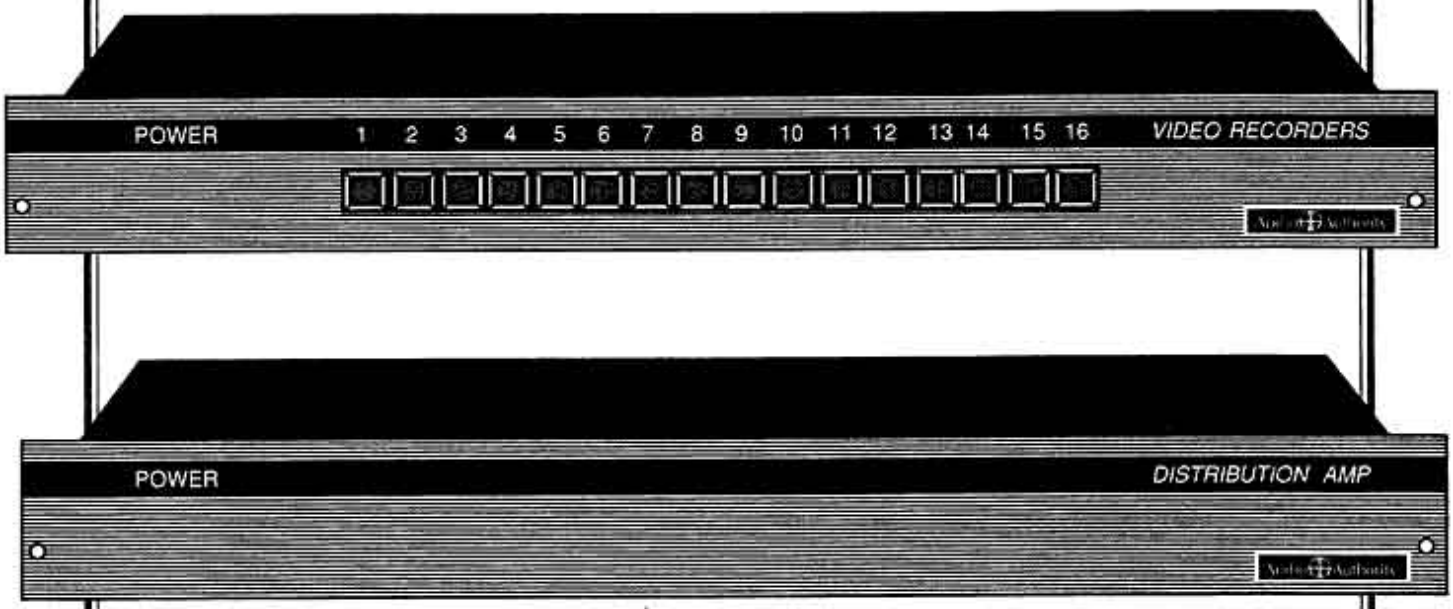
752-093, Rev 8/00

Video Demonstration System

SETUP MANUAL

for Series Five Modules



Audio Authority®

Thanks!

Everyone at Audio Authority would like to thank you for selecting our products for your demonstration needs. We design and build them to be the very best. We don't take your business for granted and hope our products and services will justify the confidence you have shown in us, and produce the merchandising efficiency you desire. Please don't hesitate to contact us if you have any questions, comments, or suggestions about our products.

PLEASE, Read This Manual

If you are like most people, you would rather jump right in and use a product than read its instruction manual. For this reason, we have tried to make this manual as concise as possible and organized in such a way that you can find the information you need quickly. A few minutes invested in looking over this manual will, in fact, reduce your installation time and chance of errors dramatically.

So please, read on.

Save This Manual

Don't forget to save this manual in a place where it will not be lost or forgotten. Entrust its safekeeping to someone in your firm.

Make a Record of Your Purchase Now

Take a moment now to record the model and serial numbers, date, and invoice number for the modules comprising your demonstration system. A form for this purpose is provided in the Technical Service portion of this manual. Creating this record will greatly simplify service arrangements, should service ever be necessary.

