AccessEz™
Demonstration Network

Car Audio
System Installation Manual

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Orientation

INTRODUCTION

The AccessEZ™ series of demonstration system modules provides a plug-in solution for car audio, hi-fi, and video switching systems in retail display environments. This second generation of the highly capable, industry-acclaimed Access™ System modules offers many new features and benefits:

- *AccessEZ* offers a compact module to fit each kind of product, compared with a patchwork of printed circuit boards.
- Modules are protected by attractive and rugged steel covers.
- Gold jacks and terminals are clearly and specifically labeled.
- Expansion, when needed, is done by directly “docking” modules.
- Simplified module addressing.
- New audio switching capabilities include Digital (coax) connections and Optical adapters for Toslink® inputs and outputs.
- Master volume controls offer level presets.
- Touchscreen and Graphical control panels invite user interaction.
- Single product group control panel for sub rooms, speaker displays, or any product category.

All these new *AccessEZ* features are added to the existing capabilities of the *Access* System which include:

- Your choice of button-per-product, central control panel/computer touchscreen, IR remote, or any combination of user interface.
- Sophisticated SilenTouch™ interval muting for quiet switching.
- Capacity for hundreds of products.
- Comprehensive control panels with automated demonstration features.
- Single button recall of up to 99 stored system configurations.

All of these features make it EZ to design the demonstration system that fits your specific merchandising needs. Your Account Manager and our Application Engineering staff can assist you in selecting and configuring the appropriate *AccessEZ* modules to build the ideal system for you.

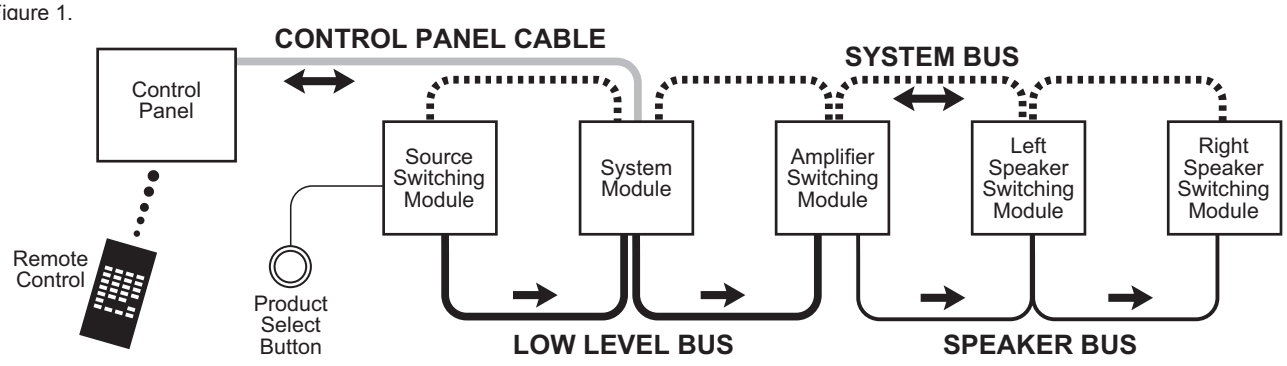
This manual is provided as a framework to help you successfully install your *Access* System, test its operation, and then use the system to demonstrate and sell your merchandise. This manual covers the proper installation of the switching system hardware only (if your system includes a 902, 903, or 906 Control Panel, or AccessPC touchscreen interface, please refer to the separate User Guide provided with your control panel for operation instructions).

Please read and follow these instructions carefully. If you have any difficulties during the installation, don’t hesitate to call us for assistance! We are always pleased to receive customer calls. We’re open Monday through Friday from 8:30 AM until 5:00 PM, Eastern Time. Also check our website for diagrams and tips: http://www.audioauthority.com.

What is the Access™ System?

The Access™ System consists of a variety of intelligent switching modules. These modules communicate with each other via the "system bus," allowing you to construct the exact demonstration system configuration you desire from the sources, processors/equalizers, amplifiers, speakers, and subwoofers in your display. The switching modules are located near the actual products on display creating a "distributed switching network." The products are connected to the modules rather than being wired to one central point. Selected product signals are then sent across the network through "buses" that interconnect the modules. A simplified view is shown below.

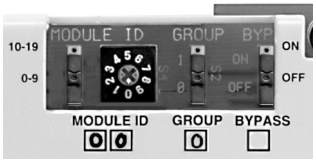
Figure 1.



DEFINITION OF TERMS

To successfully install your new *Access Demonstration Network*, you should familiarize yourself with the following terms:

Address A number that pinpoints the identity and location of a switch module within a system. The installer sets numeric switches like the ones in Figure 2 for each module which provides a unique address in the proper sequence for each component connected to the system.



AutoDamping™ When merchandising many pairs of different speakers in a showroom, the drivers of the unselected speaker pairs become passive radiators when the currently active speaker pair is playing, absorbing much of the sound coming from the speakers being played. AutoDamping™ is a circuit in the Model 932 that electrically disconnects (shorts) speakers not being played, thereby automatically damping them as passive radiators and improving sound quality in the showroom.

Bus A Bus is a pathway for signals to travel from module to module; a cable connecting modules. There are three types of buses found in most *AccessEZ* Systems:

- **System Bus** A four wire harness (red, black, yellow, blue) connected to every *AccessEZ* module. The System Bus carries the signals that control the selection of the components and perform various housekeeping functions among the modules in the system.
- **Speaker Bus** (or **High Level Bus**) A four wire harness (green, white, brown, gray) that carries speaker-level signals from source and/or amplifier modules to speaker modules.
- **Low-level Bus** A signal bus using RCA patch cables to carry low-level audio signals between source modules and equalizer or amplifier modules.

Bypass A way to hear a system without a particular in-line component (EQ, Crossover, Amplifier, etc.). For example, when you wish to hear a system without the processor, the system can route the signal past the processor group and directly to the amplifiers. In this example, Position #4 on the last module in the Processor Product Group is used as the bypass location. When this position is selected, or the Product Group is deselected, the audio signal continues through the bypassed group to the next Product Group. To activate bypass, turn ON the Bypass switch only on the last module in the group.

Control Panel Control Panels, like the 902, 903, 906 or AccessPC Touchscreen, add central control and display capabilities to a system. Any control panel can operate hand-in-hand with product select buttons.

Module A basic component of the AccessEZ™ System. There are five types of modules normally found in car audio applications:

- **Switching Modules** select and connect products for demonstration and communicate with other system components through the System Bus. Examples are Models 910D, 922, 932, 942 and 958.
- **Expander Modules** add channel capacity to switching modules. Examples are Models 920X and 940X.
- **System Modules** perform basic control, interface and housekeeping functions within the system. Examples include Models 980 and 988.
- **DC Power Modules** distribute DC power to sources, EQs, and amps. Examples include Models 915X and 916X.
- **Signal Distribution Modules,** such as the 985EZ and 975, distribute audio and/or video signals to output devices such as Video monitors.

Position The numbered point of connection (1-4 for electronics, or 1-8 for speakers) of a product to a switching or expander module. The product select button (PSB) must be connected to the corresponding position on the module. For example, if a component is connected to position 3, its product select button must be connected to PSB position 3. When a "bypass" is required, always use the fourth position (see "bypass"). Control Panels select positions through the System Bus, and are not connected to individual positions.

Product Group A group of functionally similar products, such as sources, amplifiers, subwoofers, etc. product group also refers to the windows to the right on 902/903 control panels.

Product Select Button (PSB) A push-button mounted at, or near the product location. Pushing this button selects the product for demonstration and lights an LED to confirm the selection.

System 1. A network of switching modules interconnected by buses where a control panel and/or PSBs are employed to select and thereby interconnect specific components for demonstration. 2. A configuration of audio products or components playing together which can be stored in control panel memory and A/B compared with other "systems."

SilenTouch™ SilenTouch mutes the sound for a brief period during the switching process to eliminate transient noises while changing from one product to the next.

TheftAlert™ A special circuit that senses ground continuity of the products connected to the switching modules. If an alarm device is connected to the system, it will sound if a product is disconnected from the system without authorization. *TheftAlert* is an optional feature available through your Audio Authority® Account Manager. *TheftAlert* may also be added after your initial purchase. A special transformer is required for the feature to work and is provided per your request. You then will need to install it in the proper position on the switch modules.

HOW THE ACCESS™ SYSTEM WORKS

When a product is selected for demonstration, signals are sent through a network of buses between switching modules to activate that particular product position.

Selecting Products in the Access System

Products can be selected in a system in different ways that can all be combined into a single system, if desired. You may select products in the following ways:

- By pressing a Product Select Button (PSB) connected to a switching module. This allows the user to build different systems of product configurations manually.
- By using a control panel, if the system is so equipped. Control panel use is covered in detail in a separate manual that accompanies each control panel.
- By issuing commands with the Model 905 IR Remote Control, which is included with the 902 Control Panel and available with the 903. One 905 remote is recommended per salesperson.
- By using a computer touchscreen with AccessPC or custom software configured to enable product selections and other control functions.
- A combination of these methods.

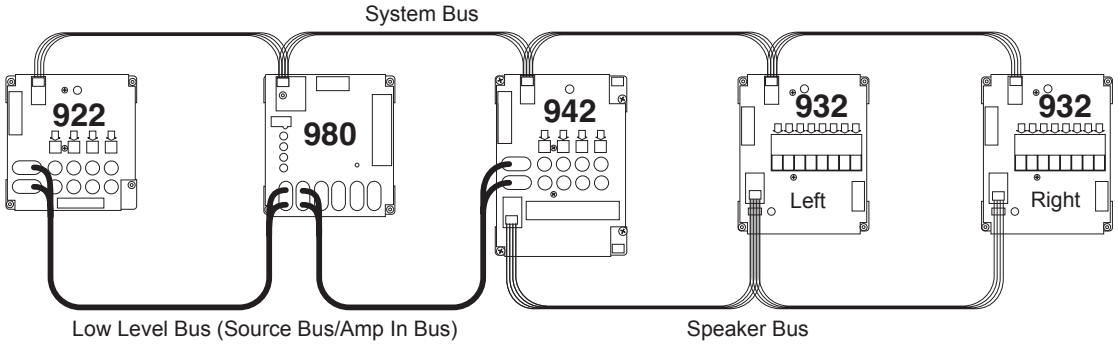
Buses

Signals are passed between modules by “buses,” which are nothing more than cables that go from module to module, connecting them into functional groups within the system’s architecture.

The System Bus connects all switching and system modules, allowing them to send messages to each other, controlled by the addresses that are set by the installer. These signals instruct the modules to select the inputs/outputs of a particular unit, such as a head unit or amplifier. Expander modules are not connected directly to the System Bus. Each expander receives its instruction from the main switch module to which it is attached.

Signal Buses carry audio signals, either low-level (source low-level output, for example) or high-level signals (amplifier output).

Figure 3. Basic bus examples in a simple demonstration system.



ACCESS SYSTEM COMPONENTS

If you have already planned your system with the assistance of your Account Manager, you may wish to skip directly to the Installation section. If you need help planning your system, call your Audio Authority® Account Manager at 800-322-8346.

Access™ User Interfaces

Control Panels

903 Digital Control Panel

- Displays selected products, even when they are selected using Product Select Buttons or by remote control. Displays diagnostic information for troubleshooting the system.
- Removable product group insert labels can be changed to indicate the functions of the LED displays. An extensive set of labels is included with the control panel.
- Amplifiers can be connected to more than one product group allowing one amplifier to be demonstrated independently as a front, rear, or sub amp (amp sharing).
- If not assigned as an active product group, the control panel's last product group can store up to 99 pre-configured systems for immediate recall.

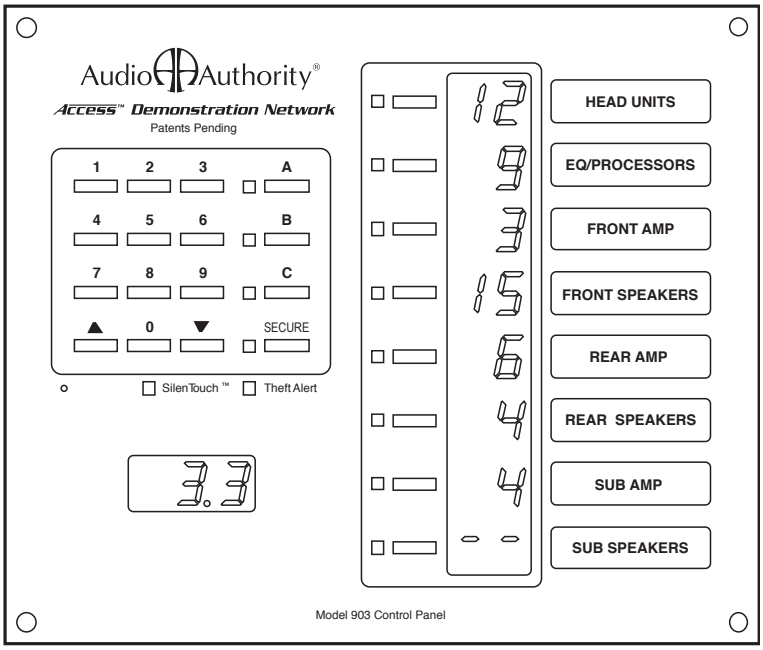


Figure 4. The 903 controls up to eight product groups, and can be operated via IR remote control (sold separately).

- Optional TheftAlert™ circuit can be armed to sound an alarm should products on display be disconnected without authorization.
- The control panel or any specific product group can be "locked out" from unauthorized user input.

IR Remote Control

903 Control Panels have an IR sensor that accepts commands from a universal or programmable remote. The Model 903 IR codes can be downloaded from www.audioauthority.com. The IR code set includes all commands available on the 903 Control Panel.

906A Control Panel

Perfect for subwoofer rooms or speaker walls, the 906A Control Panel selects products from one Product Group, using a rotary encoder knob, and displays the selected product number in the LCD window. Use the Select Previous button to make instantaneous comparisons between products. Two 906A Control Panels may be used in one system, one 906A for each Product Group.

Product Select Buttons

A product select button is a momentary switch, usually with an LED to indicate when a product is selected. Each button has a two-pin cable and two-conductor wire connecting the button to the switch module. Audio Authority carries several button styles and colors.

Switching Modules

910D Head Unit Selector

Controls outputs from 4 source units for 4-channel high-level, 2-channel low-level operation. Provides DC power connection for each source. Module can be split in two for greater placement flexibility using a Model 998 Extension Cable. Also features an expander port for adding additional channels.

922 Low-Level Selector

Controls a pair of 2-channel low-level signals routed to or from 4 low-level products such as low-level sources.

932 Speaker Selector

Each 932 accommodates eight left OR eight right speakers (standard current). Two 932s are required for 8 stereo pairs. 932 modules are mono so that each switch module may be located near the speakers it serves. Includes AutoDamping*.

939 High Current Speaker Selector

Accommodates eight high current speakers, usually subwoofers. Non-selected speakers are shorted to ground to reduce the sound absorption of unselected speakers in the display. Includes AutoDamping*.

940EZ High-Level Selector

Controls two channel high-level signals routed to or from four high-level products. Controls two channels of four products (e.g., high-level sources). Use Model 932 for applications where AutoDamping™ is desired.

942 2-Channel Amplifier Selector

Switches the low-level inputs and high-level outputs of four 2-channel amplifiers.

958 EQ or Crossover Selector

Controls low-level inputs and six channels of low-level outputs from four crossovers or equalizers.

System Module

980EZ

Provides the central point of control for DC power, SilenTouch™, 903 Control Panel, etc. The 980 is essential for any Access™ System and is typically installed in the low-level signal path just prior to any amplifier inputs.

* An exclusive technology called AutoDamping is employed to short non-selected speakers to ground, which reduces the sound absorption of unselected speakers in the display, improving room acoustics.

Expander Modules

920X Low Level Expander Module

The 920X adds a pair of low-level channels to any switching module.

932X High-Level Expander Module

The 932X adds eight speaker positions to a 932 module. This module is used in systems where speakers are switched in pre-configured sets, as opposed to a mix-and-match approach.

940X High-Level Expander Module

Adds a pair of high-level channels to any switching module.

949X High Current Amplifier Expander Module

The 949X can provide high level amplifier signal pathways for today's most powerful amplifiers. Use with Model 922 or 942. Accepts up to 6 AWG speaker wire in board-soldered terminals.

System Specific Components

970 RS232 Serial Interface/PC Interface

Connects the Access system to a PC for computer control (Touchscreen, etc.).

977 Digital Audio Adapters

977R converts optical digital audio signals to coax, and 977T converts coax digital audio signals to optical.

975 FM Distribution Amplifier

12-volt powered FM antenna booster drives all the radio antenna inputs and has direct input for one or more RF output CD changers. Use with distribution components in Kit 16 or Kit 17. Kit 16 provides 4-way taps and cables for FM distribution to sixteen head units. Kit 17 contains one 4-way tap and cables for four head units.

9A80 Crossover

A simple crossover which can be hidden inside the fixture, allowing two-channel low-level signal from the headunit to be split for the demonstration of front speakers, rear speakers, and subwoofers.

981 DC Eliminator

Small, in-line, low-level device that eliminates DC that can be present in the low-level outputs of some head units and crossovers found on the market. One required per offending product.

982A Low-Level Isolator

Small in-line, low-level device that eliminates ground loops inherent in car audio displays. One required per amplifier group (982A is not recommended with subwoofer groups).

DC Distribution Modules

915X DC Power Adapter

DC expander Module that provides connections to DC power source for 4 Equalizers, Crossovers, or CD Changers. Includes resettable 10 amp circuit breaker. Use with Model 922 or Model 958.

916X DC Power Adapter

DC expander Module that provides connections to a DC power source for 4 car audio amplifiers rated under 500 watts. Uses resettable 10 amp circuit breaker for ignition circuit and 40 amp resettable

circuit breaker for circuit from battery terminals. Use with Model 942. The 916X also provides the DC connection points for 980EZ, 910D and 915X modules.

917X DC Power Adapter

Supplies DC power to high-power car audio amplifiers in Access™ display systems. It is similar in operation to Model 916X, but with greater output current capability and built-in diagnostic lamps. Use with 922 and 949X. 60 Amp fuse, accepts wire up to 6 AWG.

CHOOSING THE CORRECT SWITCHING MODULES

The Access™ System is very versatile and can be installed and wired in many different ways. Your Account Manager can help you choose the modules that will best suit your needs. If at any time you wish to change your merchandising approach, *Access* can be reconfigured and additional modules can be installed as your needs change.

