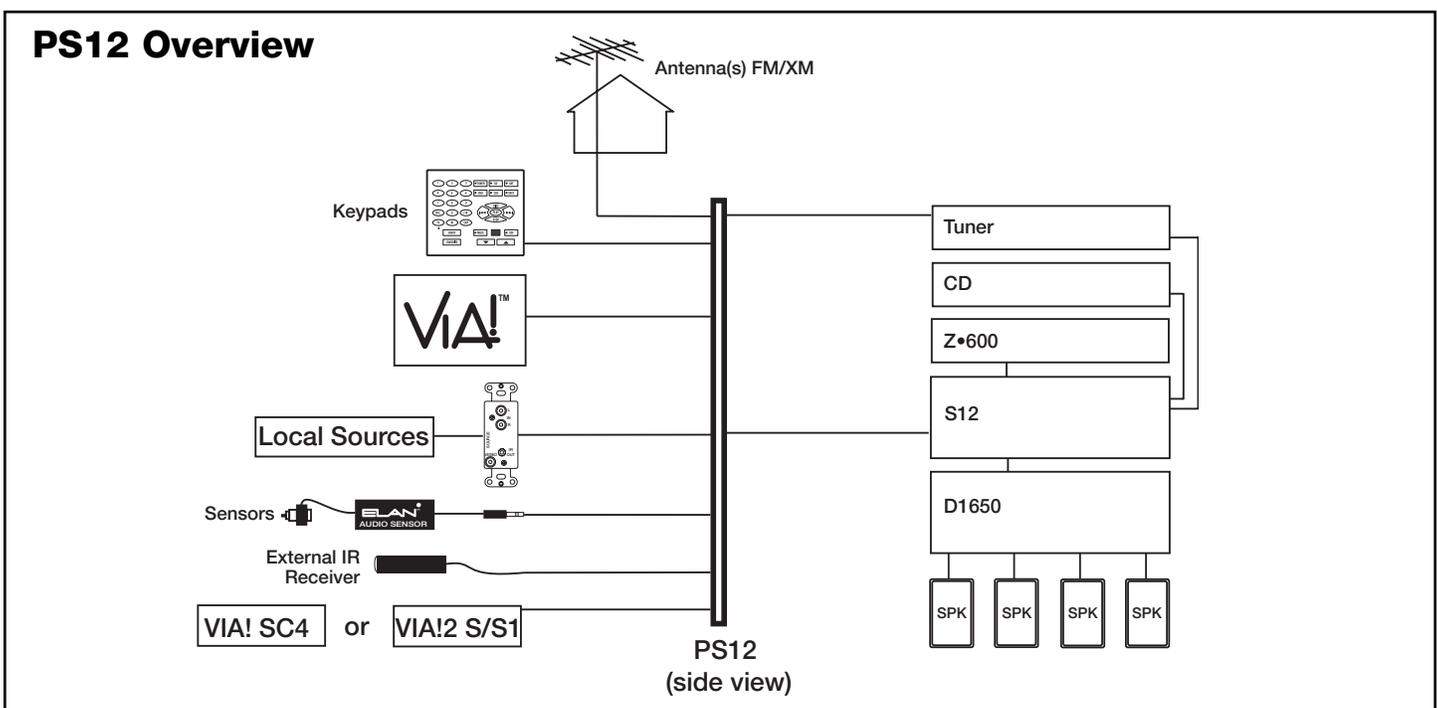
The PS12 Precision Panel is more than a convenient trim-out solution for the System12. With more sources, more zones and more built-in features than any other ELAN multi-room controller to date, the number of wire runs and systems connections needed to get everything up and running smoothly makes the PS12 a necessity!

The rear panel of the PS12 features a neatly laid out array of all the 110 punch-downs necessary to ensure quick, reliable connection of keypads, touch panels and local sources in every zone. There are also dedicated punch-down connectors for six ELAN™Sense sensors and VSE Electronic Volume Control IR signals. A clearly labeled overlay shows both the color-code and function of every connection. There are RJ-45 jacks and a switch on the rear of the panel for an easy link to an additional S12, VIA!SC4 System Controller or VIA!2-SS1 System Station.

The PS12's front panel provides RJ-45 jacks for the instant connection of keypads, touch panels and local sources in every zone to the back of the System12 controller. Use ELAN C4545 one or two meter RJ-45-to-RJ-45 interconnect cables for reliable connections every time. Six Sense Input jacks use stereo 3.5mm 'mini-to-mini' interconnect cables to go directly to the Sense Inputs on the S12. The front panel also features DC power jacks for 4A and 10A VIA! power supplies and two antenna connectors for the easy connection of rooftop antennas to the ELAN DTNR Digital Dual Tuner or any other tuner that may be part of the system.

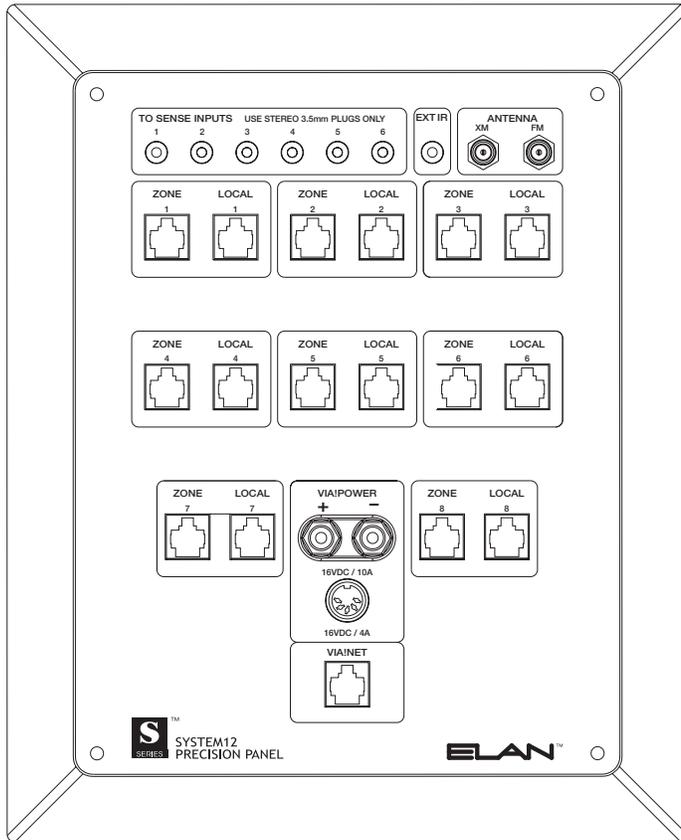
The front panel of the PS12 is removable, making all rear-panel punch-downs easy. New-construction brackets are available, or the PS12 can easily be retro-fitted using the four clamping legs attached to the frame, which clamp the panel securely to drywall. Additional panels would be required for systems with two, three or four S12s.

All connections shown in this section are made using the PS12 Precision Panel. Each punch-down location can contain two wires; one on top of the other. Use the included 110 punch-down tool to make connections to the rear panel of the PS12. Make sure to use the included punch-down caps so that connections do not inadvertently become loose!



PS12 Precision Panel

Front Panel



TO SENSE INPUTS

Connects to SENSE TRIGGER INPUTS of the S12. Enables automated functionality using Triggers/Sensors.

EXT IR IN

Connects to EXT IR IN of the S12. Control system sources from areas that are not part of a Zone.

ANTENNA

- **XM** Connect to ELAN's XM3 Satellite Radio Tuner.
- **FM** Connect to ELAN's DTNR Digital Dual Tuner or other FM Tuner.

ZONE RJ-45 Jack

Connects to ZONE KEYPAD INPUTS of the S12 using ELAN C4545 1 or 2 meter RJ-45 interconnect cables. Main portals for IR Zone Control from keypads, VIA!s, and IR receivers.

LOCAL RJ-45 Jack

Connect to LOCAL SOURCE INPUTS of S12 using ELAN C4545 1 or 2 meter RJ-45 interconnect cables. Allows connection of 8 remote sources.

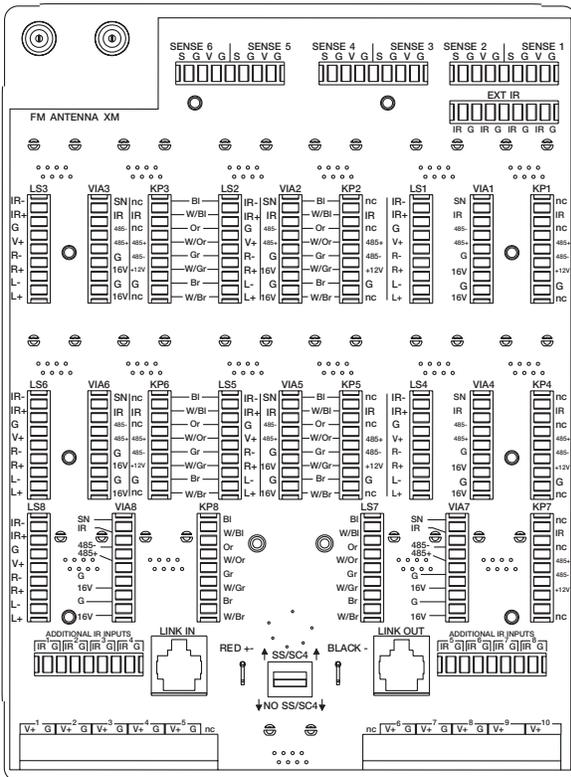
VIA! POWER

- **16VDC/10A**
Connect an ELAN 16 VDC/10A power supply for powering up to 10 VIA!s.
- **16VDC/4A**
Connect an ELAN 16 VDC/4A Power Supply for powering up to 4 VIA!s.

VIA! NET RJ-45 Jack

Connect to a VIA!SC4 Serial Controller or VIA!SS1 using ELAN C4545 1 or 2 meter RJ-45 interconnect cables. Allows for RS-232 control of the S12.

Rear Panel



SENSE

Cat-5 connections from ELAN™Sense Sensors

EXT IR IN

Cat-5 connections from non-system IR receivers

LS Punch-Down Connectors

Cat-5 connections from the Local Source Wall Plate (LSWP)

VIA! Punch-Down Connectors

Cat-5 connections from VIA! Touch Panels

KP Punch-Down Connectors

Cat-5 connections from ELAN keypads or IR receivers

LINK IN RJ-45 Jack

Cat-5 connections from another PS12 when using multiple PS12s

LINK OUT RJ-45 Jack

Cat-5 connections to another PS12 when using multiple PS12s

ADDITIONAL IR INPUTS

VSE IR connections from PVSE Precision Panel

SS/SC4 Switch

Flip switch Up when using VIA!2 SS1 System Station or VIA! SC4 System Controller

V+ G

Connect external power wires for VIA! Touch Panels on runs longer than 110 feet

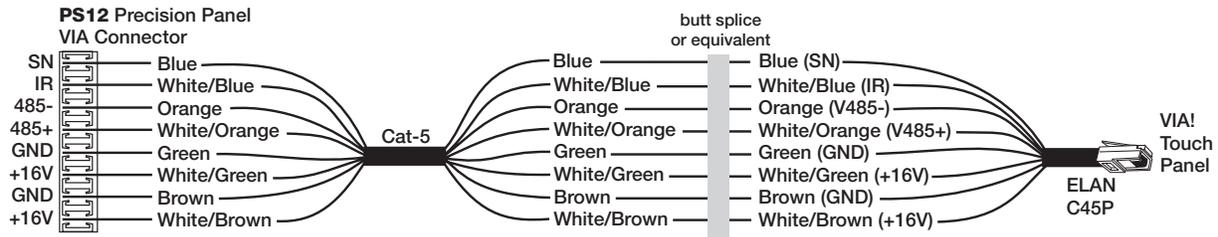
PS12 Rear Panel Connections

VIA!® Touch Panel Connections

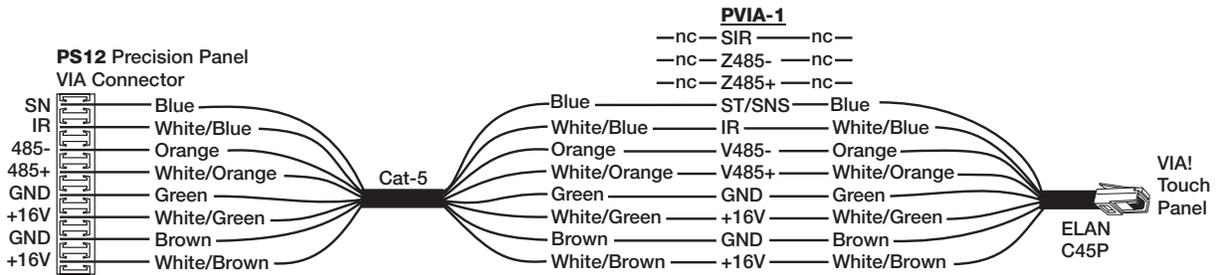
The S12 is designed to work flawlessly with ELAN VIA! Touch Panels. VIA! Touch Panels require ELAN 16 Volt DC power supplies. Use the 16V/10A power supply to power up to ten VIA! Touch Panels. Use the 16V/4A power supply to power up to 4 VIA!s.

When using a VIA! Valet, a PVIA1 Valet Wall Plate must be used. One PVIA1 Wall Plate is included with each VIA! Valet. The installer has the option of using the included PVIA1 power supply, or one of the other 16V power supplies to provide power to the Valet.

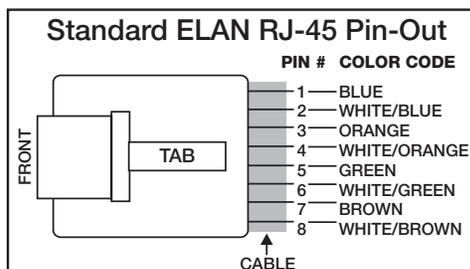
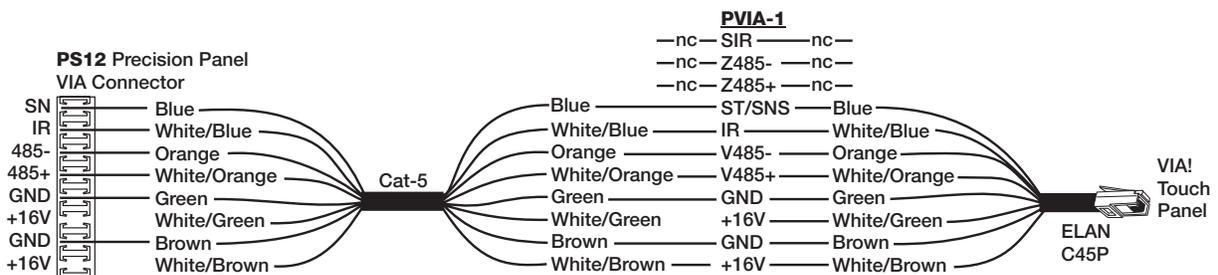
PS12 to VIA! Touch Panel



PS12 to PVIA1VALET (Using 16 VDC from PS12)



PS12 to PVIA1VALET(Using 16 VDC from PVIA1)



When connecting a PVIA1 Valet Wall Plate to the PS12, use either the included PVIA1 power supply connected to the PVIA1 Wall Plate, or a power supply connected to the PS12.

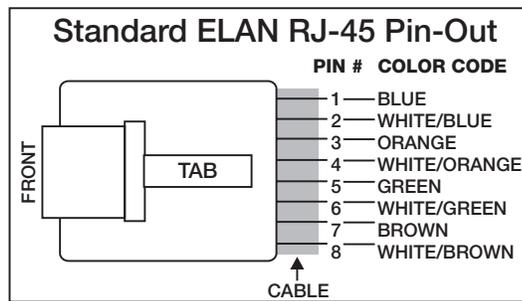
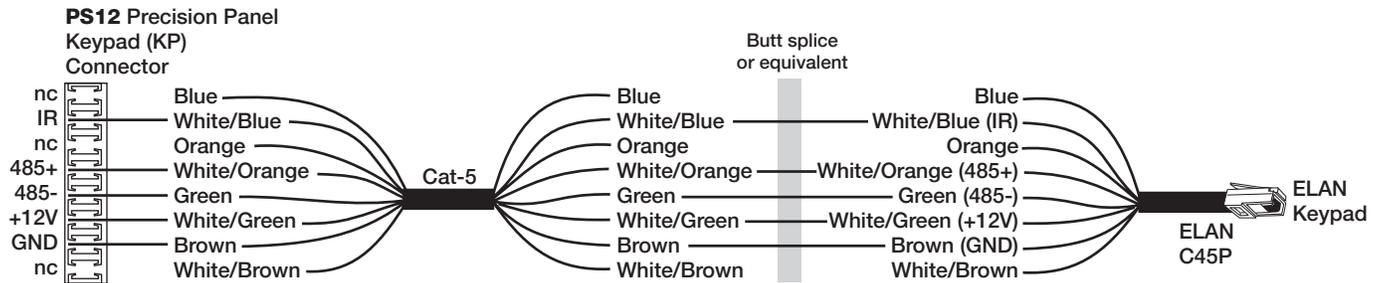
DO NOT USE BOTH POWER SUPPLIES!

PS12 Rear Panel Connections (continued)

Keypad Connections

Keypads will punch-down to the rear of the PS12 at the Keypad punch-down locations. These locations are labelled KP1, KP2, etc. corresponding to the zone that the keypad(s) will control. Two keypads can connect to the PS12's rear panel for each zone. If using more than 2 keypads per zone, make connections off of the PS12 and use jumper wires to punch-down to the correct location. The diagram below shows the correct wiring for one keypad in one zone.

PS12 To Keypad Connections



IMPORTANT NOTE Keypads, VSEs, & IR

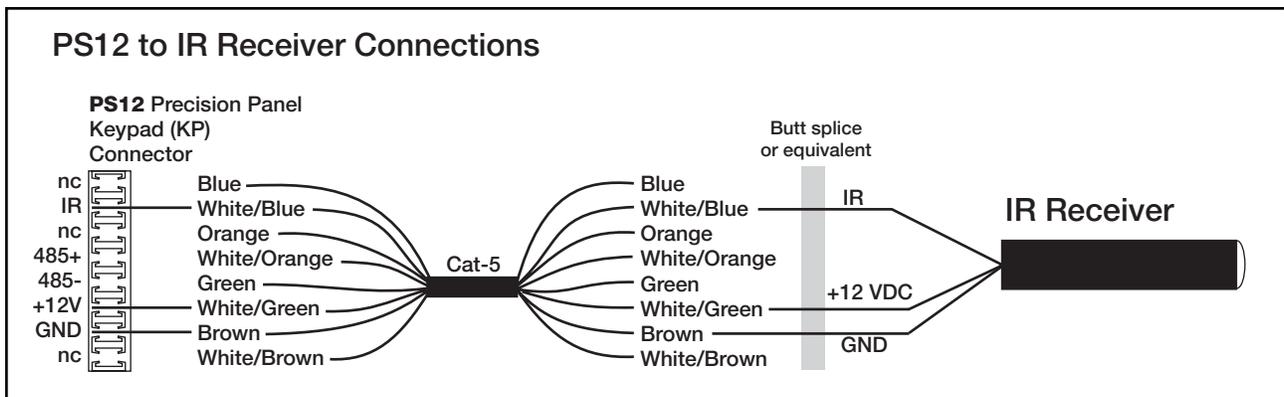
Each ZONE KEYPAD INPUT RJ45 jack on the S12 provides 12VDC 300mA.

You may choose to load each of the S12's ZONE KEYPAD INPUTS with any combination of ZPADs, IR Receivers, or Electronic Volume Controls as long as the total current consumption **DOES NOT EXCEED 300mA.**

Keypad w/IR Tube = 65mA
Z025 = 85mA
Electronic Volume Control = 40mA
Additional IR Receivers = 10mA

IR Receiver Connections

Stand-alone IR receivers can easily connect to the PS12 KP punch-downs. Connect +12V, IR, and GND to the specific zone that is to be controlled.



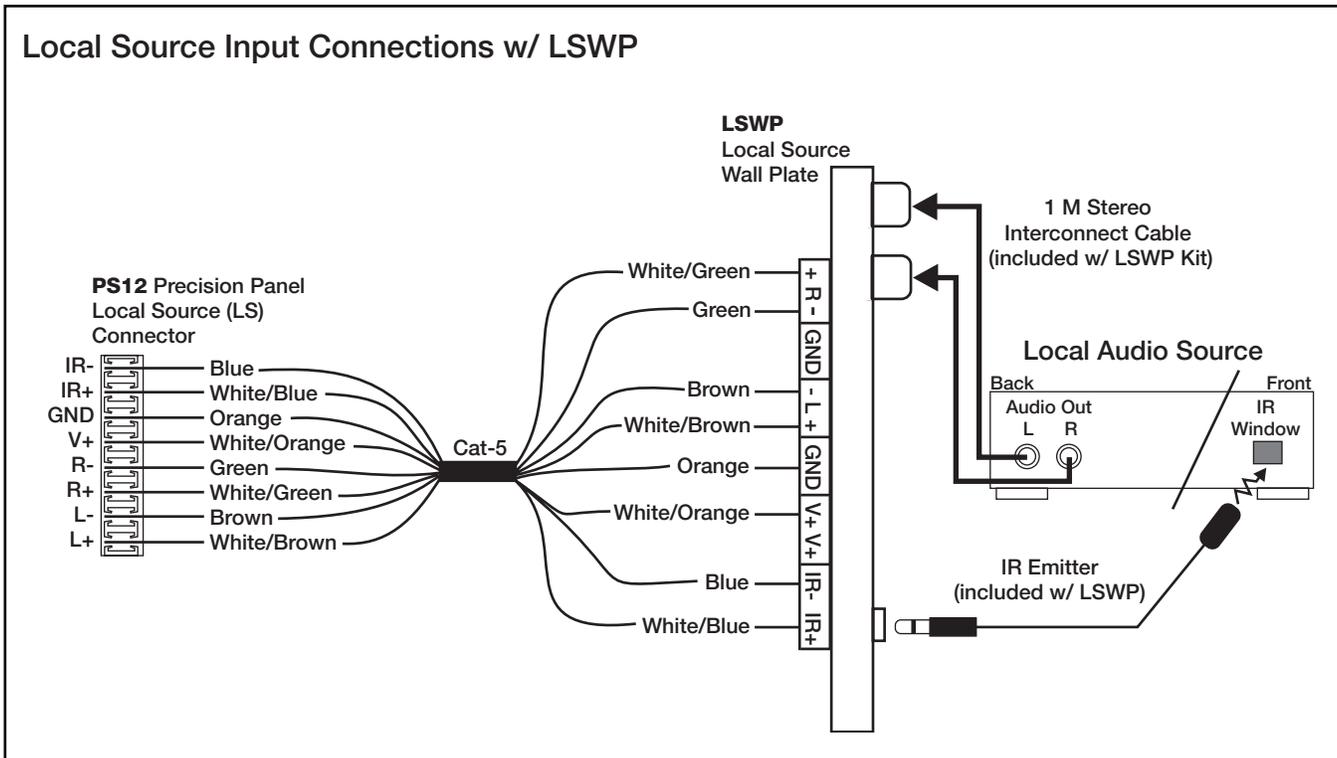
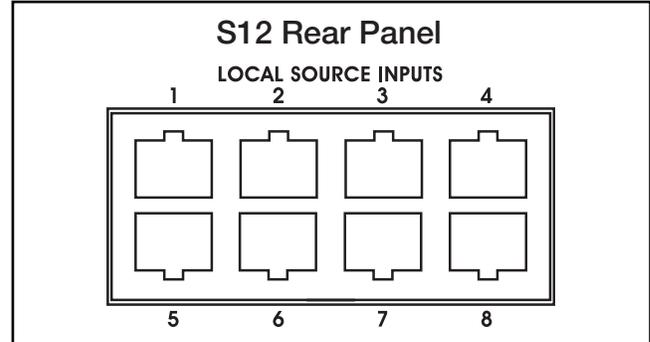
PS12 Rear Panel Connections (continued)

Local Source Input Connections

The S12 has provisions for one local or 'private' audio source per zone. Designed for use with the System12's eight Local Source Inputs, the LSWP Local Source Wall Plate Kit sends audio from any local source (i.e. a CD player in the Master Bedroom) back down to the S12, and IR control signals from the S12 back to the local source.

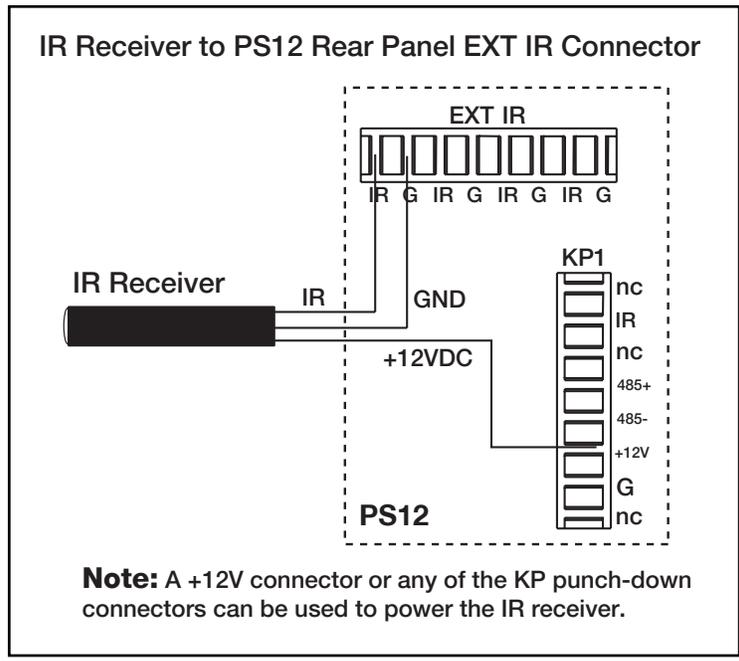
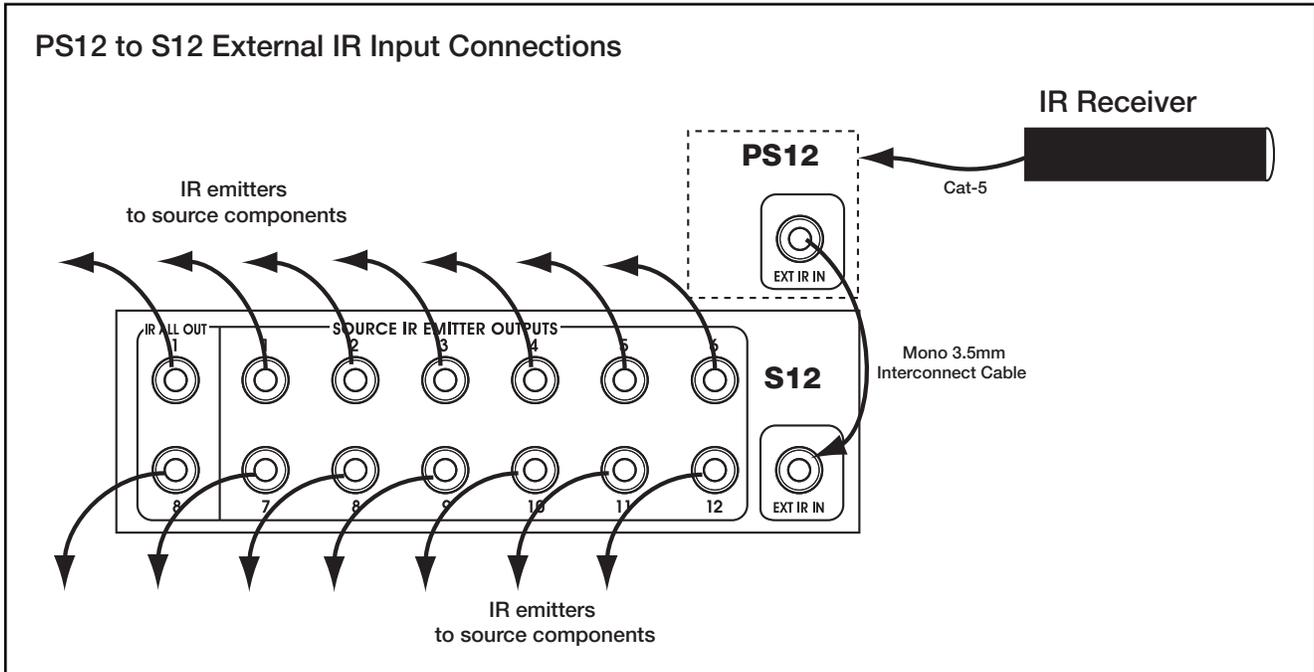
Audio and IR are transmitted over a single run of Cat-5 cable to the Local Source RJ-45 jacks on the S12. Balanced differential line drivers ensure noise-free audio from sources located up to 300 feet from the S12. An IR OUT jack on the wall plate allows connection of an IR emitter (included) for control of the source from that zone's keypad or touch panel.