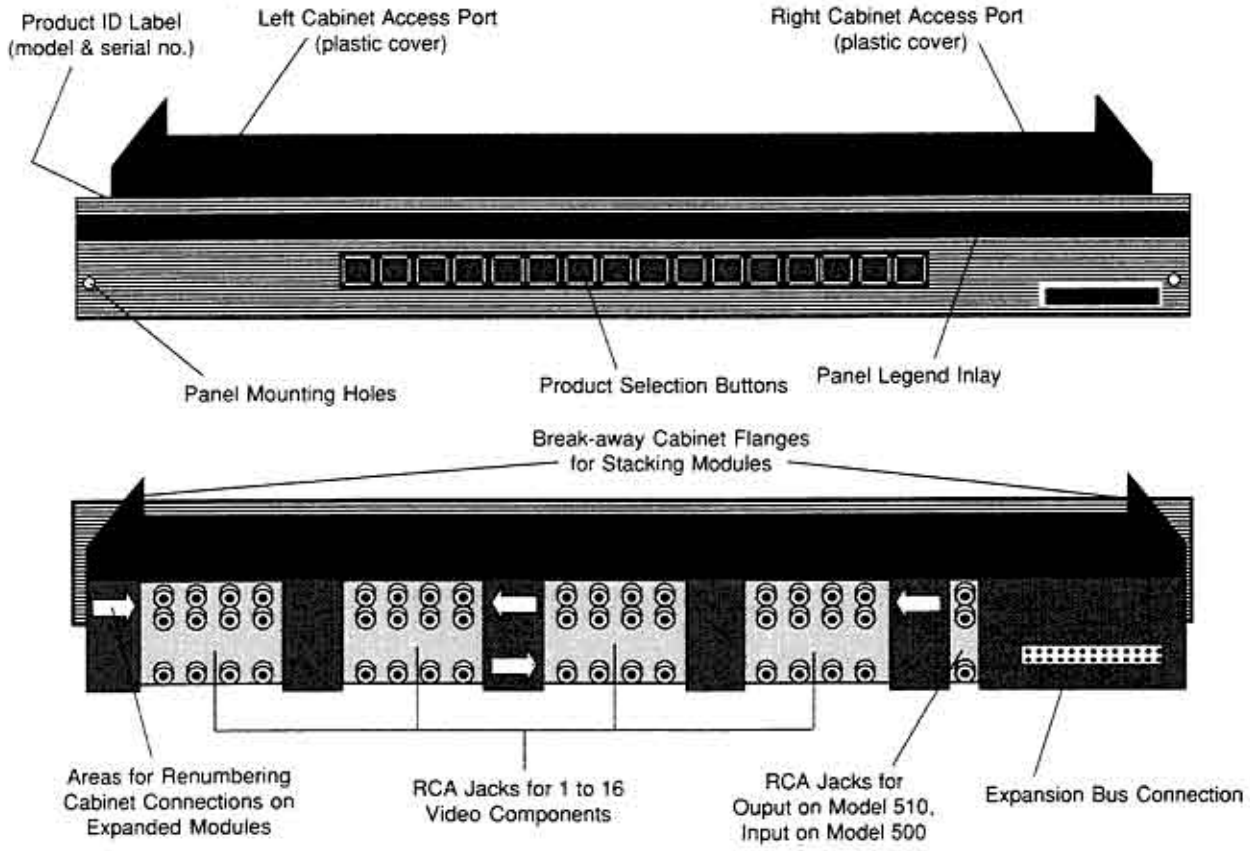
Table of Contents

Overview of the Series Five Demonstration System

Audio Authority Series Five products are designed to provide consumer electronics retailers with a flexible system for demonstrating all types of video entertainment components. Its modular design accommodates an unlimited quantity and variety of products (VCRs, monitors, receivers, tuners, video disc players, satellite receivers, etc.) to meet the individual merchandising needs of each retailer.

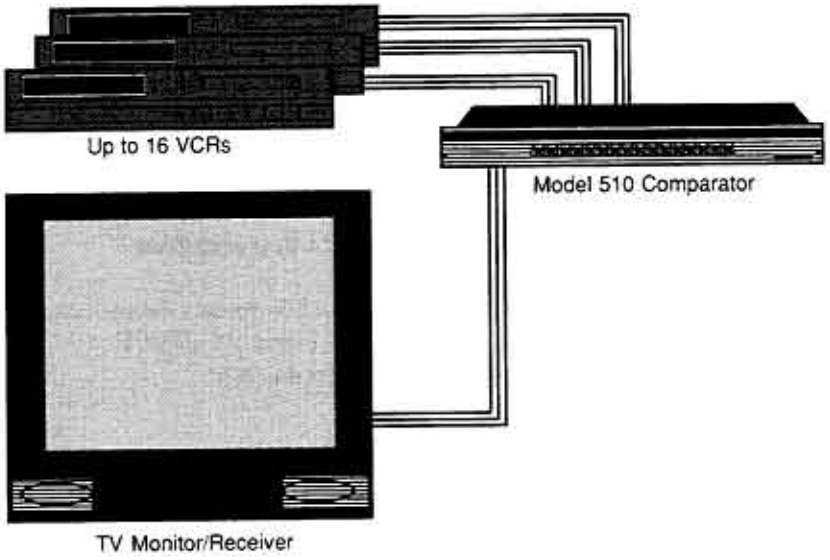
Though Series Five encompasses many products and accessories, its signal handling functions can be categorized into two basic functions – product selection and comparison, and signal distribution to many components simultaneously. These functions are performed respectively, by two modules – the Model 510 Universal Video Comparator and the Model 500 Video/Audio Distribution Amplifier. The features, controls, and connections for the Model 510 are shown on the illustration below. The Model 500 is similar except for the absence of selector buttons on front panel).