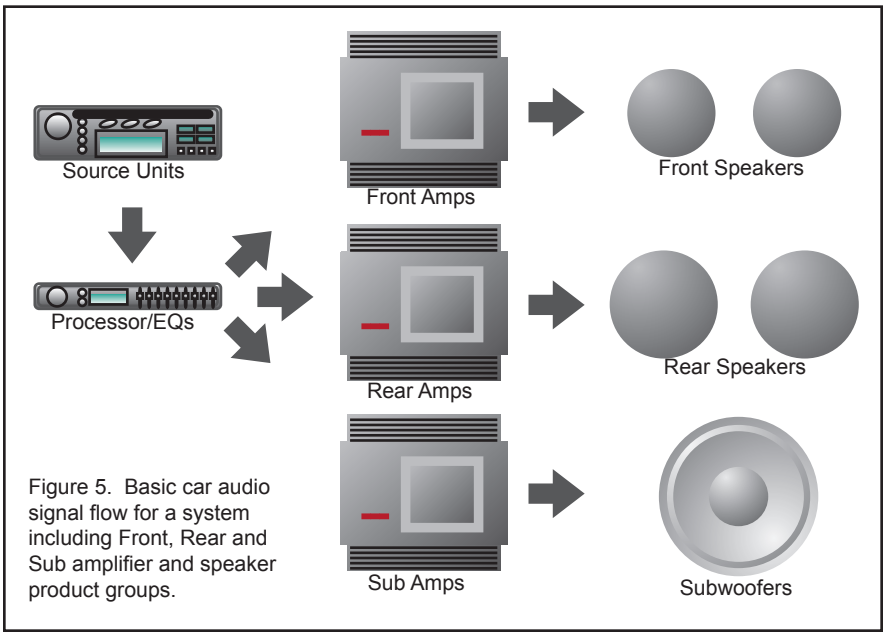


Figure 5. Basic car audio signal flow for a system including Front, Rear and Sub amplifier and speaker product groups.

Product Groups

When planning the installation, try to think of the components you wish to display as belonging to a particular family or GROUP, and where those components might reside in the signal path, for a typical vehicle installation.

Head Units

The Model 910 is a good choice for almost every type of head unit, from simple 2-channel powered tape/tuner units with only high-level outputs, to CD/tuner units that have low-level outputs (preamp) for rear channels and high-level outputs (speaker-level) for front channels. Both of these varieties belong to the same source family or product group and may be switched with the Model 910D (see Figure 6).

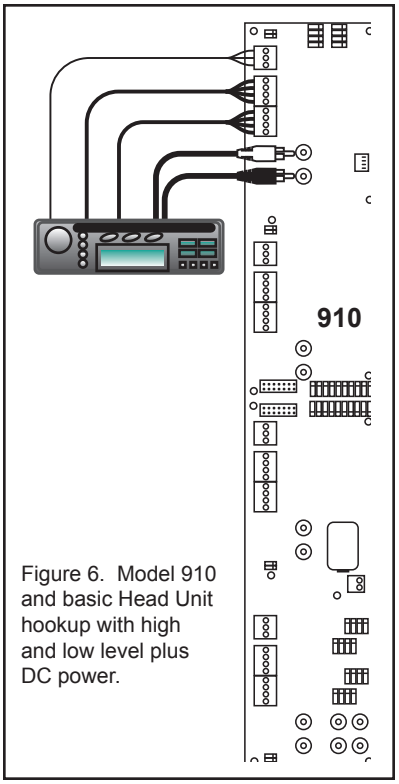


Figure 6. Model 910 and basic Head Unit hookup with high and low level plus DC power.

Processors and Equalizers

The next product group in the signal path may be Processor/EQ/Crossover. Generally, these devices have 2-channel low-level inputs and multiple output channels (e.g. 2 in x 6 out; see Figure 7). For the bypass option, remember to leave the fourth position open on the last 958 module in the Processor/EQ product group. That position is reserved for the bypass connection, so no processor or EQ can be connected.

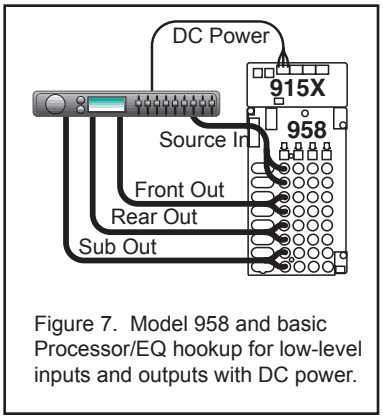
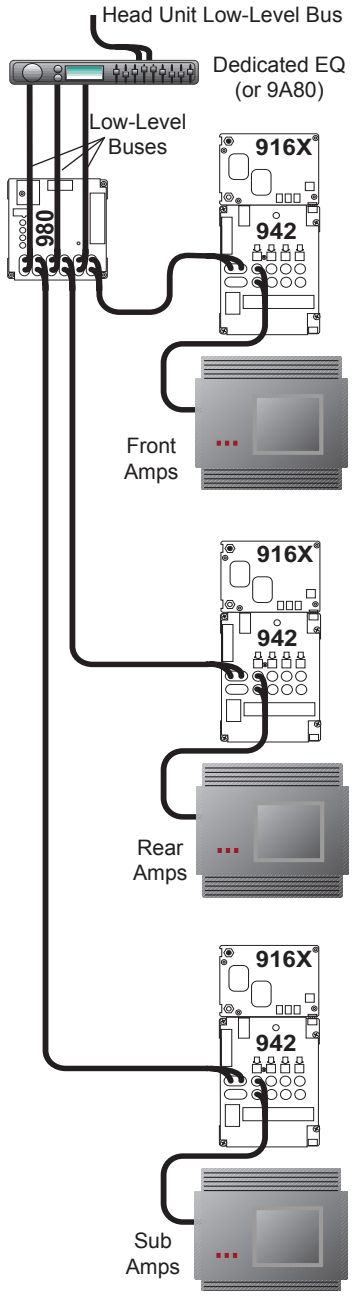


Figure 7. Model 958 and basic Processor/EQ hookup for low-level inputs and outputs with DC power.

Many retailers use a single dedicated crossover to derive multiple output signals for multiple amp inputs. This may be the simplest solution for your display (see Figure 8). Our Model 9A80 Crossover is a good alternative to a consumer crossover, designed just for this purpose.

Figure 8. Dedicated EQ and Front/ Rear/Sub Amp Groups.



Amplifier Product Groups

The low-level outputs of the Head Units or the Processor/EQ/Crossover group are connected to the next component in the signal path, the Amplifier product group. You will probably want to divide your amplifiers into front-channel amps, rear-channel amps, and subwoofer amps (see example in Figure 8).

Figure 10. Some suggestions for group arrangements. Sixteen unique speaker groups are possible.

• Front Speakers • Rear Speakers • Subwoofers	• Tweeters • Mid Range Speakers • Subwoofers

Many amps have multiple inputs and outputs such as 4-channel amplifiers with Front Left/Right-INs/OUTs and Rear Left/Right-INs/OUTs. There are 6-channel amplifiers, most with their own internal crossovers, and amplifiers that can be specially configured, depending on how you hook them up (e.g. Front L/R Stereo IN/OUT, Rear bridged in mono for Subs).

When planning for demonstrating these multichannel amps, you will need to support each L/R input to the amp, and each L/R output from the amp.

So, a 4-channel amp could be used as shown in Figure 9. The Front L/R Input signal would come from the Processor/EQ product group to the Front amplifier product group's Model 942 Amplifier Selector through the Front Low-Level Bus. The amplifier in position #1 receives the front input L/R signal through the 942 Amp Module and sends its front output L/R signal back through the 942 in the Front Amp product group. The Sub input signal in this example passes through position #1 on the 942 Amp Selector for the Sub Amp product group. The High-Level Bus then passes the signals on to the Front and Sub speaker groups.

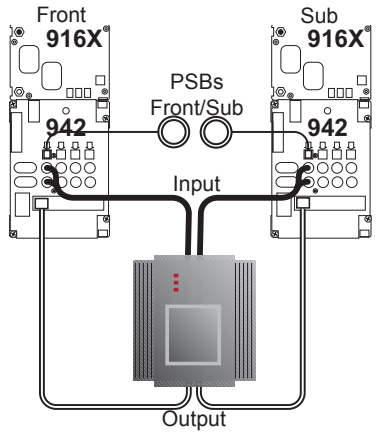


Figure 9. 4-channel amplifier switching (Front/Rear or Front/Sub).

Amp Sharing

If you want the flexibility to play 2-channel or 4-channel amplifiers in more than one product group, you can design your system for "amp sharing." For example, you may wish to show the same amplifier driving a Front, Rear, or Sub speaker group without duplicate amplifiers in the demo system. This method of demonstration lowers your display inventory investment and conserves space.

To achieve amp sharing, you need a Model 942 for each product group in which shared amps will appear. Also, each shared amp must receive a low-level input signal from each shared channel, e.g. front, rear, and sub (see Figure 11). There are several ways to set up amp sharing systems, so consult your Audio Authority Account Manager at 800-322-8346 as you design your system.

Ampifier Bypass

Bypass is activated when no products in an amp group are selected, so that the head unit's high level output signal is supplied directly to the speakers. To accommodate bypass functionality, remember to leave the fourth position open on the *last* 942 module in each Amp product group. That position is reserved for the bypass connection, so no amp can be connected there.

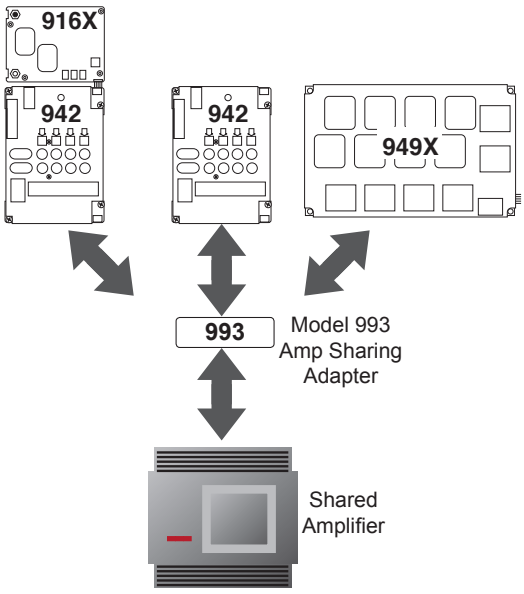


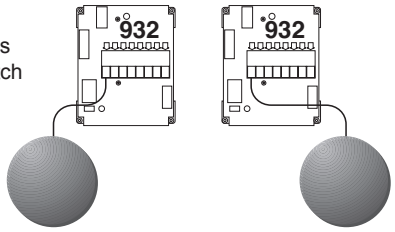
Figure 11. One shared amp may be selected for front rear or sub positions (see Appx. B p. 48).

Speakers and Subwoofers

The final components in the signal path are the speakers. Each speaker product group is powered by the selected amplifier in its corresponding group. So, front type speakers are powered by front amps, rear type speakers by rear amps, subs by sub amps. The *Access* System's architecture was designed for a maximum of 16 unique speaker groups, with a capacity within each group for 99 pairs of speakers. Most systems have just two or three speaker groups, following the amplifier groups, examples of which are shown in Figure 10.

Speaker switching modules (932 and 939) are designed to switch eight speakers in one channel (8 left or 8 right speakers) so two Model 932s are required for each eight *pairs* of speakers. The special AutoDamping™ circuit shorts the unselected speakers to ground so that they do not resonate sympathetically with the selected speaker pair. AutoDamping significantly improves the acoustic properties in a medium to large demo room.

Figure 12. Model 932 Speaker Selectors. This configuration could switch eight speaker pairs.



In very small systems, it could be more cost effective to use the Model 940EZ high-level switching module for speakers. Each 940EZ module handles 4 *pairs* of speakers. The 940EZ does not offer SilenTouch, and unselected speakers are NOT shorted to ground *(AutoDamping)* when the 940EZ is used for speaker switching, but that usually isn't an issue when there are only a few speaker pairs in the system.

Figure 13. Model 940EZ. This module could switch four speaker pairs, but does not have the AutoDamping™ Circuit.

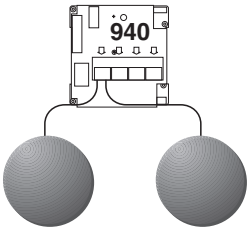
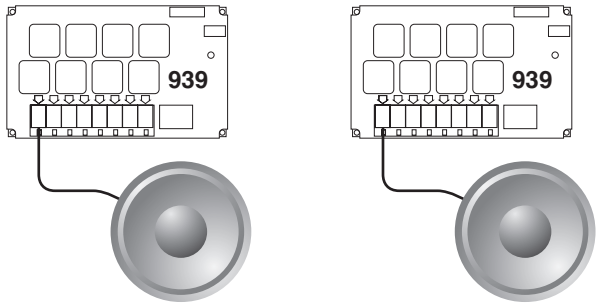


Figure 14. Model 939 High-Current Speaker Selectors. This configuration could switch eight stereo subwoofer pairs.



BEGIN INSTALLATION

1. Preparation

A. Review the design of the demonstration area.

- Find the system wiring diagram from this manual that best serves as an example for your installation. Examples are in Appendix A: Sample Systems.
- Gather the owner's manuals of other products that are part of your system for reference.

B. Gather the tools and materials you will need.

- #1 and #2 Phillips screwdriver bits
- #1 small slotted screwdriver
- Power screwdriver (especially one with a torque clutch)
- Wire cutter/stripper
- Cable ties (4" is good)
- 7/64" and 3/4" drill bits
- 7/16" nut driver or open-end wrench
- Flashlight
- 14 - 18 gauge speaker wire and high quality RCA patch cords

C. Check the contents of the shipping cartons. Use the packing list to identify the system components and determine how each component fits into your wiring plan. See page 8 for reference.

2. Address and Other Settings

How Module Addressing Works

Each Access module communicates with other modules via System Bus, and they identify themselves by a unique ID, or "*address*." Each *main switching module* (see Figure 14) has a set of switches (Figure 16 -18) for assigning its "address." There are two parts to the address:

1. The *group number* is the general place a module resides in the system, like a street in a city.
2. The *module ID* is the unique number assigned to each module like individual house addresses on one street. Therefore, each module ID must be unique *within* the same product group.

A. Number the Product Groups.

1. Determine the group number. Standard group address examples are shown below. The column to the right shows the order in which groups appear on the 903 Control Panel. Refer to your system plan to make a product group chart for your system. Number each product group starting with Head Units (always group 0).

Electronics Group	Speakers Group	Group #	903 Control Panel Display
Head Units		0	1
Processor/EQs		2	2
Front Amplifiers	Front Speakers	4	3,4
Rear Amplifiers	Rear Speakers	5	5,6
Sub Amplifiers	Subwoofers	6	7,8

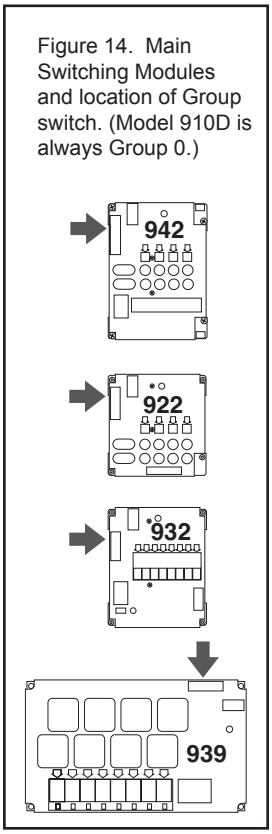


Figure 14. Main Switching Modules and location of Group switch. (Model 910D is always Group 0.)

2. Note that the front amps and speakers have matching group numbers as do the rear amps and speakers. See Figure 15 to see how the 903 Control Panel usually arranges these product groups.

B. Determine the Module ID settings.

Number the modules in each group to put the products in the desired order in the group. Use the following table for the appropriate module ID setting for each module.

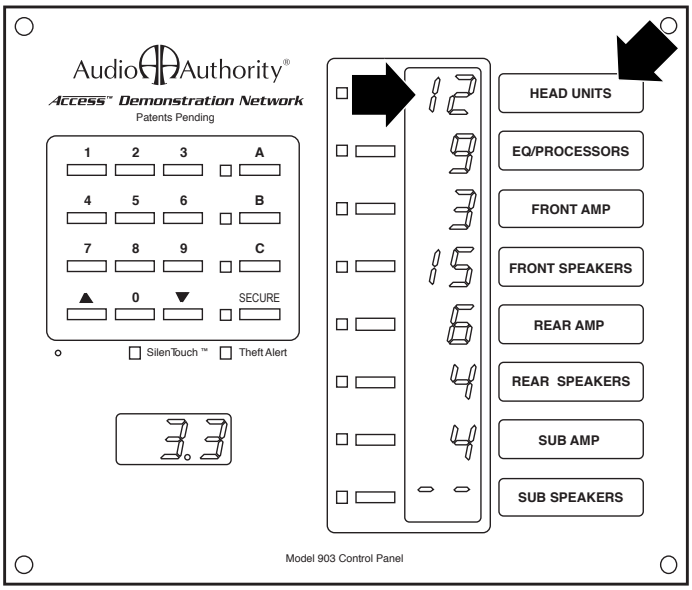


Figure 15. This is how product groups appear on the 903 Control Panel. The display shows Head Unit # 12 is currently selected.

Sources, EQs and Amplifiers

Switching Modules 910, 922, 958, 942	Addressing Sequence for Product Positions	Set the MODULE ID to: Slide Switch	Rotary Switch
1st module:	1 - 4	0 - 9	0
2nd module :	5 - 8	0 - 9	1
etc...	9 - 12	0 - 9	2
	13 - 16	0 - 9	3
	17 - 20	0 - 9	4
	21 - 24	0 - 9	5
	25 - 28	0 - 9	6
	29 - 32	0 - 9	7
	33 - 36	0 - 9	8
	37 - 40	0 - 9	9
	41 - 44	10 - 19	0
	45 - 48	10 - 19	1
	49 - 52	10 - 19	2
	53 - 56	10 - 19	3
	57 - 60	10 - 19	4
	61 - 64	10 - 19	5
	65 - 68	10 - 19	6
	69 - 72	10 - 19	7
	73 - 76	10 - 19	8
	77 - 80	10 - 19	9
	81 - 84	20 - 29*	0
	85 - 88	20 - 29*	1
	89 - 92	20 - 29*	2
	93 - 96	20 - 29*	3
	97 - 99	20 - 29*	4

Speakers

Addressing Sequence for 932 Product Grps	Set the MODULE ID to: Slide Switch	Rotary Switch
1 - 8	0 - 9	0
9 - 16	0 - 9	1
17 - 24	0 - 9	2
25 - 32	0 - 9	3
33 - 40	0 - 9	4
41 - 48	0 - 9	5
49 - 56	0 - 9	6
57 - 64	0 - 9	7
65 - 72	0 - 9	8
73 - 80	0 - 9	9
81 - 88	10 - 19	0
89 - 96	10 - 19	1
97 -99	10 - 19	2

How to Use These Tables

Read accross from left to right. For the *1st module's* addressing sequence (products *one through four*) set the MODULE ID to "*0 - 9*" on the *slide switch*, and "*0*" on the *rotary switch*.

* Contact the factory if this address is needed.

