IRP®
Professional Sound Products

SYSTEM 41®
Set Up Procedure
VOICE-MATIC® MASTER
DJ-4115A

Refer to back for control record

Refer to ***SYSTEM* 41 Installation Manual** for general instructions on module installation and wiring.

Refer to **DJ-4115A Data Sheet** for product specifications.

INTRODUCTION

The DJ-4115A Master Module is part of a modular and expandable automatic mixing system designed for use in the IRP ***SYSTEM* 41** mainframe. The DJ-4115A Master Module provides two auxiliary input channels, the system main and auxiliary outputs, and is responsible for generating the dynamic threshold sensing (DTS) levels and NOM count levels. To create a functional automatic mixer, at least one DJ-4114A Input Module must be included in the system. The Input Module will provide the necessary auto-mixing input channels to interface to the sources of the audio system. Being modular in design, the number of input channels in your automatic mixing system can be expanded in increments of four by installing additional DJ-4114A modules into the mainframe. The following documentation is designed to assist you in obtaining the greatest performance from your automatic mixing system by instructing you on how to properly assign the auxiliary input channels, configure the different functions, and properly install and terminate the Master Module. Since the DJ-4115A is only one part of the automatic mixing system, it is recommended that you also keep the associated manuals for the Input Module, the Linking Module, and the ***SYSTEM* 41** Installation Manual close at hand for easy reference.

To assist in the organization and proper documentation of your automatic mixing system, the last page of this manual contains a Control Record Sheet. For each master module installed, determine the configuration assignments, then document the information on the provided Control Record sheet. It is recommended that a copy of the Control Record Sheet be stored within the equipment cabinet for future servicing information, if needed.

CONFIGURING THE MODULE

Since installations are rarely identical, the DJ-4115A Master Module is designed to be as flexible and adaptable as possible. To accomplish this task, the DJ-4115A Master Module incorporates the use of configuration jumpers which select numerous features and functions and route the input signals to various outputs. The following configuration jumpers are described on a function by function basis.

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Before setting up your system, make sure you understand your system requirements! Review your design documentation and learn as much as you can about the system sources, loads and the signal routing. Read through this manual completely and use the control record in the back of this manual to document what you want the configuration settings for the module to be. Then start configuring your module based on the documentation you have created.

Please refer to the Jumper Position Chart and Module Detail on pages 4 & 5 for the correct jumper number and location of the following functions.

1. **AUXILIARY INPUT 1 TO MAIN OUTPUT ASSIGNMENT:** Located near the middle of the module is a jumper for the assignment of the Auxiliary Input 1 to the main output. The correct position for the jumper can be determined by observing the "In/Out" lettering on the circuit board by the jumper. By placing the jumper in the "In" position, the auxiliary input signal is mixed on the main output bus. In the "Out" position the auxiliary input signal is removed from the main output mix bus.

3. **AUXILIARY INPUT 1 TO AUXILIARY OUTPUT ASSIGNMENT:** Located near the middle of the module is a jumper for the assignment of the Auxiliary Input 1 to the auxiliary output. The correct position for the jumper can be determined by observing the "In/Out" lettering on the circuit board by the jumper. By placing the jumper in the "In" position, the auxiliary input signal is mixed on the auxiliary output bus. In the "Out" position the auxiliary input signal is removed from the auxiliary output mix bus.

4. **AUXILIARY INPUT 2 TO MAIN OUTPUT ASSIGNMENT:** Located near the middle of the module is a jumper for the assignment of the Auxiliary Input 2 to the main output. The correct position for the jumper can be determined by observing the "In/Out" lettering on the circuit board by the jumper. By placing the jumper in the "In" position, the auxiliary input signal is mixed on the main output bus. In the "Out" position the auxiliary input signal is removed from the main output mix bus.

5. **AUXILIARY INPUT 2 TO AUXILIARY OUTPUT ASSIGNMENT:** Located near the middle of the module is a jumper for the assignment of the Auxiliary Input 2 to the auxiliary output. The correct position for the jumper can be determined by observing the "In/Out" lettering on the circuit board by the jumper. By placing the jumper in the "In" position, the auxiliary input signal is mixed on the auxiliary output bus. In the "Out" position the auxiliary input signal is removed from the auxiliary output mix bus.