All signal routing occurs at line-level with provisions for three signals: composite video plus left and right channel audio, rather than one RF-type signal where video and audio are carried on one coax cable for reception over a specific TV channel. All connections to the Series Five modules mirror those found on typical video components – an RCA jack for each signal type, for each product connected.



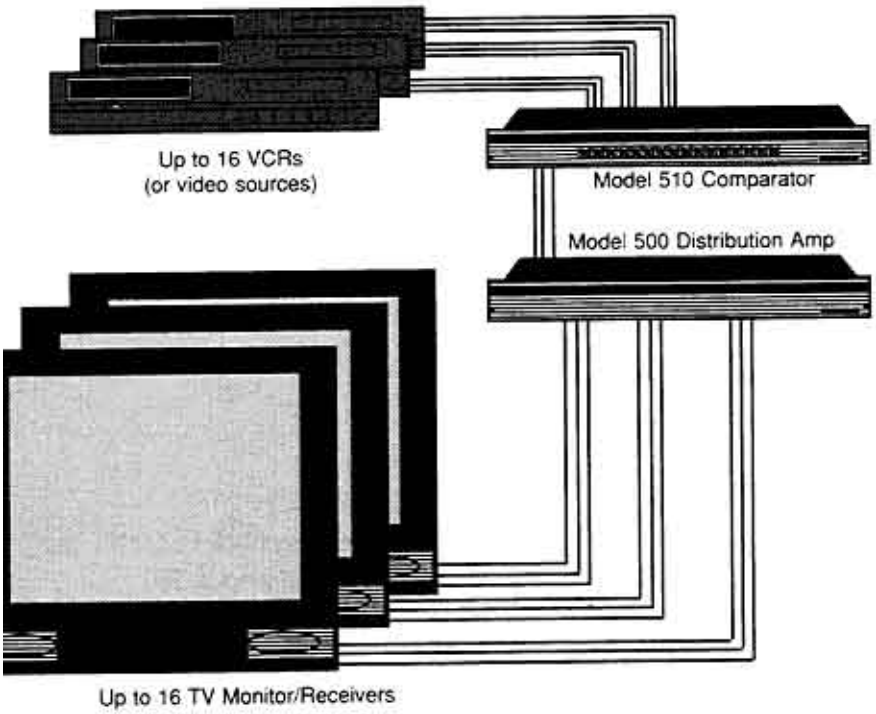
Application Examples

View any VCR on a TV Monitor/Receiver



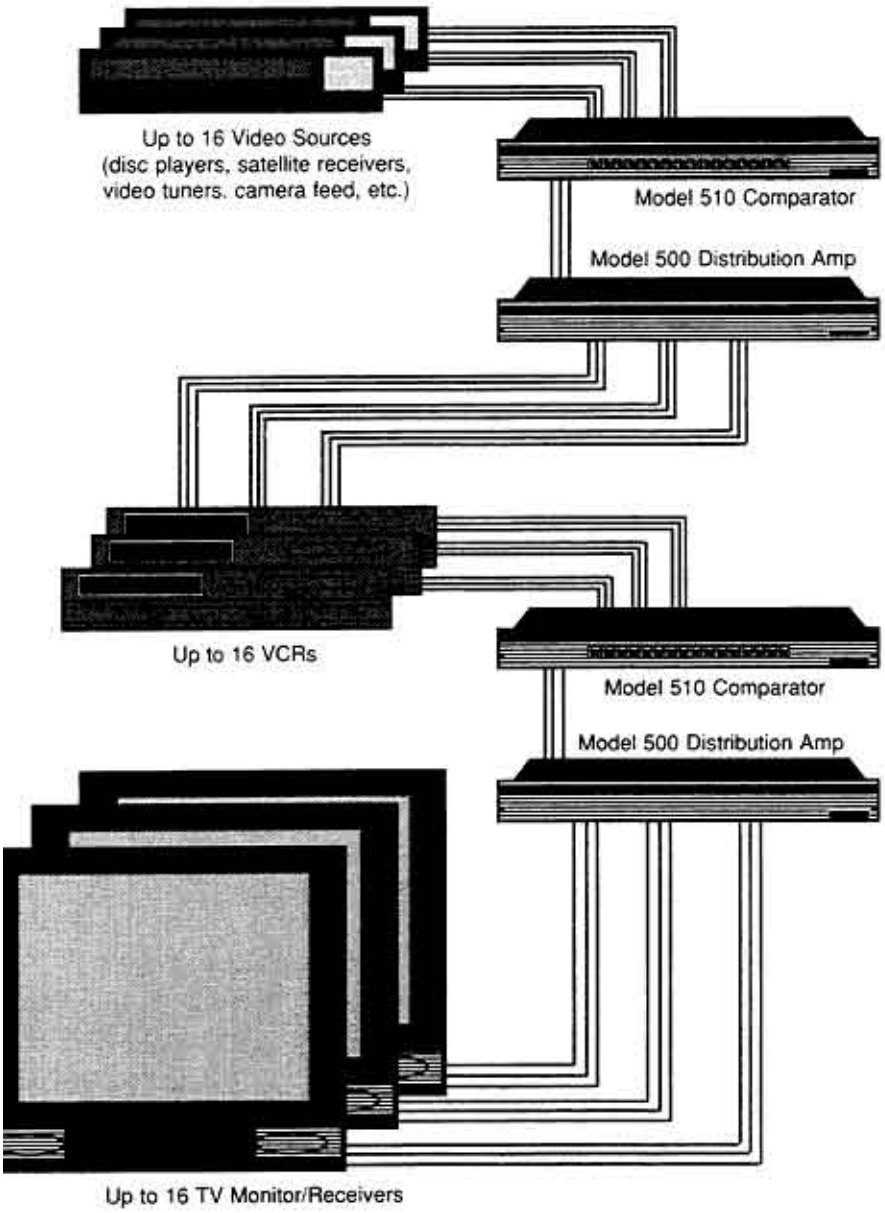
- House antenna system (not shown) feeds RF input to each VCR on display
- Line-level outputs from each VCR are routed to 510 Comparator
- Output of VCR selected by 510 is routed to a video monitor, or a TV set with video/audio inputs (TVs without A-V inputs must use a 520 RF modulator to receive VCR output on channel 3 or 4. See Installation Step 13 for more information.)