C. Set the Address Switches.

Some group settings are made at the factory, and cannot be changed later. Figure 16 shows the first switch module (Model 910D) in the first product group (head units). It has a default address of Group #0 (set at the factory) and the Module ID is set to #00 (this lets the system know this module is connected to the first four products in this product group). The second 910 would be addressed 01, and the third module, 02, etc. *Always start with zero, not one, for the first module in any group.*

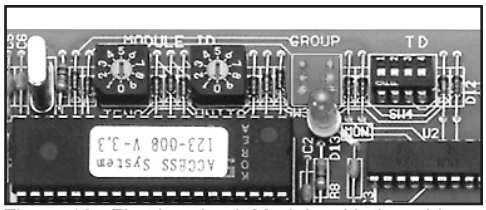


Figure 16. First head unit Module with the address 0/00 (Group/Module ID).

Figure 17 shows the address settings for the fourth module in the Processor/EQ product group. The group default is #2 and the address is set to #03.

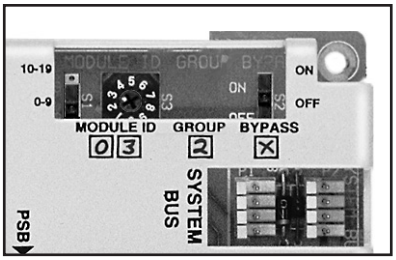


Figure 17. This Model 958 would be the fourth and last module in group 2 (Processor/EQs), because bypass is ON.

D. Set the Programming Switches.

Programming Switch Settings "S M B T D."

Models 910, 940EZ and 942 have a DIP switch array with small rocker switches labeled S M B T D (see Figure 18). Model 910 has T and D only. The slide switches are set to "OFF" at the factory. The switches are defined as:

S	M	B	T	D
Single Stereo	Multi-Channel	Bypass	Time	Delay

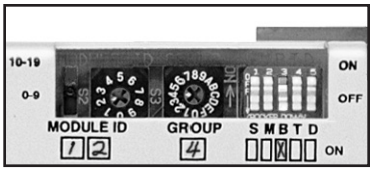


Figure 18. The thirteenth (and last) module in group 4 (Front Amps). Bypass is ON ("B" in programming switch array SMBTD).

"D" turns on the DC Power Delay feature and works with the Power Mode switch setting on the 980 module. Use the following chart to determine switch settings. Set the 980 "Power Mode" switch and each main module's "D" and "T" switch using the chart below.

Mode	Effect on Product Groups	Power Mode Switch on 980	Delay or "D" Switch on Main Modules
Power Conserve	1 unit ON; delayed turn-on	ON	ON
Smart Power	Up to 3 units ON; delayed turn-on	OFF	ON
Continuous Power	All units ON; no turn-on delay	OFF	OFF

The "T" switch sets the amount of time delay to allow for product turn-on, if "D" is ON.
"T" OFF = 3/4 second delay for head units and low power amps.
"T" ON = 3 second delay for high power amps using switching power supplies.

When "D" is ON, the "T" switch should be OFF (3/4 second delay) for 910 modules, and ON for 942 modules (3 second turn-on delay for large power amps). If "D" is OFF, "T" has no effect.

Also, see "Choosing the Power Mode for Your System" on page 24 for more detailed information on the three different Power Mode settings available for your Access™ System.

"B" should be set to "OFF" unless you wish to BYPASS the product group associated with the module. The bypass module is always the last module in the product group to be bypassed (only the bypass module should have the "B" switch turned ON). A product group will be bypassed when all products in that group are unselected. Bypass is commonly used in systems where there are both low-level and high-level output signals from head units (see Appx A, page 40 for a hookup diagram).

"M" has special functions for multi-channel amps and should be set to OFF. Call Audio Authority Technical Support for details.

"S" is related to "M" and should remain OFF in most cases.

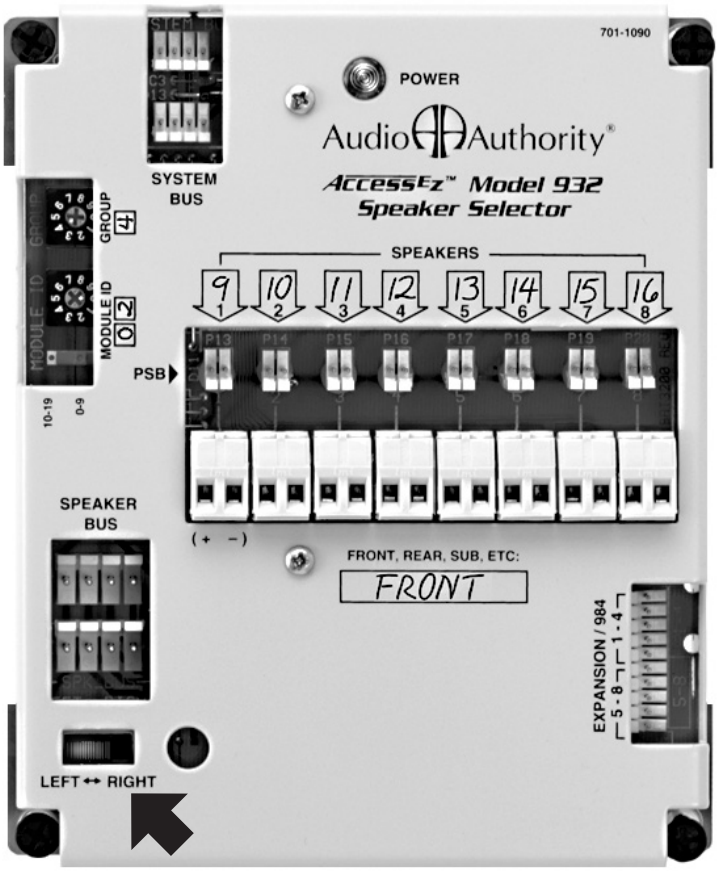


Figure 19. The 932 module serving the left channel of speakers 9-16 (note the filled-in identification boxes).

Set the Left-Right Switch.

Set the Left-Right switch on every 932 and 939 to indicate its position on the right or left side of the speaker portion of your display. 932 and 939 pairs are the only modules addressed identically, but the Left-Right switch lets the control panel tell left and right modules apart. In single channel applications, as in the case of mono subwoofers, set the switch to RIGHT.

Set the Address Switches.

Set and recheck all the address switch settings as shown on page 15 and 16. Setting the address switches is very important. All functions of the Access System depend on correct addressing of the switch modules. Please take the time to double check the labels and subsequent module addresses that you may have set.

Speaker Limit.

The Access System is designed to allow multi-channel amps to play a set of car speakers by separating them into product groups. One amplifier plays two Fronts, two Rears, and two Subwoofers. Additionally, Access allows a default of two speaker pairs to play at once in the same product group (e.g. two pairs in the Front Speaker product group). Some stereo amp manufacturers do not recommend playing more than one pair of speakers at a time. If customers will have access to your display, consider using the lowest Speaker Limit recommended for any amplifiers you are demonstrating. You may set the Speaker Limit to 1, 3 or 4 pairs with the switch array labeled SPEAKER LIMIT on the Model 980 (default is 2 pair).

E. Fill Out the Identification Boxes.

Fill out the identification boxes printed on the case of main modules to reflect the address and other settings on each module (see Figure 19). This will help with installation and troubleshooting later.

3. Installing the System Hardware

A. Designate the Switching Module Locations.

1. Each switching module controls either 4 or 8 components. Create a system plan drawing to determine the location of the switching modules in the display fixture.
2. We recommend setting up the main modules on a table or bench before actually installing the modules in your fixture. Connect main modules with system bus cable, including the control panel. Set address switches, connect the power supply, and check the switching modules and control panel logic.
3. Mark the location of the switching modules and any related expander modules near the center of the products they will serve. Some modules will serve 4 products, others will serve 8 products.
4. Be sure to consider the 2 foot plug spacing if you are using factory pre-made bus cables.

B. Determine Other Module Locations.

1. Position the 980 System Module in the signal path immediately prior to the first module(s) in your Amplifier product group(s). This position will allow you to pass signals from the output of your Head Unit or Processor/EQ product group to the 980 Module which will then pass the low-level input signals to your Amplifier product group(s). Keep in mind that the 903 control panel comes with a 10-foot cable that must connect to the 903.
2. Position the 9A80 (if used) prior to the 980EZ in the signal path. A dedicated crossover could also be installed here, hidden inside the display.
3. Position Head Unit connection modules (if used). These modules are very useful for connecting head units through small openings. If your display has a "tray" for the head unit, mount the connection module at the back of each tray. Other wise mount it inside the display, within easy reach of the opening.

C. Mount the Modules.

1. Mount the main modules first, then plug in and mount signal, and DC, expander modules (Figure 20 and 21). Use the screws provided.
2. Connect an audio signal expander (if any) such as 920X or 949X to its respective main switching module as shown in Figure 20. It is critical that the signal expanders be connected to the header port on the main module labeled “EXPANSION.” DO NOT plug an audio signal expander module to the header port labeled “DC EXPANSION.”
3. Connect each 915X, 916X, and 917X DC Expander Module to its respective main switching module and attach with screws provided. Be certain to connect DC expander modules to the header port on the main module labeled “**DC EXPANSION**.” DO NOT plug a DC expander module to the header port labeled simply “EXPANSION.”

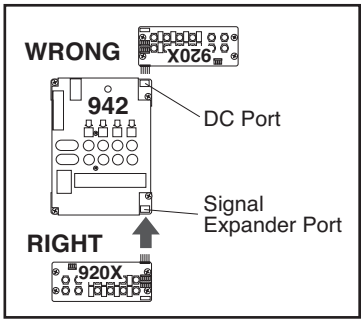


Figure 20. Audio signal expander connection

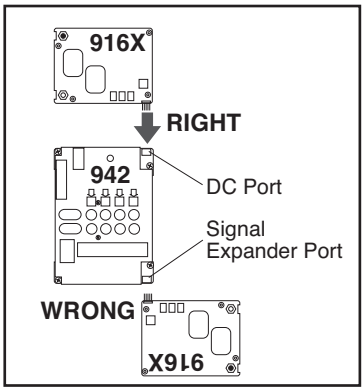


Figure 21. DC Expander connection

4. Installing the Bus Cables

Pre-assembled bus cables or the raw materials to make the necessary bus cables on the job site were included with your system purchase.

- Pre-assembled bus cables have connectors installed every two feet.
- If you plan to make bus cables on the job site, order the multi-conductor wire, and you'll need a special assembly tool available from Audio Authority (see table below). Be very careful to follow the assembly instructions, especially concerning wire to connector polarity. Incorrect bus fabrication can cause system failure and damage!
- RCA patch cords are available in lengths from three to twenty feet, or you may use any high quality, low-capacitance RCA patch cables.

Materials for On-Site Bus Fabrication

Cable Type	Color Code	Pre-assembled Part Number	Cable for Site Assembly	Plug for Site Assembly	Assembly Tool
System Bus	yellow/red/blue/black	802-307	871-055	916-0470	762-011
Speaker Bus	green/white/brown/gray	802-186	871-045	904-172	762-009
Low-level Bus	RCA patch cords	801-018 to 801-023	NA	NA	NA
System extension*	yellow/red/blue/black	802-323	871-055	916-0470	762-011
Speaker extension*	green/white/brown/gray	802-309	871-045	904-172	762-009
Module expander	red/grey/purple/blue/green	802-177			

* Extension cables allow you to connect remote sections of the Access™ System, as in the case of rear speaker towers.

A. Install the System Bus

The system bus connects only to main switching modules (910, 920, 958, 942, 932, 939, 940), *not* expanders (920X, 932X, 940X, 949X, 916X, 917X, 9A80, 9A10, etc.).

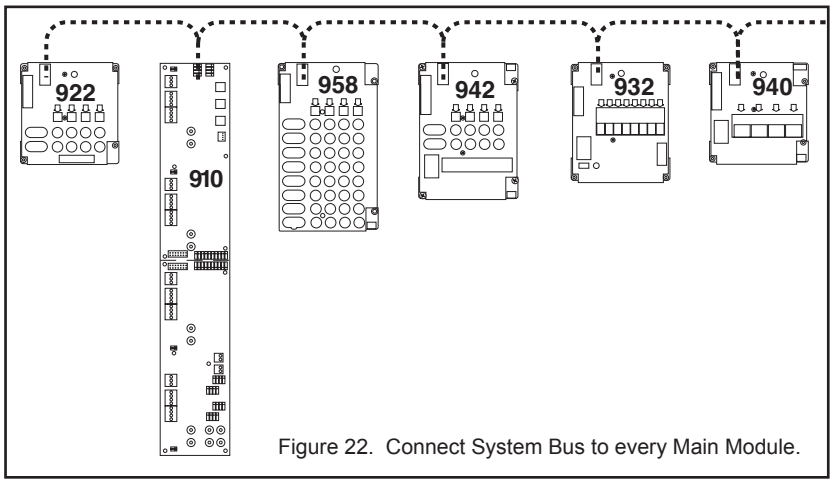


Figure 22. Connect System Bus to every Main Module.

1. Use the pre-assembled system bus cables supplied with your system or install the 4 pin plugs onto the system bus wire using the 762-011 tool. If you are making your own system bus, be sure to leave a small amount of slack in the wire between the modules and be very careful to observe correct polarity.
2. Mate one plug of the system bus cable with either of the 4 pin headers marked with the yellow/red/blue/black color code on each switching module.
3. Connect the system bus to all modules having headers marked SYSTEM BUS. The connectors are polarized, so they will only connect in one direction, but always make sure to prevent the possibility of plugging the system bus to the header backwards (see Figure 23).
4. Start at one end of your system and work toward the other end, connecting the system bus to every main module.
5. If you are using Pre-assembled buses, you may use a system bus extension cable for long distances between modules, or carefully splice 18 gauge cable where needed.

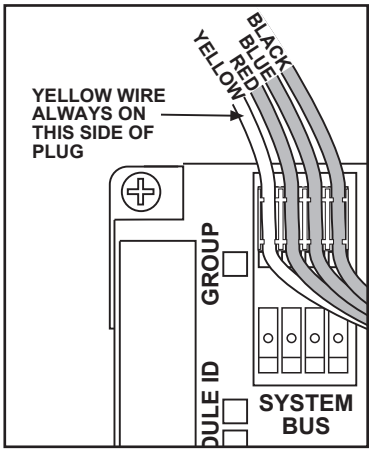


Figure 23. Observe correct System Bus polarity. It is fine to leave one header unused.

6. Dual header connections are provided on all modules so you can easily extend a bus cable that is too short, or you can branch off the main run to a remote or side group of modules, if necessary.

   Note: Since bus connectors can be both in and out, one header connection may be left open. The remaining connector may be used to create a branch from the bus.

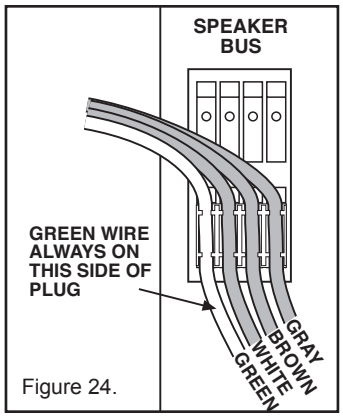


Figure 24.

B. Install Speaker Bus.

The procedure for running the Speaker Bus is very similar to the installation of the System Bus. The speaker bus will be used to send high-level signals from amp outputs to speaker modules in the system. For very small systems with no amps, the head unit group is connected directly to speaker groups via speaker bus.

- Connect related modules with a continuous run of bus cable.
- Start from the module at one end of the group and work toward the other end.
- Run separate buses for front, rear and sub (or tweeter, mid, and sub).

1. Using the a green/white/brown/gray bus cable assembly, plug a connector of the bus into a SPEAKER

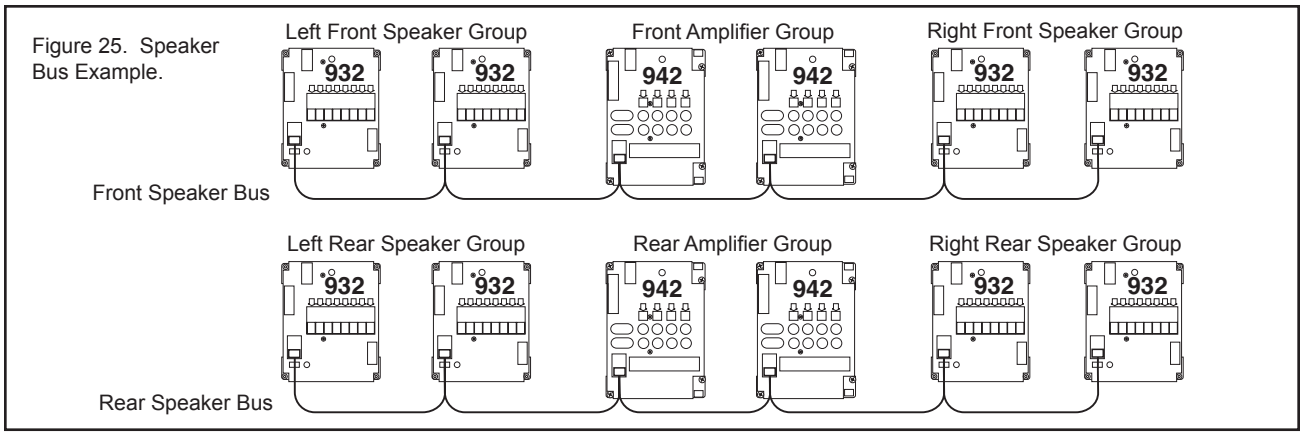


Figure 25. Speaker Bus Example.

   BUS header on each 942 module in the Front Amplifier group. The connectors are polarized, so they should only connect in one direction, but always make sure to prevent the possibility of forcably plugging the system bus to the header backwards (see Figure 24).

2. Using the same bus cable or branching off with a new section of bus cable, continue connecting all 932 modules in the Front Speaker group to the Front Speaker Bus.

3. Connect all remaining Amplifier/Speaker product groups in the same way.

4. Extend system or speaker buses, if necessary, using the available extension cable assemblies.

C. Low-Level Buses.

The rules are similar to those for installation of the other signal buses:

- Connect modules within a group and to corresponding groups.
- Start from a module at one end of the product group and work toward a module at the other end.
- Low-level cables are quite different from other bus cables. Use only high-quality shielded RCA patch cords, preferably gold-plated, for low-level bus connections.

1. Using high-quality shielded RCA patch cords, connect the modules with low-level jacks (910, 922, 958, 980 and 942) along with any low-level expander modules (920X).

2. Connect all modules serving each pair of low-level channels in a given group, such as source outputs (910 or 922), front amp inputs or rear amp inputs (942 or 922).