6. **"LAST MICROPHONE HOLD" MODE:** Located at the bottom right corner of the circuit board is the "Last Mic Hold" mode jumper. When set to the "Last On" position, the automatic mixing system will maintain at least one active input channel at all times. This feature is important for installations using echo cancellors which must be able to "hear" the room at all times. This jumper is factory set for "Last On" operation. To defeat this function, place the jumper in the standard (STD) position.

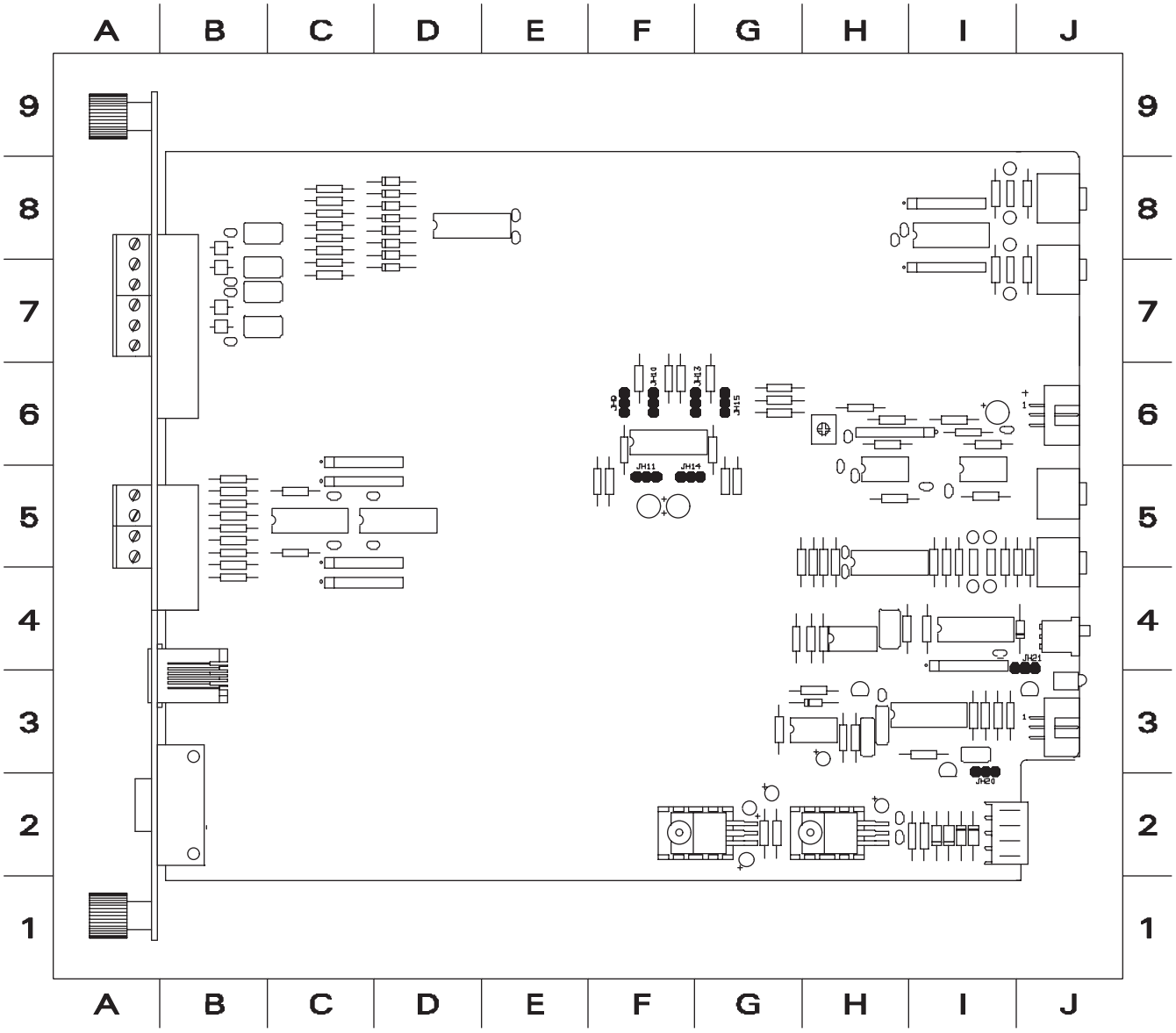
7. **LINKING INTERFACE COMBINE MODE:** Located at the lower right of the circuit board is the jumper for the linking interface. This interface is designed to allow the combining of DTS, NOM count and Last Mic Hold signals between multiple automixing systems. This interface is specifically designed for use with the DJ-4129A combining module. The correct position for the jumper can be determined by observing the "STD/RMCMB" (Standard/Room Combine) lettering on the circuit board by the jumper. This jumper is factory set for standard (STD) or stand alone operation. When used in combining applications, place the jumper in the "RMCMB" position.