View any VCR on Several TV Monitor/Receivers Simultaneously



- House antenna system (not shown) feeds RF input to each VCR on display
- Line-level outputs from each VCR are routed to 510 Comparator
- Output of VCR selected on 510 is passed to Model 500
- Model 500 provides unity gain amplification to distribute signal to the A-V inputs of up to 16 video monitors simultaneously. (TVs without A-V inputs must use a 520 RF modulator to receive VCR output on channel 3 or 4)

Any Video Source to All VCRs (Allows A/B Comparison of Record Quality), and Any VCR to All Monitor/Receivers Simultaneously



- Outputs of all video sources connect to a Model 510 Comparator. (Model 515 may be used if 5 or fewer sources)
- Selected source from 510 is fed to inputs of Model 500 distribution amplifier.
- Model 500 feeds selected source to the inputs of all VCRs simultaneously.
- Line-level outputs from each VCR are routed to second 510 Comparator.
- Output of VCR selected on 510 is passed to second 500.
- Model 500 provides unity gain amplification to distribute signal to the A-V inputs of up to 16 video monitors simultaneously. (TVs without A-V inputs must use a 520 RF modulator to receive VCR output on channel 3 or 4)

Application Notes

- Any product grouping may be expanded beyond 16 units (to 32 or 48) with additional 500 or 510 modules and a 581 Expansion Bus Cable.
- For information on configuring an in-house antenna system to distribute RF signals (like cable TV) consult a local MATV specialist.

Preparing For the Installation

While Series Five products are designed for simple, straightforward installation, they differ significantly from ordinary "switchers". Following these instructions a step at a time will assure proper installation, the first time. We suggest that you mark off each step as you complete it.

Checking Contents of Shipment

Check the contents of the shipping containers against the packing slip to be certain that the components you need are present. An installation requires at least a Model 510 Universal Video Comparator or a Model 500 Distribution Amp, with a Model 580 Video Setup Kit.

Assembling Necessary Tools and Materials

You will need the following:

- scissors
- knife
- #2 phillips screwdriver
- small flat blade screwdriver
- pliers
- 4 - 6 inch (100-150mm) wire ties
- sequentially numbered wire markers
- audio/video (3-channel) interconnect cable*
- RCA male connectors (102 per Model 500/510)*
- "Y-adapters" (for components with mono audio)

If panel mounting your modules, you will also need:

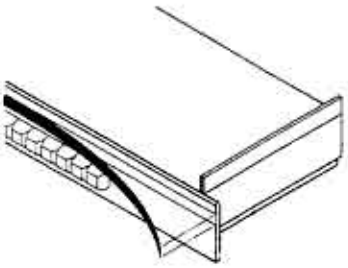
- tape measure
- straight edge
- saber saw
- electric drill and 1/8 inch (3 mm) bit

If you have questions about where to obtain any of the items listed above, please call the factory for assistance.

* **Cable and Connector Recommendation:** Our Excellerator Cable* system is designed specifically for professional audio and video installations and utilizes a solderless, screw-on, gold RCA connector. It allows you to fabricate cables to the exact length required in a fraction of the time required for solder-type connectors. Excellerator Cable* provides the perfect balance between performance, cost, and installation simplicity. See enclosed brochure.

Installation Steps

1 – Applying the Proper Panel Inlay to Model 510s



NOTE: The Model 500's panel inlay is applied at the factory.