Up to eight LSWPs, one for each zone, can be connected to a PS12. Systems with more than one S12 (and you can link up to four of them!) can accommodate eight LSWPs per S12.



PS12 Rear Panel Connections (continued)
External IR Input (EXT IR IN) Connections

Use the External IR Input to send IR from a location that is not part of a zone to the S12 in order to control system sources. By default, IR routed in this way comes out all of the source IR Emitter Outputs and the two 'ALL' IR Outputs simultaneously. VIA!®Tools Programming software provides a method to route the IR signal out of any combination of IR ports.



PS12 Rear Panel Connections (continued) VSE/VEHP/VSE100 Electronic Volume Control Connections

ELAN electronic volume controls are ideal for use with the System12. These devices do several things in relation to system design:

- Provides volume control in Fixed zone out areas (usually sub-zones)
- Impedance matching so that multiple speakers can connect to the same amp channels
- IR input and output to control volume as well as system and source control

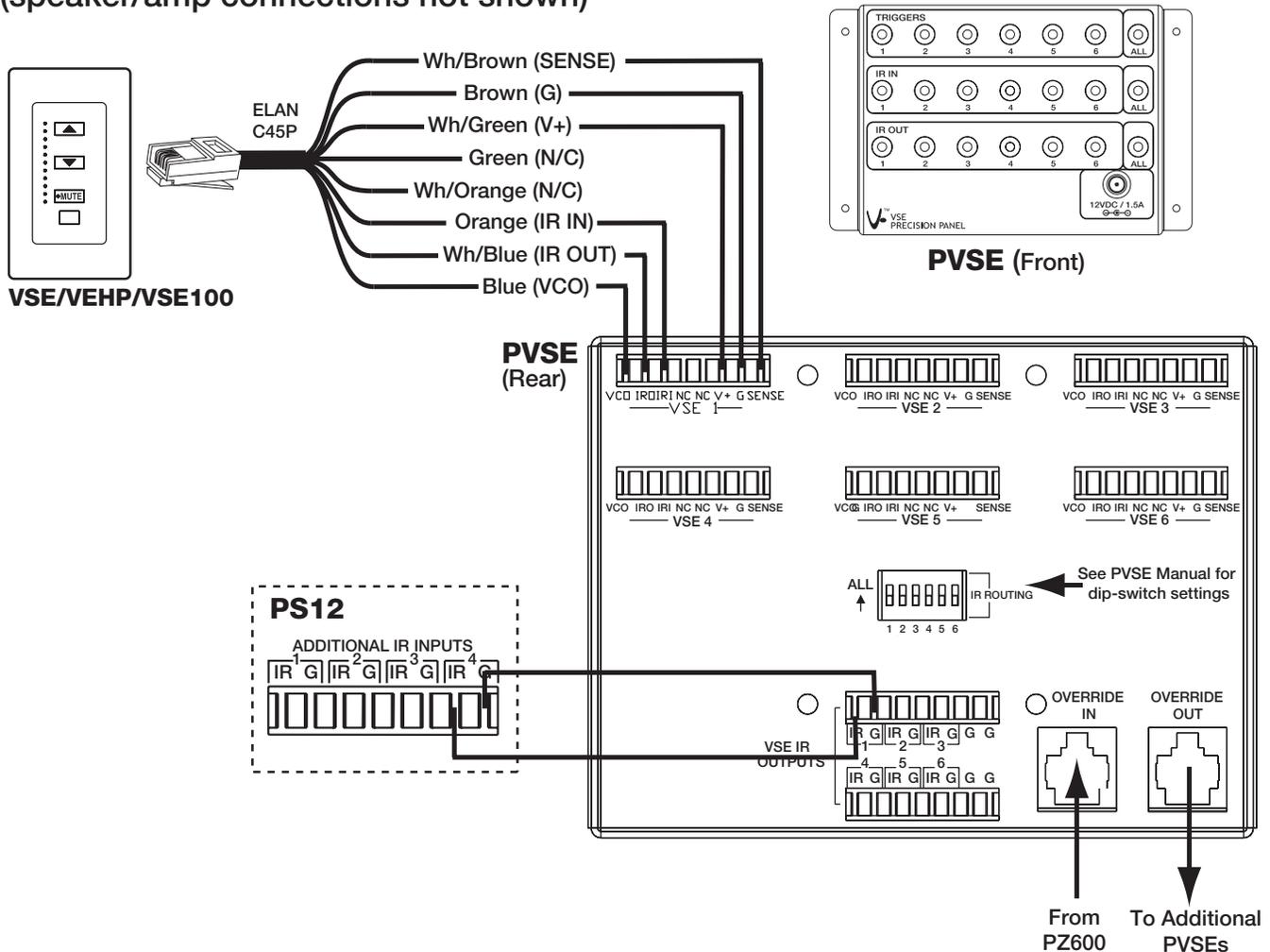
PVSE Precision Panel

Use of ELAN's PVSE Precision Panel will greatly simplify integration of electronic volume controls with the S12.

The back of the PVSE features six clearly labeled 110 punch-down blocks that provide independent connections for Override, IR and Sense; plus two additional punch-down connectors for easy routing of VSE IR signals to the System12 Precision Panel (PS12). Two RJ-45 jacks on the rear of the panel make it easy to route override signals to the PZ600 Communication Controller Precision Panel, and to link multiple PVSE panels together. There's also a bank of six dipswitches that allow configuration of the front-panel VSE-specific IR Out ports into 'ALL' IR ports.

The diagram below shows the wiring of a single electronic volume control to a PVSE, then to the PS12.

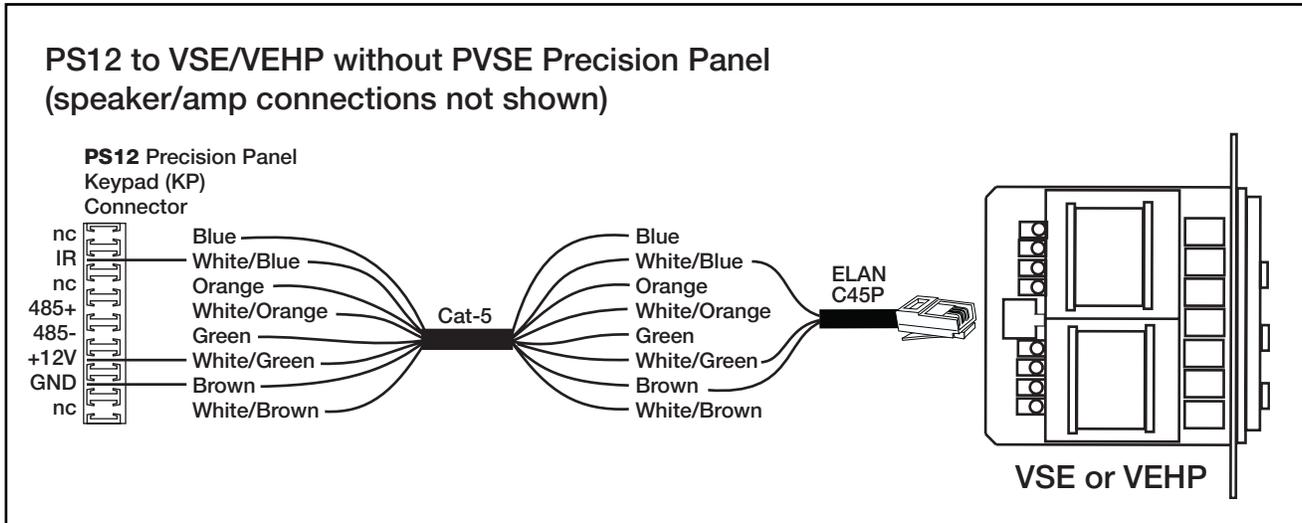
PVSE/PS12/Electronic Volume Control Connections (speaker/amp connections not shown)



PS12 Rear Panel Connections (continued)

PS12 to VSE/VEHP Connections (No PVSE Precision Panel)

It is possible to connect electronic volume controls to a PS12 without using a PVSE Precision Panel as the following diagram shows. IR, +12V, and GND are connected to the PS12.



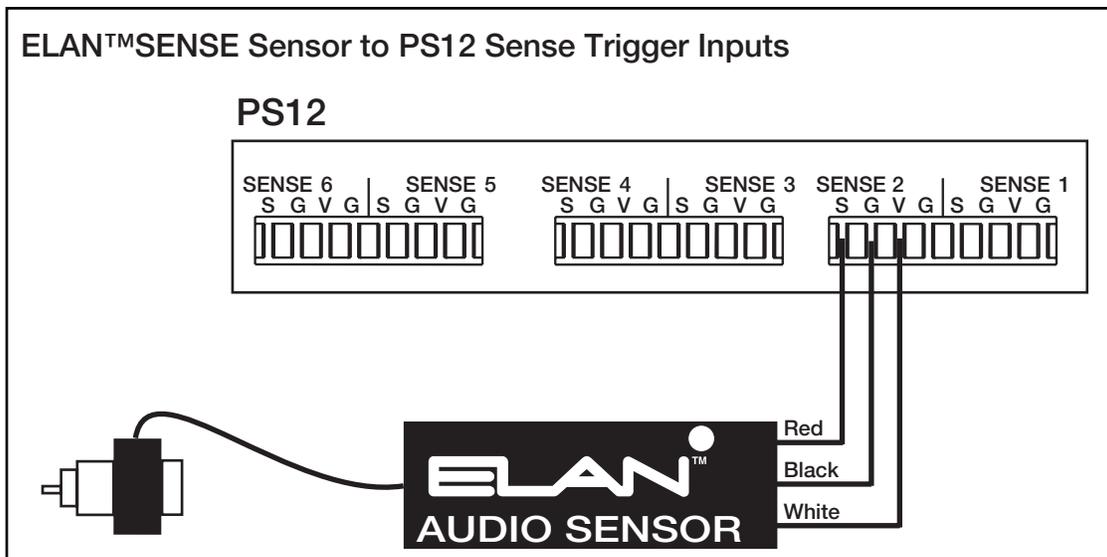
Sense Trigger Input Connections

The Sense Trigger Inputs of the S12 are primarily for use with VIA!® Touch Panels. An ELAN™SENSE Sensor can be connected that will cause VIA! Touch Panels to execute IR or serial commands. Use VIA!®Tools setup software to set up Trigger Input functionality. Wiring the Sense Inputs consists of punching down Voltage (V), Sense (S), and Ground (G) as shown below.

ELANSENSE Sensors provide for a multitude of automation requirements:

- **Audio Sensor:** Detects line-level audio utilizing an RCA adaptor.

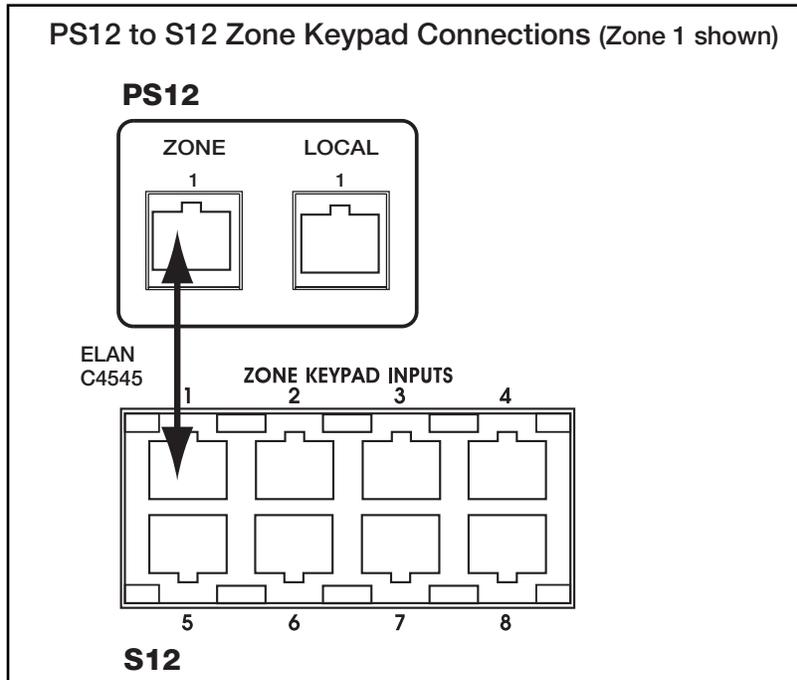
- **Video Sensor:** Detects Composite video utilizing an RCA adaptor.
- **Light/LED Sensor:** Detects ambient light or multi-color LEDs.
- **Contact Closure Sensor:** Detects closed-contact ON/OFF status.
- **Current/Magnetic Sensor:** Detects electrical current through power cords or magnetic flyback.
- **Voltage Sensor:** Detects 3-24 Volts AC or DC.
- **Doorbell Sensor:** Detects multiple doorbell signals for advanced switching functionality.



PS12 Front Panel Connections

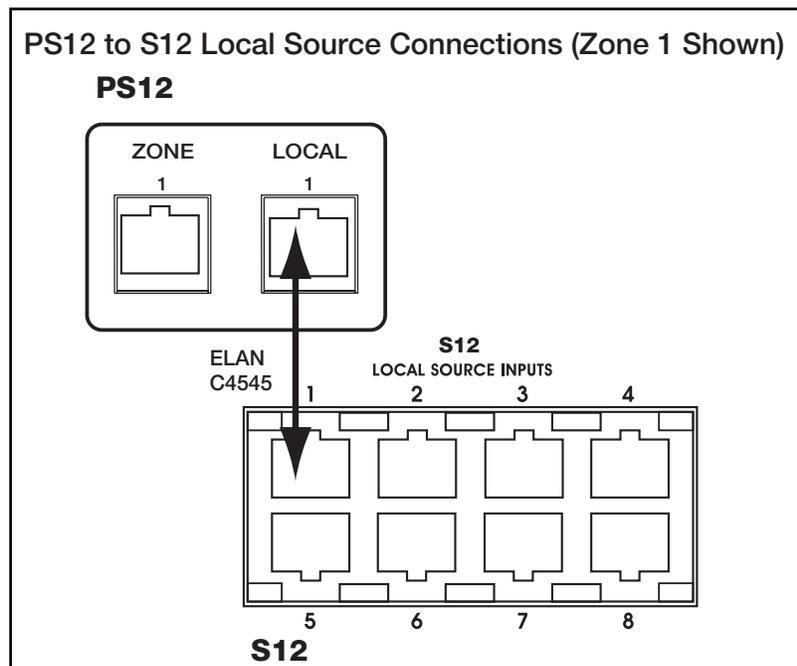
Zone Keypad Input Connections

Connect a straight-through RJ-45 interconnect cable (ELAN C4545 1 or 2 meter) between the S12's 1-8 Zone Keypad Inputs and the PS12's Zone 1-8 RJ-45 jacks. This routes all keypads, touch panels, and IR receivers punched-down on the back of the PS12 directly to the S12.



Local Source Input Connections

Once the local sources are punched-down on the rear of the PS12, plug an RJ45 interconnect cable (ELAN C4545) between the Local Source RJ-45 jack of the PS12 and the corresponding Local Source Input RJ-45 jack of the S12. These local sources will act as a thirteenth source, but will only be available in the zone to which they are connected.

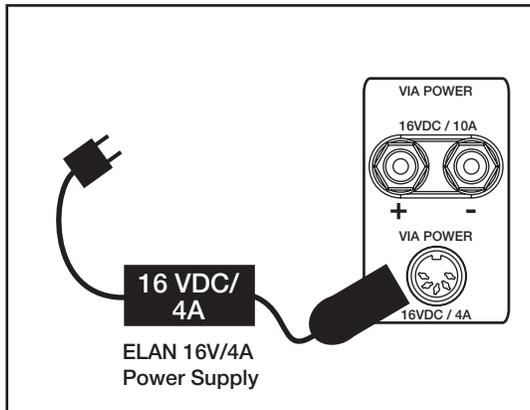


PS12 Front Panel Connections (continued)

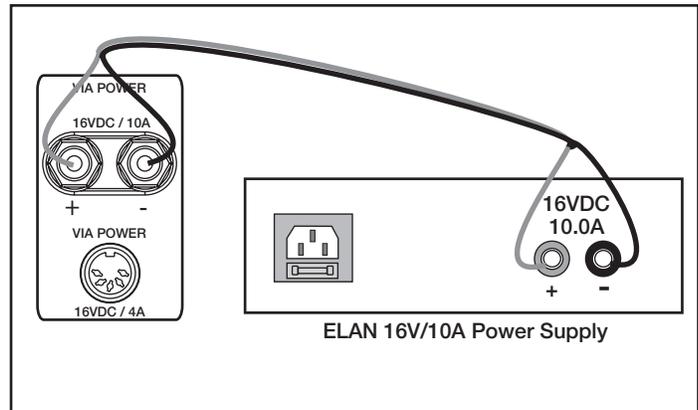
VIA!® Power Connections

It is possible to connect and power up to ten VIA! Touch Panels using the PS12 and a VIA! power supply. Use an ELAN 16VDC/4A power supply for up to four VIA! Touch Panels. Use an ELAN 16VDC/10A power supply for five-to-ten VIA! Touch Panels. Only one power supply should be connected to the PS12 at any time!

16V/4A Power Supply Connections

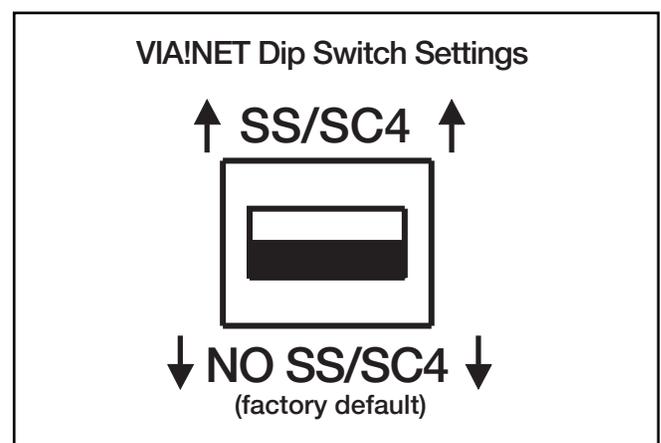
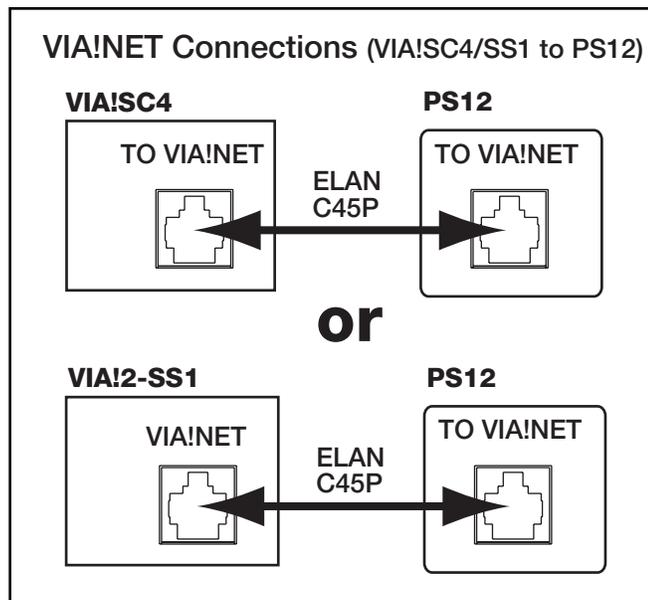


16V/10A Power Supply Connections



TO VIA!®NET Connections

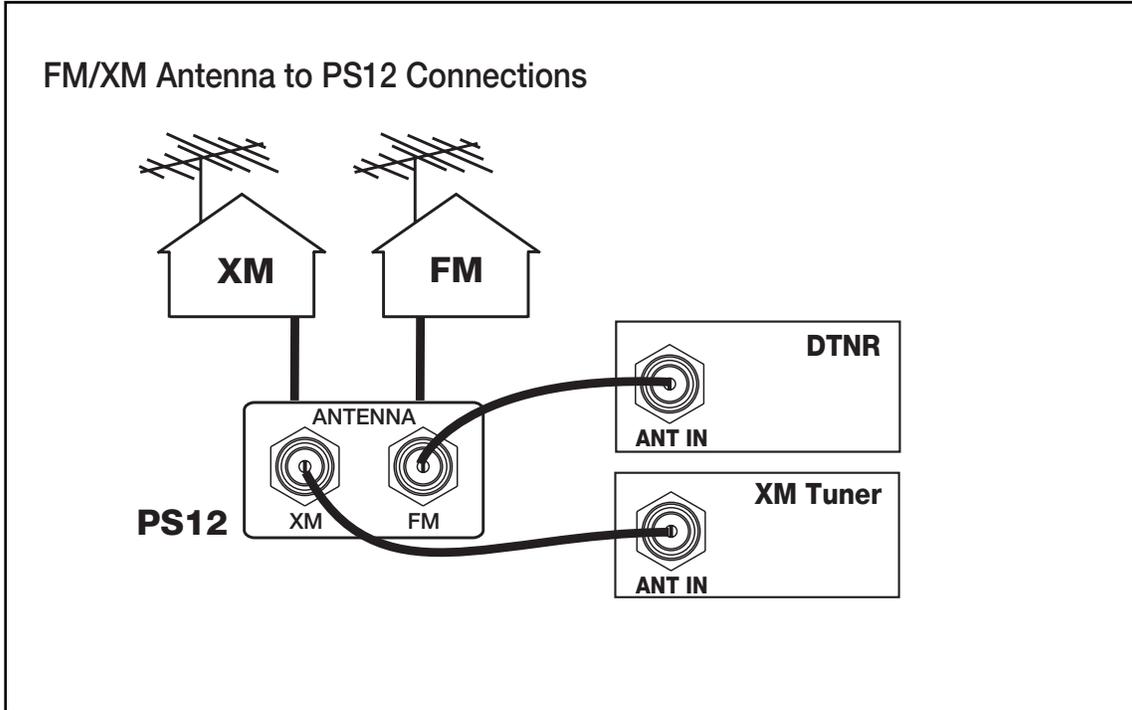
This connector allows the S12 to communicate with a VIA! SC4 Serial Controller, VIA!2-SS1 System Station, or other VIA!NET device. Connect a C4545 RJ-45 interconnect cable between the SC4 or other device, and the S12's TO VIA!NET jack. It is necessary to flip the dipswitch on the rear of the PS12 labeled **SS/SC4** and **NO SS/SC4** to the **SS/SC4** (upper) position when connecting to any VIA!NET device. Place the switch in the lower position (**NO SS/SC4**) when not connecting to a VIA!NET device. See p. XX for additional connections to the SC4 and/or SS1.



PS12 Front Panel Connections (continued)

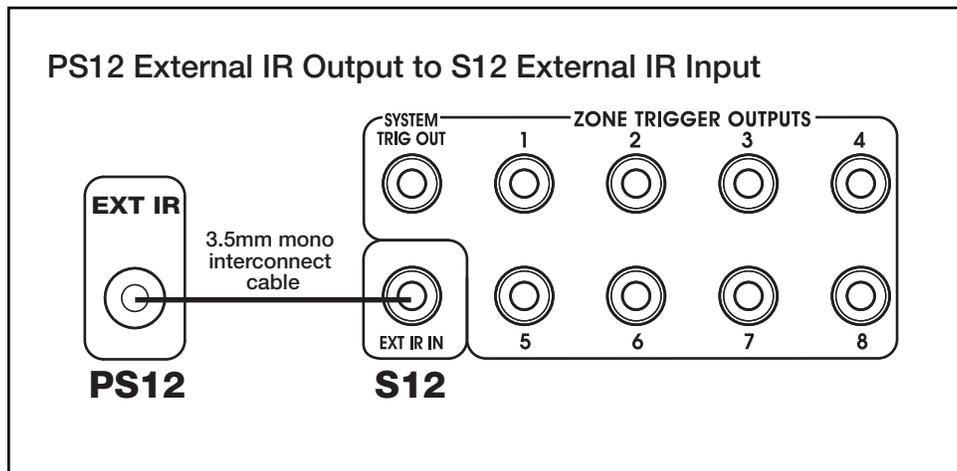
Antenna Connections

The PS12 provides F-to-F barrel connectors for the connection of FM and XM antennas to the ELAN DTNR Digital Dual Tuner, XM3 Satellite Radio Tuner (coming 2005), or other tuners.



External IR Input Connections

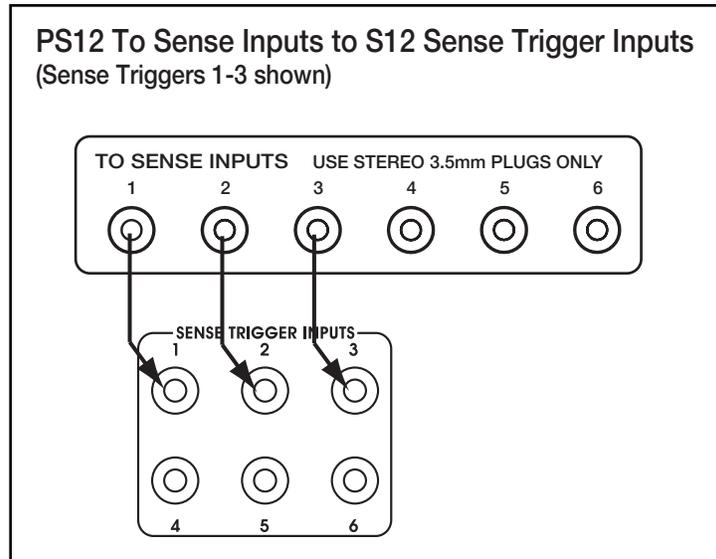
The External IR Input is a powerful feature that can enable specialized functionality in situations where system-wide (not zone-specific) IR control is required. Connect a 3.5mm mono interconnect cable between EXT IR of the PS12 and EXT IR IN of the System12.



PS12 Front Panel Connections (continued)

To Sense Inputs

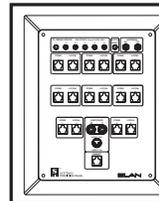
After punching-down sensors to the Sense Trigger Inputs on the rear of the PS12, simply plug 3.5mm stereo interconnect cables from the front of the PS12 to the desired Sense Trigger Inputs of the S12. Make absolutely sure to maintain correct input/output relationship (Sense 1 on the back of the PS12 must be connected to Sense 1 on the S12).