FUNCTION	JUMPER	LOCATION	FACTORY SETTING
Aux Input 1 To Main Output Assignment	JH 10	F-6	In
Aux Input 1 To Auxiliary Output Assignment	JH 13	F/G-6	In
Aux Input 2 To Main Output Assignment	JH 9	F-6	In
Aux Input 2 To Auxiliary Output Assignment	JH 15	G-6	In
Last Microphone Hold Mode	JH 20	I-2/3	Last On
Linking Interface Combine Mode	JH 21	J-3/4	Standard

JUMPER POSITION CHART

Standard/Auto Operating Mode	S 1	J-4	Standard
Aux Input 1 Sensitivity Control	R 153	J-8	Nominal (50%) Rotation
Aux Input 2 Sensitivity Control	R 154	J-7/8	Nominal (50%) Rotation
Main Output	R 156	J-5	Nominal (50%) Rotation
Auxiliary Output	R 157	J-4/5	Nominal (50%) Rotation

CONTROL POSITION CHART



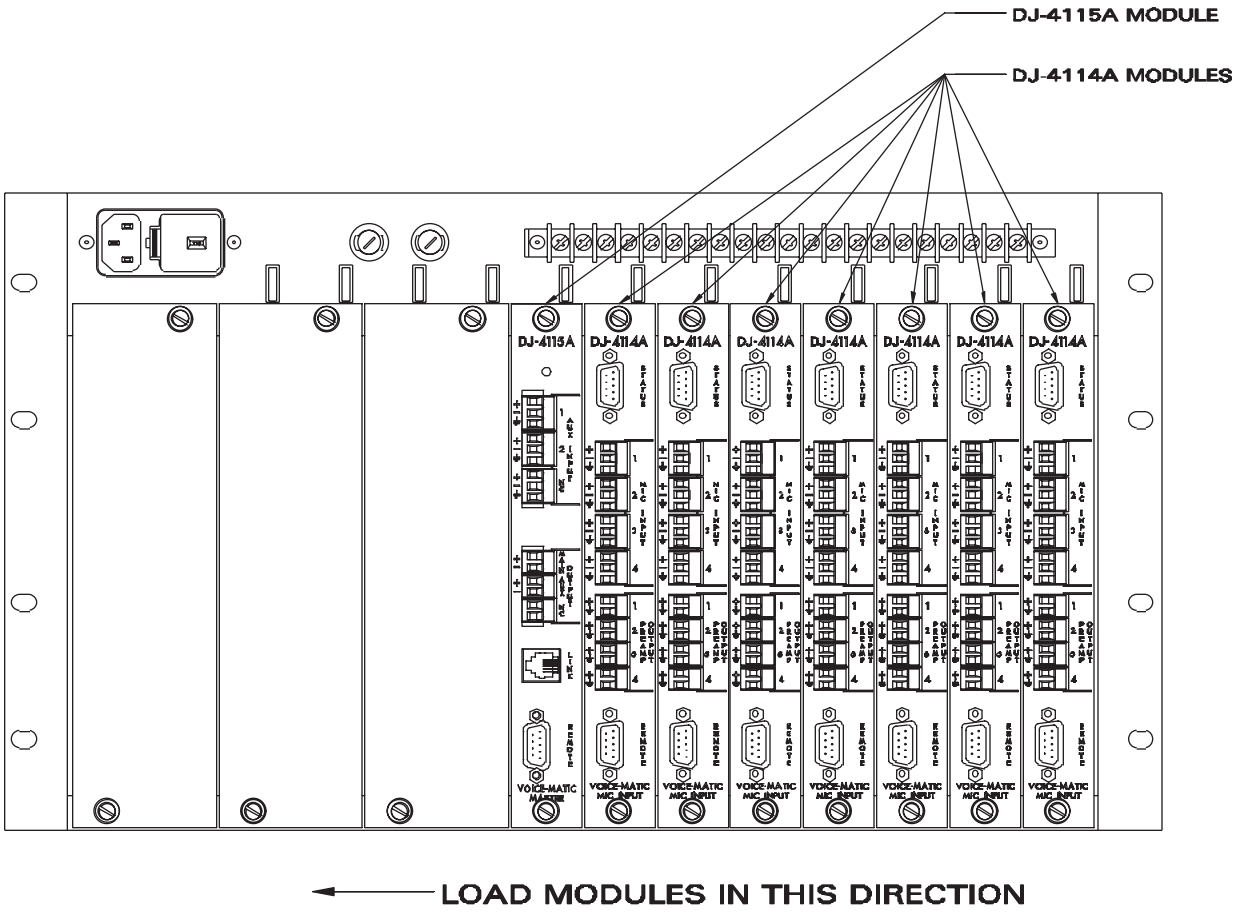
MODULE DETAIL

MODULE INSTALLATION

1. Before you proceed any further, verify that the mainframe is properly operating! Power up the empty mainframe and observe that the Front Panel "DC Normal" LED is illuminated. If it is not, the mainframe has a malfunction which must be corrected before installation of the modules. Once proper operation of the mainframe is verified, power it down before installing the modules. Make sure all modules have been correctly configured before installing them in the mainframe.

2. Viewing the mainframe from the rear, align the edge of the module into the guide alongside the last DJ-4114A Input Module installed. Insert the DJ-4115A Master Module fully by applying inward pressure along the bottom of the rear panel. If there are more than 13 DJ-4114A modules in the system, a DJ-4131A Linking Module should be installed instead of a DJ-4115A Master Module in the last remaining slot of the first mainframe. The final mainframe will require an additional DJ-4131A Linking Module and a DJ-4115A Master Module to complete the expanded system. Place the DJ-4115A Master Module immediately adjacent to the last DJ-4131A module in the final mainframe.

While it may be convenient in certain applications, it is not recommended that other System 41 modules be physically inserted between DJ-4115A module and the DJ-4131A or DJ-4114A modules. Doing so increases the possibility of RF and noise problems within the system.