Packed with each Model 510 is a set of self-adhesive Lexan® panel inlays for indicating the type and number range of video components connected to it. For each Model 510:

- Select the appropriate inlay strip.
- Apply inlay strip to the groove in the front panel being careful to align the inlay "window" under the word "POWER" with the LED furthest left on the 510 panel.
- Trim off any excess with scissors or razor knife.

Product number ranges higher than 32 are available as an accessory from the factory.

2 – Connecting Remote Indicator Cable to Model 510s

If remote indicator lights are to be used with any 510s:

- Pry out and discard the plastic cover from the right cabinet access port.
- Insert the indicator cable connector into the multi-pin receptacle on the circuit board.
- Keep the excess cable rolled up for now.

3 – Programming Model 500's for Expansion Beyond 16 Components

If no Model 500s in your system are to be combined to feed more than 16 components from the same source, then skip this step and proceed to Step 4.

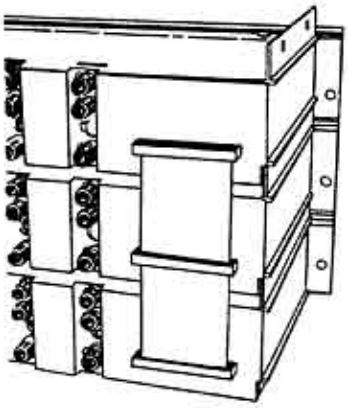
Each Model 500 Distribution Amp features a programmable 75 ohm termination resistor to match its impedance to that of the video source feeding it. Whenever multiple 500s are

NOTE: If Model 500s combined for quantities greater than 16 are later separated for use individually, those modules which were reprogrammed to disable their termination resistors must have them enabled once again by moving the jumper back to the original IN position.

combined to feed more than 16 units from a single source, only one of the modules may have its termination resistor enabled, the other 500s must be reprogrammed to disable their termination resistor. Otherwise, the multiple termination resistors will combine to present an improper load to the video source causing poor video performance. Choose the Model 500s to be combined, separate the unit(s) to be reprogrammed and do the following to them:

- Use a small screwdriver to pry the rectangular, plastic cover from the left cabinet access port.
- Disable the termination resistor by moving the small circuit board jumper (at location P103 on the circuit board) to the OUT position. (Input termination is set to the IN position at the factory)
- Snap the plastic cover back in place.

4 – Combining Like Modules for Expansion Beyond 16 Units



NOTE: Model 500s and Model 510s cannot be mixed on the same Expansion bus Cable .

CAUTION: Be careful to visually align the expansion bus cable's connector with the pin connector on the module cabinet. Incorrect pin alignment will make the module inoperative, including absence of panel indicator lights.

If no 500s or 510s are to be combined for quantities greater than 16, skip this step and proceed to Step 6. Otherwise:

- Identify and group the sets of 500s and/or 510s that are to be combined for product groups greater than 16.
- Stack modules in each set on top of each other and secure with the small screws from the hardware packets that come with each unit.

  Note: Stack Model 510s in ascending order - 1 to 16 on top, 17 to 32 next, and so on. Model 500s can be stacked in any order.

- Plug one end of the Model 581 Expansion Bus Cable into the Expansion port of the top unit in each set.
- Plug the free end of the bus cable into the bottom unit.
- Plug center plug into the middle module, if any.
- Press any excess cable tightly against the back of the cabinets.

5 – Renumbering Expanded Model 510 Cabinets

If none of your 510s are combined for quantities greater than 16 units, skip this step and proceed to the next.

On Model 510s that handle product quantity ranges above 1 to 16, we recommend the rear cabinet legends be modified to reflect the correct display product numbers, i.e., 17 to 32 or 33 to 48. To accommodate this, there are four large arrows beneath the regular product numbers on the rear of the 510 where additional number ranges can be written. Use the fine point, indelible marker included with the 581 Kit to renumber the 510s according to the chart below:

Product Range	Cabinet Markings			
1 to 16 (no change)	16 - 13	12 - 9	8 - 5	4 - 1
17 to 32	32 - 29	28 - 25	24 - 21	20 - 17
33 to 48	48 - 43	44 - 41	40 - 37	36 - 33

6 - Building the Module Stack

If you are using only a single module, simply remove the right cabinet access port cover, and plug the cord from the 580 Video Power Supply into the matching receptacle on the circuit board. Use any of the four power pack outputs. Proceed to Step 7.

For systems comprised of multiple 500s and/or 510s:

- Determine the stacking order for the modules (or sets of combined modules) by crossing out those from the chart on the next page that are **not** present in your system.