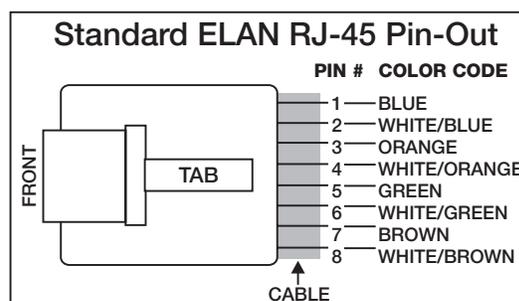
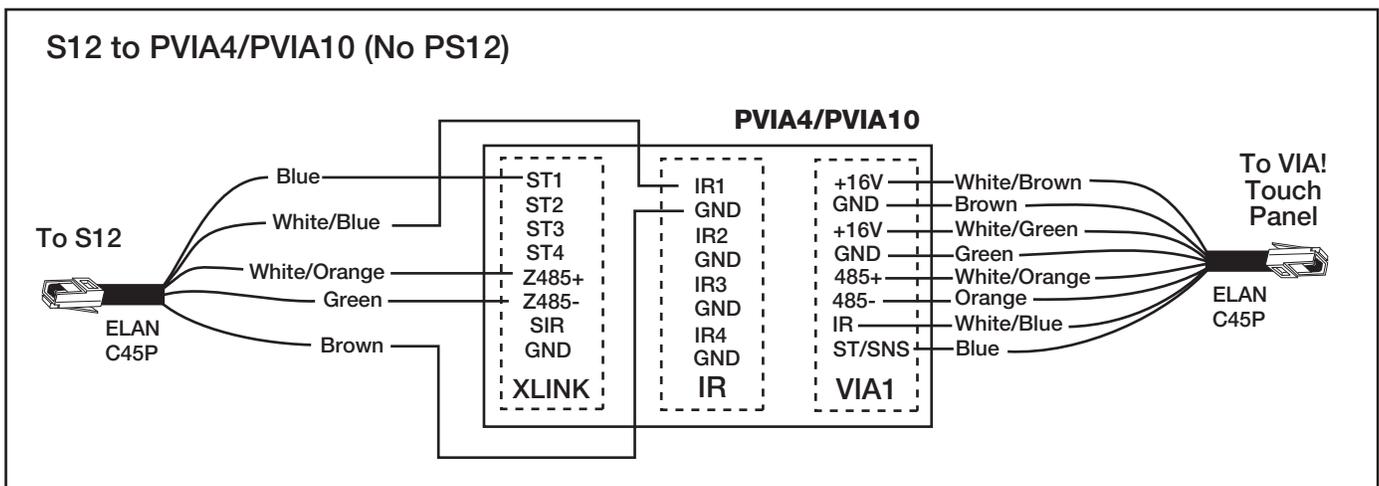
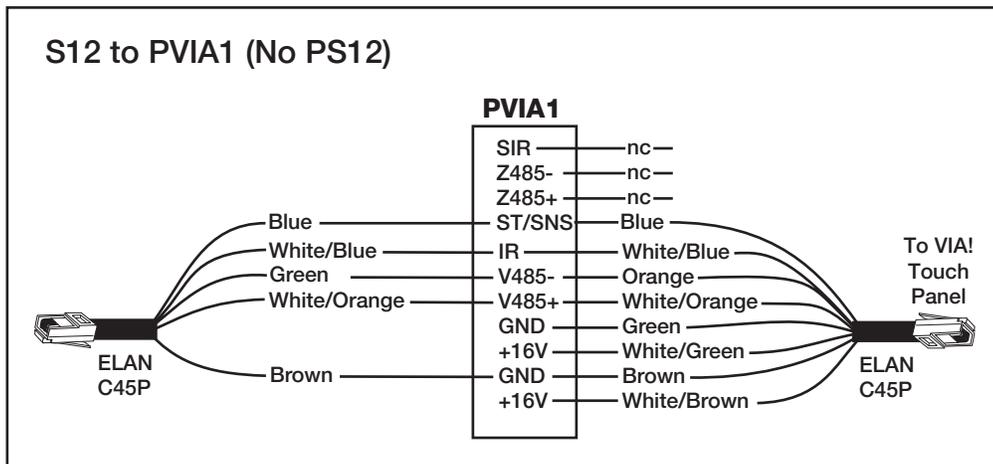
S12 Connections When NOT Using a PS12 Precision Panel

VIA!® Touch Panel Connections

If not using the PS12, it is necessary to use a PVIA Wall Plate when connecting VIA! Touch Panels to the S12. VIA! Touch Panels require the 16V power supplies that are included with each PVIA wall plate (PVIA1, PVIA4, and PVIA10).



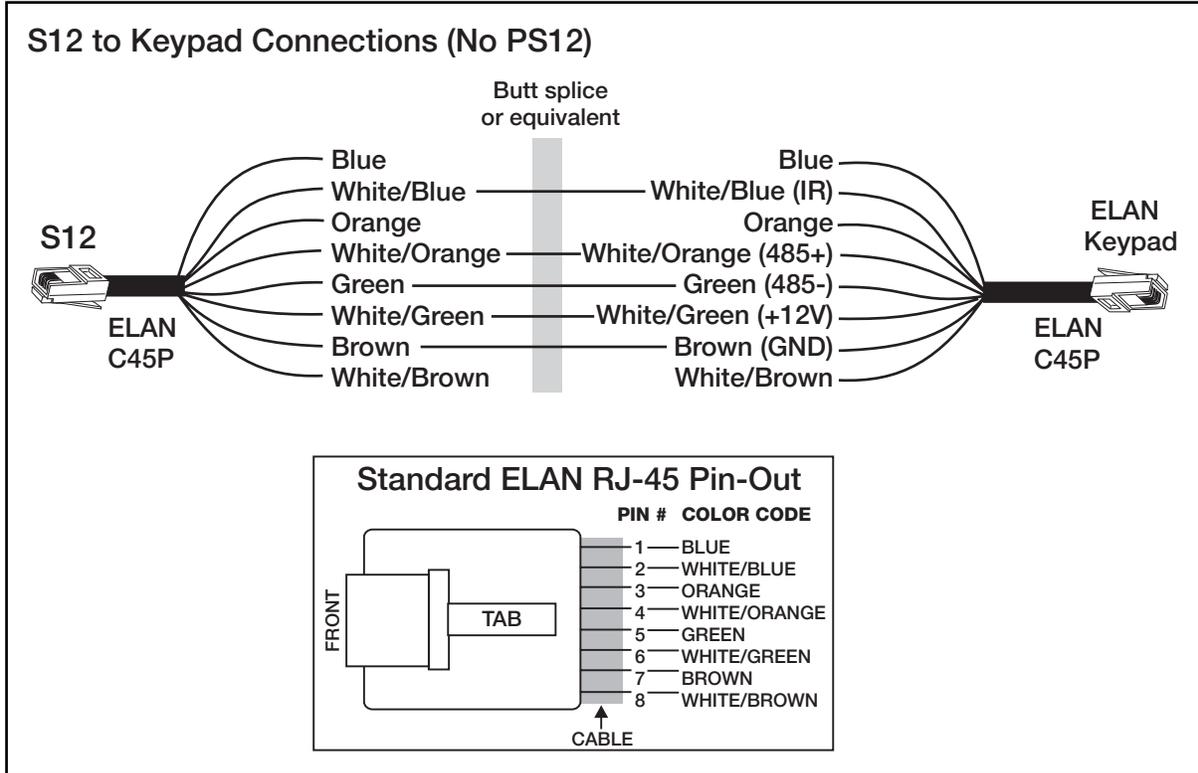
ELAN Precision Panels save time and make sense out of complex wiring jobs!



Connections When Not Using a PS12 (continued)

Keypad Connections

ELAN keypads require IR, RS-485+, RS-485-, 12 Volts DC, and Ground to function. Make these connections as shown below. Multiple keypads in the same zone require parallel connections. For simplicity, all pins can be connected straight through.



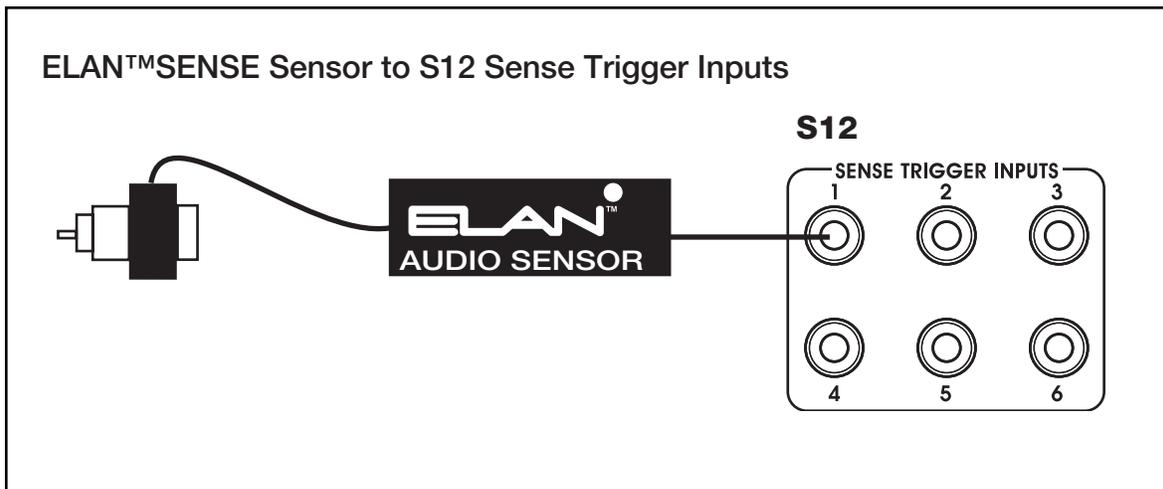
Sense Trigger Input Connections

Information from ELAN™SENSE Sensors connected to the S12's Sense Trigger Inputs is used to trigger events that have been programmed into VIA!® Touch panels.

To connect ELANSense sensors directly to the S12, simply plug the 3.5 mm stereo interconnect cable of the Sensor into the desired Sense Trigger Input.

If long runs are required, the 3.5 mm stereo interconnect cable must be cut off and the cable extended using Cat-5.

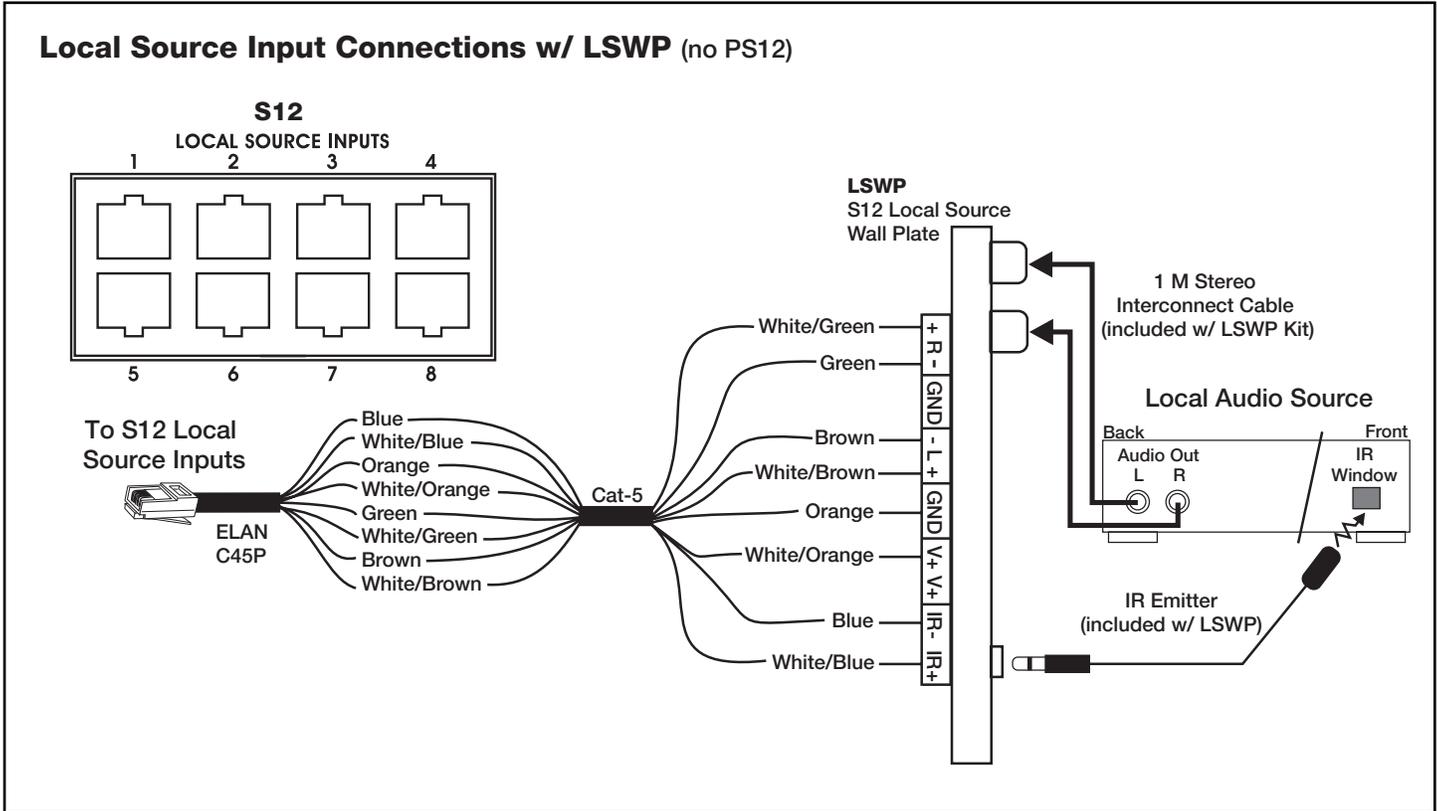
Utilize VIA!®Tools setup software to create IR or serial command strings for automated functions. See VIA!TOOLS Help for additional information about programming Sense Triggers.



Connections When Not Using a PS12 (continued)

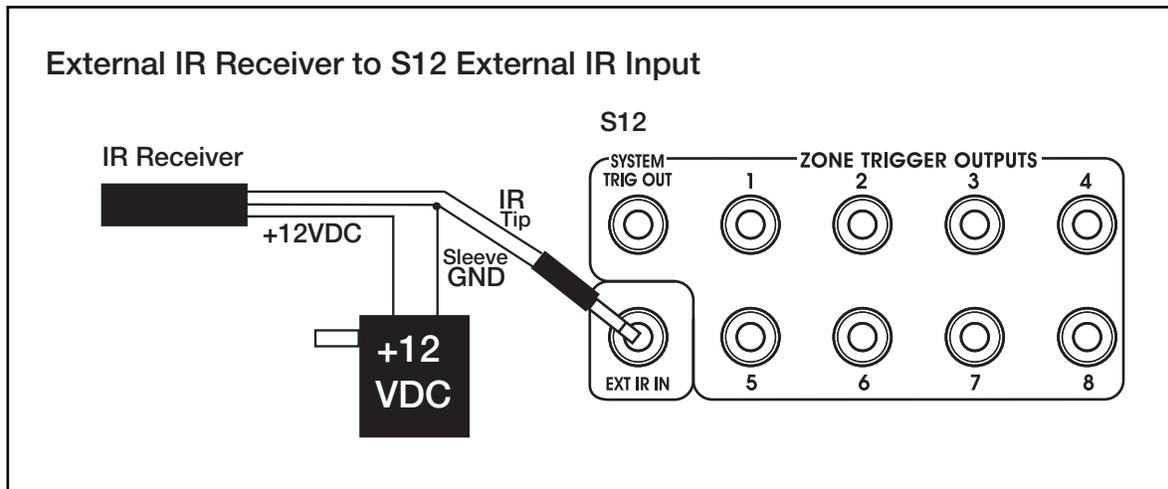
Local Source Connections

Connect local audio sources to the LSWP Local Source Wall Plate using the stereo interconnect cables provided. Use Cat-5 from the LSWP to the S12, and connect as shown below. Only one local source per zone can be connected.



External IR Connections

It is necessary to provide +12VDC for any External IR device when not using a PS12 Precision Panel. Connect only the IR and GND leads from an IR receiver, keypad, or other IR device to the EXT IR IN port on the S12. See VIA!TOOLS Help for information about External IR programming.

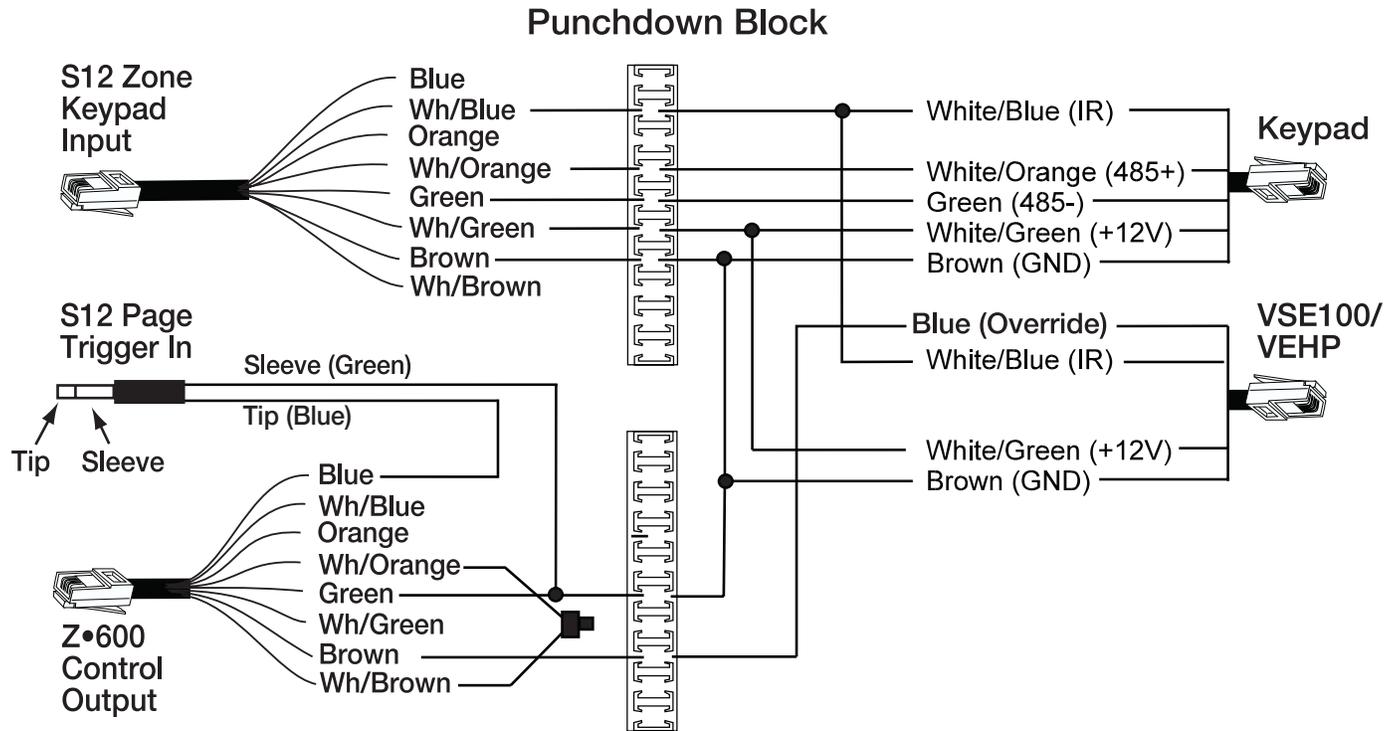


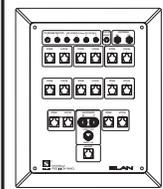
Connections When Not Using a PS12 (continued)

VSE/VSE100/VEHP Electronic Volume Control Connections

(No PVSE)

If not using a PS12 or a PVSE Precision Panel, interconnects will need to be made between the electronic volume control, the S12, the Z•600 Communications Controller, and the system amplifier. These connections include IR, 12VDC, Ground, and Override, as shown below. Please note the Z•600 Control Output connections: WH/ORANGE ties to WH/BROWN. GREEN is VC- and Brown is VC+.





ELAN Precision Panels save time and make sense out of complex wiring jobs!

Z•600 Communications Controller Connections

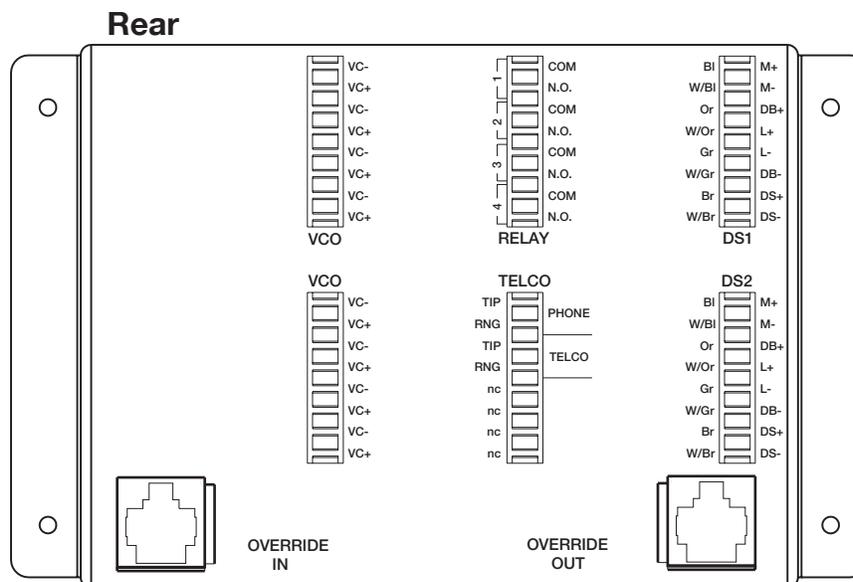
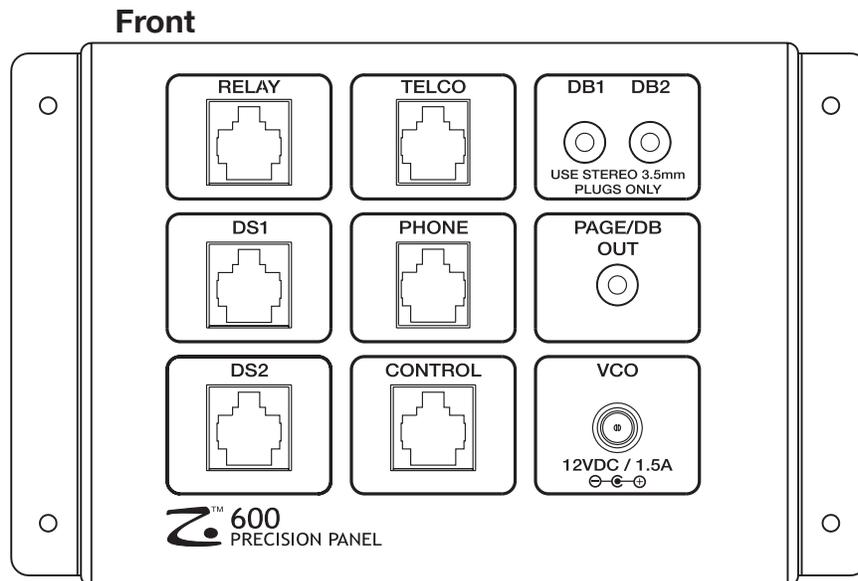
PZ600 Precision Panel

The PZ600 Precision Panel facilitates the connection of telephone service, page, doorbell and override signals, relays and door stations to the Z•600 Communications Controller and ELAN S Series multi-room controllers.

The back of the PZ600 features 110 punch-downs for the connection of incoming telephone service, telephone extensions, 2 ELAN Door Stations, 4 Relays and 8 Volume Control Override signals. There's also an RJ-45 jack for a quick and easy link to the PVSE Electronic Volume Control Precision Panel.

The front panel of the PZ600 has RJ-11 jacks for Telco and Phone, and RJ-45 jacks for Relays, Override Control and 2 Door Stations. All just plug right into the back of the Z600 Communications Controller. Doorbell 1 & 2 Trigger jacks are also provided for the easy connection to S12 or S6 Sense Inputs, as is a Page/Doorbell Out jack for connection to the S12. A front panel DC power jack allows connection of an ELAN power supply if using multiple volume controls with override.

See VIA!®TOOLS Help file for information about programming discrete DB1 and DB2 functions for the S12.

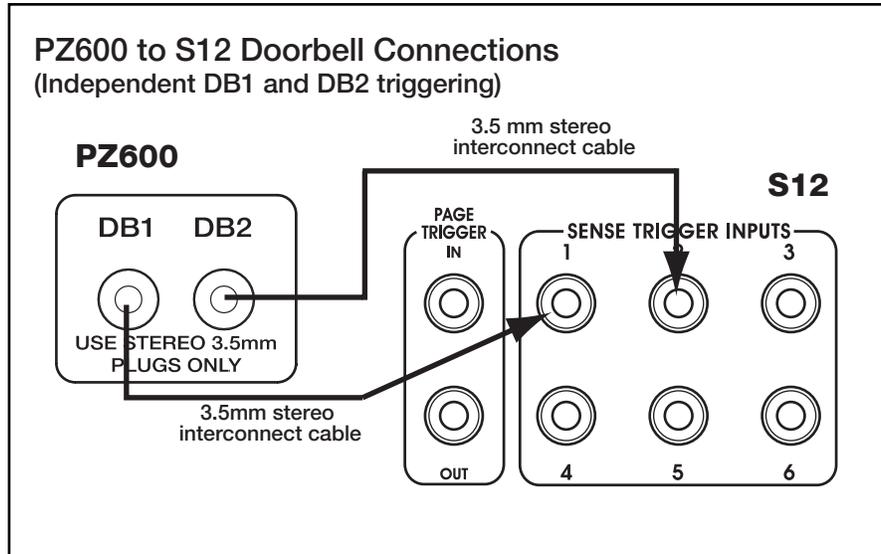


Z•600 Communications Controller Connections (continued)

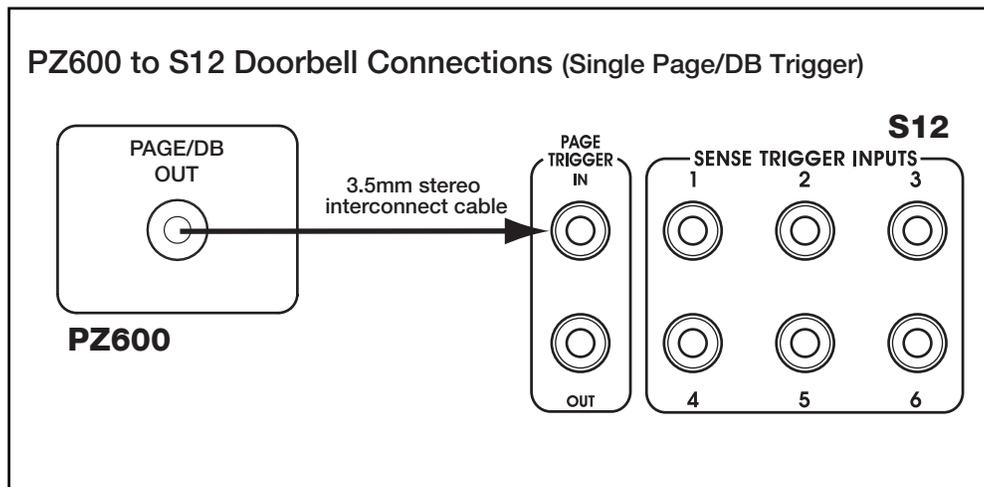
PZ600 Precision Panel To S12 Connections

When using a Z•600 Communications Controller with the S12, ELAN recommends a PZ600 Precision Panel. Relevant connections are the PAGE/DB OUT, DB1, and DB2. Use a 3.5mm stereo interconnect cable to make this connection as follows:

- If using the VIA!® Touch Panel 'Wake w/ Doorbell' feature, connect DB1 to Sense Input 1, and DB2 to Sense Input 2 of the S12. VIA!®Tools setup software will allow differentiation of the two doorbell triggers and allow the VIA! Touch Panels to display different cameras when different doorbells are activated.



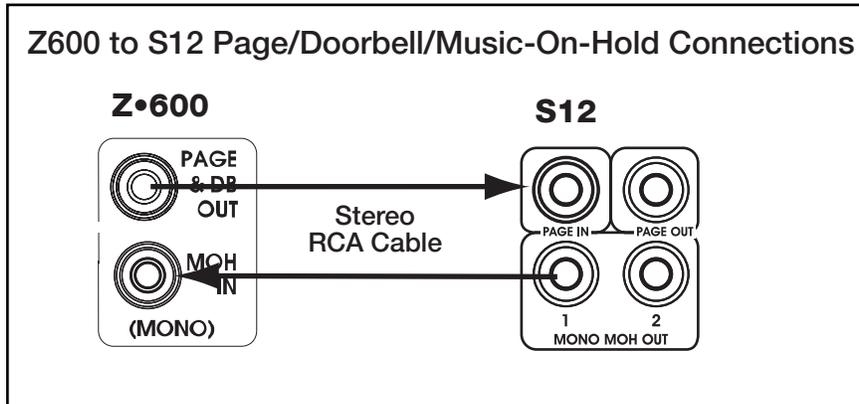
- In any circumstance where independent door camera viewing is not required, connect a 3.5mm stereo interconnect cable from the PAGE/DB OUT of the PZ600 to the PAGE TRIGGER IN of the S12.