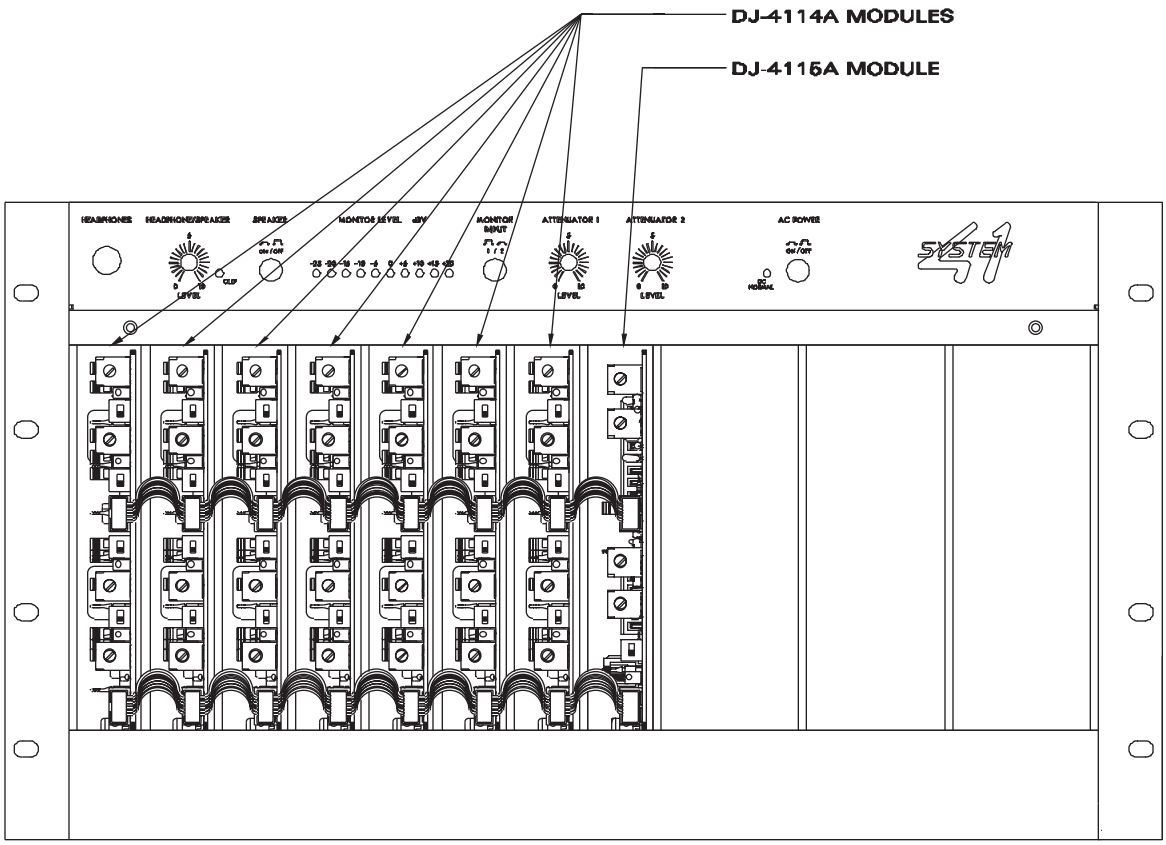


MAINFRAME REAR VIEW

3. There are 2 parallel runs of ribbon cable that need to be installed to interconnect the modules in the mainframe. Packed with each DJ-4115A series Master Module and DJ-4131A Linking Module is a pair of ribbon cables to accomplish this. Stretch out the ribbon cables and observe that the spacing between the last connectors is greater on one end than the other. Note also that there are 15 connectors provided on each of the cables. Starting with the end of the ribbon cable that does **not** have the greater spacing and viewing the mainframe from the front, connect the flat ribbon cables from the leftmost DJ-4114A module sequentially (daisy chain) across each DJ-4114A module ending at the DJ-4115A Master Module or the DJ-4131A Linking Module. Cut off any unused length of ribbon cable. If the mainframe has both a linking module and a master module installed, cut the section of ribbon cable with the greater spacing (with both connectors attached) and use it to link the DJ-4115A Master Module and the DJ-4131A module together. Note that this interconnection is not directly across from each other as the DJ-4114A cards were but is diagonal which accounts for the increased ribbon cable spacing. Repeat this procedure for the second ribbon cable (see Mainframe Front View With Linking Module on the following page).