3. Connect a module from each low-level group of modules to a module of the next low-level group in the signal path. Here are two examples:

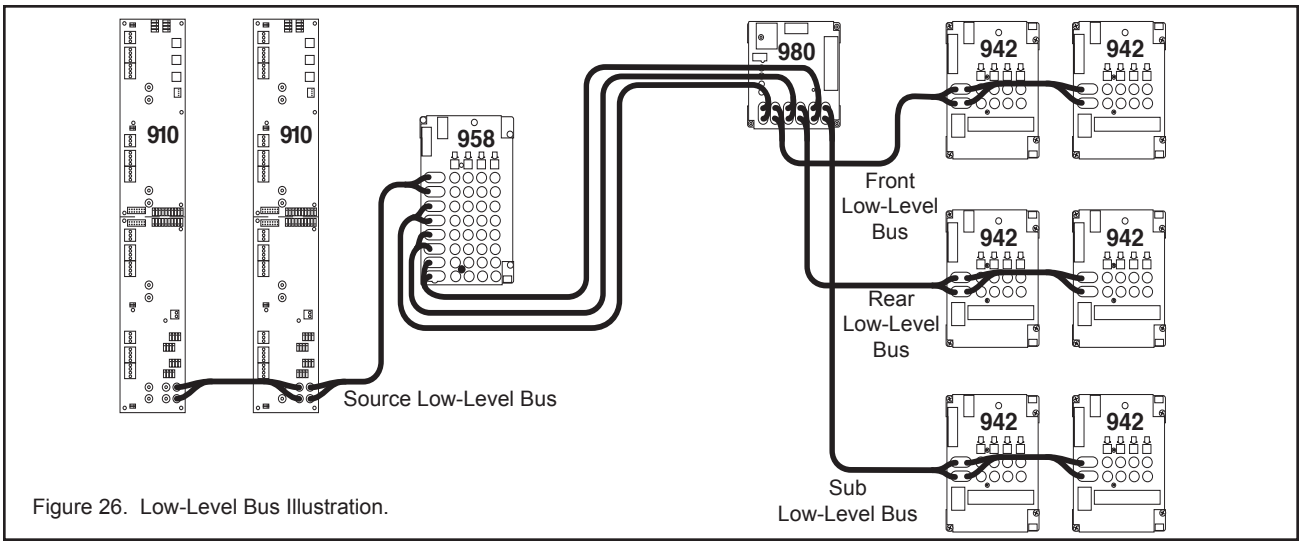


Figure 26. Low-Level Bus Illustration.

- Connect the source output bus to the processor bus input; if using a single dedicated processor to derive additional amplifier product groups, connect the source output bus directly to the input of the dedicated processor.
- Connect the processor output bus to the 980 System Module input bus; connect the 980's output bus to the amplifier bus input. The 980 has inputs and outputs to feed processor output signals to front, rear, and sub amplifier groups (see Figure 26).

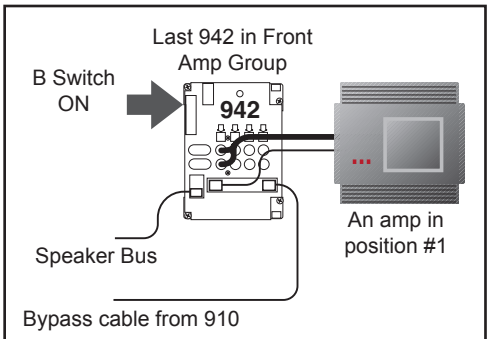


Figure 27. Amplifier Bypass configuration. No amp may be connected to position #4.

D. EQ and Amplifier Bypass.

To demonstrate high powered head units without other in-line products such as processors, equalizers or amplifiers, use Speaker Bus cable to create a front and rear high-level bypass from the Source product group directly to the Speaker product group (for a hookup diagram, see page 40).

1. Hook up the Source Group's Front High-Level Bus using a green/white/brown/gray bus cable assembly. Plug a connector of the bus into each header marked FRONT HIGH-LEVEL BUS on 910 modules in the Source group.

2. Connect one end of the Front High-Level Bus to the fourth position on the last 942 module in the Front Amplifier product group (see Figure 27). Turn on the "B" switch to activate bypass on *that module*.

3. Connect a *separate* high level bus cable into each header marked REAR HIGH-LEVEL BUS on 910 modules.

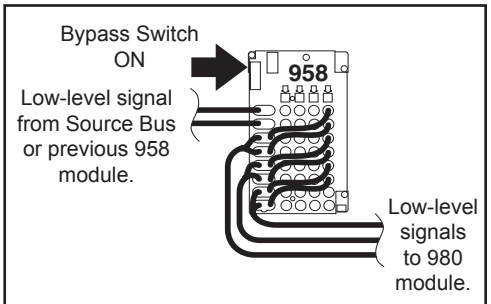


Figure 28. EQ bypass bus wiring on last 958 in the Processor/EQ group. No EQ can be connected to position #4.

4. Connect one end of the Rear High-Level Bus to the fourth position on the last 942 module in the Rear Amplifier product group. Turn on the “B” switch to activate bypass on that module.

To demonstrate amplifiers without inline products such as Processors or EQs, it is necessary to bypass the Processor/EQ product group at low-level. Figure 28 shows how to route the signal from the input of the 958 past the display product connections and on to the Amplifier product group. The fourth position on the last module is reserved for bypass in product groups using a bypass.

E. Install the DC Power Distribution Cables.

The 915X, 916X, or 917X DC Expander Modules should already be installed and connected to electronics modules. Use the EZ docking port unless more than one connection is required (e.g., ampsharing) then use the 5 wire expander cable. Check your system plan or use one of the drawings in Appendix A to determine each module’s location.

- 915Xs are generally used to power Processor/EQs and CD Changer units. In most systems, head units are powered directly from the 910 Head Unit Switching Module.
- 916Xs are used to distribute DC power to amplifiers and to provide home run DC connection points for 910D and 915X modules.
- 917Xs are used to distribute DC power to high current amplifiers and to provide home run DC connection points for 910D and 915X modules.

Run the main DC bus from the power supply to all 916X and/or 917X Expander Modules. Any 916X or 917X can then provide the connection point for 980EZ, 910D, and 915X modules. See Figure 29 and refer to Appendix A for wiring examples.

1. Use the provided red and black 4 gauge wires with small ring terminals on the ends. Hang on to the other included wire assemblies; they will be used to furnish DC power to your display components later.

2. Start with the 917X or 916X expander that is closest to the DC power source.

3. Connect the red and black 4 gauge wires to the large color-coded red and black, brass terminal posts on the 916X or 917X. Connect the red wire to “BAT+” and the black wire to “BAT–” using a 7/16" nut driver or open end wrench. Be sure to tighten the brass nuts snugly so that the ring terminals are well seated on the terminal posts.

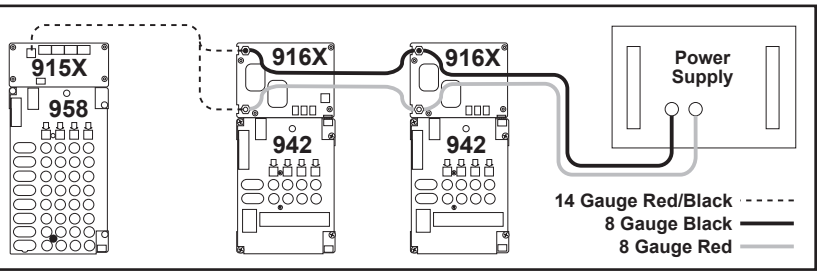
   Note: While connecting the initial run of red and black wire to the next 916X or 917X module, also connect a separate 4 gauge red and black set of wires to the 916X or 917X’s terminals for final connection to your system’s DC power supply or battery.

4. Now, connect the red and black wires to the next 916X or 917X in the system, making a “daisy-chain” until the last 916X or 917X is connected.

5. Run low-current DC to all 910 Source Modules and 915X Expander Modules.

6. Use the red and black 14 gauge wires provided with the 910. Connect the ring ends to the DC bus terminals of the nearest 916X or 917X.

Figure 29. DC trunk lines connect 916X or 917X modules to each other and the power source; 915X, 910D, and 980EZ branch from the nearest available 916X or 917X.



7. Cut the red and black wires to length, strip the ends and insert them into the terminal block on the 910 module labeled “DC Power Bus.” Wire red to “+” and black to “–” and tighten the screws securely.

8. If 915X modules are part of your system, wire them in the same manner as the 910 modules. Connect the pre-made power cable supplied with the 980 System Module to the terminal posts of a nearby 916X or 917X. Tighten all the brass nuts on DC bus terminals until snug. DO NOT plug the other end of the power cable in to the 980 at this time.

Power Supply Ventilation.

It is very important to provide adequate ventilation for the power supply in your display fixture. A car audio DC power supply generates a lot of heat which must be dissipated. If the power supply will be enclosed inside your display fixture, you must provide an incoming source of cool air and an opening at the top of your display for ventilation of the heated air.

A. Make the final connections to prepare your system for initial testing. If your system includes a battery, **DO NOT** install it until all testing is complete.

1. Connect the red and black battery lead wires to the 916X or 917X most convenient to the battery location (do not connect the battery). The lead wires have large ring terminals on one end and small rings on the other. Connect the small ring terminal ends of the red and black leads to terminal posts of the 916X or 917X.

2. Install the power supply in your display fixture. Take the time to read the owner’s manual that came with your power supply.

   WARNING: Keep all metal tools away from the power supply terminals, and all DC terminals once the system is connected and powered up.

3. Connect the other end of the red wire from the 916X or 917X to the positive terminal of the power supply.

4. Connect the black wire to the (–) power supply terminal in the same fashion.

5. Now, plug the red and black power wire assembly you installed earlier into the 980’s power socket.

6. Plug the power supply AC cord into a continuous source of 120 volt power.

7. Test your system by turning your power supply ON. Each main module has a green LED that should be flashing, like a “heartbeat.” If any modules lack a heartbeat, check the system bus connection.

F. Choosing the Power Mode for Your Display.

You may have determined the Power Mode setting when you completed the DIP switch settings on the main switching modules and 980 System Module earlier in the installation. Now that you have reached this point, you may wish to reconsider the Power Mode(s) you will use. Read the following information for more detail.

- The three different Power Mode settings determine how many components will be powered at any given time and whether or not there is a turn-on delay.
- Set the Power Mode by a combination of the switches on the 980 and the main switch modules.
- You may use more than one power mode within the same system, depending on the “D” switch settings on 910, 958, and 942 modules.

The three Power Modes are as follows:

1. **Power Conserve** allows only one component from each electronic group to be ON at any given time. New selections have a turn-on delay of either 3/4 seconds or 3 seconds, depending on how the T switch is set on each main module.
2. **Smart Power Mode** allows up to three components in each electronic product group to be on at any given time. When a fourth component in the group is selected, the first selected component in the group powers down, and so on. If there is no new selection activity in the group within 5 minutes, all components in the group power down; then, a new selection cycle begins. There is a turn-on delay for each *new* selection (no delay for the products recently selected); the length of the delay is determined by the T switch setting on the selected component's main module.
3. **Continuous Power Mode** allows all electronic components in the display to be ON and ready for immediate selection with no delay. Since all components are ON it is extremely important to have an adequate source for DC power. Many car applications require a 100 or 200 amp supply. Choose either the Continuous Mode or the Smart Power Mode if you desire instant A/B or A/B/C comparison of components in your display.

Set the 980's "Power Mode" switch and each main module's "D" and "T" switch.

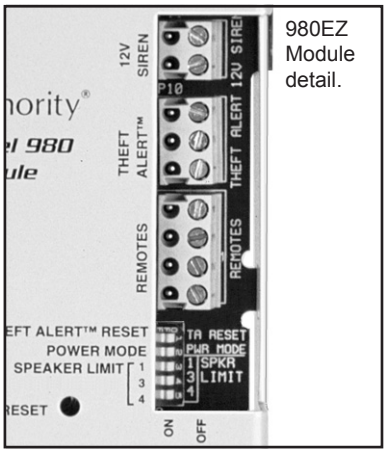
Mode	Effect on Product Groups	Power Mode Switch on 980	Delay or "D" Switch on Main Modules
Power Conserve	1 unit ON; delayed turn-on	ON	ON
Smart Power	Up to 3 units ON;	OFF delayed turn-on	ON
Continuous Power	All units ON;	OFF no turn-on delay	OFF

Remember, T set to OFF = 3/4 second delay for head units, processors or small amps (Models 910, 958)
T set to ON = 3 second turn-on delay for large power amps (Model 942).

G. Setting the Parallel Speaker Limits.

The Access™ System can allow multiple pairs (up to four pairs) of speakers to play in each Speaker Group, at one time, from the same amplifier. Leave the default setting at two, or use a setting of one pair per group, unless you're very confident of every amp's stability. The factory default setting (two) allows two pairs of front speakers, two pairs of rears, and a pair of subs – a very powerful demonstration. If you decide to allow three or four pairs, consider that two pairs of speakers playing in parallel in the same group, the load presented to the amplifier is increased in exactly the same manner as connecting the two pairs of speakers directly to the amp's output. The amp now "sees" a lower impedance or higher load and works a little harder. Two pairs of speakers, both at 4 ohms, would present a 2 ohm load to the amp. Three pairs could present 1.7 ohms of load impedance or lower.

1. Immediately beneath the "Power Mode" switch on the 980 are three additional switches labeled "Speaker Limit" and numbered 1, 3, and 4. The switches are set to OFF at the factory.
2. To change the factory setting, turn on the limit number switch you want. Leave the other switches OFF. Example: Turning limit number 3 ON allows three pairs of speakers per group to play simultaneously.



980EZ Module detail.

Figure 30. 980EZ speaker limit switches.

H. Install the RF Antenna Distribution System.

Retail stores often have poor indoor FM reception, so it is recommended to install a roof-top antenna, and/or provide an alternative music source, such as a Model 1701 MP3 player or other music source. Then these signals can be made available to all head units via an RF distribution system. Install an FM modulator and a 975A FM Distribution Amp.

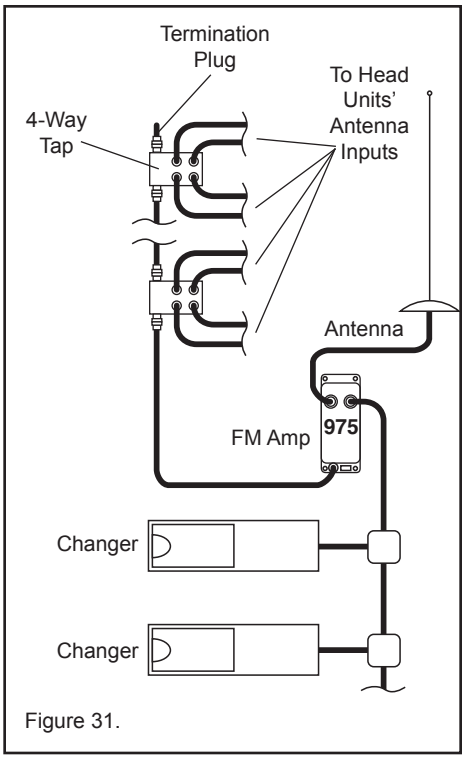


Figure 31.

A. Unpack items 975A FM Amplifier and KIT17(s). Follow the enclosed instructions completely, making sure that the coax cable used to connect the 4 way taps is not kinked or bent during the hookup process. If you need additional instructions, please contact the factory and request detailed instructions, part# 752-139.

C. Use a 7/16" open-end wrench to tighten all F-connector terminations.

D. Make certain that the F-to-Motorola cables are not allowed to touch the switching modules. The Motorola plug could cause a short if allowed to touch the modules.

E. Make sure that you have inserted the proper F-59 Termination Plug in the last 4 way Tap Block's "Out" position (Figure 31).

Check Your Work to This Point.

1. Check the Group and Module ID settings on all modules against your system plan.

2. Check the Expander modules in the system to insure that audio signal expanders (920X, 940X if any) are connected to the "Expander" header and that the DC expander modules (915X, 916X, 917X) are connected to the "DC Expansion" header on their main modules.

3. Check programming switches, especially the following:

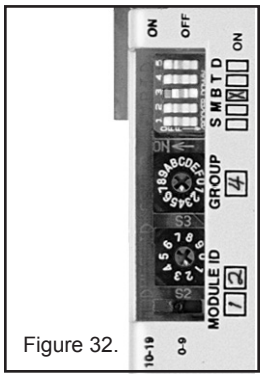


Figure 32.

- Bypass switch is ON where a bus has been connected to the 4th product position on the last module in a group that can be bypassed (such as processors, passive EQs, amplifiers, etc.).
- Left–Right switch set correctly on 932 and 939 Speaker Selectors; LEFT for left speakers, RIGHT for right speakers. In special cases, like mono subwoofers, set switch on the single 932 or 939 to RIGHT.

4. Check signal bus routing.

- Follow the physical path of signal buses from source group products, through intermediate product groups, out to the speaker groups.
- Be sure to include all product groups in your inspection.
- Include all bypass conditions; check groups that can be bypassed, such as processors and amplifiers. Make sure only the last module in the group (module with the highest Module ID setting) has the "B" or "Bypass" switch in the ON position.

5. Make sure the system bus and speaker bus have solid connections, with the correct polarity (Figure 34). When your system is powered up from the power supply, all the main modules should be blinking, with a “heartbeat.” If one or more modules do not show the blinking LED, check the System Bus connections.

6. Check the DC bus. If one or more products do not power up, and you are confident of the DC bus connections, check each 910, 915X, 916X and/or 917X module for a red, non-blinking LED close to the black plastic or metal circuit breaker on the circuit board. If the red LED is ON, push the circuit breaker’s RESET button.

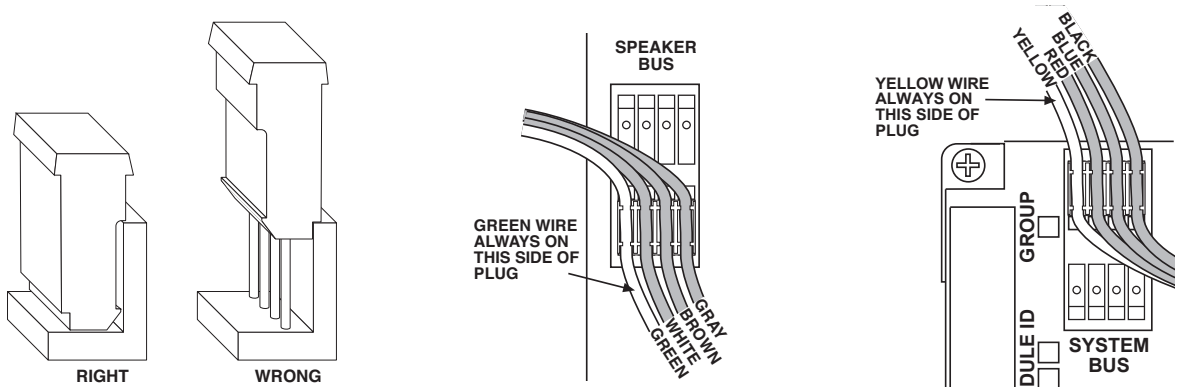


Figure 34. Observe correct polarity for all bus connections.

INSTALLING A CONTROL METHOD

1. Installing a Control Panel

Skip this step if you do not have a 903 or 906 Control Panel. If you have a 903 Control Panel, it is accompanied by a separate User's Guide which you should locate for future reference. Note: The 903 Control Panel can also be remotely controlled using an IR remote programmed with the IR codes available at www.audioauthority.com.