Z•600 Communications Controller Connections (continued)

Z•600 to S12 Audio Connections

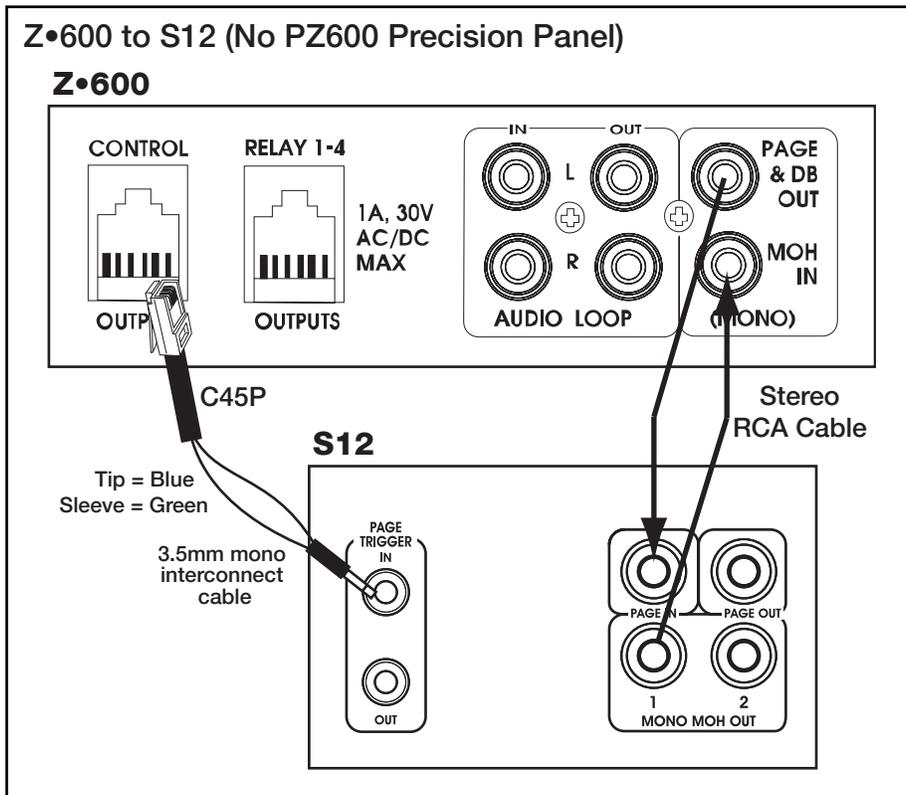
Using a stereo RCA interconnect cable, connect Z•600 PAGE & DB OUT to the S12's PAGE IN, and one of the S12's MONO MOH OUT jacks to the MOH IN of the Z•600.



Z•600 Connections (no PS12 or PZ600 Precision Panel)

The diagram below shows the necessary connections when installing a Z•600 and an S12 without using a PS12 or PZ600 Precision Panel. Required connections include:

- Control Output from Z•600 to Page IN of S12
- PG & DB OUT from Z•600 to PAGE IN of S12
- MOH OUT from S12 to MOH IN of Z•600
- PAGE OUT from S12 #1 to PAGE IN of S12 #2
(for multi-chassis systems - see System Expansion p. 54)



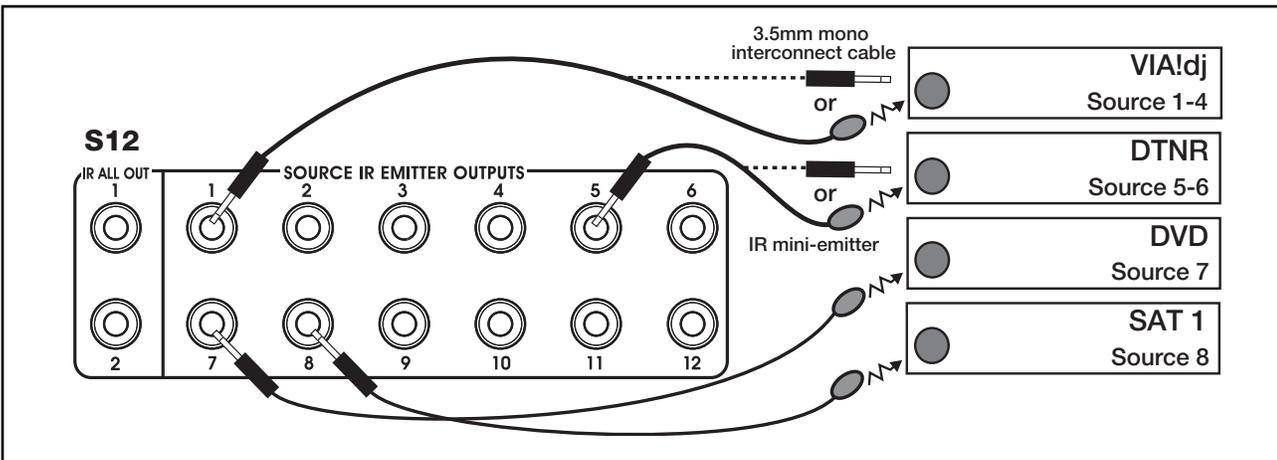
Additional S12 Connections

The following sections describe all connections that are made directly to the S12.

IR Connections

Source IR Emitter Output Connections

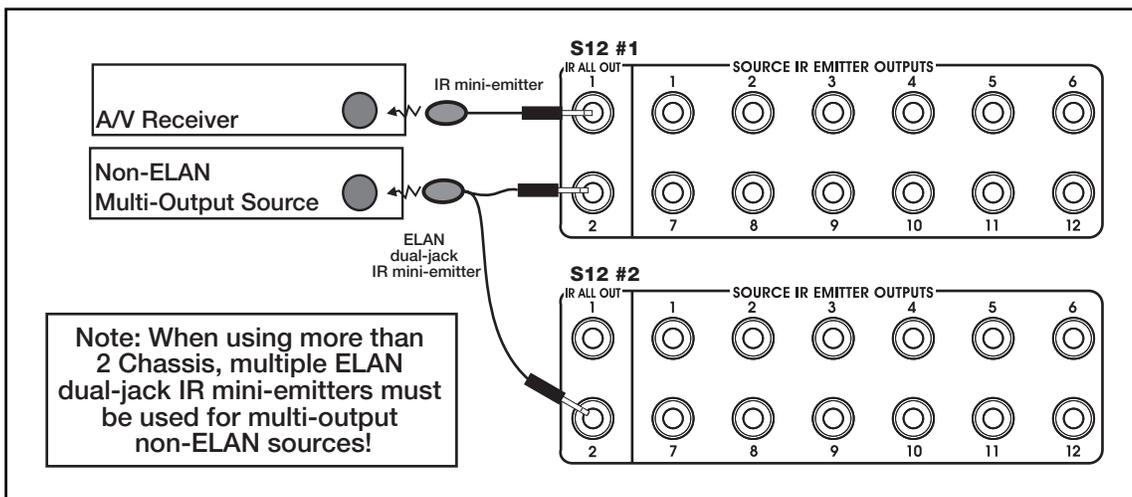
The S12 features 12 source-specific IR emitter outputs. Each of these outputs is active only when the assigned source is selected. This makes it possible to use identical source components and still have the capability of separate control. For ELAN multi-output sources such as VIA!dj or DTNR, VIA!®TOOLS setup software will automatically route IR out of each IR port that the source is assigned to. The example below shows a VIA!dj that is connected to Audio Inputs 1, 2, 3, and 4. Any of IR Emitter Outputs 1 through 4 can be used to control the VIA!dj. To connect non-ELAN multi-output sources, see **IR 'ALL' Output Port Connections** below.



IR 'ALL' Output Port Connections

Two 'ALL' IR outputs are provided for controlling additional components such as TVs or A/V Receivers that may require control regardless of the source currently selected. These ports are chassis-specific and always active: any IR signal sent into S12 Chassis #1 comes out the 'ALL' IR outputs of Chassis #1 as shown below. When a non-ELAN multi-output source requires control from more than one chassis, an ELAN Dual Plug IR emitter should be used. The 'ALL' ports are also useful when controlling several non-identical sources. For really large installations, an 'ALL' port can be routed to an IR Distribution Block and sent to several sources.

Note: 'ALL' IR port functionality does not span chassis.



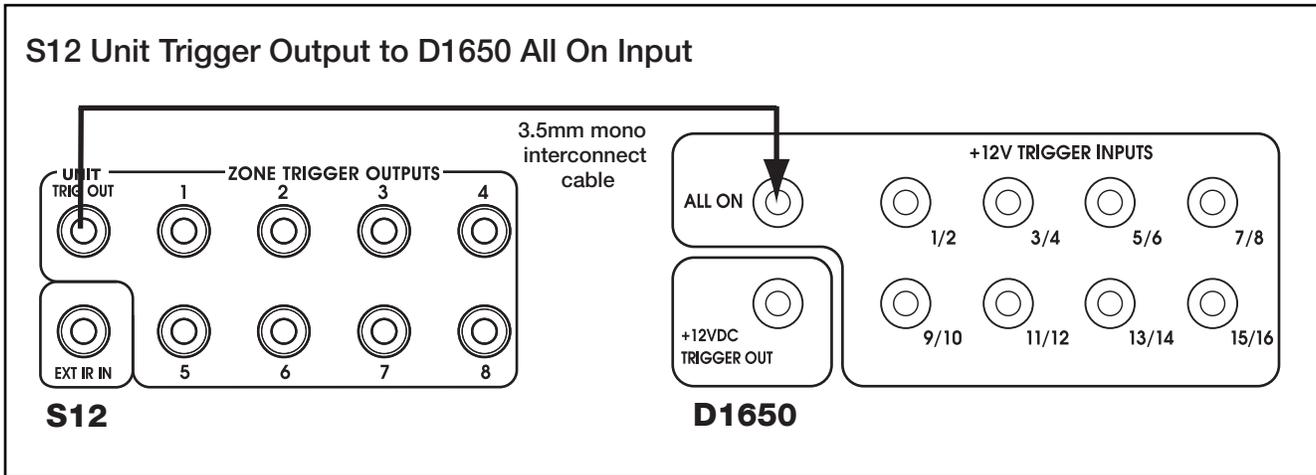
Additional S12 Connections (continued)

Trigger Output Connections

Unit Trigger Output Connections

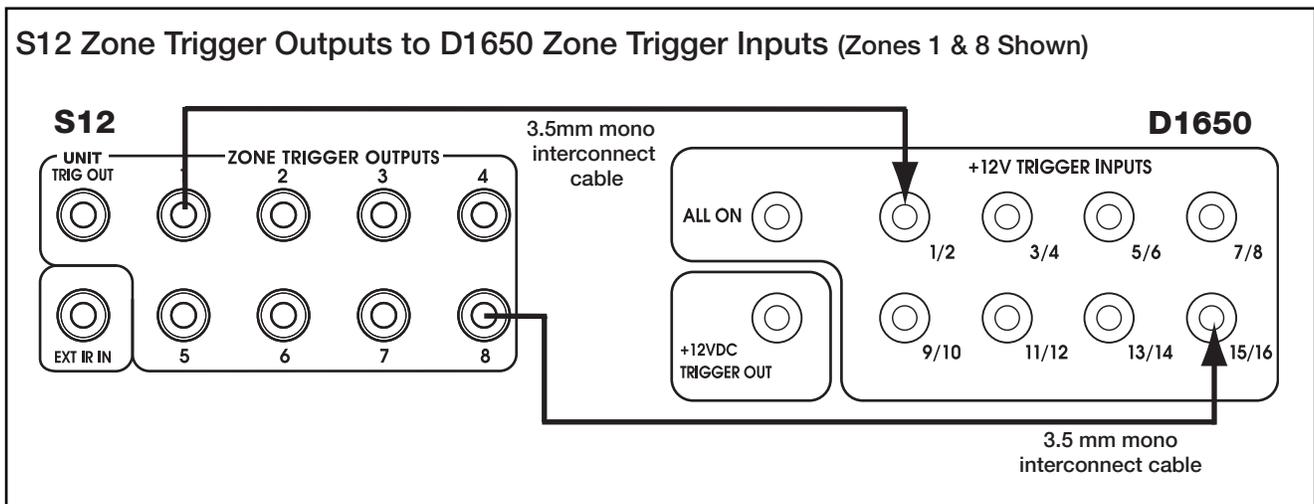
The Unit Trigger Output sends a 12VDC Trigger whenever any zone of the S12 is turned on. Use this trigger for system-wide functions such as un-muting a D1650 amplifier or turning on a Z•Power Controller.

Please note: the Unit Trigger Output is chassis-specific. If any zone of a chassis is active, that chassis' Unit Trigger Output is active.



Zone Trigger Output Connections

There are 8 zone-specific Trigger outputs on the S12. Use these when zone-specific functions are desired. For example, use the Zone Trigger Outputs to mute/un-mute specific channels on a D1200 or D1650 amplifier.

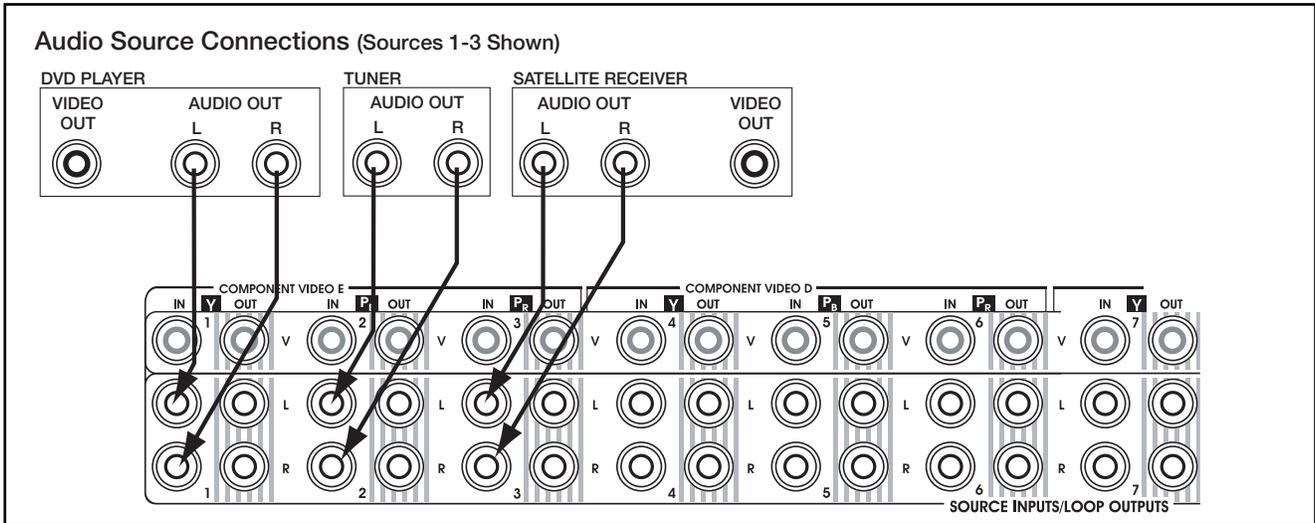


Audio Connections

There are 12 Audio Source Inputs and 12 Audio Source Loop Outputs on the S12. Each system source will be connected to a specific Source Input, allowing audio distribution to any zone of the S12. Each Source Input corresponds to the same-numbered IR Output port.

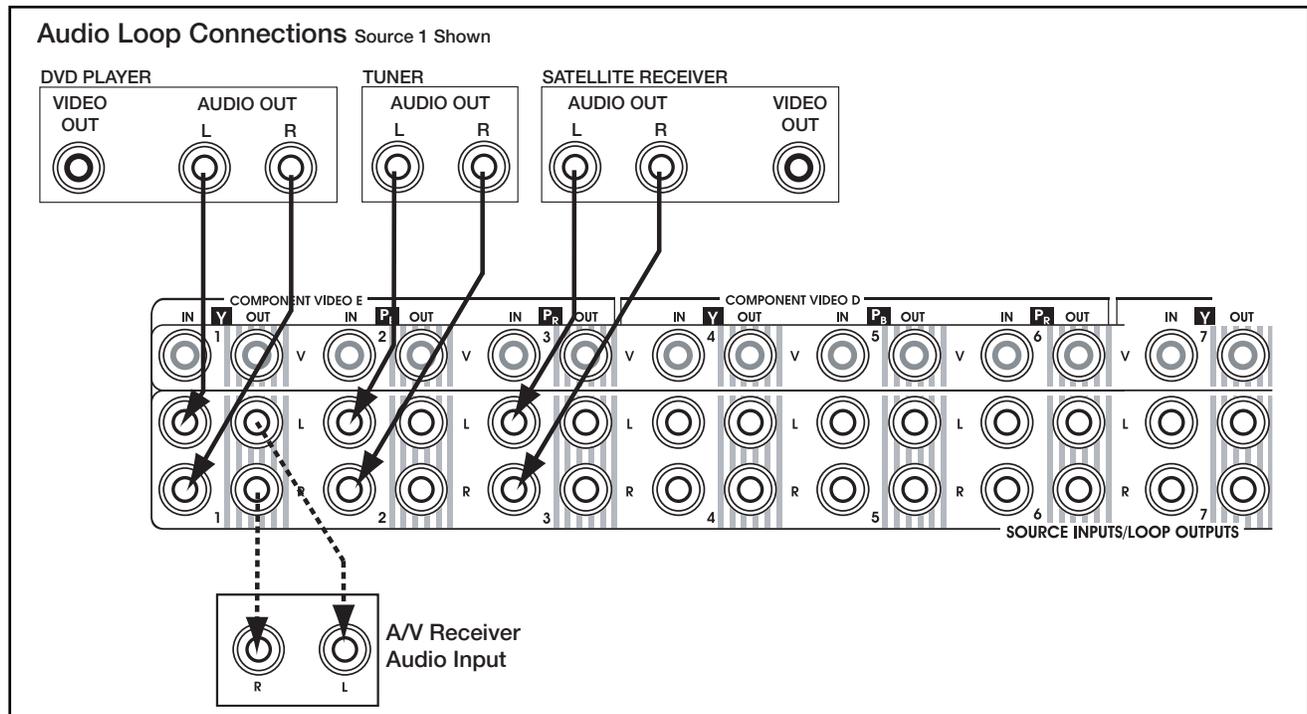
Source Input Connections

Connect the Left/Right audio output of each source to the Left/Right Source Input using stereo RCA audio cables. Make sure to maintain Left/Right channel connections.



Loop Output Connections

Ideal for sharing sources with Home Theaters, these buffered Loop Outputs pass line-level audio directly out of the corresponding Source Input. This audio is buffered, therefore no signal loss will occur. Use RCA audio cables to connect a Loop Output to a Home Theater receiver or an additional S12 chassis.

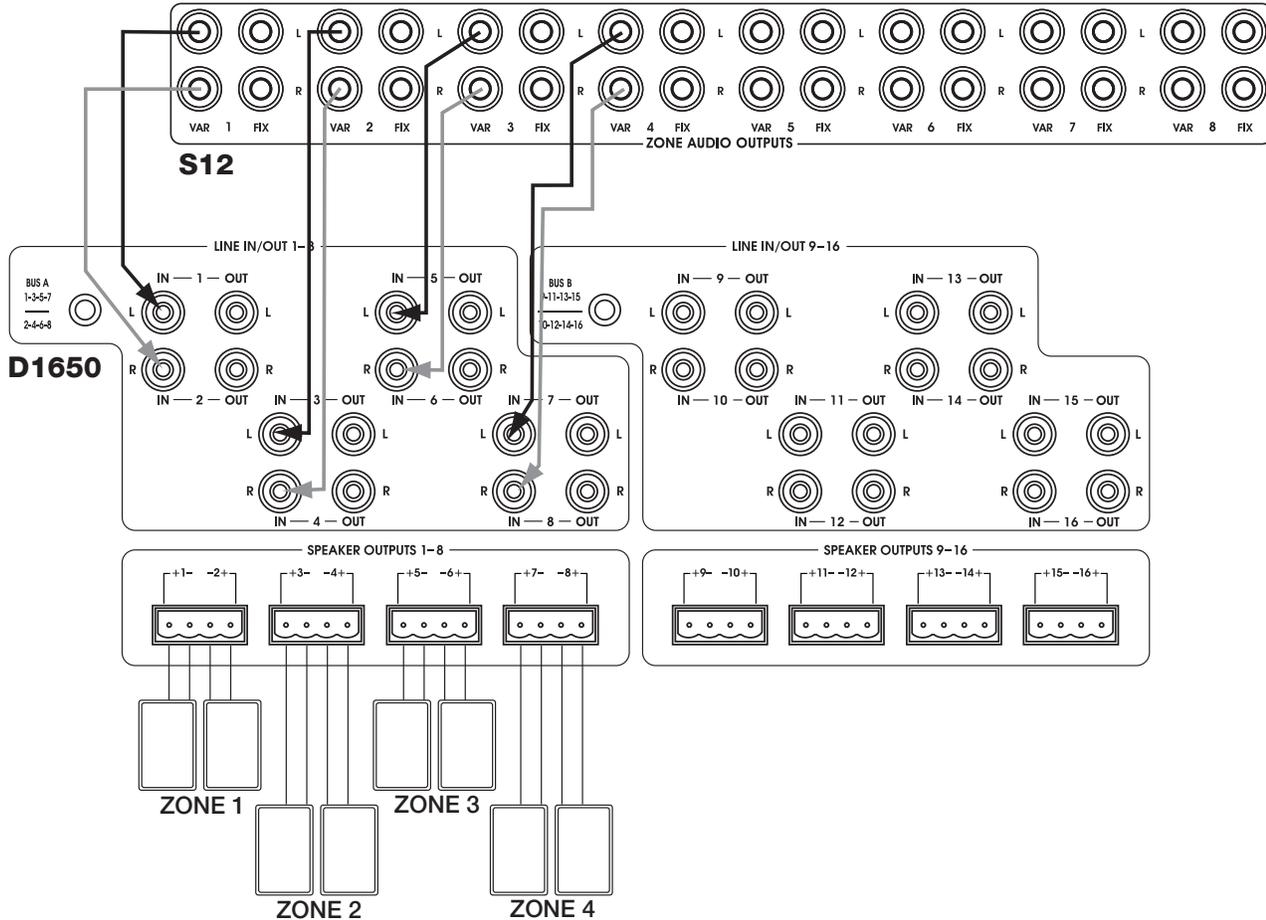


Audio Connections (continued) Zone Outputs

Variable Zone Output Connections

The S12 has both Fixed and Variable Zone Audio Outputs to increase system flexibility. Variable zones are controlled using IR or serial commands to ramp volume up and down at preamp level.

Variable Zone Audio Outputs (Zones 1-4 Shown)



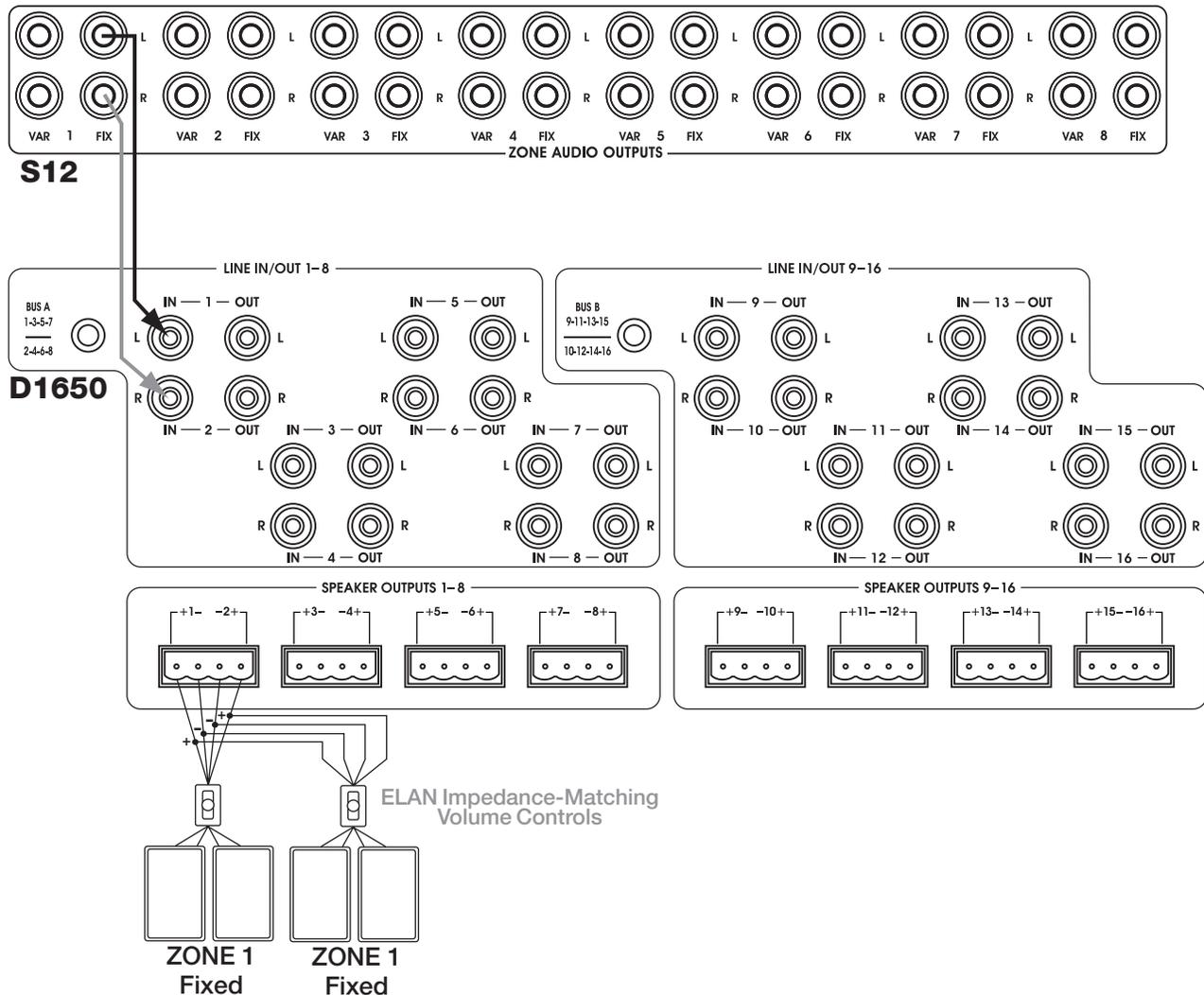
Audio Connections (continued)

Fixed Zone Output Connections

Fixed zones deliver line-level audio at full output (100% volume). Use volume controls in Fixed zones to adjust volume up and down in sub-zones. The use of ELAN impedance matching volume controls allows increased speaker loads and increased system flexibility.

Note: Variable Zone Audio Outputs can utilize all DSP functions such as Bass, Treble, Volume, Source Leveling and Dynamic Range Compression. Fixed Zone Audio Outputs utilize none of these functions, therefore zones and sub-zones may sound different from each other.

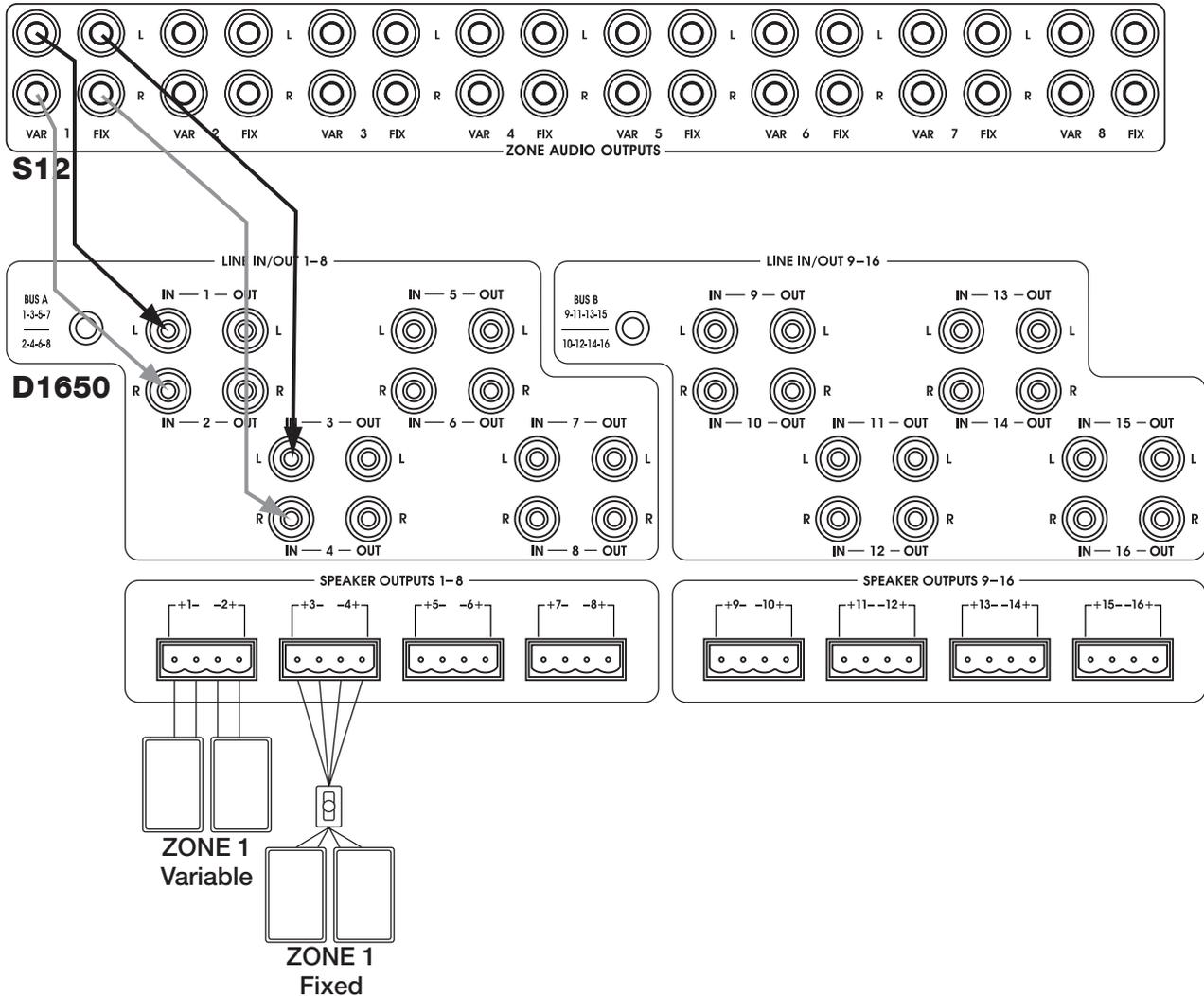
Fixed Zone Audio Outputs (Zones 1-4 Shown)



Audio Connections (continued)
Fixed and Variable Zone Output Connections

The S12 has the ability to send a Fixed output and a Variable output simultaneously. This feature can be used to great advantage when utilizing sub-zones. Audio that is routed out of the Variable zone outputs will ramp volume up and down at line-level using IR or RS-232 commands. Audio that is routed out the Fixed outputs will be adjusted using volume controls.