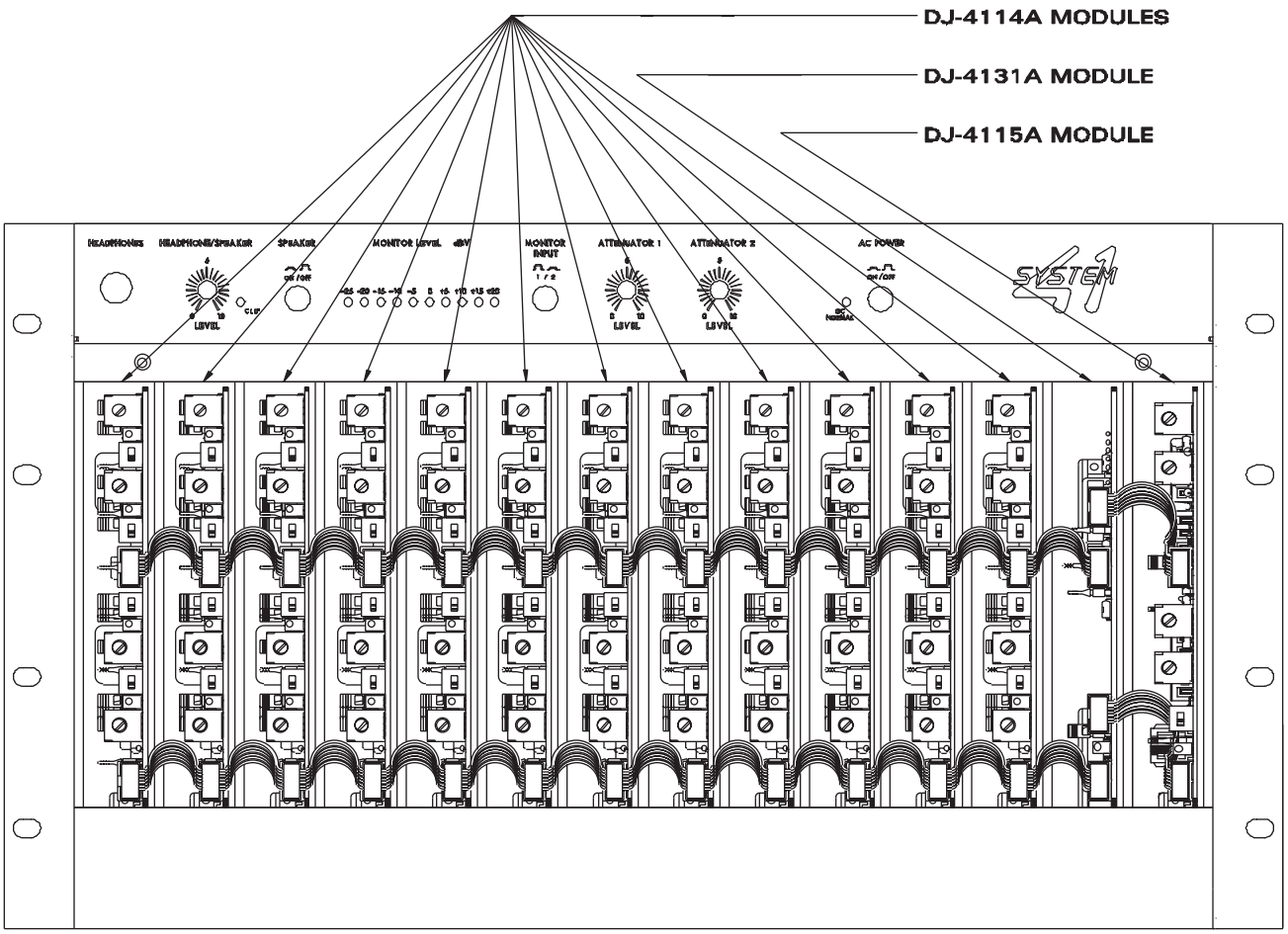
NOTE

Leaving any unused length of ribbon cable inside the mainframe for future expansion is strongly discouraged. Doing so creates an unterminated line and could contribute to unnecessary RF interference. If in the future the system is expanded and new ribbon cables are needed, contact us and we will gladly supply new ribbon cables at no charge with your order.



MAINFRAME FRONT VIEW

MAINFRAME FRONT VIEW WITH LINKING MODULE



SYSTEM WIRING CONNECTIONS

NOTE

The removable screw clamp connectors used for the input and output connections is designed to accept either solid or stranded wire up to 12 AWG in size. If necessary, multiple conductors may be terminated together if the 12 AWG equivalent is not exceeded. It is recommended that if you are using multiple conductors they should be the same AWG size. For the most reliable connection, the wires must be twisted together, especially if you are mixing AWG sizes.

Removable Screw Clamp Connector Termination