System Stacking Chart

Module Inlay No.	Product Range	Signal Function
510-A1 510-A2 510-A3	1 - 16 17 - 32 33 - 48	Source Selector
500 500* 500*	1 - 16 17 - 32 33 - 48	VCR Input Feed
510-1 510-2 510-3	1 - 16 17 - 32 33 - 48	VCR Output Selector
500 500* 500*	1 - 16 17 - 32 33 - 48	Processor Input Feed
510-B1 510-B2 510-B3	1 - 16 17 - 32 33 - 48	Processor Output Selector
500 500* 500*	1 - 16 17 - 32 33 - 48	Video Monitor Feed

* These modules reprogrammed to disable redundant termination resistor.

- Beginning with the bottom module (or set of modules) remaining on the chart above, plug the end of the 580 Power Supply cord into the circuit board receptacle located beneath the right cabinet access port.

NOTE: The 580 Video Power Supply has 4 connectors on its cord. While it can supply power to as many as 4 modules, or sets of expanded modules, no more than 3 Model 500s should be connected to a single 580. Use multiple 580s as needed to power more than 3 500s.

- Select the next higher module (or set of expanded modules) from your system chart above and place it on the bottom module so that the front panels interlock.

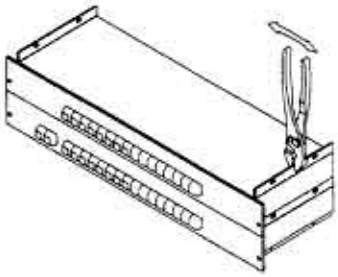
- Fasten the cabinet flanges of the bottom module to the cabinet of the higher module, using the small screws from the hardware packets that come with each module.

NOTE: Only the first module in an expanded set need be connected to the 580 cord. The remaining modules in the expanded set will receive power through the Expansion Bus Cable.

- Plug the next connector on the 580 cord into the top module.

- Repeat this stacking process until all modules are physically joined and connected to a 580 Power Supply.

7 – Removing Breakaway Cabinet Flanges from Top Module



Before proceeding, verify that:

- Modules are in the proper order, as listed from top to bottom on the preceding system chart.
- Every module, or set of modules, has a 580 Power Supply cord plugged into its receptacle.
- Each set of expanded modules has an Expansion Bus Cable connected to it.
- All desired remote indicator cables have been connected.

If any of these are not completed, please find the instructions for that step and complete it before continuing. Then do the following:

- Break off the two flanges from the top module of the stack using a pair of pliers. Bend each flange to the side, a little bit each way and continue until it breaks clean. Don't overbend!

8 – Initial Checkout

- Verify that the input voltage rating on the 580 Video Power Supply(s) is correct for your application - 120 volt vs. 220 volt.
- Plug the 580 Video Power Supply(s) into an unswitched (powered continuously) wall outlet. The POWER indicator on each module will come on.
- Push each selector button in turn. The indicator above each button will light. If your system contains sets of 510s joined by Expansion Bus Cables, each new selection pushed will release the previous one, anywhere on the set. If something seems amiss, check the Power Supply(s) and Expansion Bus Cable connections. If that doesn't help call the factory Technical Service for assistance. See Technical Service portion of this manual for details.

9 – Preparing To Panel Mount the Module Stack

If your Series Five Module Stack is going to simply sit on a shelf, then skip this step and proceed to the next.

To panel mount the stack:

NOTE: Series Five modules are not compatible with EIA-standard equipment racks. Consult the factory if you want to mount your modules in a commercial equipment rack.

- Mark a rectangular opening in the display fixture to the exact size shown in the chart below:

Number of Modules	Opening Size, Inches	Millimeters
2	4 x 17	102 x 432
3	6 x 17	152 x 432
4	8 x 17	203 x 432
5	10 x 17	254 x 432
6	12 x 17	305 x 432
7	14 x 17	356 x 432
8	16 x 17	406 x 432

- Protect the display surface from accidental damage during cutting by applying masking tape to the areas where the cutting tool might contact the display.
- Carefully cut the opening with a sabre saw taking care to make it just as straight and rectangular as you can.
- Remove the rubber feet from the bottom unit in the stack and fit it through the opening.
- Position the stack where you want it and mark the centers of the panel mounting holes.
- Remove the module stack and drill a 1/8 inch (3 mm) guide hole at each hole location.
- Position stack in opening to verify correct guide hole locations. Final installation of the modules will occur after all wiring and connections are complete, so set the stack aside for now.

10 – Selecting Cables and Connectors

The display wiring that interconnects all the video components with your switching and distribution modules is what will make or break your demonstration system. Its importance cannot be overemphasized. Using premium grade cable and connectors guarantees the best possible picture and sound in your demonstration system.

The cable characteristics required for a audio/video component display are as follows:

- Audio – dual channel, shielded, low capacitance
- Video – shielded coax, 75 ohms nominal impedance

NOTE: Stringing together patch cords with barrels to make the display interconnects is specifically **NOT** recommended. Besides typically poor quality and performance, the many additional connections dramatically reduce the reliability of the demonstration system.

Cables of this type and solder-on RCA connectors are available at most electronic parts/supply stores.