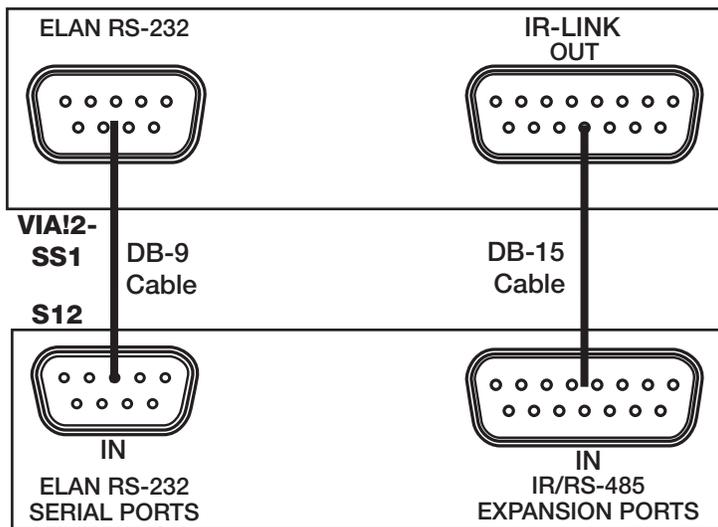
Fixed/Variable Zone Audio Outputs (Zone 1 Shown)



ELAN RS-232 Serial Port Connections

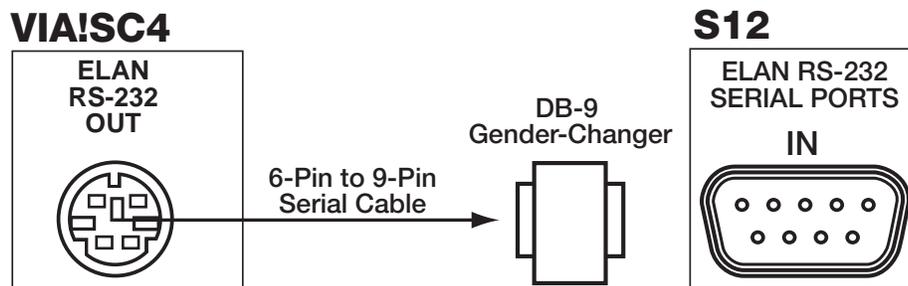
VIA!® 2-SS1 to S12 Connections

The VIA!2-SS1 System Station allows many advanced features in an S12 system. Wireless VIA! Touch Panels can communicate with the S12 and other sub-systems through RS-232 or IR. Connectivity between the SS1 and the S12 is done through two cables (included with the SS1); a 15-pin cable for IR and RS-485, and a 9-pin cable for RS-232. Connect these cables as shown below. Please consult the VIA!2-SS1 Installation Manual for important information regarding the use of this product.



VIA!® SC4 to S12 Connections

When controlling a System12 with ELAN's VIA!SC4 System Controller, use the 6-Pin DIN-to-9-Pin serial cable and the male-to-male DB9 gender-changer that is included with the SC4. Plug the 6-Pin DIN (round) connector into the SC4's ELAN RS-232 OUT port. Using the gender-changer, plug the other end of the serial cable into the ELAN RS-232 IN port on the S12. The SC4 will always be connected to Chassis #1 in a multi-chassis system.

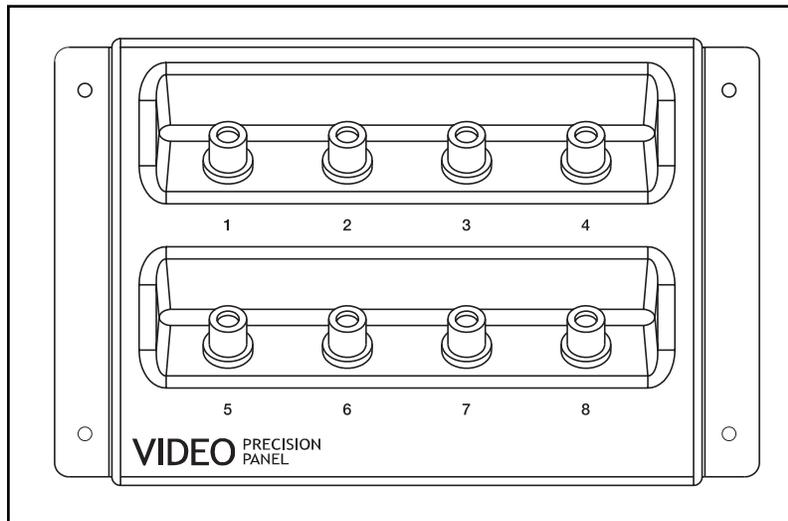


PV8 Video Precision Panel

The PV8 Video Precision Panel provides a clean and easy way to connect up to 8 runs of coaxial cable to the System12 A/V Controller.

Eight gold-plated F-to-RCA barrel connectors are mounted on flanges angled at 45 degrees. The angled flanges ensure that all coax runs slide easily back into the wall after termination, and that the cables are not bent past their specified limits, which can cause damage resulting in signal loss.

The PV8 is one of ELAN's new 'half-frame' Precision Panels. Two 'half-frame' panels can be mounted in one PF2 Precision Panel Frame, giving you the flexibility to mix and match the Precision Panels needed to complete a neat, problem-free trim-out. Two PV8s can be mounted in one frame to accommodate the 16 video outputs of the System12.



Video Switching

The vast array of built-in video switching features is part of what makes the S12 so powerful! When properly configured, large video routing projects become a simple matter of "Auto-Building" IR or RS-232 commands using VIA!®Tools setup software.

The S12 has a 16 input by 16 output video switcher that can distribute Composite, Component and High

Definition video to any zone. The number of video sources, and the number of zones that they can be distributed to, depends on whether you are using single-input/output Composite video signals, or 3-input/output Component video signals. The tables below show the video switcher's distribution capabilities with different combinations of Composite/Component video sources.

Video Source Input Table

Available Composite Video Source Inputs	Available Component Video Source Inputs
16	0
13	1
10	2
7	3
4	4
1	5

Video Output Table

Available Composite Video Outputs	Available Component Video Outputs
16	0
13	1
10	2
7	3
4	4
1	5

Video Switching (continued) Default Tracking Mode

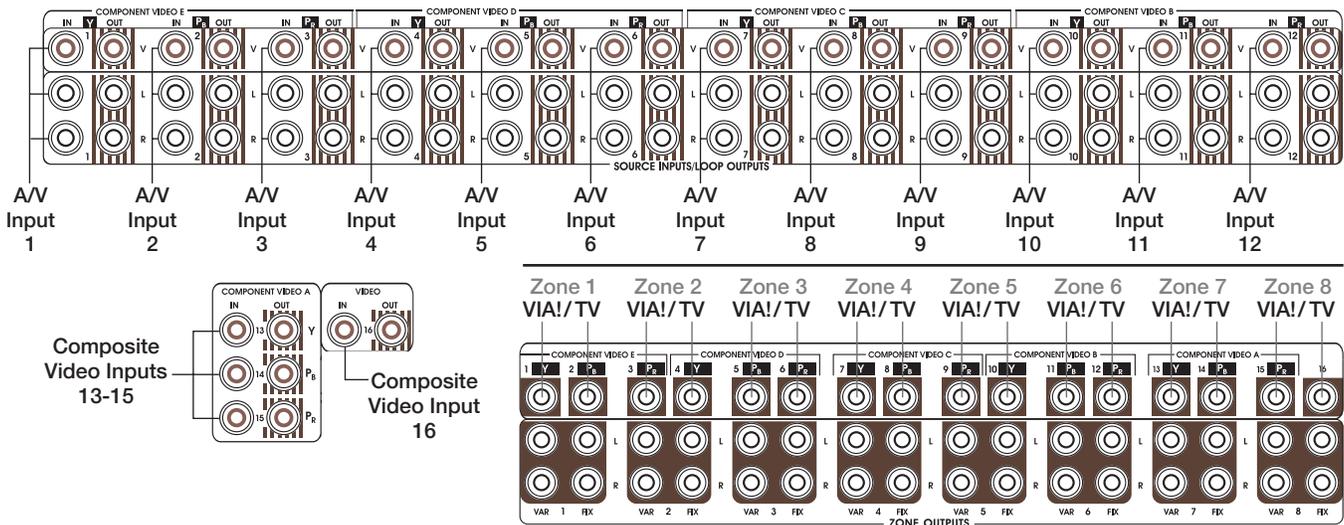
For many systems, 1-to-1 audio/composite video switching may be all that is required. Default Tracking Mode is the default audio/video switching mode for the S12, and requires no additional programming. By default, the first twelve video inputs of the S12 are directly tied to, or 'track' with, the twelve audio inputs. This means that the audio and composite video signals of sources 1-12 will switch simultaneously when selected from a zone without any additional programming. Additionally, in Default Tracking Mode, video inputs 13-16 remain available for additional

Composite video sources such as CCTV cameras. These inputs can be programmed for selection in any zone.

In Default Tracking Mode, there are two pre-configured video outputs for each zone. The first output is pre-configured for a VIA!® Touch Panel, the second output for a TV/monitor. When a video source is selected in a zone, both of these video outputs will automatically route the selected source video to that zone (see **Video Zone Output Connections**, page 51 for further details).

Default Tracking Mode

Composite Video Inputs 1-12 'track' on a 1-to-1 basis with Audio Inputs 1-12.
Composite Video Inputs 13-16 are available as independent inputs, i.e. for CCTV cameras.
Each Zone has 2 pre-configured video outputs, one for a VIA!, one for a TV/monitor.



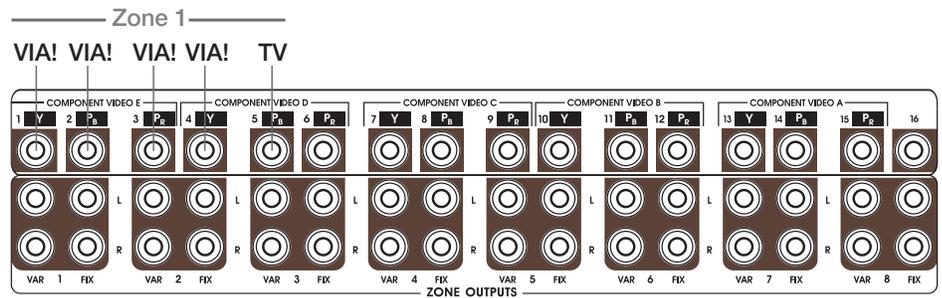
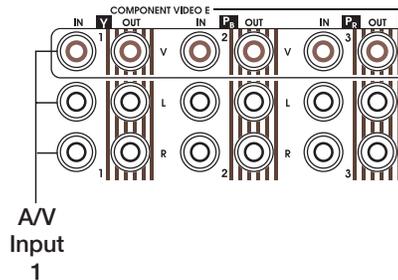
Video Switching (continued)

Source-Select Tracking Mode

Should more than the two default video outputs be needed in a zone, VIA!®TOOLS setup software provides an easy way to automatically route up to 5 Composite video outputs, plus 1 Component video output (3 jacks), to a zone with a single source-select IR or RS-232 command. This not only facilitates quick programming, but also eliminates the delays inherent when multiple IR commands are chained together to perform multiple input/output select functions. See VIA!TOOLS Help tutorials for step-by-step programming instructions.

Source-Select Tracking Mode

Programmed in VIA!TOOLS setup software.
Automatically routes up to 5 Composite video outputs, plus 1 Component video output, to a zone when a source is selected.



16 x 16 Mode

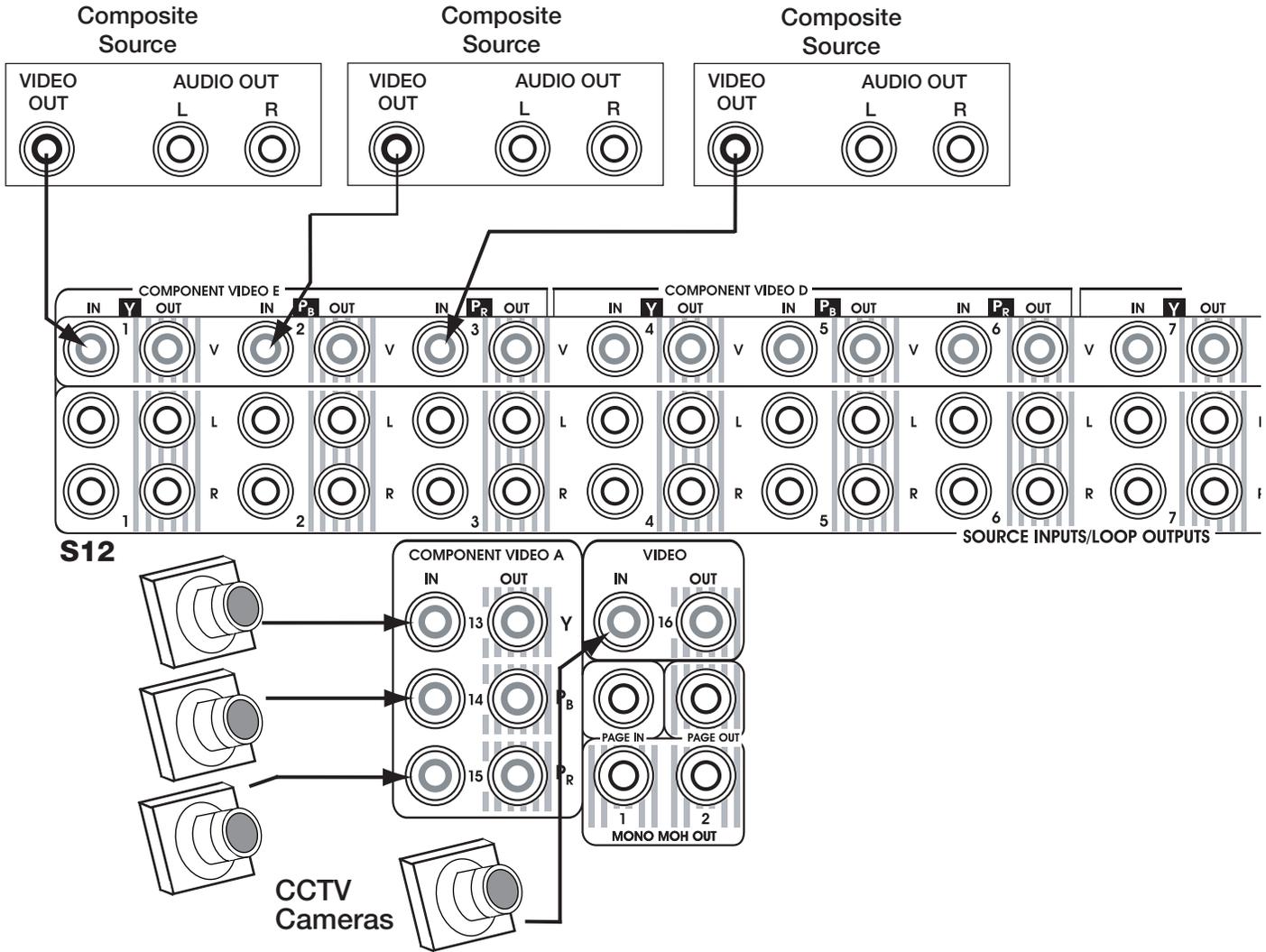
The S12 also performs video matrix switching, meaning that any of its 16 video inputs can be routed to any of its 16 video outputs, singly or in groups. By far the most flexible option for advanced video routing, 16 x 16 mode also requires a great deal more programming. Unlike Tracking mode, where no additional programming is necessary for the simultaneous switching of audio and video, or Source-Select mode, where multiple outputs switch automatically when a source is selected, 16 x 16 mode requires that each video input and output be 'told' what to do through programming. Essentially, a button on a VIA! Touch Panel or a keypad will be programmed with a specific input-select command(s) and output-select command(s). Specific instructions on S12 video programming are provided with VIA! TOOLS setup software (revision 5.0 or higher).

Video Switching (continued)

Composite Video Source Connections

Use high quality RCA video interconnect cables for most source connections. Sources requiring long cable runs (CCTV cameras, for example) may require the use of RG-6 or RG-59 coax with F-to-RCA adaptors.

Composite Video Source Connections



Video Switching (continued) Component Video Switching

Component (Y, P_B, P_R) video signals can easily be switched by the S12. Each Component video source utilizes three video inputs; one for Y, one for P_B, and one for P_R (Green, Blue, and Red). These inputs are grouped together through programming to switch as one entity.

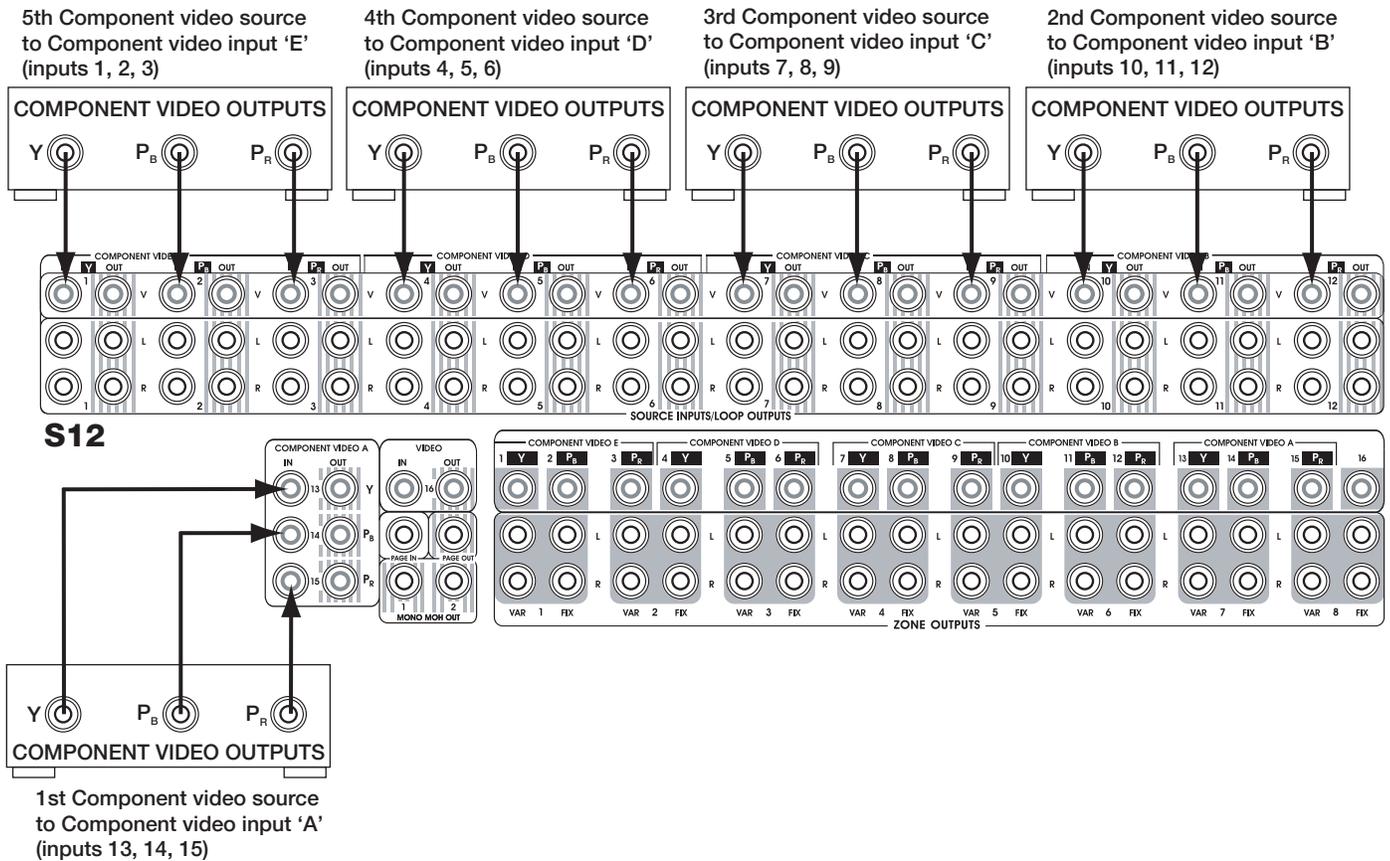
Component inputs are designated on the rear panel of the S12 in reverse order.

These groups are labeled:

- A: Inputs 13, 14, 15
- B: Inputs 10, 11, 12
- C: Inputs 7, 8, 9
- D: Inputs 5, 5, 6
- E: Inputs 1, 2, 3

Use high quality Component video cables to connect Component sources to the S12 as shown below. Make sure to connect the proper Component cable to the proper video input jack (Y, P_B, P_R).

Component Video Source Connections

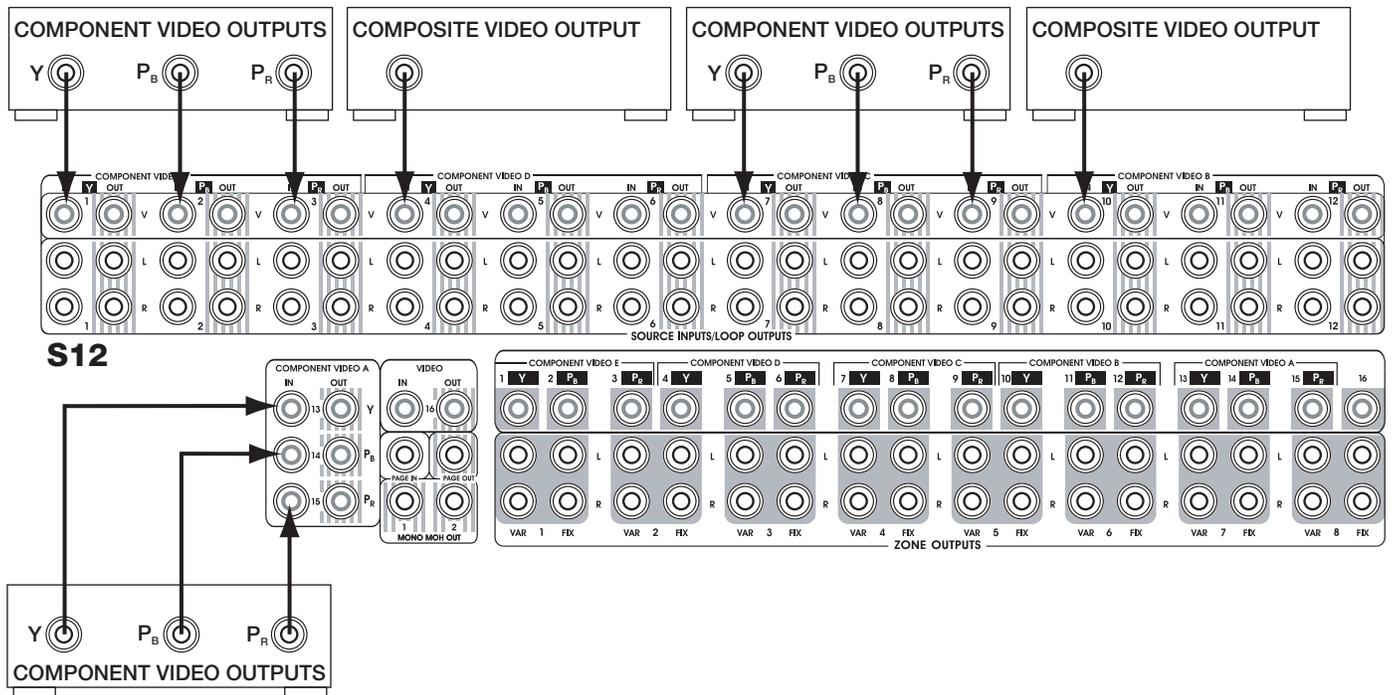


Video Switching (continued)

Combination Component/Composite Video Connections

Utilizing the matrix capabilities of the S12, it is possible to switch both Component video and Composite video at the same time. Certain inputs will be assigned in groups of three to facilitate Component switching, while other inputs will remain independent and will switch according to how they are programmed. Please consult VIA!®Tools setup software for information about S12 video programming.

Component/Composite Video Source Connections



Video Switching (continued)

Video Output Connections

Video outputs consist of Zone Outputs and Source Loop Outputs. Use high quality video interconnect cables for all video connections.

Video Zone Output Connections: Composite

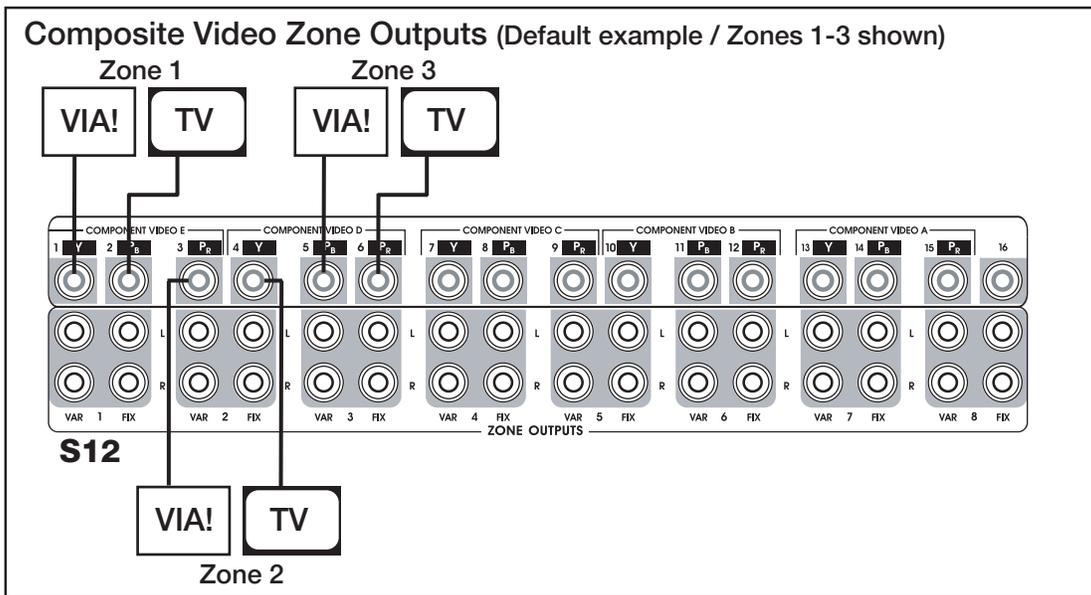
Default Tracking Mode

In the Default Tracking Mode, there are two pre-configured video outputs for each zone. The first output is configured for a VIA! Touch Panel, the second output for a TV/monitor. When a video source is selected in a zone, both of these video outputs will automatically route the selected source video to that zone. The audio will also be automatically routed to the zone.