Strip back 5/16" of wire insulation and then insert the bare wire into the screw clamp opening. Tighten the screw clamp down firmly onto the wire. DO NOT TIN THE WIRE WITH SOLDER!!! The cold flow of solder will loosen the connection of tinned wires.

1. **AUX INPUT 1 & 2 LINE CONNECTIONS.** The Aux line level inputs on the DJ-4115A are 82kΩ instrument grade electronically balanced circuits. The input circuitry is capable of accepting signal levels of up to +19dBV. The input is provided with a three position removable screw clamp connector block for interconnection to external sources. With this connector there is no numerical pin designation as there are on XLR style connectors. Connections can be made as they are represented on the rear panel. The (+) symbol designates the non-inverting signal

connection, the (-) symbol represents the inverting signal connection and the (⏚) symbol represents the shield or ground connection.

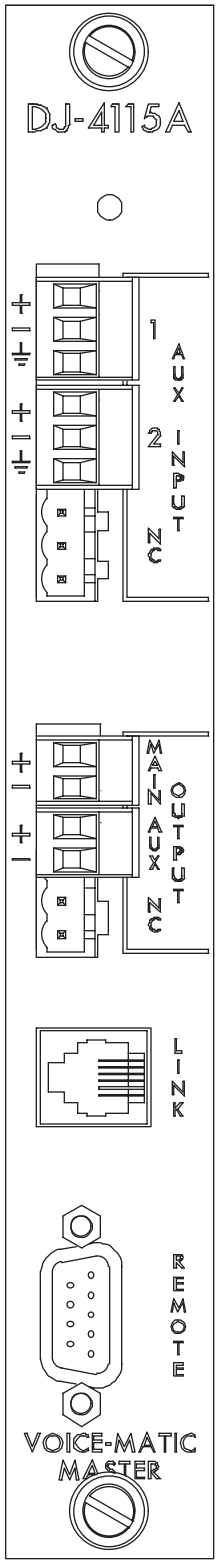
NOTE For use with an unbalanced source, tie the signal positive to the non-inverting (+) connection and the signal ground to the inverting (-) connection. For additional information, refer to the ***SYSTEM* 41** Installation Manual for proper wiring techniques.