A. Cut an opening for the Control Panel if you wish to flush mount it in your display or other surface.

- For a 903 Control Panel, cut an opening 7" (178 mm) wide by 5-⅛" (130 mm) high.
- For a 906 Control Panel, cut an opening 4 -1/16" (105 mm) wide by 5-⅛" (130 mm) high.
- Use the panel to mark screw hole locations and drill 7/64" (2.5 mm) holes for the screws.
- Insert the appropriate slide-in Product Group labels provided with a 903 control panel into the product group display windows to identify each component group on the panel. Consult page 6 of your 903 User's Guide for more information on Product Group labeling.

B. Using the 10 foot cables supplied, plug the 903 into the 980 System Module at the header marked 903.

Figure 34. 906 Control Panel connections and settings.

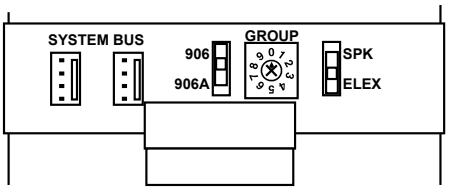
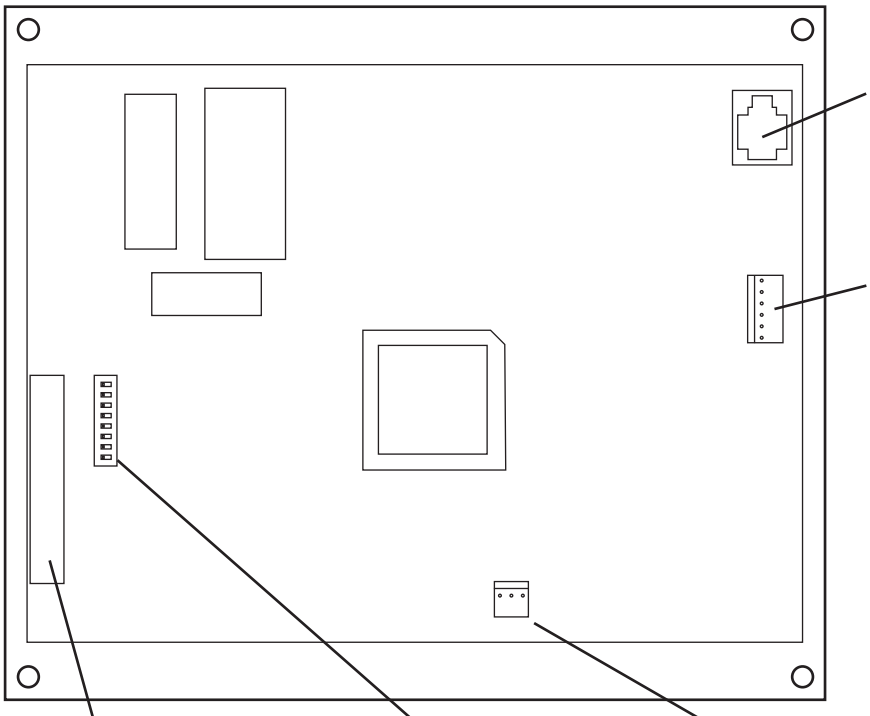


Figure 35. Rear view of the 903 Control Panel.



RS-232 Serial Port
Modular jack for connection to PC or modem

6-Pin Header
Connection for Model 980EZ System Module

Product Group Expansion Port
34-pin connector for model 904 Product Group ExpanderModule

Configuration DIP Switches
to enable/disable control panel features

3-Pin Header
Connection for Model 990 Auxiliary IR Sensor

C. Set the Configuration Switches on the Control Panel. See switch settings below.

903	Switch	Function	Comments
	A	Keyboard Click	Turn ON for audible key feedback or “beep”
	B	Demo-Mode	Leave OFF. Use only when control panel is not connected to a system as a “Training Mode”
	C	Systems Memory	ON makes the last (unused) Product Group capable of storing and recalling 99 system configurations*
	D	Future Use	Spare, leave OFF
	E	Previous Selection	OFF = “C” key is third “flash memory” key ON = “C” key is toggle between current selection and previous selection
	F	902 vs 903	Turn ON
	G	Internal IR	Turn OFF when using 990 Remote IR Receiver
	H	Auxiliary IR	Turn ON when using 990 Remote IR Receiver

906	906 / 906A	Primary/Secondary	This switch should only be in 906A mode when two 906 modules are controlling the same product group.
	Group	Address	Set this switch to the number of the Product Group it will control.
	Spk / Elex	Speakers or Electronics	Set to Spk for controlling speaker groups, and Elex for controlling head units, eqs, and amplifiers.

D. Mount the control panel using the four screws provided. Do not overtighten the screws.

2. Installing Product Select Buttons

You may use product select buttons (PSBs) alone, or in conjunction with a control panel.

A. Determine where each PSB and Indicator will be located, usually close to the product the PSB will select, and often near product information tags.

- For plastic Model 999 PSBs: drill a 1⅛” inch hole in the panel or surface. Remove the nut and feed the switch through the hole. Tighten the nut and install the white switch mechanism.
- For stainless steel 803-190 PSBs: Drill a ¾" (19 mm) hole. Maximum panel thickness is 0.5 inch (12.5 mm). Required depth is 2 inches behind front panel surface. Tighten the nut.

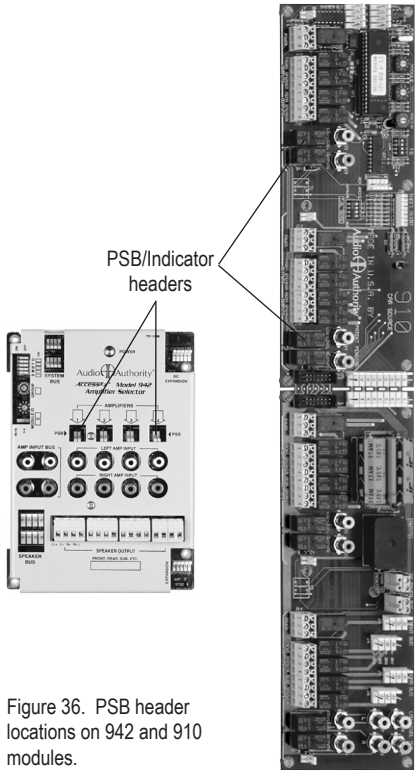


Figure 36. PSB header locations on 942 and 910 modules.

B. You may wish to leave the PSB mounted in the product panel, or install them later, after your components have been mounted.

C. Locate the switching module where the component will be connected. Each module has either 4 or 8 two-pin headers above the product connectors numbered from 1 - 4, or 1 - 8. As you install the display products, you will connect the PSBs and Indicators to these headers using the cable assembly supplied with each.

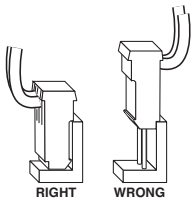


Figure 37. Be careful to maintain PSB cable polarity.

3. Installing Remote Switches

In systems without a control panel, it is often desirable to add "outboard" switches for remote operation of certain system management tools.

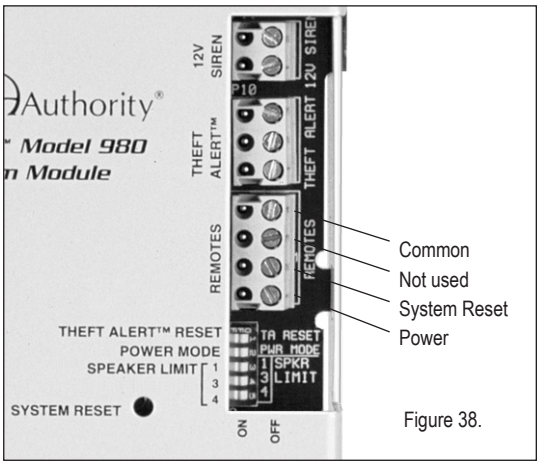


Figure 38.

A. Remote Power Switch.

- If your system does not include a Control Panel, you may want to turn the system on and off using a remote key switch or toggle switch.
- Use any SPST (single-pole, single-throw) switch you prefer. Low current switches will work perfectly well.
- Connect the switch between the "POWER" and "COM" pins of the 980's "REMOTES" terminal block.

B. Remote System Reset.

- There is a "System Reset" button on the 980 that enables the user to reset the system in the unlikely event that the system "hangs up." Pressing this button will re-boot the entire system. Having a Remote Reset switch is a good idea in any system since the 980EZ is usually buried inside the display and would not be readily accessible if the system ever needed to be reset. You may wish to "hide" this remote switch from customer access.
- Connect a SPST switch between the "Reset" and "COM" pins on the "Remotes" terminal block located on the 980 (see Figure 38).
- Your system can now be Reset using this remote switch.

TESTING SYSTEM FUNCTION

1. Normal Operation

After installation is complete, all the system's components need to be tested. Apply power to the system and observe the following signs of normal operation:

- The green SilenTouch™ LED is lit on the 980EZ.
- The green POWER LEDs on the switching modules and the 980EZ are slowly blinking.
- The red 980EZ LOW VOLTAGE LED is not lit, or very dim.
  Note: If the LOW VOLTAGE LED is lit, your system will not function. The system shuts down if the DC power source (usually a battery) is providing less than 12 volts DC. Check the output voltage of your battery and/or power supply and contact Audio Authority Technical Support.
- The red TheftAlert™ LED on the 980EZ is not lit.
- For the moment, ignore the color of the clear LED marked "BUS MONITOR" on the 980EZ. Later, when product selections are made, you will notice that the BUS MONITOR LED flickers and is an orange color. This orange flicker is normal. It merely indicates that "traffic" is present on the bus.

2. 903 Test Sequence

Test the Control Panel (if your system does not have a 903 Control Panel, skip to step "3" and ignore other references to control panels). Reboot the system (press SECURE, 88, SECURE) and observe the following test results on the Control Panel. If you encounter any problems, keep a note pad handy to record results as they are reported in the Control Panel windows.

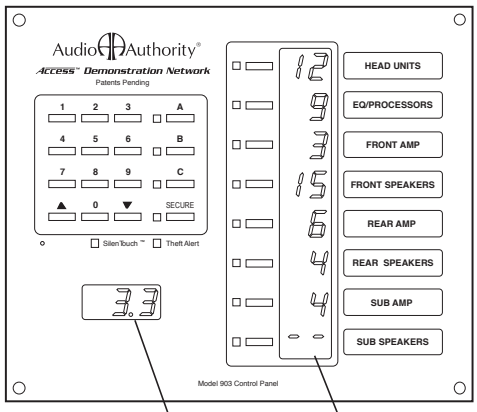


Figure 39.

1. All display segments and indicators on the control panel are lit briefly (lamp test).
2. The EVC window at the left of the panel displays software version (e.g., 3.3).
3. A System Bus Test is performed.
   a. If the word "bUS" flashes in the EVC window, it indicates a problem with a system bus cable or switching module.
   b. To find the faulty cable or module, use this process of elimination: carefully unplug portions of the yellow-red-blue-black system bus cable to isolate them from the 980EZ module, then press any key on the control panel. If "bUS" still appears on the EVC window, plug the cable back in and try a different cable.
   c. If "bUS" disappears from the EVC window, you have isolated the module or bus cable that is faulty.
   d. Call Audio Authority® Technical Service at 800-322-8346 for assistance with parts replacement.
4. After the bus test, the diagnostic program scans the active range of module addresses in every Product Group. You will observe these module addresses counting up in the EVC window as the product group number is displayed in each group's Product Group window. Lowest group numbers first, and electronics come up before speaker groups.

If the numeric displays begin flashing during the module scan, then two or more modules have the same address. Duplicate addresses are disallowed because the control panel is unable to tell two identically addressed modules apart.

a. Make a note of the last group number displayed in the Product Group windows and the module number displayed in the EVC window find the two modules that both have this address. For example, if the control panel is flashing, the EVC window displays 002, and the third Product Group window shows S4, you would look for two speaker modules (932) with the same address of “Group 4, Module 02, Right.”

b. Remember that pairs of speaker modules must have the same Group and Module ID address, but must be identified LEFT and RIGHT to avoid a duplication (see page 18).

c. If the problem address disappears too quickly to write down, press SECURE, 88, SECURE to reboot the system and repeat the test.

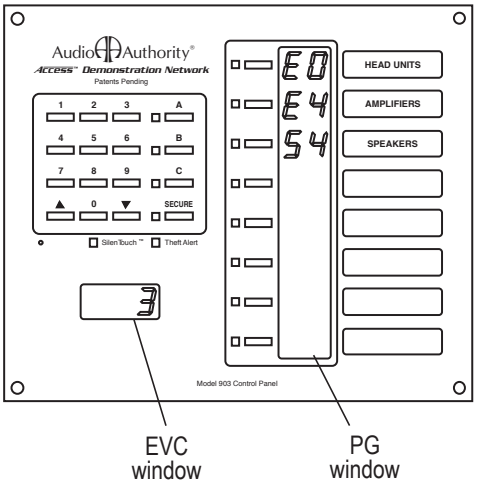


Figure 39. Address Scan: In Control Panels, "E" refers to Electronics switching modules and "S" refers to Speaker switching modules.

d. As each new group number appears in a PG window (Product Group, Figure 39), the EVC window counts up the number of modules in that group that can be recognized. Write down the highest number reported in the EVC window and the Group number with it. For each group, compare the reported module tally with a physical count of the modules.

e. If the module count in a group does not match the number of modules you actually have, look for disconnected or mis-addressed modules. For example, a system has four “E Group 0” modules, six “E Group 4” modules, and three pairs of “S Group 4” modules. The top PG window displays “E0” as EVC scans up to 4 (good), the second PG window displays “E4” as EVC scans up to 5 (bad), and the third PG window displays “S4” as EVC scans up to 3 (good). In this case you would look for a mis-addressed, unplugged, or faulty E4 module (Electronics Group 4).

f. Also check for gaps in the series of Module ID settings in that group. For example, 0, 1, 2, 4, 5 is not allowed and will be reported as 3 modules; in this case, the modules addressed 4 and 5 must be corrected to 3 and 4, respectively.

3. Testing the Product Positions

Use the PSBs (product select buttons) to select each position called for in the following procedures. If your system does not include PSBs, you can use a screwdriver to short the small 2-pin PSB port at each location called for in the following steps.

1. Connect a PSB to one position on a switching module belonging to each Product Group and press the button. Watch for the following signs of normal operation:

   - The test PSB lights.
   - The 980EZ SilenTouch™ LED blinks off momentarily.
   - The 980EZ BUS MONITOR LED flickers orange.
   - The product position number that the test PSB is connected to is displayed on the 903 Control Panel.
   - Each product selected with The PSB is displayed in the correct Product Group window on the 903.

2. Press a PSB or short a PSB port selected position in any group.

    - The LED goes out.

    - The 903 displays double dashes (– –) in the respective product group window.

3. Select a speaker position, then move the PSB to the same module location on the opposite side of the speaker section of the display.

    - The PSB lights up as soon as you plug it in, showing both left and right speaker positions are selected.

4. To select more than one speaker pair in a group, press the PSB and hold the button for at least one second.

    - If the speaker limit setting on the 980EZ is set to 1, the PSB will not come on.

    - If the speaker limit is 2 or higher, the PSB will come on in both the first and second speaker position (factory default is 2, with 980EZ limit switches all in the OFF position). The 903 displays the two speaker positions alternately in the speaker's PG window.

DISPLAY COMPONENT HOOKUP

It is now time to begin installing the car audio head units, EQs, amplifiers and speakers. If you've followed the instructions so far, you will soon have a working system. This section assumes that the components have been mounted onto removable panels or onto the front portion of your fixture. You will obviously need to connect the wires from the components to the switching system and DC distribution system, so you may wish to map out a plan for that process that allows easy access to the modules from the front or the rear of your display.

Usually, it works out best to mount the components to be located at the bottom of your display first, and work toward the top of the display so you can avoid masses of hookup wire hanging down from above. Take your time mounting the components and be sure to save their boxes and accessories, so that you can offer your customer a new or almost new unit when you later take the component out of the display.

1. Install the First Products

Install one product in each of several groups in order to get a simple system running. For example, install a head unit, a processor (if any), a two-channel amp, and a pair of front speakers (see Appendix B for detailed hookup drawings). Leave your power supply ON and your battery, if any, connected, but be careful using metal tools.

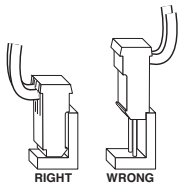
A. Connect a head unit's high/low-level audio outputs and DC power inputs to a product position on the 910 Module.

- Connect the low-level output to the red (R) and white (L) female RCA jacks using short, high quality patch cables.

- Connect the unit's front and rear high-level (speaker) outputs to the two terminal blocks next to the "Power" terminal block. Observe the polarity legend printed on the circuit board under the terminal plugs.

- Connect the two-pin plug of the PSB's cable, if PSBs are used, to the small 2 pin headers on the 910 circuit board at the corresponding product position. Press the PSB into the ¾" hole you drilled earlier in the mounting panel or display fixture. Plug the connector into the PSB with the cable exiting on top as shown.

Figure 40. Correct PSB cable polarity.



- Connect the ground lead to the GND terminal.

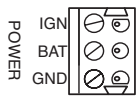
- Connect the memory lead to the BAT terminal.

- Connect the ignition lead to the IGN terminal.

- Plug an FM antenna cable from the FM Distribution System into the unit's female antenna jack.

- Install the unit in your fixture.

Figure 41. DC power terminal



B. Connect a processor's audio inputs and outputs to a 958 in the Processor/EQ Group. Then connect the processor/EQ unit's DC power inputs to a 915X DC Expander Module.

- Connect a high quality RCA patch cable from the 958's LEFT and RIGHT INPUT jacks to the EQ's input.

- Use additional RCA patch cables to connect a corresponding jack pair from the LEFT and RIGHT FRONT OUTPUT to the unit's Front output. Do the same for the unit's Rear and Sub outputs.

- Connect the ground lead to the GND terminal.

- Connect the memory lead to the BAT terminal.
- Connect the ignition lead to the IGN terminal.
- Install the unit in your fixture.

C. Connect an amplifier's audio signal inputs and outputs to a 942 module and DC power inputs to a 916X DC Expander Module. Four DC harness assemblies were included with each 916X.

1. Connect the amp's audio inputs and speaker outputs a the 942 Module.
    - Connect a high quality RCA patch cable from the same numbered 942 LEFT and RIGHT AUDIO jacks to the unit's input.
    - Use 14 - 16 gauge speaker wire to connect the unit's Speaker outputs to a corresponding SPEAKER OUTPUT terminal plug.
2. Now connect the amp's DC power inputs to the 916X connected to its 942 module.
    - Connect the amp's ground lead to the BLACK wire in the harness.
    - Connect the amp's battery lead to the YELLOW wire in the harness.
    - Connect the amp's turn-on lead to the BLUE wire in the harness.
    - Plug the connector on the other end of the harness onto a numbered amp position on the 916X circuit board. No smoke and fire? Great!
3. Install the unit in your display fixture.

D. Install a pair of speakers in the Front Speaker Group.

Note: Factory-wired displays use two position terminal blocks marked (+) and (–) that are pre-wired to 932 Speaker Modules. You may wish to extend the wiring location for speakers from the 932 module to a convenient spot in each speaker cavity in your display.