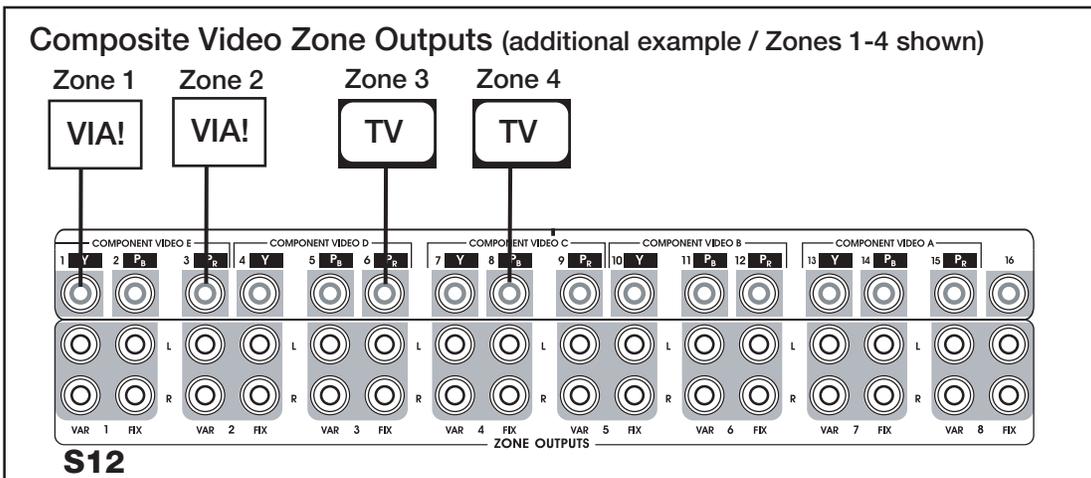
The default Composite video zone outputs are:

- Zone 1: Video Outputs 1 - 2
- Zone 2: Video Outputs 3 - 4
- Zone 3: Video Outputs 5 - 6
- Zone 4: Video Outputs 7 - 8
- Zone 5: Video Outputs 9 - 10
- Zone 6: Video Outputs 11 - 12
- Zone 7: Video Outputs 13 - 14
- Zone 8: Video Outputs 15 - 16

Use PV8 Video Precision Panels for S12 Video Outputs to VIA! Touch Panels and TVs



As shown in the diagram below, not every zone will have both a VIA! Touch Panel and a TV/monitor, therefore both Zone Video Outputs may not always be used.



Video Switching (continued)

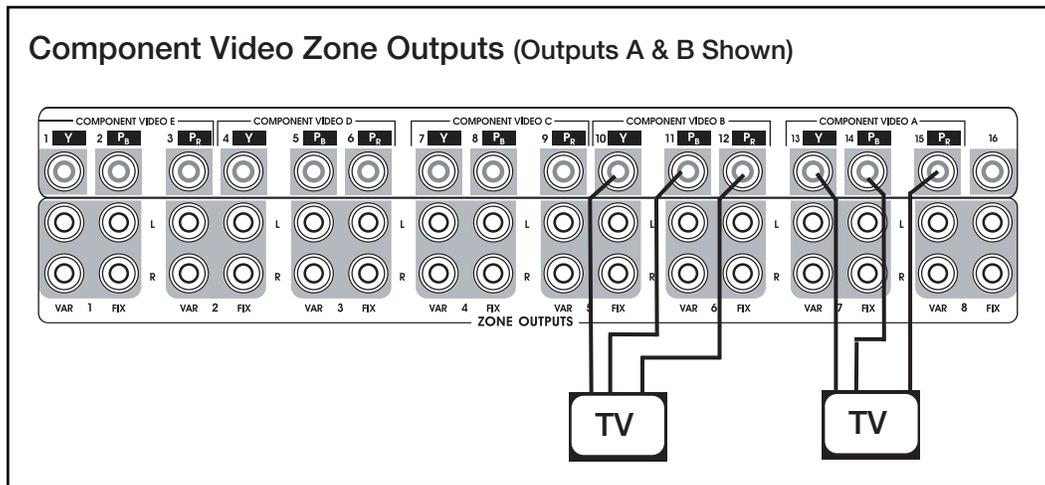
Video Zone Output Connections: Component

Component video outputs are grouped using VIA!®Tools setup software. As with the Component video inputs, these outputs are designated by a letter and go backwards in order. Output 16 is not used as a Component video output.

These groups are labeled:

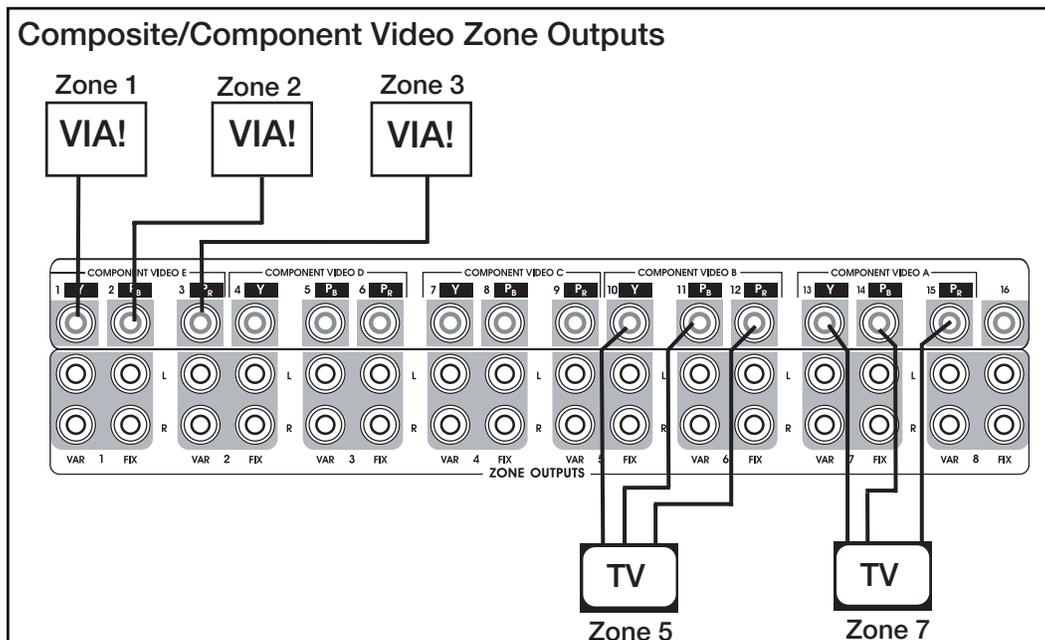
- A: Outputs 13, 14, 15
- B: Outputs 10, 11, 12
- C: Outputs 7, 8, 9
- D: Outputs 4, 5, 6
- E: Outputs 1, 2, 3

Use high quality Component video cables to connect from the S12's Zone Video Outputs to TVs or monitors located in specific zones of the house. Please consult VIA!Tools software for additional information about Component video routing.



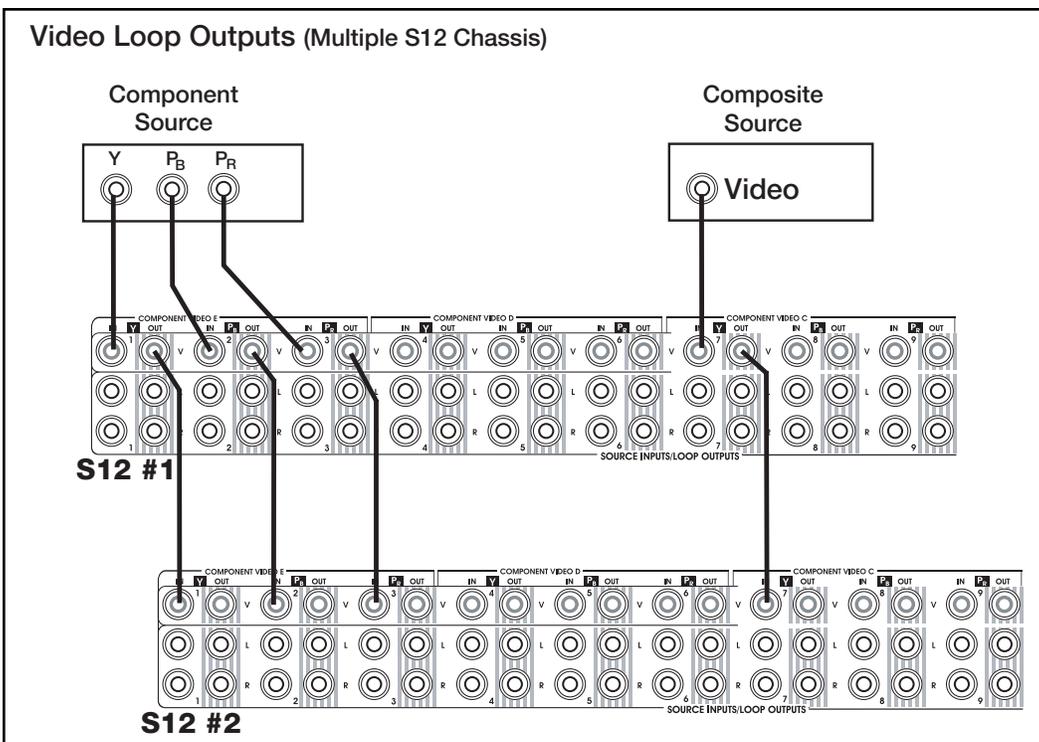
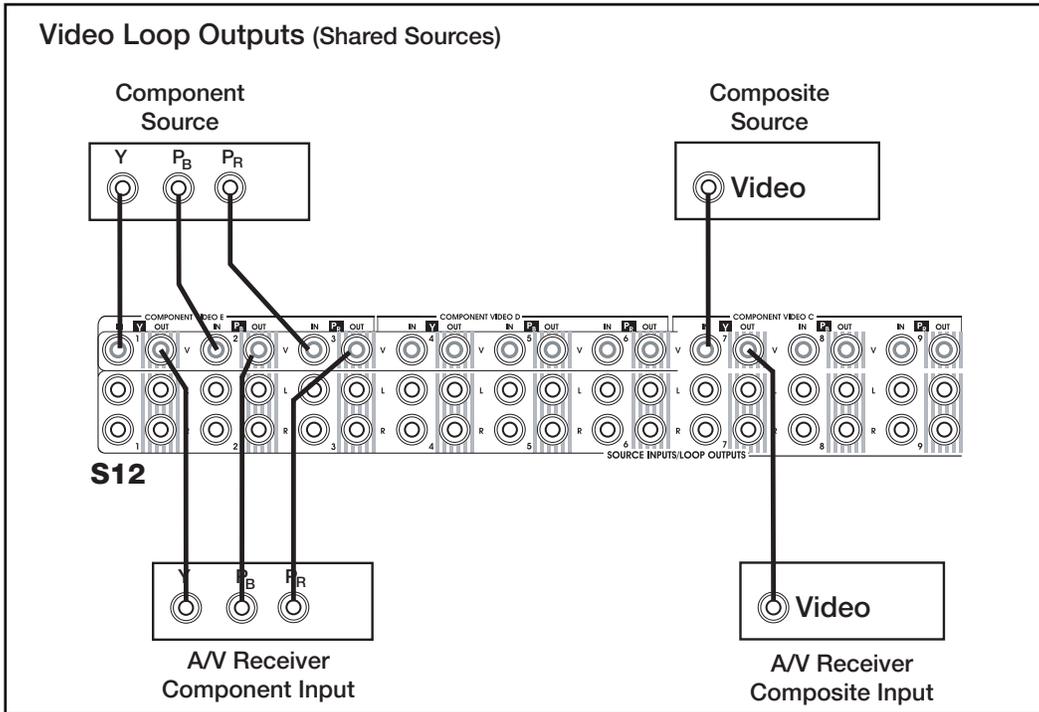
Video Zone Output Connections: Composite & Component

The S12 allows you to route both Composite video and Component video simultaneously. Connect the Video Zone Outputs as needed, making sure to maintain Group connections for Component video. Use VIA!Tools setup software to assign outputs to specific zones as required by the system's architecture. See VIA!Tools for detailed programming instructions.



Video Switching (continued)
Loop Output Connections

There is a corresponding Video Loop Output for each video input and because these are buffered outputs, there is no degradation of signal. Both Composite and Component video outputs can be looped. There are two primary applications for the Loop Outputs; sharing video sources with another system (such as a Home Theater), or multi-chassis S12 systems. The drawings below illustrate both examples.



System Expansion

An S12 system can be expanded from 8 to 32 zones by adding additional units:

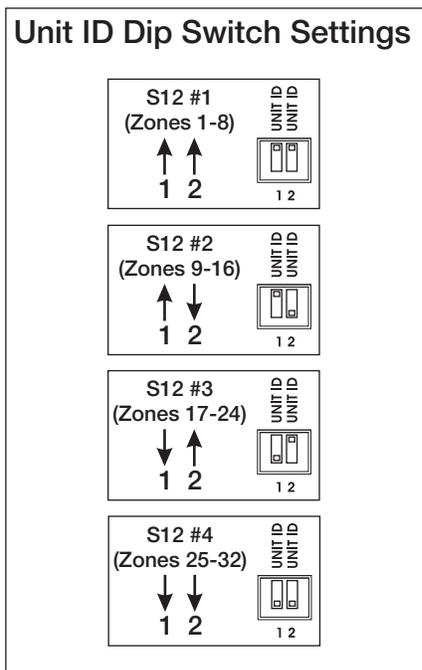
- 1 S12 = 8 zones
- 2 S12s = 16 zones
- 3 S12s = 24 zones
- 4 S12s = 32 zones

64 zones of video only are also available when linking four S12s. The number of distributed audio/video sources (12/16) does not increase with the addition of multiple chassis. The number of local sources, however, increases by 8 with each additional S12.

Each S12 in the system will have its own UNIT ID, which designates the zones it is controlling:

- UNIT 1: Zones 1-8
- UNIT 2: Zones 9-16
- UNIT 3: Zones 17-24
- UNIT 4: Zones 25-32

Unit ID dipswitches are found on the S12's rear panel, and must be properly configured in order for a multi-chassis system to work correctly.



S12 Expansion Kit (S12XK)

Expanding an S12 system requires the use of the S12 Expansion Kit (Model S12XK). One S12XK is needed for each additional S12 in the system (maximum 3 S12XKs per system).

It is essential to use the S12XK Expansion Kit when connecting multiple S12s!

Each expansion kit includes:

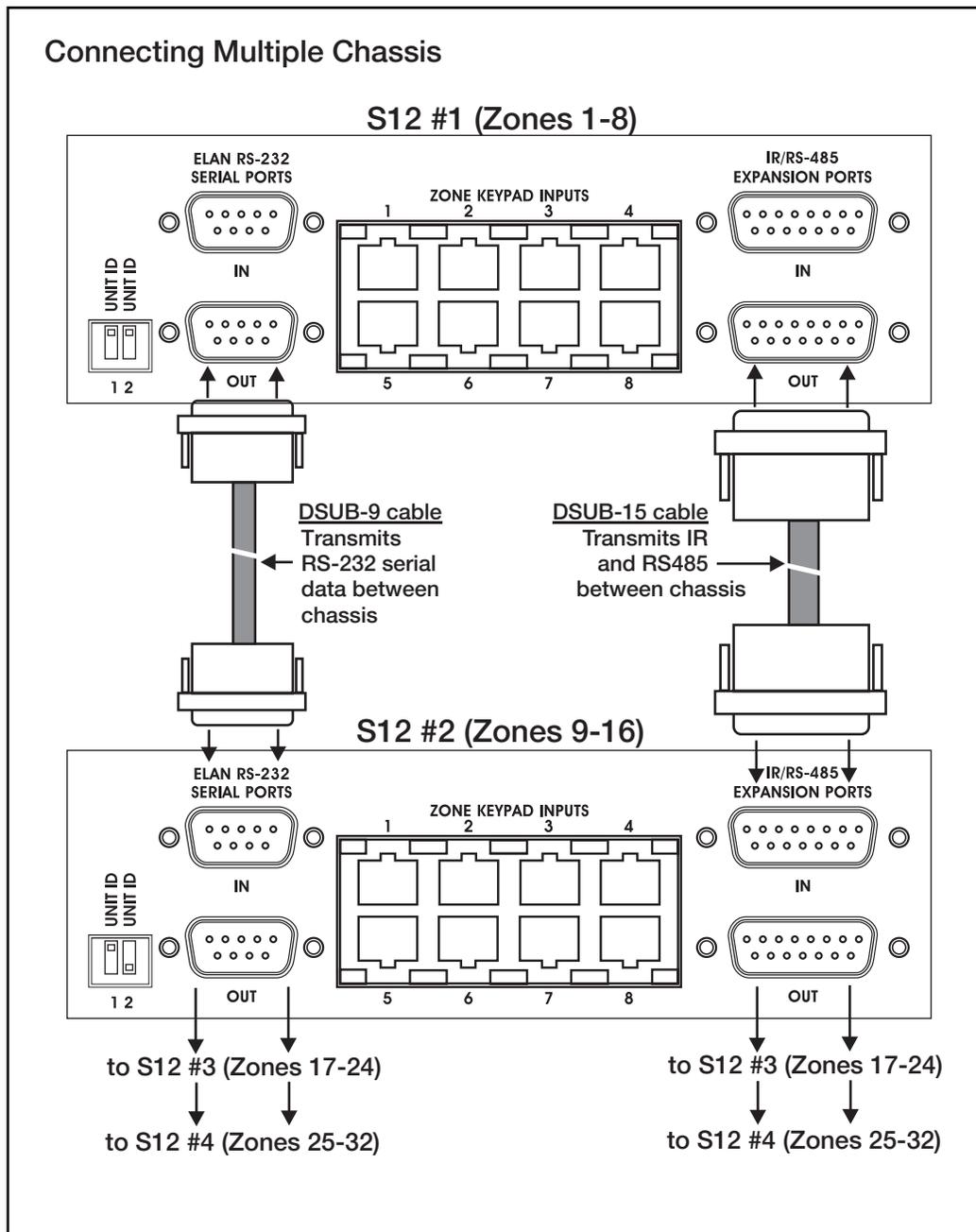
- (1) 15-pin male-to-female DSUB cable for the transmission of IR/RS-485 data between chassis
- (1) 9-pin male-to-female DSUB cable for the transmission of RS-232 serial data between chassis
- (1) 0.5M RCA-to-RCA interconnect cable for routing Page Audio between chassis
- (1) 3.5mm stereo interconnect cable for routing Page Trigger between chassis

Changes to the Unit ID Dip Switches become active when the S12 is reset to Factory Default. Each chassis must be reset in order for changes to take effect. See pg. 60 for Factory Default procedure.

System Expansion (continued)
Multi-Chassis Connections
IR/RS-485/RS-232

The S12's Expansion Ports are used to transmit IR and RS-485 data between chassis. The S12XK's 15-pin DSUB cable is used for this purpose.

The S12's ELAN RS-232 Serial Ports are used to transmit serial data between chassis. These connections are necessary when downloading your VIA!®TOOLS file from your computer to the S12s, and also if the S12 is being serially controlled, i.e. with an ELAN SC4 System Controller. Each S12XK expansion comes with a 9-pin DSUB cable for this purpose.

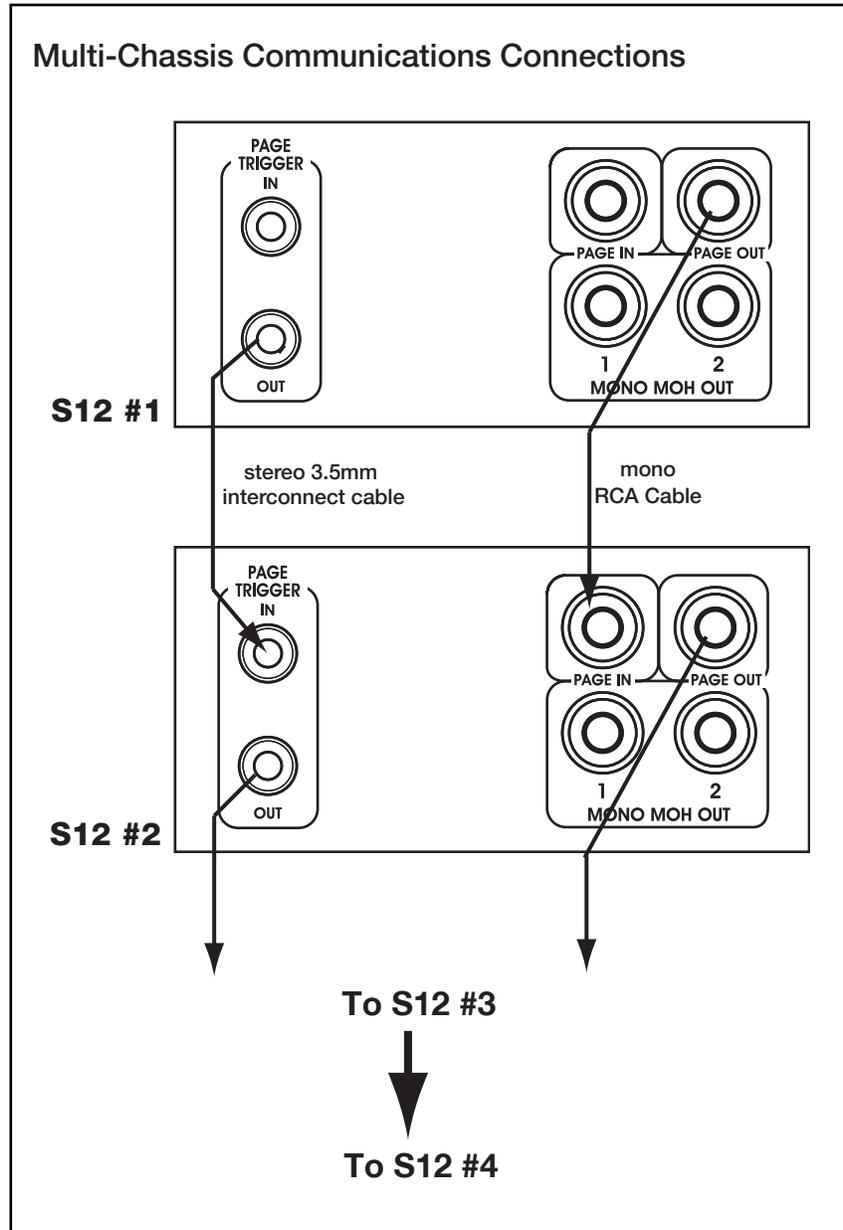


System Expansion (continued)**Multi-Chassis Z-600 Communications Connections**

The S12 Expansion Kit (S12XK) includes the stereo 3.5mm 'mini plug' interconnect cable needed to connect the Page Trigger Out to the Page Trigger In between S12 chassis. This connection must be made between all chassis in the system.

The S12XK also includes the single RCA interconnect cable needed to route page audio between multiple S12's. Connect this cable between the Page Out of S12 #1 to the Page In on S12 #2. Repeat for S12s 2, 3 and 4 if required.

Note: Do not link MOH connections.



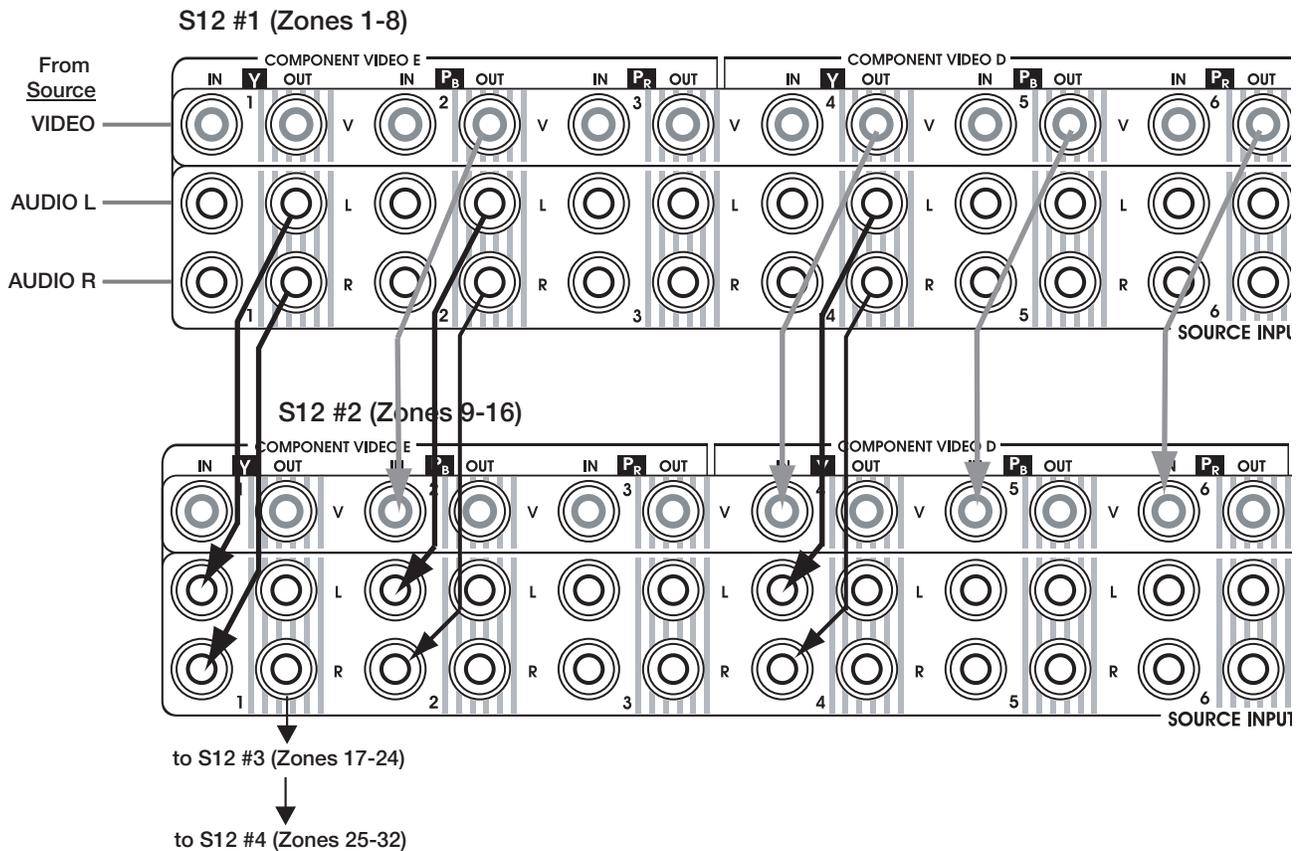
System Expansion (continued)
Audio/Video Connections

The Audio and Video Loop Outputs are used to route source audio and video between each S12 chassis. Each source connected to S12 Unit 1 must be routed to the corresponding source input on S12 Unit 2. This process must be repeated for each chassis. Since both the audio and video loop outputs are buffered, there will be no loss of signal between S12s.

ELAN's CZP 15" audio interconnect cables were specifically designed for looping source audio between S12s. ELAN's CZV 15" video interconnect

cables were specifically designed for looping Composite video between S12 chassis, and can also be used to loop Component video signals from DVD players or other Standard Definition (SD) video devices. For video sources that output High-Definition Component signals, such as certain cable/satellite receivers and DVHS machines, only cables that are HD-rated should be used to loop these video signals between chassis. Use of SD video cables will result in a degradation of video quality.

Source Audio, Composite Video, & Component Video Connections
 (Audio Source 1, Audio/Composite Source 2, and Component Video Source D Shown)



4. Programming

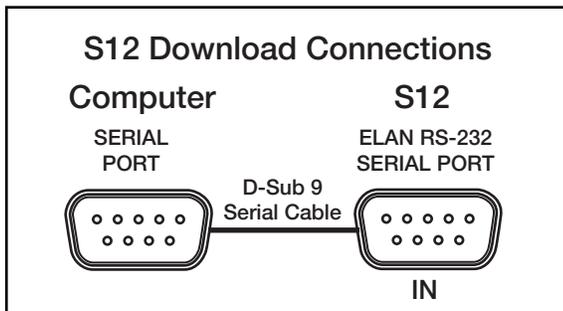
Other than the Unit ID dipswitches that are used to identify each S12 in a multi-chassis system (see p. 53) and ELAN keypad dipswitch settings (see below), all S12 programming is done with VIA!TOOLS setup software - the same software that is used for programming VIA! Touch Panels and ELAN keypads. **VIA!TOOLS revision 5.0 or higher** is required for S12 programming. VIA!TOOLS software requires Windows® 98 or higher operating systems on a PC with one standard RS-232 or USB port*, 256 color 800 x 600 display, 16MB RAM (minimum) and approximately 10MB free disk space for associated files.

The S12 can be programmed prior to making all connections (recommended) or after making all connections. If programming prior to making connections, print out the source and zone setup screens from VIA!TOOLS and use them as a guide for making your input and output connections. If programming after making all your connections, it is critical that you document the location of every source input and zone output, as this information will be needed for programming.

The specifics of VIA!TOOLS programming is outside the scope of this manual, but complete step-by-step S12 programming tutorials are included with VIA!TOOLS 5.0 setup software.