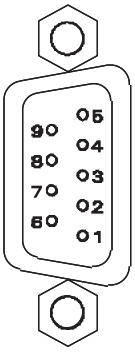
2. MAIN/AUX OUTPUT CONNECTIONS: There is one discreet output provided for each of the Main and Auxiliary mix bus on The DJ-4115A module. The output is a electronically balanced, low impedance driver suitable for driving loads of 600Ω or more. The output is provided with a two position removable screw clamp connector. The (+) symbol designates the non-inverting signal and the (-) represents the inverting signal connection.

7. VOICE-MATIC/STANDARD MODE REMOTE CONTROL: The Auto/Standard mode control is a master override that places the entire automatic mixer in the standard operating mode regardless of the front edge control settings on the DJ-4114A modules. The Auto/Standard mode control can be activated by grounding its corresponding control pin on the rear panel DB9 D-Subminiature connector. The pin location for this function on the nine position connector is shown on the Remote Pin Function Chart below.

NOTE The Voice-Matic/Standard Remote Control will override the Master Automatic/Standard Switch when the Master is in the Automatic mode. When remote control of the operating mode is required, the Master must be in the Automatic position.

8. **VOICE-MATIC LINKING INTERFACE:** Provided on the back of the DJ-4115A master module is a 6 position RJ-12 linking connector for combining applications. This connector, when used in conjunction with a DJ-4129A combining module, will allow the combining of the DTS, NOM count and Last Mic Hold control signals with the master modules of other systems. Please refer to the Linking Interface Mode Jumper description on page 3 for further information.

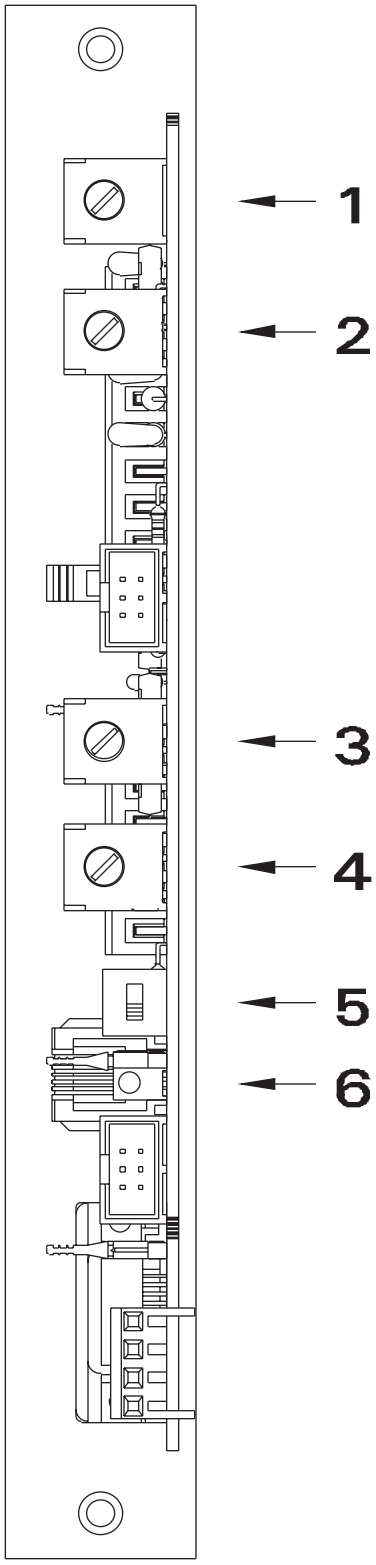




1	Voice-Matic/Standard Remote
2	No Connection
3	No Connection
4	No Connection
5	No Connection
6	No Connection
7	No Connection
8	No Connection
9	Ground

Remote Pin Function Chart

FRONT EDGE CONTROLS



1. **AUX INPUT 1 SENSITIVITY CONTROL:** This potentiometer provides a 20dB usable control range of the overall channel input sensitivity. Full counterclockwise rotation will attenuate the input channel and full clockwise rotation will provide maximum available gain.