The traditional approach to fabricating the display interconnects has been to solder RCA connectors onto separate audio and video cables that meet the above criteria. While this approach works, there are two drawbacks:

1) Labor Cost - The time required to strip, solder, and crimp an RCA connector reliably onto low-cap cable with a foam dielectric, even assuming very high technical skills, is extremely high. With 102 connectors per Series Five Module, the labor adds up quickly. And, of course, there is also the loss of income while store personnel are tied up making cables.

2) Installation Difficulty - Though it would be desireable to put on connectors after the cables have been run, the only practical way is to fabricate them at a work bench. Pulling cables through the display with the connectors attached can be difficult and often causes plug failure.

3) Long Term Reliability - Our study has shown that soldered-on connectors, with even the best soldering craftsmanship, are simply prone to problems like losing a channel. This is primarily due to the inadequate, crimp-type strain relief, which allows connections to work their way loose over time, as display merchandise is changed.

To address these problems, we have developed and recommend Excellerator Cable®, an audio/video interconnect system designed specifically for professional installations. It has the following features:

- ideal electrical characteristics
  - 95 ohms impedance*
  - low capacitance (less than 15pF/ft.)
  - extremely low loss for long cable runs (0.0151 dB/ft at 6MHz)
  - wide bandwidth (DC to 50MHz)
- available in 3-channel configuration, for stereo audio plus video, in unbroken lengths up to 500 feet.
- Solderless, gold plated, RCA connectors simply screw onto the cable, without any special tools. Cuts installation time and difficulty dramatically.
- Connectors feature a special strain relief that provides long term reliability and resistance to abuse.
- Cables can be pulled without connectors and trimmed to the exact length with ordinary scissors. Connectors are easily added after cables are in place.

* Typical impedance value of cables designed for video components is 75 ohms. The slightly higher value of 95 ohms for Excellerator Cable was chosen because it produces increased detail and resolution over 75-ohm cables for composite video signals in a typical installation.

11 – Wiring the Display

If you are fabricating the display interconnect cables apart from the display to pull through afterwards:

- Calculate the exact lengths needed for each cable run between the Series Five Modules and each component location (a scaled drawing is helpful for this).
- Cut cables to length and use cable markers to identify each by the display product location it will serve.
- Install RCA connectors on both ends of each interconnect cable.
- Pull finished cables through the display to their respective locations leaving adequate slack for easy connections at both ends.

NOTE: One of the objectives in wiring the display is to avoid any unnecessary lengths of interconnect cables. Since no cable is a perfect conduit for your audio and video signals, the less used the better. Keep interconnect lengths just long enough to do the job, and no longer.

If you are fabricating interconnects at the display location:

- Pull the desired length of cable from the module stack to the hookup point for each product. Leave some slack.
- Use cable markers at each end to identify each cable with the display product location it serves.
- Trim cables for the desired amount of slack and install RCA connectors at each end.

12 – Installing the Stack

In the application examples earlier in this manual, we saw how single or multiple sources could be fed through various levels of video components, finally arriving at one or more TVs or monitors. Although your system is probably not identical to any of the examples, the basic signal flow is still the same.

- To interconnect all of the components of your video display follow these four basic steps:

  1) Connect the outputs of the video components being selected to the 16 sets of jacks labeled "FROM VIDEO/AUDIO OUT" on the respective 510.

  2) Connect the 510's "VIDEO/AUDIO OUT" jacks to the inputs of a single video product, or to the "FROM VIDEO/AUDIO OUT" jacks of a Model 500 for distribution to several components simultaneously.

  3) Connect the 500's input jacks, marked "FROM VIDEO/AUDIO OUT", to the output of a single video product, or the "VIDEO/AUDIO OUTPUT" of a Model 510.

  4) Connect the 500's 16 sets of jacks marked "TO VIDEO/AUDIO IN" to the inputs of the video products receiving the common source signal.

NOTE: The importance of using some sort of cable markers, even pieces of masking tape, to identify the function of each interconnect cable cannot be overemphasized. It will eliminate confusion in the future if maintenance is required and as display products are changed.

NOTE: As your display wires converge on the module stack, they may become quite bulky and heavy. Use nylon wire ties to bundle your cables for neatness and reliability, and keep the weight of the cable bundles off the module stack as much as possible

NOTE: If any of the components being connected do not have stereo outputs or inputs, use a "Y-adaptor" to allow connections.

NOTE: The Model 500 features built-in circuitry which allow outputs to individual components to be combined with a simple "Y-adapter" without the usual problems (poor sound, phase shift, mono throughout the system).

NOTE: A small number of videc monitors can be fed from a single video output by "looping through," that is, feeding each monitor in the loop from the output of the monitor before it.

NOTE: Composite video signals cannot be split with TV signal splitters or "Y-adapters". You must use a distribution amplifier such as the Model 500 to feed two or more device inputs from one source.