Downloading VIA!TOOLS Programs to the S12

Once you have completed programming, it will be necessary to download the VIA!TOOLS client file to the S12. For downloading, the 9-pin serial cable that is included with your VIA!TOOLS package should be connected between the computer's serial port and the ELAN RS-232 Serial Port IN on the S12.



* If your computer has a USB port, but not a serial port, a USB-to-Serial Port adaptor, or a serial I/O PC card will be required for programming the S12. ELAN has tested and confirmed the functionality of the following I/O PC card for use with VIA!TOOLS: Socket Communications, Inc. Serial I/O PC Card, Product #: SL0700-004. For further information on this product, go to <http://www.socketcom.com/product/SL0700-004.asp>.

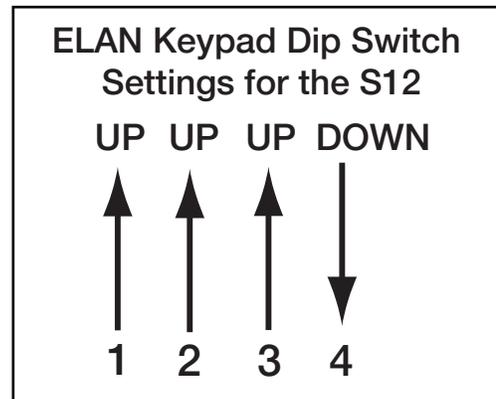
If there is more than one S12 in the system, it will be necessary to connect the ELAN RS-232 ports between chassis using the 9-pin serial cable that is included with the S12 Expansion Kit (see **Multi-Chassis Connections**, page 55, for details).

Each S12 in the system must be powered up prior to downloading. In multi-chassis systems, make sure the Unit ID dipswitches for each chassis are set correctly (see System Expansion, page 54, for details).

For detailed, step-by-step downloading instructions, see the VIA!TOOLS Help files included with every version of VIA!TOOLS.

ELAN Keypad Dipswitch Settings

When using an ELAN keypad with an S12, the dipswitches (located on the front of each keypad) must be set to the following position:



Failure to set the keypad dipswitches as shown above will result in improper zone control and functionality. The settings shown above are the settings for all ELAN keypads in the system, regardless of what zone they are in.

Like the S12 itself, each keypad in the system must receive a VIA!TOOLS download in order for it to properly control a zone. Refer to the keypad instruction manual or VIA!TOOLS Help for details on downloading to ELAN keypads.

Programming (continued)

IR Commands

The following list contains the IR commands for the S12. These commands are included in the IR Library of VIA!®TOOLS version 5.0 and higher. Please refer to VIA!TOOLS Help for specific information about these commands and how to use them.

There are three types of commands:

- **System Commands**
- **Video Commands**
- **External IR Commands**

System Commands

SYS OFF

- Turns all 8 zones off.
- If multiple chassis are used ENSURE the expansion cable is connected and send this command to the first chassis.

ZONE OFF

- Turns a single zone off.

ZONE ON

- Turns a single zone on.
- Turns the zone on to the last selected source.

ZONE TOG

- Toggles a zone from off to on to off.

DND OFF

- Disables Do Not Disturb in a zone.
- Works if the zone is off or on.

DND ON

- Enables Do Not Disturb zone.
- Works if the zone is off or on.

DND TOG

- Toggles a zone's Do Not Disturb from off to on to off.
- Works if the zone is off or on.

WHM OFF

- Disables Whole House Music in a zone.
- If any zone in the group is turned off, WHM is disabled.
- Has no effect if the zone is off.

WHM ON

- Enables Whole House Music zone.
- Has no effect if the zone is off.

WHM TOG

- Toggles a zone's Whole House Music from off to on to off.

- If any zone in the group is turned off, WHM is disabled.
- Has no effect if the zone is off.

MUTE OFF

- Disables Mute in a zone.
- Has no effect if the zone is off.

MUTE ON

- Enables zone Mute.
- Has no effect if the zone is off.

MUTE TOG

- Toggles a zone's Mute from off to on to off.
- Has no effect if the zone is off.

DRC OFF

- Disables Dynamic Range Compression in a zone.
- Has no effect if the zone is off.

DRC ON

- Enables Dynamic Range Compression in a zone.
- Has no effect if the zone is off.

DRC TOG

- Toggles a zone's Dynamic Range Compression from off to on to off.
- Has no effect if the zone is off.

EQ FLAT

- Sets the Treble and Bass to zero in a zone.

TREB DOWN

- Decreases the treble in a zone.
- Has no effect if the zone is off.

TREB UP

- Increases the treble in a zone.
- Has no effect if the zone is off.

BASS DOWN

- Decreases the bass in a zone.
- Has no effect if the zone is off.

BASS UP

- Increases the bass in a zone.
- Has no effect if the zone is off.

VOLUME DOWN

- Decreases the volume in a zone.
- Has no effect if the zone is off.

VOLUME UP

- Increases the volume in a zone.
- Has no effect if the zone is off.

Programming (continued)**GROUPS**

- Has no effect if the zone is off.
- When group is turned OFF, all zones remain on.

GRP 1/5/9/13 OFF

- Disables Groups 1, 5, 9 or 13.

GRP 2/6/10/14 OFF

- Disables Groups 2, 6, 10 or 14.

GRP 3/7/11/15 OFF

- Disables Groups 3, 7, 11 or 15.

GRP 4/8/12/16 OFF

- Disables Groups 4, 8, 12 or 16.

GRP 1/5/9/13 ON

- Enables Groups 1, 5, 9 or 13.

GRP 2/6/10/14 ON

- Enables Groups 2, 6, 10 or 14.

GRP 3/7/11/15 ON

- Enables Groups 3, 7, 11 or 15.

GRP 4/8/12/16 ON

- Enables Groups 4, 8, 12 or 16.

SOURCE 1 thru Source Local

- Selects their respective source in a zone.

PAGE OFF

- Disables Page in a zone.

PAGE ON

- Enables Page in a zone.

PAGE TOG

- Toggles a zone's Page from off to on to off.

DB OFF

- Disables Doorbell in a zone.

DB ON

- Enables Doorbell in a zone.

DB TOG

- Toggles a zone's Doorbell from off to on to off.

PAGE VOL DOWN

- Decreases the Page volume in a zone.
- Works if zone is on or off.

PAGE VOL UP

- Increases the Page volume in a zone.
- Works if zone is on or off.

DB VOL DOWN

- Decreases the Doorbell volume in a zone.
- Works if zone is on or off.

DB VOL UP

- Increases the Doorbell volume in a zone.
- Works if zone is on or off.

Video Commands**VIDEO1-1**

- The S12 Routes Input 1 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-2

- The S12 Routes Input 2 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-3

- The S12 Routes Input 3 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-4

- The S12 Routes Input 4 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-5

- The S12 Routes Input 5 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-6

- The S12 Routes Input 6 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-7

- The S12 Routes Input 7 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-8

- The S12 Routes Input 8 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

Programming (continued)**VIDEO1-9**

- The S12 Routes Input 9 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-10

- The S12 Routes Input 10 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-11

- The S12 Routes Input 11 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-12

- The S12 Routes Input 12 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-13

- The S12 Routes Input 13 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-14

- The S12 Routes Input 14 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-15

- The S12 Routes Input 15 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-16

- The S12 Routes Input 16 to Panel 1 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO1-TRACK

- The S12 Routes the selected audio source's video to the Panel.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO2

- Same as VIDEO1 except the S12 routes to Panel 2 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO3

- Same as VIDEO1 except the S12 routes to Panel 3 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO4

- Same as VIDEO1 except the S12 routes to Panel 4 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

VIDEO5

- Same as VIDEO1 except the S12 routes to Panel 5 in Zone.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

COMPONENT A

- The S12 Routes Inputs 13, 14, 15 to the Component Device.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

COMPONENT B

- The S12 Routes Inputs 10, 11, 12 to the Component Device.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

COMPONENT C

- The S12 Routes Inputs 7, 8, 9 to the Component Device.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

COMPONENT D

- The S12 Routes Inputs 4, 5, 6 to the Component Device.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

COMPONENT E

- The S12 Routes Inputs 1, 2, 3 to the Component Device.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

COMPONENT TRACK

- The S12 Routes the selected audio source's Component video to the Component Device.
- Used with Default Tracking mode, Source-Select Tracking Mode, Un-Tracking Mode.

Programming (continued)

Video Commands for 16 X 16 Mode

16 X 16 VID OUT 01 thru 16 X 16 VID OUT 16
and

16 X 16 VID IN 03 thru 16 X 16 VID IN 04

- Must use VID OUT and VID IN together.
- The S12 routes a specified Input to a specified Output.
- The commands must be sent Output first and then Input.
- Works if the S12 is off or on.

16 X 16 CPN OUT A thru 16 X 16 CPN OUT E
and

16 X 16 CPN IN A thru 16 X 16 CPN IN E

- Must use CPN OUT and CPN IN together.
- The S12 routes a specified inputs to specified outputs.
- The commands must be sent output first and then input.
- Works if the S12 is off or on.

External IR

EXTIR OFF 1

- Turns Source IR Emitter Output Port 1 OFF.

EXTIR OFF 2 thru EXTIR OFF 12

- Same as EXTIR OFF 1 except they turn OFF their respective ports.

EXTIR ALLOFF

- Turns ALL Source IR Emitter Outputs OFF.

EXTIR ON 1 thru EXTIR ON 12

- Same as EXTIR OFF 1 except they turn ON their respective ports.

EXTIR ALLON

- Turns ALL Source IR Emitter Outputs ON.

RS-232 Control

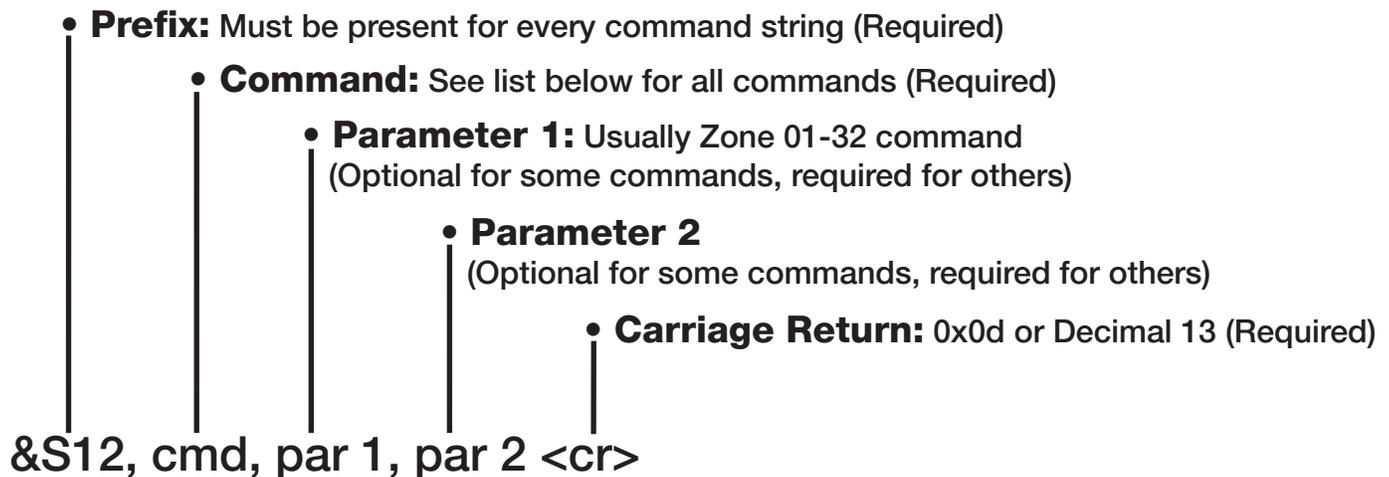
General Information

The S12 serial interface is a 3-wire RS-232 (Rx, Tx, Ground-Pins 2, 3, and 5 respectively).

S12 Communication Port Settings

Baud Rate	19200
Data Bits	8
Parity	None
Stop Bits	1
Flow Control	None

Command Structure



&S12,ACK

&S12,ACK<cr> is a command that is transmitted by the S12 whenever it receives a command with the correct structure. It does not mean that the command was performed. To ensure that the command was performed correctly, the S12 needs to be queried.

The following are correct serial command structures:

- &S12,SYSOFF
- &S12,PWR,01,1

If &S12,SYSOFF command is transmitted to the S12, the S12 will respond with &S12,ACK.

If &S12,PWR,100,1 is transmitted to the S12, the S12 will NOT respond with a &S12,ACK because 100 is out of the scope. That field supports Zones 01-32 for this particular command.

If there is only one S12 in the System, Zones 1-8, and &S12,PWR,09,1 is transmitted to the S12, the S12 will NOT respond with a &S12,ACK because Chassis 1 does not support Zone 09. Chassis 1 supports Zones 01-08 for this particular command.

If an &S12,ACK is not received within 200ms:

- the command was formatted incorrectly
- an error has occurred in the S12
- serial cable not connected or defective
- S12 does not have power

The S12 requires at least 50ms between each serial command transmitted to it. However, if the &S12,ACK is received prior to 50ms, another command can be transmitted immediately.

Programming (continued)

RS-232 Commands

The following list contains the RS-232 commands for the S12. These commands are included in the IR Library of VIA!®TOOLS version 5.0 and higher. Please refer to VIA!®TOOLS Help for specific information about these commands and how to use them.

There are three types of commands:

- **System Commands**
- **Video Commands**
- **External IR Commands**

System Commands

BAS (Bass)

Description:

- Sets Zone zz to bass xyz.
- Increment Zone zz bass.
- Decrement Zone zz bass.
- Has no effect if zone is off.
- If sending 00, the + or - can be omitted.

Command:

&S12,BAS,zz,a<cr>
&S12,BAS,zz,xyz<cr>

Query:

&S12,BAS,zz?<cr>

Reply:

&S12,BAS,zz,xyz<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

- + = Increments (plus symbol)
- = Decrements (minus symbol)

x:

- + Sets to positive number (plus symbol)
- Sets to negative number (minus symbol)

yz:

00 - 18
00 = Flat

Examples:

- &S12,BAS,+13,+<cr> Increments Zone 13's bass.
- &S12,BAS,02?<cr> queries Zone 2 for its bass.
- &S12,BAS,13,-03<cr> sets Zone 13's bass to -3.
- &S12,BAS,13,00<cr> Zone 13 bass is flat

CPN (Component)

Description:

Switches S12's Component in Zone zz to a specific Video Component Group a.

Command:

&S12,CPN,zz,a<cr>

Query:

&S12,CPN,zz?<cr>

Reply:

&S12,CPN,zz,a<cr>

Parameters:**<cr>:**

Carriage Return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

Component group 1-5
0 = Track

Examples:

- &S12,CPN,03,2<cr> S12's Component in Zone 3 selects Component Group 2.
- &S12,CPN,29?<cr> Queries S12's Component in Zone 29 for selected Component Group.
- &S12,CPN,07,5<cr> S12's Component in Zone 7 selects Component Group 5.
- &S12,CPN,02,0<cr> Notifies S12 to place S12's Component in Zone 2 in Tracking Mode.

DND (Do Not Disturb)

Description:

- Turns specified Zone zz's DND off/on/toggle.
- Works if zone is off or on.

Command:

&S12,DND,zz,a<cr>

Query:

&S12,DND,zz?<cr>

Reply:

&S12,DND,zz,a<cr>

Programming (continued)**Parameters:****<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

0 = OFF

1 = ON

2 = TOG

Examples:

- &S12,DND,13,0<cr> turns Zone 13's DND off.
- &S12,DND,02?<cr> queries Zone 2's DND.
- &S12,DND,13,1<cr> turns Zone 13's DND on.
- &S12,DND,13,2<cr> toggles Zone 13's DND from on to off or off to on.

DRC (Dynamic Range Compression)**Description:**

- Turns specified Zone zz's DRC off/on/toggle.
- Has no effect if the zone is off.

Command:

&S12,DRC,zz,a<cr>

Query:

&S12,DRC,zz?<cr>

Reply:

&S12,DRC,zz,a<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

0 = OFF

1 = ON

2 = TOG

Examples:

- &S12,DRC,13,0<cr> turns Zone 13's DRC off.
- &S12,DRC,02?<cr> queries Zone 2's DRC.
- &S12,DRC,13,1<cr> turns Zone 13's DRC on.
- &S12,DRC,13,2<cr> toggles Zone 13's DRC from on to off or off to on.

DB**Description:**

- Turns specified DB off/on/toggle. This will initiate a DB that will route audio present at the S12's Page In audio jack to zones that have DB enabled.
- Works if the System/Zone is on or off.
- Only chassis one will respond.

Command:

&S12,DB,a<cr>

Query:

&S12,DB?<cr>

Reply:

&S12,DB,a<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

a:

0 = OFF

1 = ON

2 = Toggle

Examples:

- &S12,DB,0<cr> turns Doorbell off.
- &S12,DB?<cr> queries Doorbell status.
- &S12,DB,2<cr> toggles Doorbell from on to off or off to on.

GRP (Group)**Description:**

- Turns specified Zone zz's Group off/on/toggle.
- Has no effect if the zone is off.
- When group is turned off, all zones in group remain on.

Zones 01-08 = Groups 01-04

Zones 09-16 = Groups 05-08

Zones 17-24 = Groups 09-12

Zones 25-32 = Groups 13-16

Command:

&S12,GRP,zz,gg,a<cr>

Query:

&S12,GRP,zz,gg?<cr>

Reply:

&S12,GRP,zz,gg,a<cr>

Programming (continued)**Parameters:****<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

gg:

Group: 01-16

a:

0 = OFF

1 = ON

Examples:

- &S12,GRP,13,05,0<cr> turns Zone 13's Group 1 off.
- &S12,GRP,02,01?<cr> queries Zone 2's Group 1.
- &S12,GRP,13,07,1<cr> turns Zone 13's Group 07 on.

If Zone 2 and Zone 4 are the only zones in GRP 1 and you want to turn GRP 1 on from Zone 8 with Zone 4's source as the Group source, send &S12,GRP,04,01,1<cr>.

If you send &S12,GRP,03,01<cr> and Zone 3 is not in Group 1, YOU WILL get a &S12,ACK since the command structure is correct but no grouping will occur.

KEY**Description:**

These are the same commands as the S12 IR commands.

Command:

&S12,KEY,zz,abc<cr>

Query:

N/A

Reply:

N/A

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

abc:

000 = SYS OFF

001 = ZONE OFF

002 = ZONE ON

003 = ZONE TOG

010 = DND OFF

011 = DND ON

012 = DND TOG

013 = WHM OFF

014 = WHM ON

015 = WHM TOG

016 = MUTE OFF

017 = MUTE ON

018 = MUTE TOG

022 = DRC OFF

023 = DRC ON

024 = DRC TOG

025 = EQ FLAT

032 = TREB DOWN

033 = TREB UP

034 = BASS DOWN

035 = BASS UP

036 = VOLUME DOWN

037 = VOLUME UP

040 = GRP 1/5/9/13 OFF

041 = GRP 2/6/10/14 OFF

042 = GRP 3/7/11/15 OFF

043 = GRP 4/8/12/16 OFF

044 = GRP 1/5/9/13 ON

045 = GRP 2/6/10/14 ON

046 = GRP 3/7/11/15 ON

047 = GRP 4/8/12/16 ON

048 = SOURCE 1

049 = SOURCE 2

050 = SOURCE 3

051 = SOURCE 4

052 = SOURCE 5

053 = SOURCE 6

054 = SOURCE 7

055 = SOURCE 8

056 = SOURCE 9

057 = SOURCE 10

058 = SOURCE 11

059 = SOURCE 12

060 = SOURCE LOCAL

064 = VIDEO1 1

065 = VIDEO1 2

066 = VIDEO1 3

067 = VIDEO1 4

068 = VIDEO1 5

069 = VIDEO1 6

070 = VIDEO1 7

071 = VIDEO1 8

072 = VIDEO1 9

073 = VIDEO1 10

074 = VIDEO1 11

075 = VIDEO1 12

Programming (continued)

076 = VIDEO1 13	152 = VIDEO4 TRACK
077 = VIDEO1 14	128 = VIDEO5 1
078 = VIDEO1 15	129 = VIDEO5 2
079 = VIDEO1 16	130 = VIDEO5 3
149 = VIDEO1 TRACK	131 = VIDEO5 4
080 = VIDEO2 1	132 = VIDEO5 5
081 = VIDEO2 2	133 = VIDEO5 6
082 = VIDEO2 3	134 = VIDEO5 7
083 = VIDEO2 4	135 = VIDEO5 8
084 = VIDEO2 5	136 = VIDEO5 9
085 = VIDEO2 6	137 = VIDEO5 10
086 = VIDEO2 7	138 = VIDEO5 11
087 = VIDEO2 8	139 = VIDEO5 12
088 = VIDEO2 9	140 = VIDEO5 13
089 = VIDEO2 10	141 = VIDEO5 14
090 = VIDEO2 11	142 = VIDEO5 15
091 = VIDEO2 12	143 = VIDEO5 16
092 = VIDEO2 13	153 = VIDEO5 TRACK
093 = VIDEO2 14	144 = COMPONENT A
094 = VIDEO2 15	145 = COMPONENT B
095 = VIDEO2 16	146 = COMPONENT C
150 = VIDEO2 TRACK	147 = COMPONENT D
096 = VIDEO3 1	148 = COMPONENT E
097 = VIDEO3 2	154 = COMPONENT TRACK
098 = VIDEO3 3	160 = 16X16 VID OUT 01
099 = VIDEO3 4	161 = 16X16 VID OUT 02
100 = VIDEO3 5	162 = 16X16 VID OUT 03
101 = VIDEO3 6	163 = 16X16 VID OUT 04
102 = VIDEO3 7	164 = 16X16 VID OUT 05
103 = VIDEO3 8	165 = 16X16 VID OUT 06
104 = VIDEO3 9	166 = 16X16 VID OUT 07
105 = VIDEO3 10	167 = 16X16 VID OUT 08
106 = VIDEO3 11	168 = 16X16 VID OUT 09
107 = VIDEO3 12	169 = 16X16 VID OUT 10
108 = VIDEO3 13	170 = 16X16 VID OUT 11
109 = VIDEO3 14	171 = 16X16 VID OUT 12
110 = VIDEO3 15	172 = 16X16 VID OUT 13
111 = VIDEO3 16	173 = 16X16 VID OUT 14
151 = VIDEO3 TRACK	174 = 16X16 VID OUT 15
112 = VIDEO4 1	175 = 16X16 VID OUT 16
113 = VIDEO4 2	176 = 16X16 VID IN 01
114 = VIDEO4 3	177 = 16X16 VID IN 02
115 = VIDEO4 4	178 = 16X16 VID IN 03
116 = VIDEO4 5	179 = 16X16 VID IN 04
117 = VIDEO4 6	180 = 16X16 VID IN 05
118 = VIDEO4 7	181 = 16X16 VID IN 06
119 = VIDEO4 8	182 = 16X16 VID IN 07
120 = VIDEO4 9	183 = 16X16 VID IN 08
121 = VIDEO4 10	184 = 16X16 VID IN 09
122 = VIDEO4 11	185 = 16X16 VID IN 10
123 = VIDEO4 12	186 = 16X16 VID IN 11
124 = VIDEO4 13	187 = 16X16 VID IN 12
125 = VIDEO4 14	188 = 16X16 VID IN 13
126 = VIDEO4 15	189 = 16X16 VID IN 14
127 = VIDEO4 16	190 = 16X16 VID IN 15
	191 = 16X16 VID IN 16

Programming (continued)

192 = 16X16 CPN OUT A
193 = 16X16 CPN OUT B
194 = 16X16 CPN OUT C
195 = 16X16 CPN OUT D
196 = 16X16 CPN OUT E
197 = 16X16 CPN IN A
198 = 16X16 CPN IN B
199 = 16X16 CPN IN C
200 = 16X16 CPN IN D
201 = 16X16 CPN IN E
004 = PAGE OFF
005 = PAGE ON
006 = PAGE TOG
007 = DB OFF
008 = DB ON
009 = DB TOG

Examples:

- &S12,KEY,13,000<cr> turns System off.
- &S12,KEY,02,004<cr> turns Zone 2 Page off
- &S12,KEY,13,009<cr> turns Zone 13 Doorbell off to on or on to off.

MUT (Mute)

Description:

- Turns specified Zone zz
- Has no effect if the zone is off.

Command:

&S12,MUT,zz,a<cr>

Query:

&S12,MUT,zz?<cr>

Reply:

&S12,MUT,zz,a<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

0 = OFF
1 = ON
2 = TOG

Examples:

- &S12,MUT,13,0<cr> turns Zone 13's Mute off.
- &S12,MUT,02?<cr> queries Zone 2's Mute.
- &S12,MUT,13,1<cr> turns Zone 13's Mute on.
- &S12,MUT,13,2<cr> toggles Zone 13's Mute from on to off or off to on.

PG

Description:

- Turns specified PG off/on/toggle. This will initiate a PG that will route audio present at the S12's Page In audio jack to zones that have PG enabled.
- Works if the System/Zone is on or off.
- Only Chassis 1 will respond.

Command:

&S12,PG,a<cr>

Query:

&S12,PG?<cr>

Reply:

&S12,PG,a<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

a:

0 = OFF
1 = ON
2 = Toggle

Examples:

- &S12,PG,1<cr> turns Page on.
- &S12,PG?<cr> queries Page status.
- &S12,PG,2<cr> toggles Page from on to off or off to on.

PWR (Power)

Description:

- Turns specified Zone zz off/on/toggle.
- Zone turns on to last selected source.

Command:

&S12,PWR,zz,a<cr>

Query:

&S12,PWR,zz?<cr>

Reply:

&S12,PWR,zz,a<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

0 = OFF
1 = ON
2 = TOG

Programming (continued)

Examples:

- &S12,PWR,13,0<cr> turns Zone 13 off.
- &S12,PWR,02?<cr> queries Zone 2.
- &S12,PWR,13,1<cr> turns Zone 13 on.
- &S12,PWR,13,2<cr> toggles Zone 13 from on to off or off to on.

SRC (Source)

Description:

- Selects a specified Source ss in a Zone zz.
- Automatically switches audio and video as programmed in VIA!TOOLS.
- If the zone is off, zone will turn on with ss = 01-13.

Command:

&S12,SRC,zz,ss<cr>

Query:

&S12,SRC,zz?<cr>

Reply:

&S12,SRC,zz,ab<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

ss:

Source 01-13

00 is zone off

13 is local source

Examples:

- &S12,SRC,13,11<cr> selects Source 11 in Zone 13.
- &S12,SRC,02?<cr> queries Zone 2 for selected source.
- &S12,SRC,09,00<cr> turns Zone 9 off

SYSOFF (System Off)

Description:

- Turns all zones off.
- Only Chassis 1 will respond.

Command:

&S12,SYSOFF<cr>

Query:

&S12,SYSOFF?<cr>

Reply:

&S12,SYSOFF,a<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

a:

0 = OFF

1 = ON

Examples:

- &S12,SYSOFF<cr> turns System off.
- &S12,SYSOFF?<cr> queries System status.
- &S12,SYSOFF,0<cr> S12 returns System is off.

TRE (Treble)

Description:

- Sets Zone zz to treble xyz.
- Increment Zone zz treble.
- Decrement Zone zz treble.
- Has no affect if zone is off.
- If sending 00, the + or - can be omitted.

Command:

&S12,TRE,zz,a<cr>

&S12,TRE,zz,xyz<cr>

Query:

&S12,TRE,zz?<cr>

Reply:

&S12,TRE,zz,xyz<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

+ = Increments (plus symbol)

- = Decrements (minus symbol)

x:

+ Sets to positive number (plus symbol)

- Sets to negative number (minus symbol)

yz:

00 - 18

00 = Flat

Examples:

- &S12,TRE,+13,+<cr> Increments Zone 13's treble.
- &S12,TRE,02?<cr> queries Zone 2 for its treble.
- &S12,TRE,13,-03<cr> sets Zone 13's treble to -3
- &S12,TRE,13,00<cr> Zone 13 treble is flat.

Programming (continued)**VOL (Volume)****Description:**

- Sets Zone zz to volume abc.
- Increment Zone zz volume.
- Decrement Zone zz volume.
- Has no effect if zone is off.