- Connect the left speaker to one of the 2 position terminal blocks on the Left 932 and the right speaker to the corresponding position on the Right 932. Wire the positive lead to (+) and the negative speaker lead to (–).
- Connect the two-pin plug of the PSB's cable, if PSBs are used, to the small 2 pin headers on the 932 circuit board at the corresponding product position. Press the PSB into the ¾" hole you drilled earlier in the mounting panel or display fixture.

Note: One PSB will activate both left and right speakers when selected. You may wish to install a PSB on both speaker locations for easy product selection.

- Install the speakers in the display fixture. Tightly seal all speaker chambers, especially subwoofer enclosures.

2. Test Your Initial Product Installation

A. Select the test products using PSBs or the Control Panel. (See the 903 manual for detailed instructions.)

- On a 903, press the first key at the top of the column of 8 Product Group keys. The red LED comes on.

- Enter the number of the first product in the Source Group using the numeric pad. The Product Group Display blinks while receiving your input.

- The Product Group Display stops blinking after two seconds and the selected product comes on.

- Enter the numbers of the remaining test products in their respective Product Groups.

B. Adjust the product controls until you hear music. If none is heard:

- Check for source material (Satellite, MP3, CD, FM tuning).

- Check your product selection numbers on the control panel for accuracy.

- Check product connections to the switching modules.

- Make sure all products are receiving DC power.

- Check all Group, Module, and programming switch settings. Refer to the configuration on the information boxes and your system plan.

Note: If you make any changes to any module's switch settings, press the System Reset button on the 980 System Module. In systems with control panels, you can also press "Secure, 88, Secure" on the control panel to reset the system. This enables the modules to recognize the new settings.

- Make sure that PSBs, if present, are connected to the correct header position.

- If PSBs are not installed, plug the test PSB that came with the 980 System Module into the respective headers on the switching modules to make sure that the products are currently selected to play.

- Follow the signal path visually through the product hookups and system buses to make sure there are no wiring errors. If you still have difficulty, call Audio Authority Support at 800-322-8346.

4. Install the Remaining Products

- Install the rest of the sources, amplifiers and speakers by groups, working from the bottom of the display toward the top (for electronic products).

- Check all connections in each product group as it is completed.

4. Test All Products

This section covers operation of Access™ Systems using PSBs rather than a Control Panel. For operation of systems utilizing a control panel, please see the separate User's Guide included with the control panel.

A. Make sure the system is on (check power lights on switch modules).

B. Select products to play by pressing the PSBs next to one product in each product group. The PSB lights, confirming that the product is selected.

C. Adjust product controls to get the desired audio level.

D. Select a new product in any group by pressing its PSB. The previous selection is automatically canceled. Select every product in each group to be certain all products are correctly installed.

Troubleshooting Noise Problems

The *Access* car audio system topology combats unwanted noises by automatically double-grounding the inputs of both selected and deselected amplifiers, because a car audio display presents a different electrical environment than a car. Sometimes noise such as hum, transport-related noises, or switching-related popping can still occur.

1. If an undesired noise turns up in the audio of one or two products, carefully check the products themselves and their wiring for defects. If a whole group of electronics or a large part of it is affected, review the system wiring— or ask someone else to do it— to uncover anything that may have been overlooked during installation, especially in the type of shielded cables that were used.

2. If noise persists, add 982A isolators in all signal paths between the EQ group and the 980EZ as shown in Figure 43.

3. An isolator placed in-line between the head unit group and the EQ group instead of (or in addition to) those in Step 2 may improve noise performance even further.

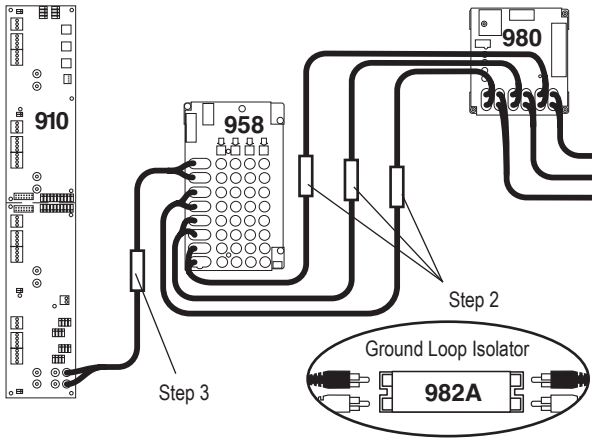


Figure 43. Install 982A Ground Loop Isolators on the Front, Rear, and Sub Low-Level Bus in the signal path just before the Model 980. If noise persists, install a 982A in the signal path between the 910 and the 958.

USER TIPS

1. Selecting Additional Speaker Pairs with PSBs

The number of speakers per product group that can play at once is limited by the way you set the speaker limit on the 980EZ module. The Access™ System is capable of playing up to 4 pairs at once, but many amplifiers are not recommended to play more than one pair simultaneously. Read each amp's documentation to determine the setting you should use.

- To add a pair of speakers to the pair currently playing, "LPress" the PSB (press and hold about 1 second) for the additional pair you wish to add until both pairs are playing.
- To turn any current speaker selection OFF, press its PSB.
- A short press on a new speaker selection cancels all previous selections.

2. Deselecting Products with PSBs

Turn any currently selected product OFF by pressing its PSB. The button light goes OFF. If you deselect an in-line product, such as an EQ, that product is replaced by a direct signal path if you have installed a bypass (for more information, see “bypass” in the index).

3. A/B System Comparison

- A/B comparison may be performed on the 903 or 906 control panels. For detailed instructions, refer to the control panel User’s Guide.
- When you switch a component such as a source, the *Access* System engages our exclusive SilenTouch™ circuit to mute the audio level briefly (0.15 seconds) during the switching process. This feature reduces switching noise.

Reference

APPENDIX A: SAMPLE SYSTEMS

System, DC and Signal Bus Wiring Diagrams

- Example System 1: Two-Channel System
- Example System 2: Six-Channel System
- Example System 3: Amp Shared System

APPENDIX B: PRODUCT CONNECTIONS

Product to Switch Module Wiring Diagrams

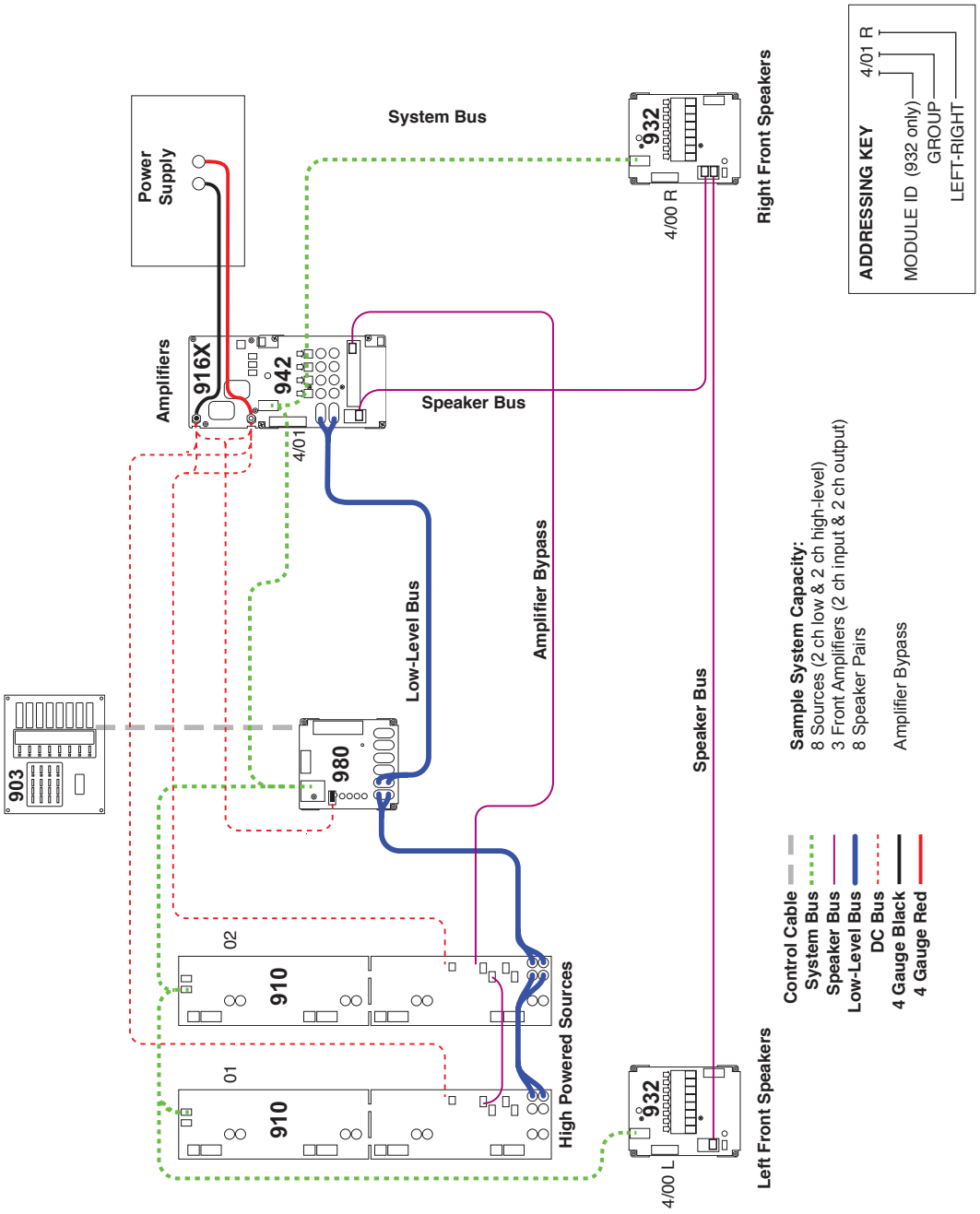
- Head Unit Hookup
- Processor/EQ Hookup
- Model 980 System Module Hookup
- Amplifier Two-Channel Hookup
- Amplifier Four-Channel Hookup
- Amplifier Shared Hookup
- Left/Right Speaker Hookup

ACCESS WARRANTY

INDEX

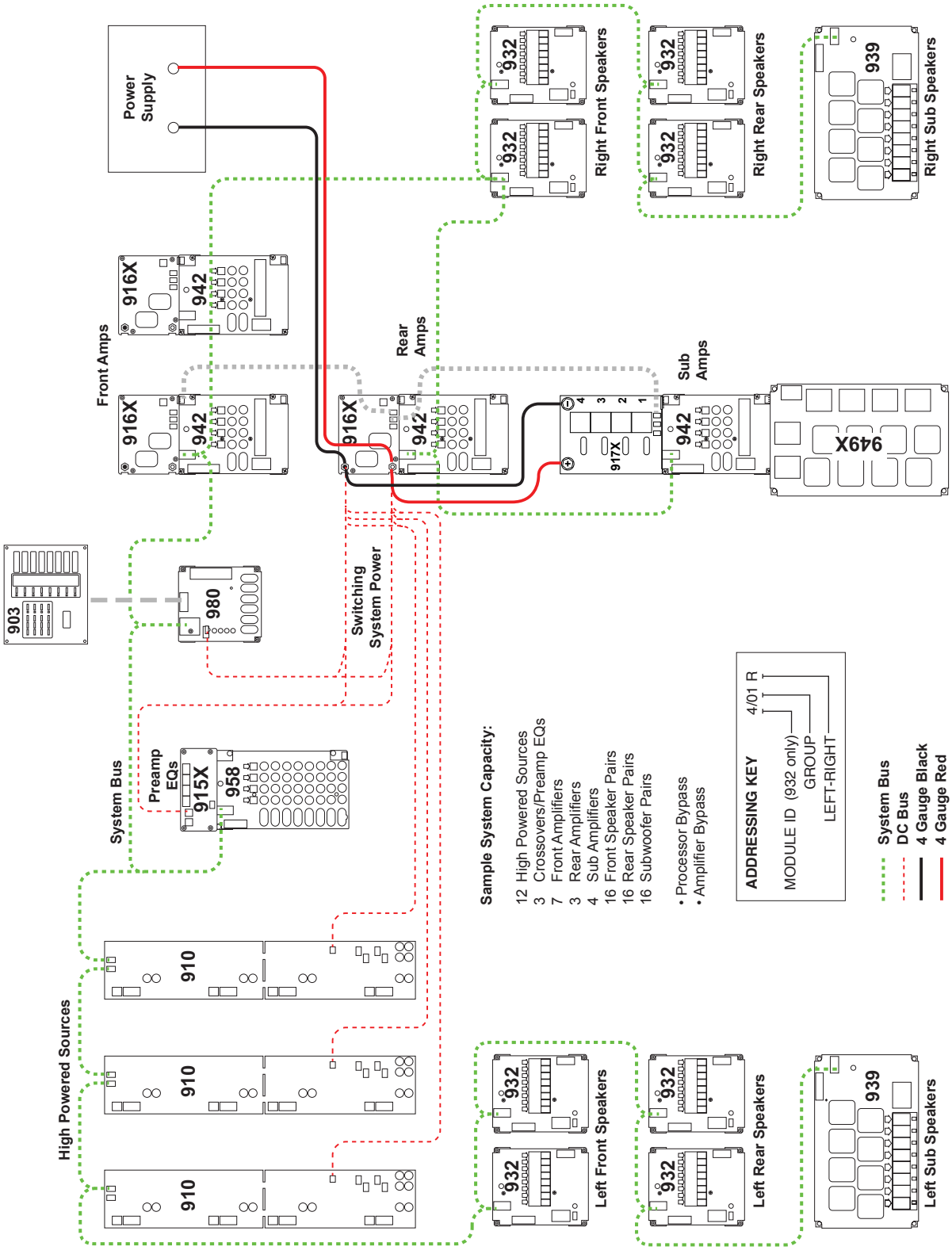
EXAMPLE SYSTEM 1
TWO-CHANNEL SYSTEM

- Addressing
- System Bus
- DC Bus
- Low-Level Bus
- Speaker Bus
- Amplifier Bypass