- Check the connections from the 580 Power Supply(s) to the modules in your stack one last time before mounting the stack, then plug the 580s into the wall outlets.
- Connect remote indicators to the stack by plugging the 34-pin bus cable(s) coming from the 510(s) into the receptacle on the respective Indicator Interface Board.
- Once connections to the module stack are complete, it can be mounted in the display and its panel(s) secured using the two larger screws and nylon washers packed with each module. Guide holes in the display surface were made previously, in step 9.
- The individual video components can now be connected to the display. Be careful to follow the cable markings you made earlier to insure that the three signals (audio left, audio right, and composite video) and input cables vs. output cables are not confused during hookup.

13 – Connecting RF Modulators to TVs Without Video Inputs

If TVs without direct video inputs are to be demonstrated, it is necessary to use a Model 520 RF Modulator between the demonstration system and the antenna inputs of the particular TV set. The 520 modulates the combined left and right audio and composite video over VHF channel 3 or 4. The 520 has a single "RF-Output" . To connect a Model 520 to your system:

- Plug the display system's stereo audio and composite video output into the corresponding jacks on the 520.
- Connect the 520s "RF-Output" to the desired component's antenna input using a RG-59 cable with an F-type connector on each end.
- Tune the TV channel selector to either 3 or 4 (whichever you selected on the 520) to see the output from the demonstration system.

To use a Model 520 to supply an RF signal to a number of TVs without direct video inputs, use one of the following procedures:

- Feed the "RF Output" of the 520 into the head end of the in-house MATV system, using a suitable signal combiner, making sure that there are no conflicting RF sources on the channel you intend to use.

- Feed the "RF-Output" of the 520 into a VHF antenna amplifier (available at electronic parts stores) and use a number of antenna splitters and/or line tapoffs to connect multiple TV sets.

14 – Final Checkout and Troubleshooting

- Make sure that all sources are ready to operate, i.e., software is loaded in disc players and cable drop or antenna inputs are hooked up to tuners, etc.

- Play the available sources one at a time through a monitor or VCR/monitor combination. Check for clean video and audio, and verify that you have stereo separation on all sources.

- Identify and solve any trouble areas before proceeding.

Very Weak or Absent Video or Audio

May mean an interconnect cable is defective, or connectors are not installed properly. Be especially critical of soldered RCA plugs, which are notorious as trouble sources in demonstration systems.

Snowy Video or Noisy Audio

- Problem in a cable TV or antenna source, such as faulty cable or connectors
- Antenna preamplifier turned off
- Too many splitters on antenna line

In General

Always be certain that your inputs and outputs are oriented correctly to the 500s and 510s. Use this summary:

- The 16 sets of 500 jacks are connected to component INPUTS.
- The 16 sets of 510 jacks are connected to component OUTPUTS.
- Connections between Model 510s and 500s are made via interconnect cables.
- Connections between expanded 500s or 510s are made via the Expansion Bus Cable.

If in doubt about the system hookup, review the 4 rules in Step 12, and get "a fresh pair of eyes" to check your work.

Complete the system checkout by testing the operation of all other video products on the display, one-by-one.

Technical Service

Maintenance

Use a mild window cleaner to remove fingerprints, etc. from the front panels of the module stack. No other regular service is required.

Service Procedures

TOLL-FREE 800 NUMBER!
800-32-AUDIO
800-322-8346

In Kentucky call 859-233-4599

A document called Service Policies and Procedures is packed with every Series Five product and details the exact procedures for obtaining service. Generally, we offer the following services:

Application Consultation

If you have any questions about how to employ our products to solve your demonstration problems, our sales staff is thoroughly trained in this area. Since all our sales personnel have actually worked in retail and used these products, you will find their advice most pertinent.

Installation Consultation

Our Technical Service Manager is available to assist you with configuration and installation problems that you are

unable to solve by consulting this manual.

Warranty Service

Most of our products are designed for quick "in-store" service by simply replacing a circuit board module. Our Technical Service Manager can diagnose any problem over the phone and can usually have the solution on its way to you the next day.

Out-of Warranty Service

Our commitment to service does not change after the warranty period. Out-of-warranty service is handled just like warranty service, except that there is a nominal difference between the cost of the replacement module and the refund for the defective return.

Record of Purchase

Date of Purchase: ___/___/___
Invoice Number: _____
Model 500 - Quantity: ____
Serial Numbers: _____
_____
Model 510 - Quantity: ____
Serial Numbers: _____
_____
Model 515s: _____
Model 520s: _____
Other: _____

Limited Warranty

Audio Authority Corporation warrants Series Five products against defects in materials and workmanship for a period of one year from date of purchase. Within the warranty period, Audio Authority will exchange replaceable circuit board modules or parts, or will repair at no charge units returned to the factory freight prepaid. This warranty is void for units which, in our sole opinion, have been subjected to accident, misuse, abuse, or improper installation. Audio Authority assumes no responsibility for consequential damages of any kind.