Command:

```
&S12,VOL,zz,a<cr>  
&S12,VOL,zz,abc<cr>
```

Query:

```
&S12,VOL,zz?<cr>
```

Reply:

```
&S12,VOL,zz,abc<cr>
```

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

- + = Increments (plus symbol)
- = Decrements (minus symbol)

abc:

000 - 100
000 = Mute

Examples:

- &S12,VOL,13,+<cr> Increments Zone 13's volume.
- &S12,VOL,02?<cr> queries Zone 2 for its volume.
- &S12,VOL,13,19<cr> sets Zone 13's volume to 19.
- &S12,VOL,13,000<cr> mutes Zone 13.

WHM (Whole House Music)**Description:**

- Turns specified Zone zz's WHM off/on/toggle.
- Has no effect if the zone is off.
- If zone is turned off, WHM is disabled.

Command:

```
&S12,WHM,zz,a<cr>
```

Query:

```
&S12,WHM,zz?<cr>
```

Reply:

```
&S12,WHM,zz,a<cr>
```

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

a:

0 = OFF
1 = ON
2 = TOG

Examples:

- &S12,WHM,13,0<cr> turns Zone 13's WHM off.
- &S12,WHM,02?<cr> queries Zone 2's WHM.
- &S12,WHM,13,1<cr> turns Zone 13's WHM on.
- &S12,WHM,13,2<cr> toggles Zone 13's WHM from on to off or off to on.

Video Commands**COR (Component Routing)****Description:**

- Routes Unit u's Component Input Group i to Component Output Group o.
- Used in 16x16 mode.
- Works if S12 is off or on.

Command:

```
&S12,COR,u,oi<cr>
```

Query:

N/A

Reply:

N/A

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

u:

Unit 1-4

o:

Output A-E

i:

Input A-E

Examples:

- &S12,COR,1,AE<cr> routes Unit 1 Component Input A to Component Output E.
- &S12,COR,4,BC<cr> routes Unit 4 Component Input B to Component Output C.
- &S12,COR,2,DA<cr> Routes Unit 2 Component Input D to Component Output A.

Programming (continued)**VID1 (Video 1)****Description:**

Switches S12's Panel 1 in Zone zz to a specific Video ab.

Command:

&S12,VID1,zz,ab<cr>

Query:

&S12,VID1,zz?<cr>

Reply:

&S12,VID1,zz,ab<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

ab:

Input 01-16
00 = Track

Examples:

- &S12,VID1,03,02<cr> S12's Panel 1 in Zone 3 selects Input 2.
- &S12,VID1,29?<cr> Queries S12's Panel 1 in Zone 29 for selected video input.
- &S12,VID1,07,07<cr> S12's Panel 1 in Zone 7 selects Input 7.
- &S12,VID1,02,00<cr> Notifies S12 to place S12's Panel 1 in Zone 2 in Tracking Mode.

VID2 (Video 2)**Description:**

Switches S12's Panel 2 in Zone zz to a specific Video ab.

Command:

&S12,VID2,zz,ab<cr>

Query:

&S12,VID2,zz?<cr>

Reply:

&S12,VID2,zz,ab<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

ab:

Input 01-16
00 = Track

Examples:

- &S12,VID2,03,02<cr> S12's Panel 2 in Zone 3 selects Input 2.
- &S12,VID2,29?<cr> Queries S12's Panel 2 in Zone 29 for selected video input.
- &S12,VID2,07,07<cr> S12's Panel 2 in Zone 7 selects Input 7.
- &S12,VID2,02,00<cr> Notifies S12 to place S12's Panel 2 in Zone 2 in Tracking Mode.

VID3 (Video 3)**Description:**

Switches S12's Panel 3 in Zone zz to a specific Video ab.

Command:

&S12,VID3,zz,ab<cr>

Query:

&S12,VID3,zz?<cr>

Reply:

&S12,VID3,zz,ab<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

ab:

Input 01-16
00 = Track

Examples:

- &S12,VID3,03,02<cr> S12's Panel 3 in Zone 3 selects Input 2.
- &S12,VID3,29?<cr> Queries S12's Panel 3 in Zone 29 for selected video input.
- &S12,VID3,07,07<cr> S12's Panel 3 in Zone 7 selects Input 7.
- &S12,VID3,02,00<cr> Notifies S12 to place S12's Panel 3 in Zone 2 in Tracking Mode.

Programming (continued)**VID4 (Video 4)****Description:**

Switches S12's Panel 4 in Zone zz to a specific Video ab.

Command:

&S12,VID4,zz,ab<cr>

Query:

&S12,VID4,zz?<cr>

Reply:

&S12,VID4,zz,ab<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

ab:

Input 01-16

00 = Track

Examples:

- &S12,VID4,03,02<cr> S12's Panel 4 in Zone 3 selects Input 2.
- &S12,VID4,29?<cr> Queries S12's Panel 4 in Zone 29 for selected video input.
- &S12,VID4,07,07<cr> S12's Panel 4 in Zone 7 selects Input 7.
- &S12,VID4,02,00<cr> Notifies S12 to place S12's Panel 4 in Zone 2 in Tracking Mode.

VID5 (Video 5)**Description:**

Switches S12's Monitor in Zone zz to a specific Video ab.

Command:

&S12,VID5,zz,ab<cr>

Query:

&S12,VID5,zz?<cr>

Reply:

&S12,VID5,zz,ab<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

zz:

Zone: 01-32

ab:

Input 01-16

00 = Track

Examples:

- &S12,VID5,03,02<cr> S12's Monitor in Zone 3 selects Input 2.
- &S12,VID5,29?<cr> Queries S12's Monitor in Zone 29 for selected video input.
- &S12,VID5,07,07<cr> S12's Monitor in Zone 7 selects Input 7.
- &S12,VID5,02,00<cr> Notifies S12 to place S12's Monitor in Zone 2 in Tracking Mode.

VOR (Video Routing)**Description:**

- Routes Unit u's Video Input ii to Output oo.
- Used in 16x16 mode.
- Works if S12 is off or on.

Command:

&S12,VOR,u,oo,ii<cr>

Query:

&S12,VOR,u,oo?<cr>

Reply:

&S12,VOR,u,oo,ii<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

u:

Unit 1-4

oo:

Output 01-16

ii:

Input 01-16

Examples:

- &S12,VOR,1,13,01<cr> routes Unit 1 Input 1 to Output 13.
- &S12,VOR,3,02?<cr> queries Unit 3's output 2.
- &S12,VOR,4,13,16<cr> routes Unit 4 Input 16 to Output 13.
- &S12,VOR,2,13,12<cr> routes Unit 2 Input 12 to Output 13.

Programming (continued)

Query Commands

ASD (Audio Signal Detect)

Description:

- Queries Unit u Audio Source Inputs to determine if an audio signal is present.
- The S12 can either sense audio from the Left, Right or both Left and Right.
- The S12 can detect the audio instantaneously, however it can take up to 30 seconds before the S12 detects the absence of audio once the audio is removed.
- Works if System is off or on.

Command:

N/A

Query:

&S12,ASD,u?<cr>

Reply:

&S12,ASD,u,aaaaaaaaaaaa<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

u:

Unit 1-4

a:

0 = Not Detected
1 = Detected

Examples:

- &S12,ASD,1?<cr> Queries Unit 1.
- &S12,ASD,2?<cr> Queries Unit 2.
- &S12,ASD,1,111111000000<cr> S12 Unit 1 reply. Audio Signals 1 thru 6 are ON and Audio Signal 7-12 are OFF.
- &S12,ASD,2,000010001000<cr> S12 Unit 2 reply. Audio Signals 5 and 9 are ON, Audio Signals 1, 2, 3, 4, 6, 7, 8, 10, 11 and 12 are OFF

LSD (Local Signal Detect)

Description:

- Queries Unit u Local Audio Source Inputs to determine if an audio signal is present.
- The S12 can either sense audio from the Left, Right or both Left and Right.
- The S12 can detect the audio instantaneously, however it can take up to 30 seconds before the S12 detects the absence of audio once the audio is removed.
- Works if System/Zone is off or on.

- If the S12 is queried immediately after connecting a Local Source, there is a possibility that the S12 will return all Local Signals are on/detected &S12,LSD,1,11111111<cr>. Wait a few seconds before the S12 is queried after connecting a Local Source.

Command:

N/A

Query:

&S12,LSD,u?<cr>

Reply:

&S12,LSD,u,aaaaaaaa<cr>

Parameters:

<cr>:

carriage return: Hexadecimal 0x0D or Decimal 13

u:

Unit 1-4

a:

0 = Not Detected
1 = Detected

Examples:

- &S12,LSD,1?<cr> Queries Unit 1.
- &S12,LSD,2?<cr> Queries Unit 2.
- &S12,LSD,1,11111100<cr> S12 Unit 1 reply. Local Audio Signals 1 thru 6 are ON and Local Audio Signal 7 and 8 are OFF.
- &S12,LSD,2,00001000<cr> S12 Unit 2 reply. Local Audio Signal 5 is ON, Local Audio Signals 1, 2, 3, 4, 6, 7 and 8 are OFF.

PGD (Page Detect Query)

Description:

- Queries Unit u to determine if the Page Trigger In jack is active.
- If all zones in a chassis/system do NOT have PG enabled, this command will still return the correct status of the Page Trigger In jack.
- PG enabled is programmed in VIA!TOOLS S12 Init Screen Zones page.
- Works if System is off or on.

Command:

N/A

Query:

&S12,PGD,u?<cr>

Programming (continued)**Reply:**

&S12,PGD,u,a<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

u:

Unit 1-4

a:

0 = Off/Inactive

1 = On/Active

Examples:

- &S12,PGD,1?<cr> Queries Unit 1.
- &S12,PGD,2?<cr> Queries Unit 2.
- &S12,PGD,1,0<cr> S12 Unit 1 reply. Page Trigger In jack is Off/Inactive.

STI (Sense Trigger Inputs)**Description:**

- Queries Unit u's Sense Trigger Inputs to determine if they are on or off.
- You must have the expansion cable connected if more than one chassis is in the system. If you do not, the returned data will not be reliable.

Command:

N/A

Query:

&S12,STI,u?<cr>

Reply:

&S12,STI,u,aaaaaa<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

u:

Unit 1-4

a:

0 = OFF

1 = ON

Examples:

- &S12,STI,1?<cr> Queries Unit 1.
- &S12,STI,2?<cr> Queries Unit 2.
- &S12,STI,1,111111<cr> S12 Unit 1 reply. All Sense Trigger Inputs are ON.
- &S12,STI,2,000010<cr> S12 Unit 2 reply. Sense Trigger Input 5 ON, Sense Trigger Inputs 1, 2, 3, 4 and 6 OFF.

VSD (Video Signal Detect)**Description:**

- Queries Unit u Video Inputs to determine if a video signal is present.
- The S12 can either sense audio from the Left, Right or both Left and Right.
- The S12 can detect the video instantaneously and detect the absence of video instantaneously.
- Works if System is off or on.

Command:

N/A

Query:

&S12,VSD,u?<cr>

Reply:

&S12,VSD,u,aaaaaaaaaaaaaaaa<cr>

Parameters:**<cr>:**

carriage return: Hexadecimal 0x0D or Decimal 13

u:

Unit 1-4

a:

0 = Not Detected

1 = Detected

Examples:

- &S12,VSD,1?<cr> Queries Unit 1.
- &S12,VSD,2?<cr> Queries Unit 2.
- &S12,VSD,1,1111110000000000<cr> S12 Unit 1 reply. Video Signals 1 thru 6 are ON and Audio Signal 7-16 are OFF.
- &S12,VSD,2,0000100010000101<cr> S12 Unit 2 reply. Video Signals 5, 9, 14 and 16 are ON, Audio Signals 1, 2, 3, 4, 6, 7, 8, 10, 11, 12, 13 and 15 are OFF.

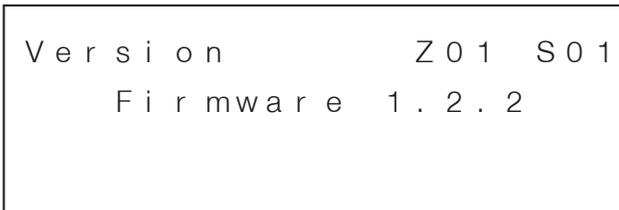
5. Troubleshooting

Diagnostics Menu

The S12 features a Diagnostics Menu that is designed to provide easy access to S12 system status and current programming. All diagnostics information is displayed on the S12's front panel. Menus exist for Firmware Version, Video Inputs and Outputs, Sense Inputs, Groups, and Factory Default. The pages within the Diagnostics Menu provide a map of the S12's configuration and are invaluable when trouble-shooting.

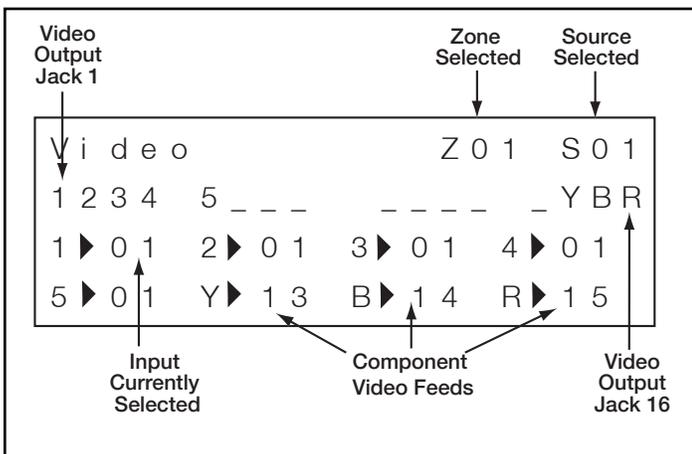
Firmware Version Screen

To access the Diagnostics Menu, press and hold the DND button for 2.5 seconds. The first screen will appear and provide the Firmware revision

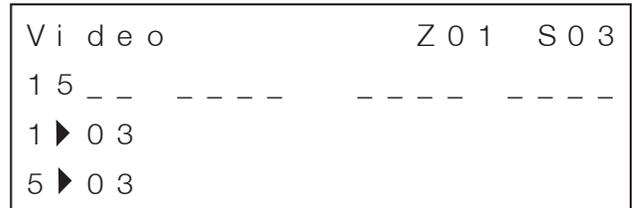


Video Screen

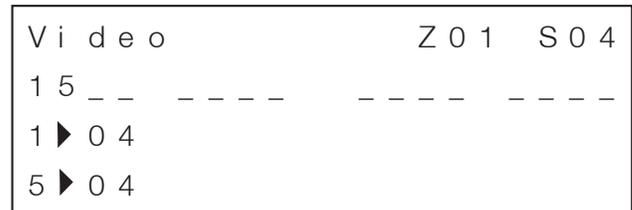
Press DND again to cycle to the next screen which will display programmed video information. The example screen below shows (for Source 1, Zone 1) that Outputs 1, 2, 3, and 4 are assigned to VIA!® Touch Panels in Zone 1 (the numbers on the second line "1 2 3 4" designate that touch panels are connected). Output 5 is assigned to a monitor in Zone 1 (monitors are represented by "5") and Outputs 14, 15, and 16 are Component video outputs also assigned to Zone 1 (designated by "Y, B, R").



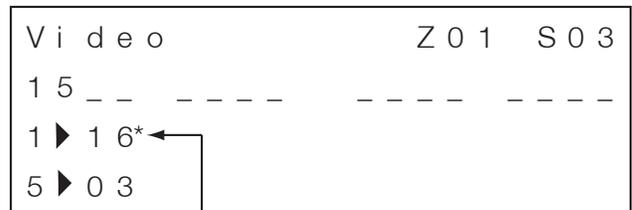
The next example screen shows Zone 1 with Source 3 selected. Output 1 goes to a VIA! Touch Panel (1), Output 2 goes to a monitor (5). The touch panel connected to Output 1 is displaying Input 3, the monitor connected to Output 2 is displaying Input 3, as well.



The example screen shown below shows Zone 1 with Source 4 selected. Output 1 goes to a VIA! Touch Panel, Output 2 goes to a monitor. The touch panel connected to Output 1 is displaying Input 4, the monitor connected to Output 2 is displaying Input 4.



The last example shows Zone 1 with Source 3 selected and a camera selected. The touch panel (1) on Output 1 is displaying the camera connected to Input 16, while the monitor connected to Output 2 (5) is displaying Input 3. The * indicates that the output is not tracking with the audio source selected.

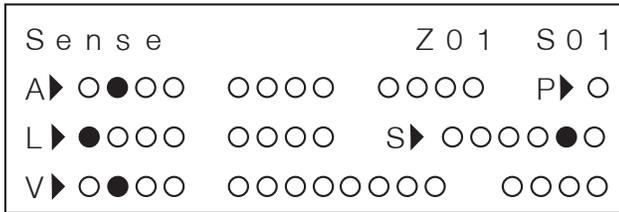


* indicates video not currently tracking with audio source (example: a camera is being displayed on a VIA! Touch Panel)

Note: This display is only valid for Default Tracking Mode and Source-Select Tracking Mode. It is invalid for 16 X 16 Mode.

Sense Screen

Press DND again to access the Sense Screen. The 12 positions next to "A" correspond to audio sensing. Any source that is currently playing will be indicated in this location. "P" indicates a Paging signal (either Page Trigger or Page Audio). "L" indicates that a Local source's audio is present. "S" indicates Sense inputs that are active, while "V" represents video signals that are present.



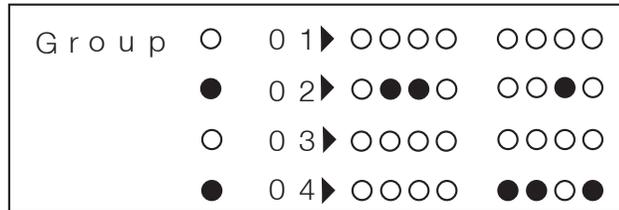
● = Active ○ = Inactive

Exiting Diagnostics

Press and hold the DND button for 2.5 seconds to exit Diagnostics Mode and get back to the normal display. The Diagnostics display will time-out after 4 hours of inactivity and revert back to the normal screen.

Group Screen

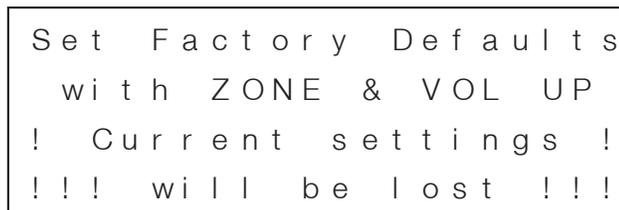
Press DND again to cycle to the Group screen. This will show the zones that are in each of the four possible groups associated with the S12 chassis and whether the Group is currently linked. In the example below, Group 2 is active and contains Zones 2, 3, and 7. Group 4 is active and contains Zones 5, 6, and 8.



● = Active ○ = Inactive

Factory Default

The last screen in the Diagnostics Menu is the Factory Default screen. Use this feature to reset the S12 back to original factory programming. With the Factory Default screen visible, press ZONE and VOL UP. The unit will reset itself and all programming will be removed.



Audio

Symptom	Cause	Solution
No audio present in a specific zone.	1. Source not playing.	Press Play, tune station, turn ON, etc.
	2. No source selected in zone.	Select source on front panel, keypad, or other zone controller.
	3. Source selected in wrong zone. IR zone controller (keypad, etc.) connected to wrong zone.	a. Consult front panel display to determine Source/Zone selection.
		b. Connect IR keypad or touch panel to correct zone.
	4. Variable output's volume turned all the way down.	Increase volume.
	5. Speakers or volume controls miswired or defective.	Test known good speaker/volume control at amplifier.
6. Zone audio output(s) connected to wrong amplifier input(s).	Verify connections.	
No audio present in any zone.	1. See above.	Perform steps above.
	2. Amplifier powered down.	Turn amp ON.
	3. Amp in protection mode.	Find cause of amp's protection mode and correct. Miswired speakers or volume controls most likely cause.
Hum or buzz through system speakers.	1. Ground Loop.	a. Ensure proper grounding using a three prong grounded AC outlet.
		b. Isolate problem by disconnecting each source one-by-one.
	2. Amp level(s) too high.	Reduce level(s).
Poor Audio quality.	1. Clipping or distortion.	Reduce amp level(s).
	2. Speakers out of phase.	Carefully check polarity of each speaker.
	3. Incorrect left/right assignment of source or zone RCA cables.	Isolate to source or zone and correct.
	4. Source level programming too high/too low.	Increase/decrease source level (+/- 6dB) w/VIA!TOOLS setup software.
Audio plays at full volume in a variable zone. No volume control with IR zone controller (Keypad, etc.).	1. Fixed zone output connected to amp in variable zone.	Connect variable zone output to amplifier.
	2. Loop output connected instead of variable zone output.	Connect variable zone output to amplifier.

Video

Symptom	Cause	Solution
No video to TV monitors or VIA! Touch Panels.	1. Source not playing.	Press Play, Tune station, etc.
	2. No source selected in zone.	Select source on front panel, keypad, or other zone controller.
	3. Wiring: video inputs and/or outputs incorrectly connected.	Verify and correct wiring.
	4. Programming: video inputs and/or outputs incorrectly programmed.	Verify and correct programming. Use VIA!Tools "Autobuild" for video source routing functions.
Video image is not optimal (ie., smeared, ghosted, blurry, or dull).	1. Wiring: in-house coax runs picking up noise from high-voltage lines, etc.	Do not run video cables near AC lines. Cross AC lines at 90 degrees.
	2. Wiring: coax has sharp bends or poor quality wire.	Make gradual bends in coax when running wire. Use high-quality wire.
	3. Source output too high. Certain satellite receivers have especially high output.	Use an RCA 'Y' cable w/ a 75 Ohm terminator connected to one leg. This will reduce the source output strength.
	4. Component video Y, P _B , P _R connections mixed-up.	Verify and correct wiring.

Triggers

Sense Trigger Inputs: Triggered event fails to occur. Example: VIA! Touch Panel does not switch to Camera Mode.	1. Wiring: Sense Inputs incorrectly connected or incorrect type of sensor/faulty sensor.	a. Connect a 3.5 mm mono mini cable to Sense Input. This simulates a contact closure and should trigger the event.
		b. Replace sensor or use different type.
	2. Programming: Sense Inputs incorrectly programmed in VIA!Tools.	a. Verify and correct programming. See VIA!Tools Help file.
		b. See Diagnostics Menu p. 59.
Zone/System Trigger Outputs: Triggered event fails to occur. Example: Amplifier does not turn ON when zone becomes active.	1. Wiring: bad mini-cable or using 3.5 mm stereo mini-cable instead of mono.	a. Must use MONO mini-cable.
		b. Replace defective cable.
	2. Test for voltage w/ Digital Multi-Meter.	Correct reading is 12 VDC.
Page Trigger Inputs/Outputs: Triggered event fails to occur. Example: Volume Control Override does not function.	1. Wiring: incorrect connections between Z•600 and S12/PS12.	a. See " Communications " p. 64.
		b. See Diagnostics Menu p. 59.
		c. Test for Voltage w/ digital multi-meter. Correct reading is 12 VDC.

IR Control

Symptom	Cause	Solution
No Source selection from IR Zone controller (Keypad, VIA! Touch Panel, or hand-held remote).	1. Programming: missing or incorrect source select command.	Verify and correct programming.
	2. Wiring: IR signal not reaching zone input.	Verify wiring: Wh/Blue(IR) & Brown (G).
Source selected in wrong zone.	IR zone controller connected to wrong zone.	Connect to correct zone input.
No source control from source-specific IR port. Works from 'ALL' port.	1. Programming: missing or incorrect source select command.	Verify and correct programming.
No source control whatsoever. Source selection is OK.	1. Programming: missing or incorrect source control commands.	Verify and correct programming. Test IR commands from VIA!Tools.
	2. Wiring: IR emitter connected to wrong port.	Correct connection of IR emitter.
	3. IR emitter defective.	Replace IR emitter.
Intermittant source control.	IR flooding.	Check IR indicator LED on front panel. If it flickers, or is constantly lit, IR flooding is indicated. Check any IR receivers that may be receiving ambient light or plasma TV noise.

RS-232 Control

Symptom	Cause	Solution
No source selection from VIA! Touch Panel.	1. Programming: missing or incorrect source select command.	Verify and correct programming.
	2. Wiring: RS-232 signal not reaching ELAN RS-232 port.	Verify wiring: SC4 or SS1 ELAN RS-232 to S12 ELAN RS-232.
Source selected in wrong zone.	Programming: incorrect source and/or zone select commands.	Verify and correct programming.
No RS-232 source control.	1. Programming: missing or incorrect source control commands.	Verify and correct programming.
	2. Wiring: incorrect pin-out or serial port assignment.	Verify and correct wiring and/or port assignment.

Communications

Symptom	Cause	Solution
No Music-On-Hold.	1. Source #1 is not playing.	Press Play, tune station, turn ON, etc.
	2. The MOH input level on the Z•600 is turned down.	Adjust levels. Consult the Z•600 manual.
No Page or Door Chime audio. Music does not mute when page or doorbell is activated.	1. Zone is in Do-Not-Disturb.	De-activate Do-Not-Disturb using front panel, IR, or RS-232 commands.
	2. Page/DB output from Z•600 not connected to Page/DB input on S12.	Correctly connect Page/DB Output from Z•600 to Page/DB Input on S12. See Z•600 to S12 Connections p.36.
	3. Control Output wiring incorrect between the S12 and the Z•600.	Correct wiring error. See Z•600 Connections p. 37 and the Z•600 manual.
No Page or Door Chime audio. Music mutes when page or doorbell is activated.	1. Z•600 Page/DB Output level turned all the way down.	Increase Page/DB level adjustment on Z•600.
	2. Page/DB output from Z•600 not plugged into Page/DB input on S12.	See Above.
	3. S12 has Volume programmed too low.	Increase setting (zone-specific) in VIA!TOOLS setup software.

Multi-Chassis

Symptom	Cause	Solution
In Chassis #2-4 only: <ul style="list-style-type: none"> • WHM, Paging, Doorbell, System Off do not function • Sense information not correct • IR information does not reach source equipment • Incorrect system On/Off status 	IR/RS-485 Expansion ports not connected or incorrectly connected.	Connect Expansion Port OUT of Chassis #1 to Expansion Port IN of chassis 2, etc. using ELAN's S12XK Expansion Kit.
In Chassis #2-4 only: <ul style="list-style-type: none"> • No RS-232 control of S12 • No RS-232 control of sources 	RS-232 Serial ports not connected or incorrectly connected.	Connect RS-232 Serial port OUT of chassis #1 to RS-232 Serial port IN of chassis 2, etc. using ELAN's S12XK Expansion Kit.

Technical Support

If, after carefully following the steps in the **Troubleshooting** section, you are unable to resolve issues with the installation or operation of the System12, please call ELAN Technical Support at 1-800-622-ELAN (3526).



Notes:

Limited Warranty

ELAN HOME SYSTEMS L.L.C. ("ELAN") warrants the System12 to be free from defects in materials and workmanship for the period of two years (2 years) from date of purchase. If within the applicable warranty period above purchaser discovers that such item was not as warranted above and promptly notifies ELAN in writing, ELAN shall repair or replace the item at the company's option. This warranty shall not apply (a) to equipment not manufactured by ELAN, (b) to equipment which shall have been installed by other than an ELAN authorized installer, (c) to installed equipment which is not installed to ELAN's specifications, (d) to equipment which shall have been repaired or altered by others than ELAN, (e) to equipment which shall have been subjected to negligence, accident, or damage by circumstances beyond ELAN's control, including, but not limited to, lightning, flood, electrical surge, tornado, earthquake, or other catastrophic events beyond ELAN's control, or to improper operation, maintenance or storage, or to other than normal use of service. With respect to equipment sold by, but not manufactured by ELAN, the warranty obligations of ELAN shall in all respects conform to the warranty actually extended to ELAN by its supplier. The foregoing warranties do not cover reimbursement for labor, transportation, removal, installation or other expenses which may be incurred in connection with repair or replacement.

Except as may be expressly provided and authorized in writing by ELAN, ELAN shall not be subject to any other obligations or liabilities whatsoever with respect to equipment manufactured by ELAN or services rendered by ELAN.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED AND IMPLIED WARRANTIES EXCEPT WARRANTIES OF TITLE, INCLUDING BUT NOT LIMITED TO IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

ATTENTION: TO OUR VALUED CONSUMERS

To ensure that consumers obtain quality pre-sale and after-sale support and service, ELAN Home Systems products are sold exclusively through authorized dealers. **ELAN products are not sold online.** The warranties on ELAN products are **NOT VALID** if the products have been purchased from an unauthorized dealer or an online E-tailer. To determine if your ELAN reseller is authorized, please call ELAN Home Systems at (859) 269-7760.



2428 Palumbo Drive Lexington, KY 40509

www.elanhomesystems.com