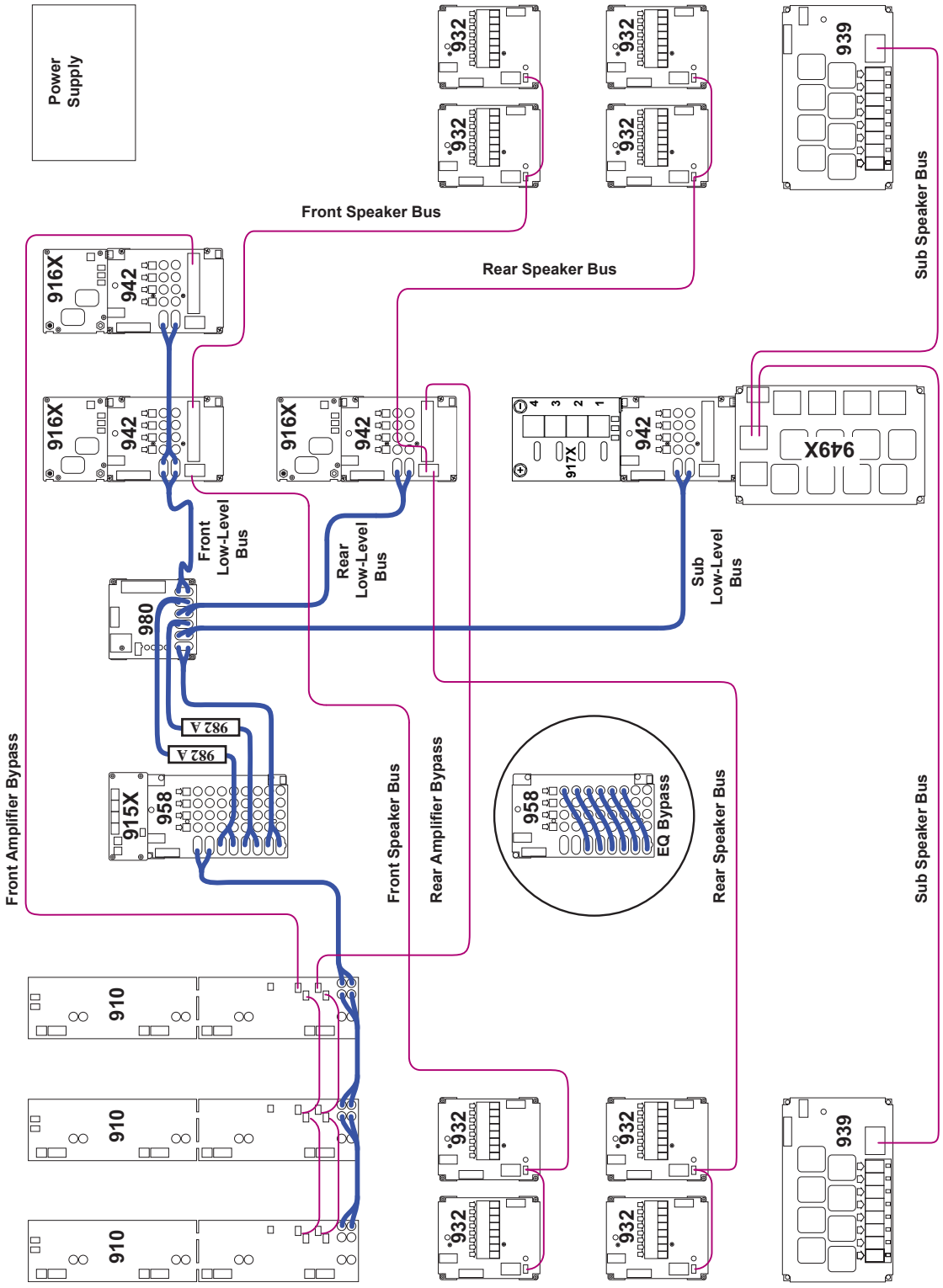
EXAMPLE SYSTEM 2
SIX-CHANNEL SYSTEM

- System Bus
- DC Bus
- Addressing



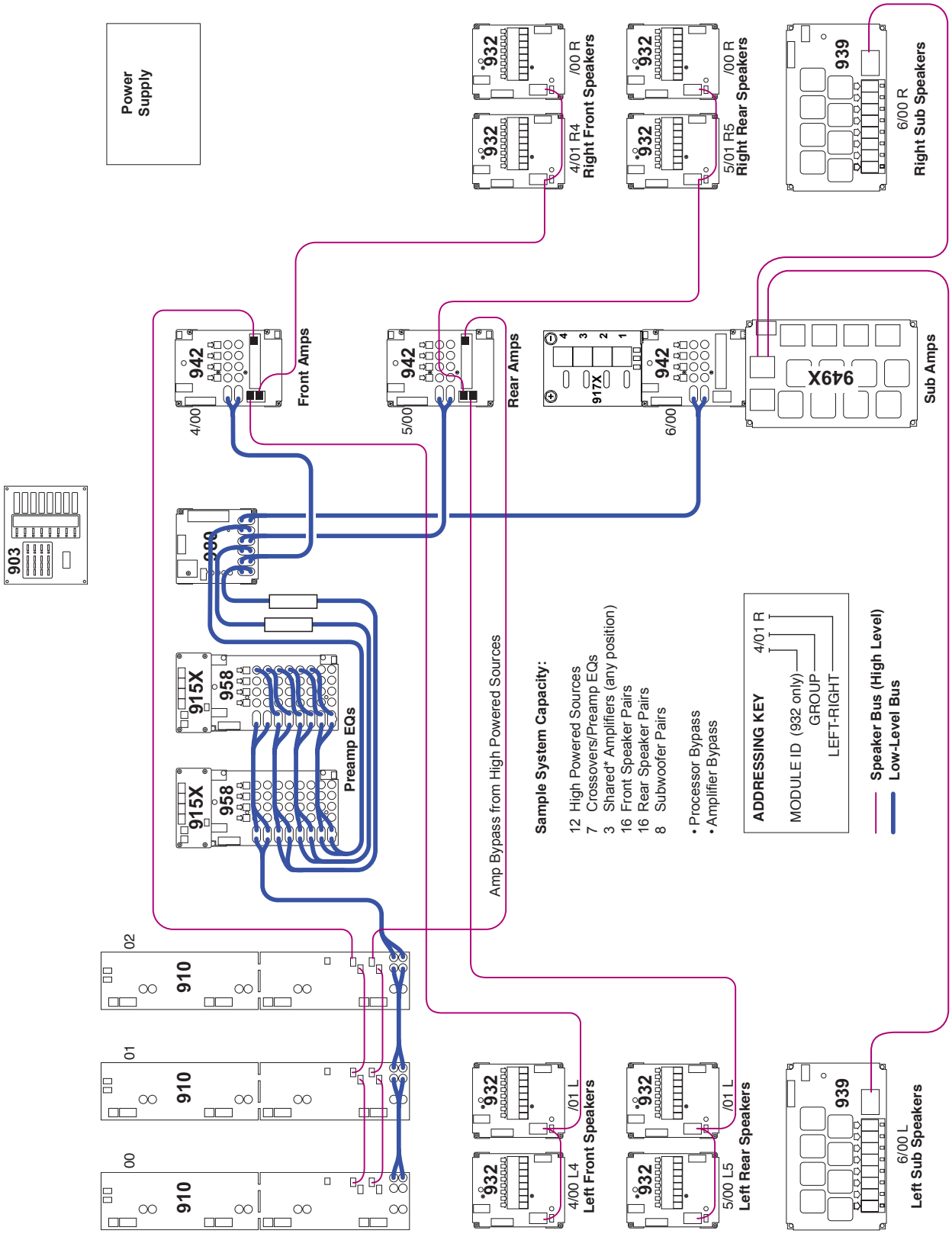
EXAMPLE SYSTEM 2
SIX-CHANNEL SYSTEM

- Low-Level Bus
- Speaker Bus
- Amp Bypass
- EQ Bypass



EXAMPLE SYSTEM 3
AMP SHARED SYSTEM

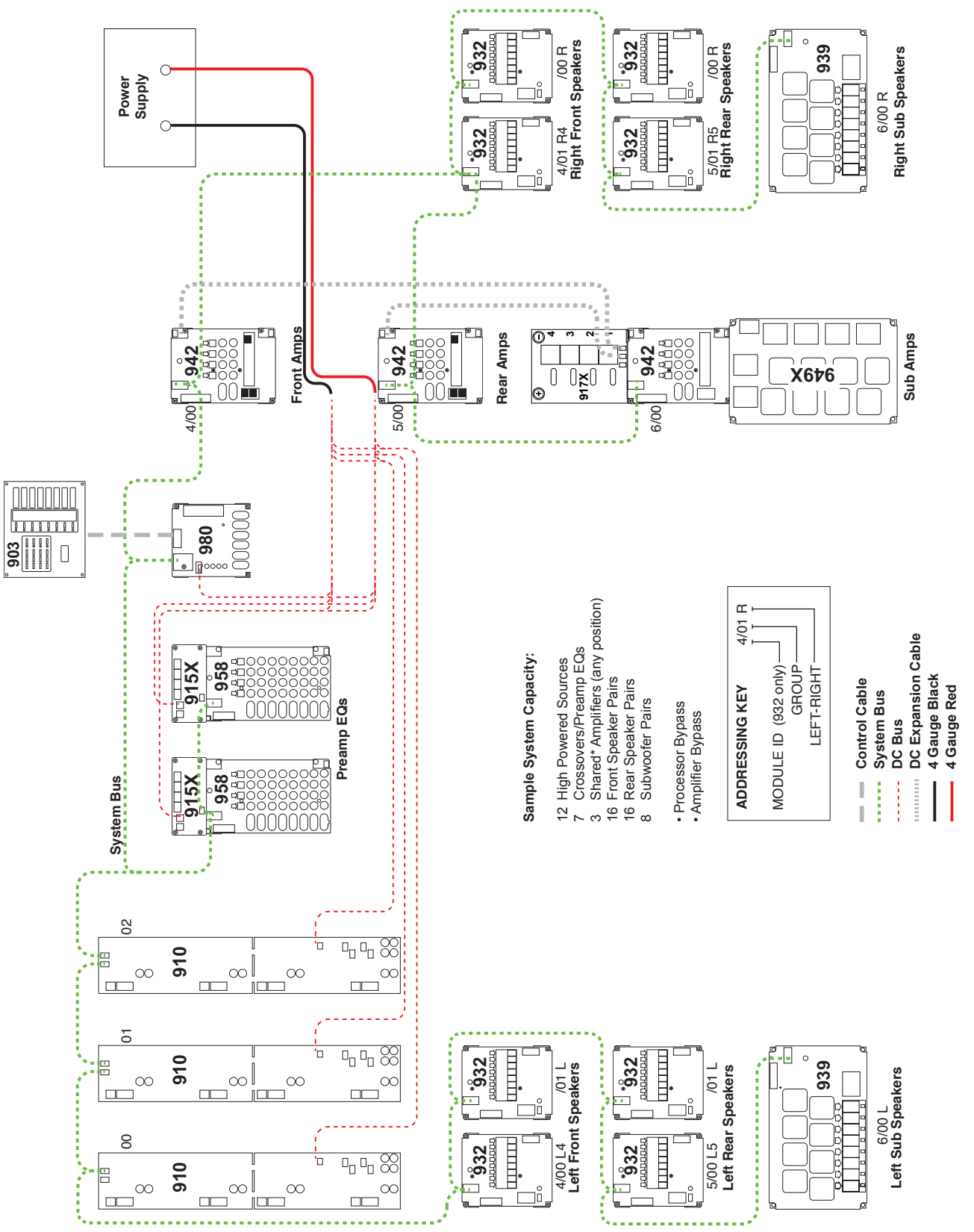
- Low-Level Bus
- Speaker Bus
- Amp Bypass
- EQ Bypass



* See Amp Share Adapter instructions (Model 993), in Appendix B.

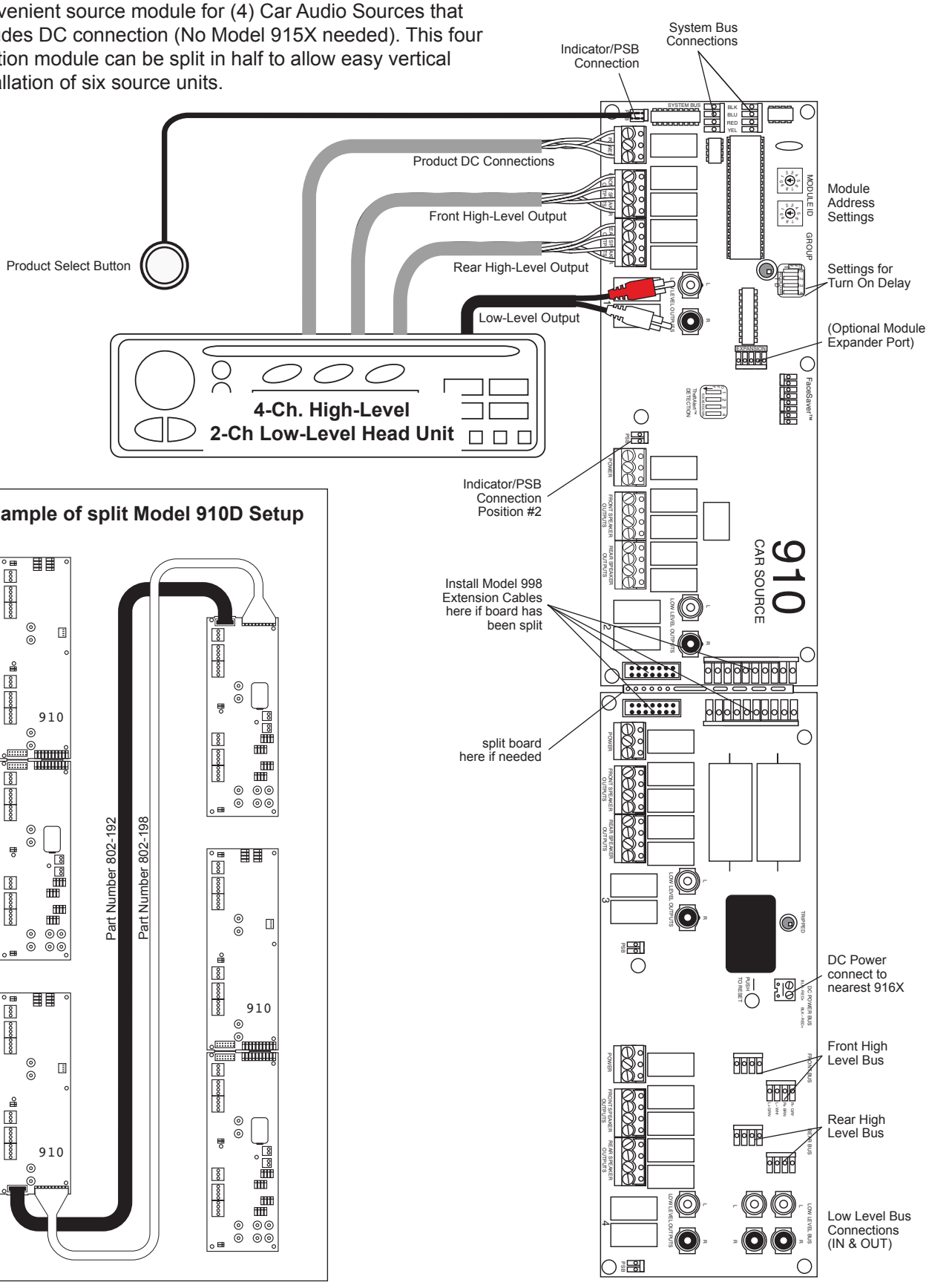
EXAMPLE SYSTEM 3
AMP SHARED SYSTEM

- System Bus
- DC Bus
- Addressing



Model 910 Head Unit Module: 4 Channel High- /2 Channel Low-Level

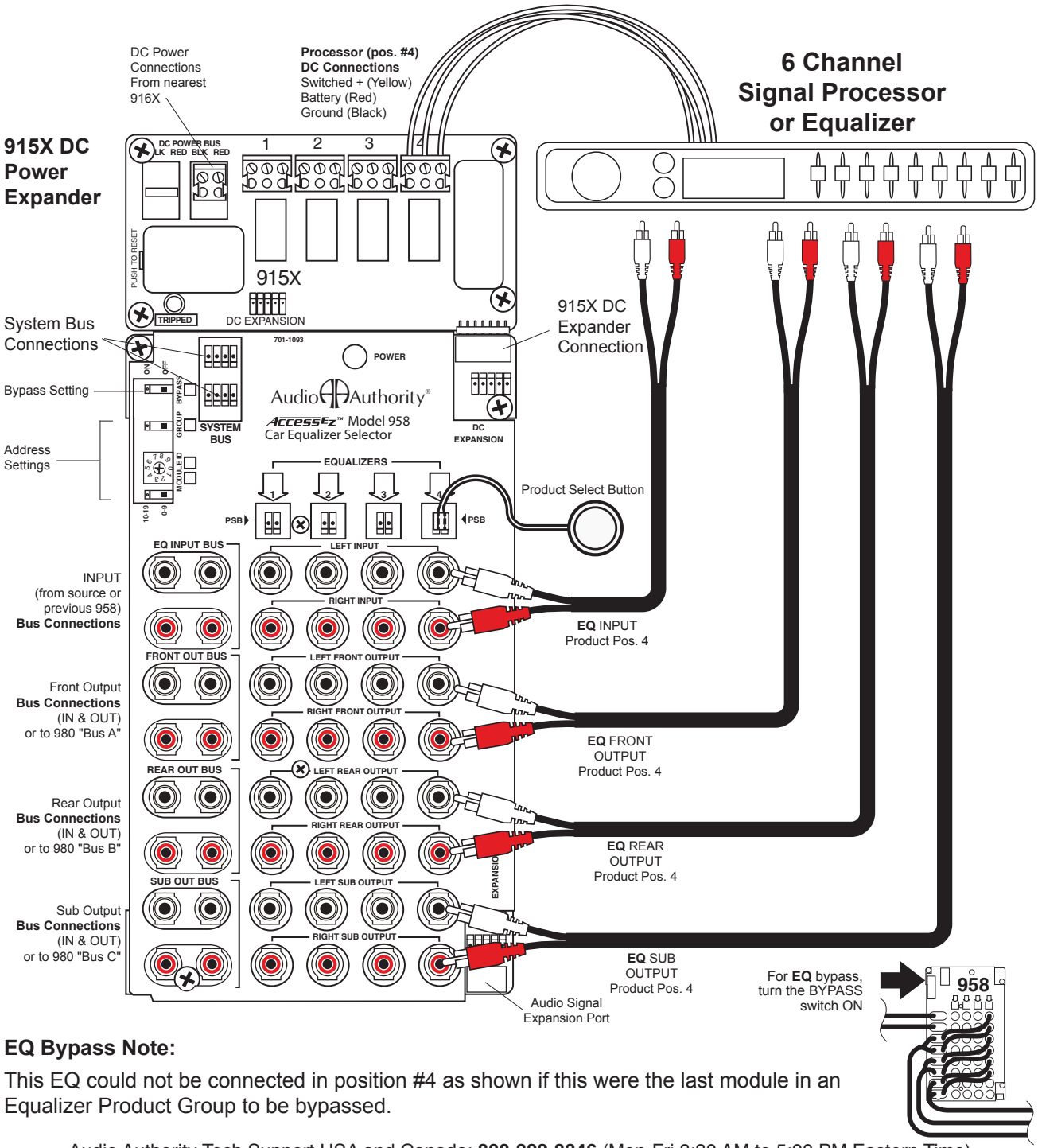
Convenient source module for (4) Car Audio Sources that includes DC connection (No Model 915X needed). This four position module can be split in half to allow easy vertical installation of six source units.



Processor/EQ: 2 Channel Low-Level Input / 6 Channel Low-Level Output

The same layout applies to 6 and 4-channel processor Product Groups (a 2-channel processor group may use a 922 for input signal and a 920X for output). The Low-Level Bus connections should be routed to the corresponding bus connections on the next module in the Product Group or the Model 980 System Module (front output bus to position "A" on the 980A, rear bus to position "B" & Sub bus to position "C"). See Model 980 Setup Diagram for the next installation step.

If your system includes head units with both low-level and high-level signal output, special wiring is required for setting up the proper installation of Low-Level Bypass (see pp. 12, 42).



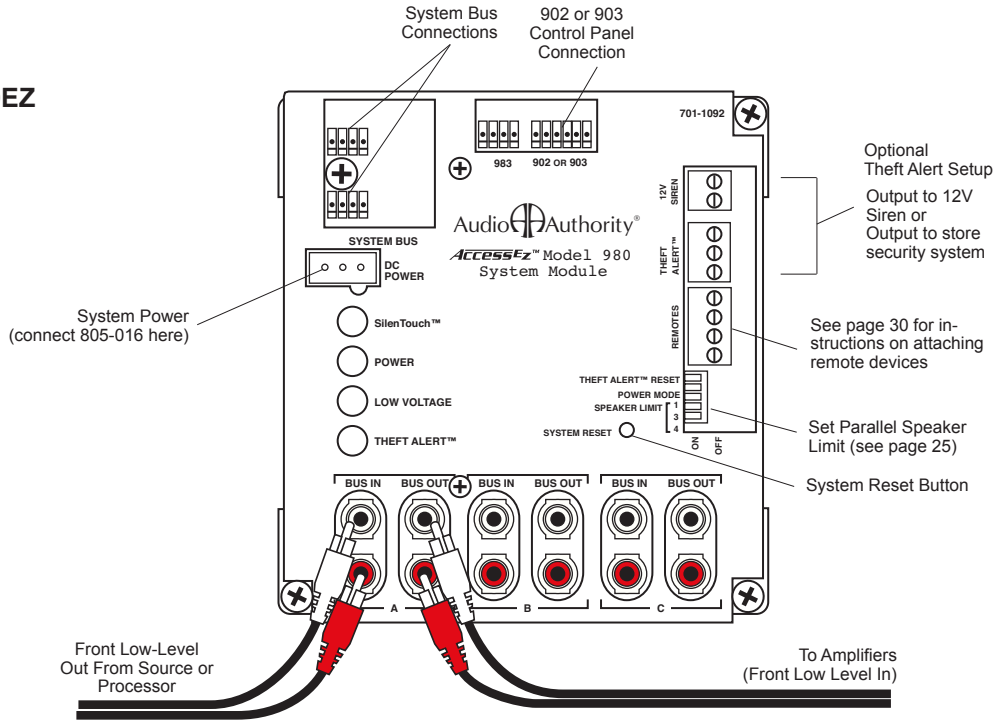
EQ Bypass Note:

This EQ could not be connected in position #4 as shown if this were the last module in an Equalizer Product Group to be bypassed.

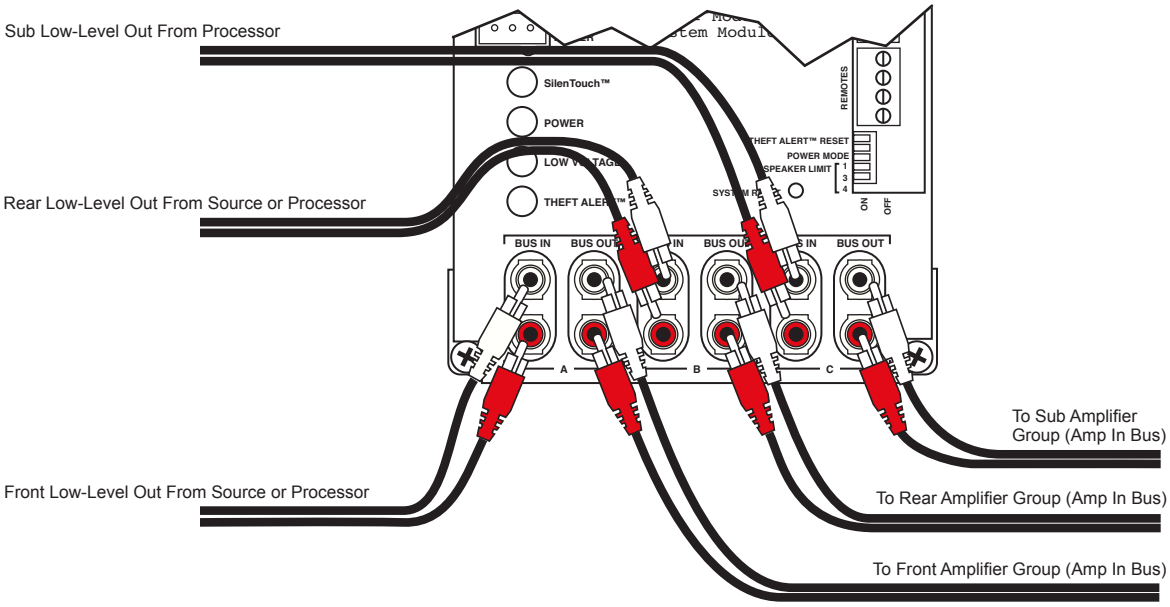
Model 980 System Module / 2- and 6-Channel Hookup

The System Module is essential for every Access™ system. It makes no difference if selection of product is by Control Panel or by Product Select Buttons or both, therefore, always follow this diagram for proper setup. Concerning signal path, the Model 980EZ will be located just before the amplifier inputs (see Appendix A). In the 2-channel configuration, the Front Inputs and Front Outputs are the only connections that are used. In the 6-channel configuration, all three sets of inputs/outputs are used. The Low-Level buses (e.g., front, rear, sub) continue separately from the 980 on to their corresponding amplifiers or amp groups.

2-Channel Setup for 980EZ

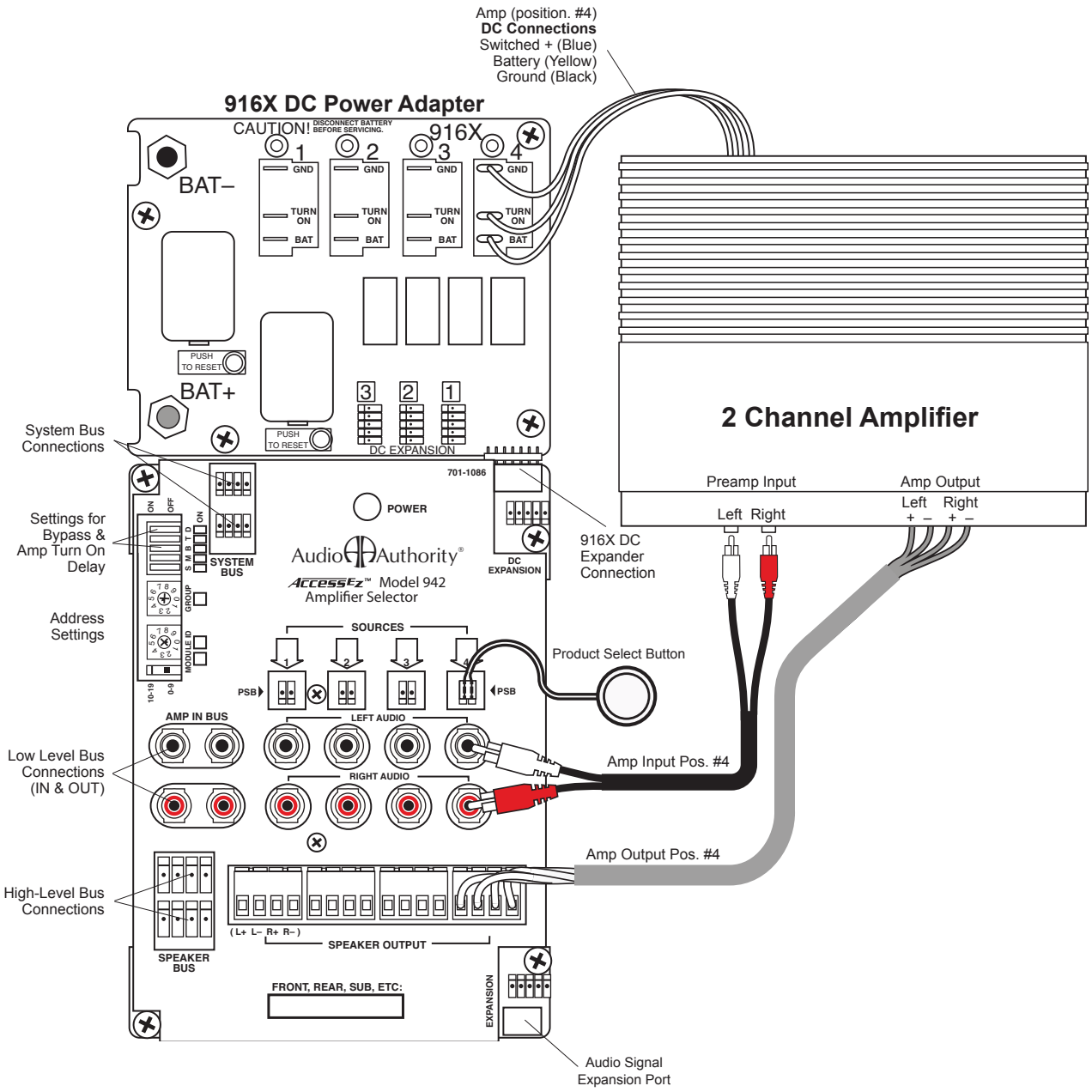


6-Channel Setup for 980EZ



AMPLIFIERS / 2-Channel Hookup

This drawing shows the basic connections for a 2-channel amplifier. See Appendix A for other system related connections such as System Bus, DC distribution, or Low-Level and High-Level Bus.

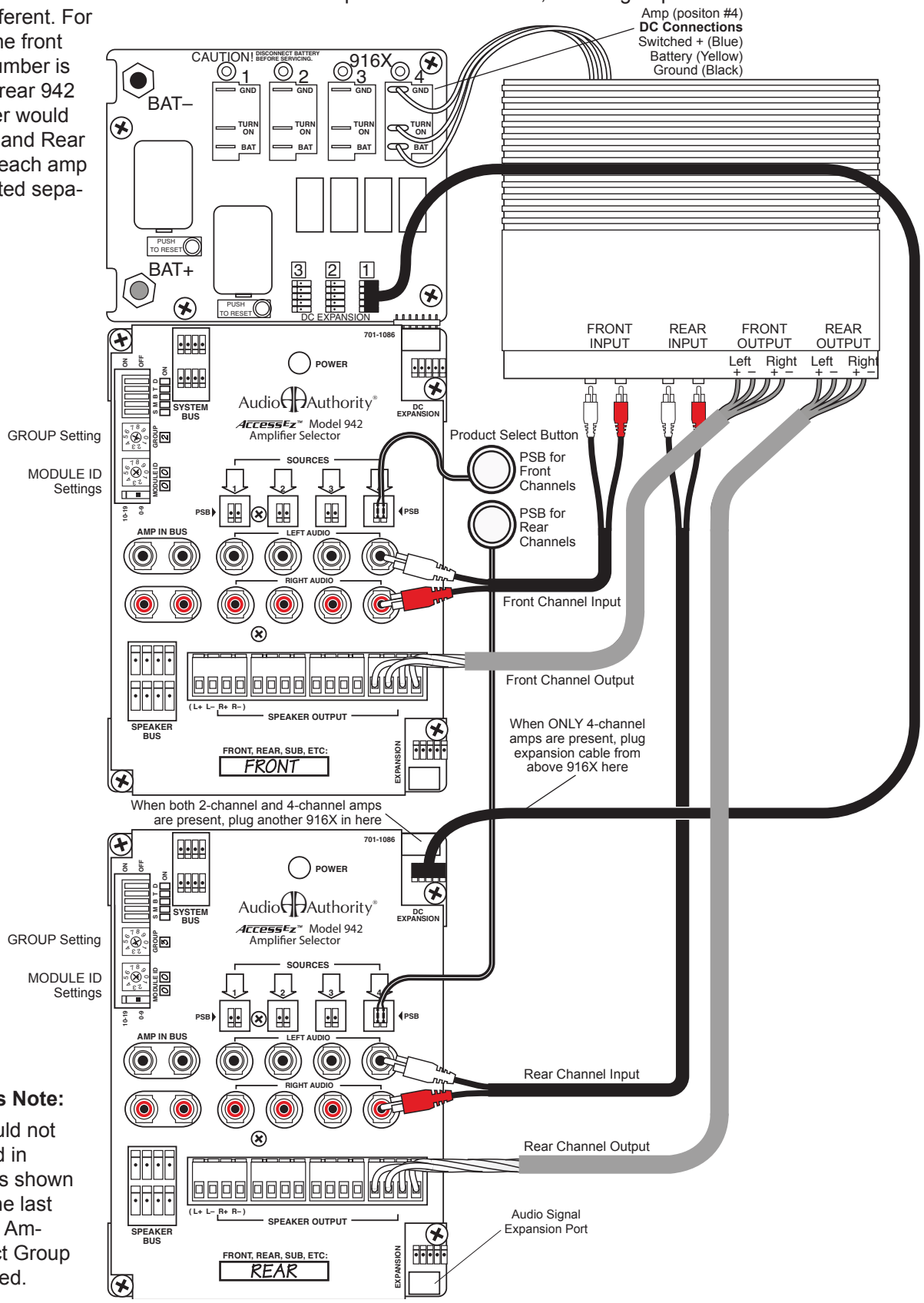


Amp Bypass Note:

This amp could not be connected in position #4 as shown if this were the last module in an Amplifier Product Group to be bypassed.

AMPLIFIERS / 4-Channel Hookup

The Module ID for both 942s in a four-channel setup should be the same, but the group number for each should be different. For example, if the front 942 group number is “4,” then the rear 942 group number would be “5.” Front and Rear Channels of each amp can be selected separately.



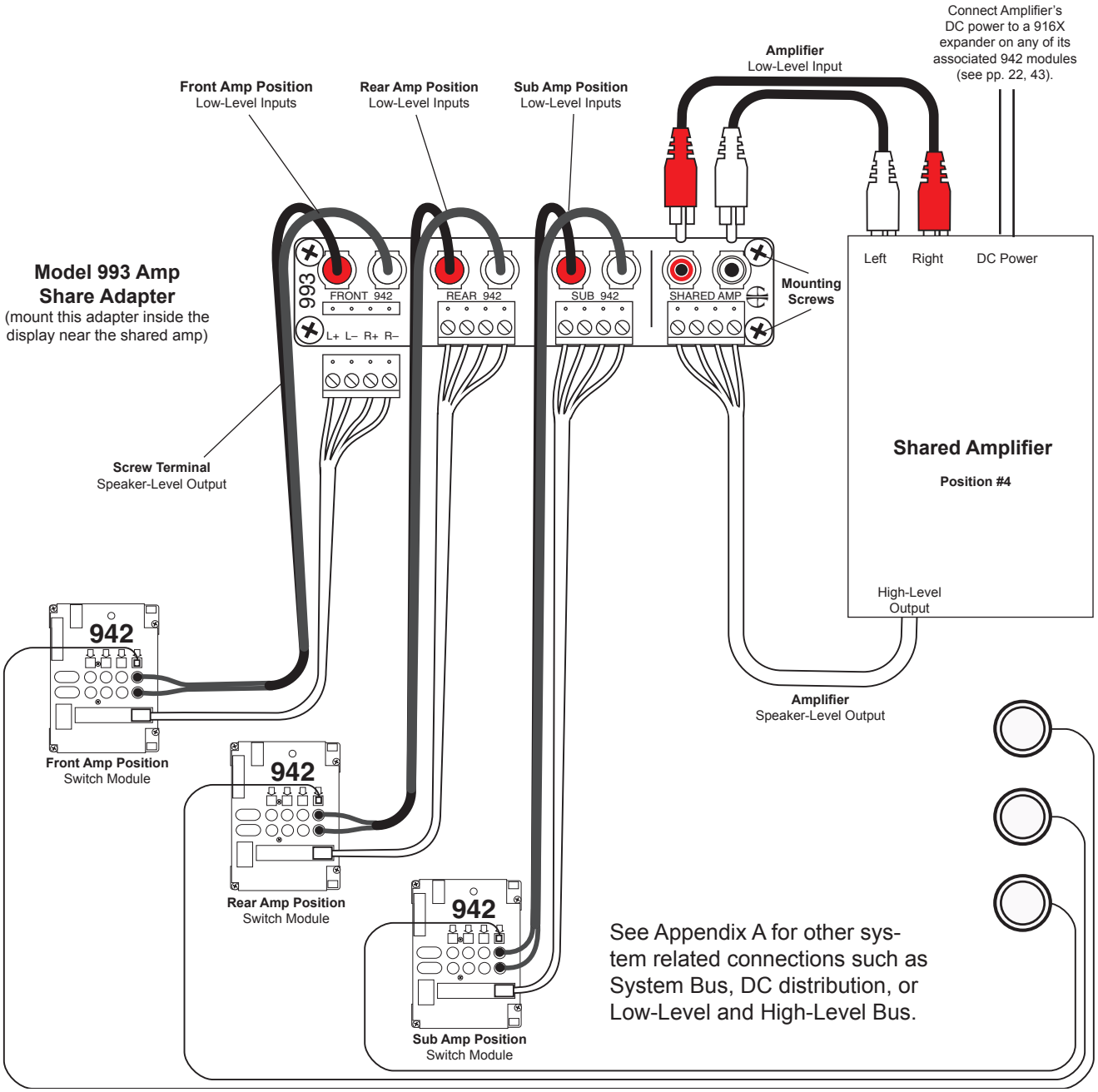
Amp Bypass Note:

This amp could not be connected in position #4 as shown if this were the last module in an Amplifier Product Group to be bypassed.

Shared Amplifier Hookup

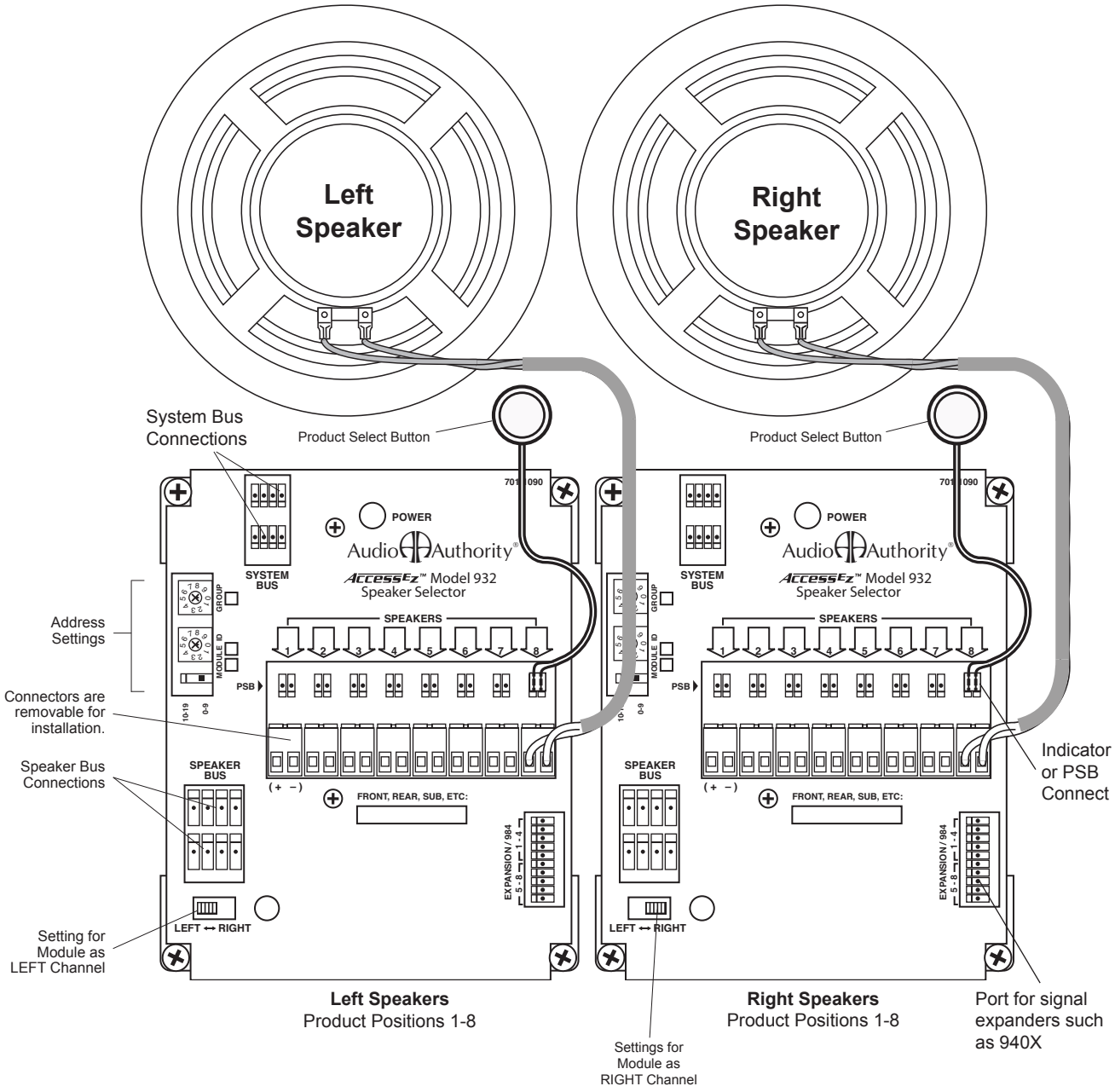
This diagram shows one stereo amplifier connected to all three Amplifier Product Groups so that it can play in the front, rear, or sub position. To add three more shared amplifiers, connect each to its own Model 993 adapter, and then connect the adapter to corresponding positions on each 942 module. If some of your amps will be shared, and some not shared, contact Audio Authority® at the phone number below for assistance.

First, mount the switching modules inside your display according to your system plan. Then use the screws provided to mount each amp's 993 adapter inside the cabinet or on the back of the amplifier display panel near the amplifier to be shared. Connect the Input and Output cables from each 942 module to the 993 adapter as shown. Connect the amplifier to the adapter using the "SHARED AMP" terminals and jacks on the 993. Contact Audio Authority® Technical Service at the phone number below with questions.



Note: This drawing is not to scale.

Left/Right and Mono Speaker Hookup

Model 932 Speaker Modules can be configured to function as left, right or mono modules. The slide switch on the left side of the module is marked LEFT and RIGHT . Position the slide switch to LEFT for left channel function and toward RIGHT for right channel or MONO function. (If used for mono operation there will not be a corresponding "L" module.)

Model 932s are unique in that they share the same GROUP Address with the amplifier group with which they operate. For example, if the front amp GROUP number is "4," then the front speaker GROUP number would also be "4." Additionally, LEFT and RIGHT modules have the same MODULE ID; here is an example: For speakers 1-8, both LEFT & RIGHT 932 modules have the address: 4/00 (GROUP=4 / MODULE ID=00). For speakers 9-16 both LEFT & RIGHT 932 modules have the address: 4/01 (GROUP=4 / MODULE ID=01) etc...