2. **AUX INPUT 2 SENSITIVITY CONTROL:** This potentiometer provides a 20dB usable control range of the overall channel input sensitivity. Full counterclockwise rotation will attenuate the input channel and full clockwise rotation will provide maximum available gain.

3. **MAIN OUTPUT LEVEL CONTROL:** This potentiometer is used to set the gain levels of the main output of the module. Full counterclockwise rotation will attenuate the output channel and full clockwise rotation will provide maximum available gain.

4. **AUXILIARY OUTPUT LEVEL CONTROL:** This potentiometer is used to set the gain levels of the auxiliary output of the module. Full counterclockwise rotation will attenuate the output channel and full clockwise rotation will provide maximum available gain.

5. **VOICE-MATIC/STANDARD MASTER SWITCH:** This switch is a master operating mode override control of all the input channels in the mixing system. If the switch is in the up position, all DJ-4114A input channels will function according to their individual settings. If the switch is in the down position, all DJ-4114A input channels will function in the direct manual mode of operation regardless of their individual mode settings.

The Master Voice-matic/Standard switch will override the remote Voice-matic/Standard mode control when in the "STD" position. When remote capability of the operating mode is required the Master Switch must be in the "AUTO" position.

6. SIGNAL PRESENT LED: This LED provides a visual indication of when a signal is present at the output of the master module. When the LED is lit, the system is receiving a signal from a source.

INITIAL CONTROL SETTINGS

1. Locate the input sensitivity controls for the Auxiliary Inputs 1 & 2 along the top front edge of the DJ-4115A module. Set the gain controls to the nominal level (50% rotation). This setting is an optimal starting position for standard line level sources such as tape recorders, CD players or telephone hybrids. If any of the Auxiliary Inputs are unused, set the input sensitivity control for that channel fully counterclockwise to minimize hum and noise. An even better solution can be achieved by removing the input signal from the mix bus as described on pages 2 and 3 in this manual.

2. Locate the gain controls for the Main and Auxiliary outputs along the middle front edge of the DJ-4115A module. Set the gain controls to the nominal level (50% rotation). This setting should be optimal for feeding ***SYSTEM* 41** line level modules or other line level sources such as tape decks, press feeds or telephone hybrids. Variations in sensitivity of the load may be accommodated by the adjustment of this control.

3. For all microphone channels to be "on" continuously and not under Voice-Matic control, set the front mounted master switch to the "manual" position.

4. Refer to the set up procedure manual for the DJ-4114A Input Module and the DJ-4131A linking module for instructions on initial gain and control settings before continuing.

POWER UP AND FINAL ADJUSTMENTS

1. Before starting the final adjustment procedure, verify that the room(s) in which the system is to operate is physically ready. If construction is incomplete or there are other forms of chaos occurring in the room, it will be impossible for you to perform the adjustment procedure to the level necessary to insure proper operation.

2. Before proceeding with the adjustment procedure, double check all your wiring connections for any obvious errors. This will reduce the possibility of damage to any IRP products or other components that are connected to the audio system.

3. When ready to power up the mainframe, verify that any power amplifier connected to the system is turned off to prevent the possibility of any speaker damage. If using remote level controls, set them to 60% of the available range. If using remote channel muting/switching, verify that the controls are not in the mute position.

4. With the front cover of the mainframe open, verify that the Last Mic Hold jumper on the DJ-4115A Master Module is in the Standard (STD) position. Reset the jumper so that Last Mic Hold will not interfere with the proper setup of the automixer.

5. Turn the mainframe on, observe the modules for any unusual activity, such as all mic channels turning on, etc. Normal, random flickering of the status LED's on the DJ-4114A input module(s) is normal.

6. Systematically have an assistant talk into each microphone in a manner duplicating conditions in which the system will commonly be used. As the test talker is talking into the microphone observe the channel status LED activity on the DJ-4114A input modules. Does the LED turn on when the test talker starts speaking? Does the LED turn off when the test talker stops? If not, adjust the channel input sensitivity on the DJ-4114A input module accordingly. Once you have adjusted the input channel sensitivity, listen to the channel using headphones or a monitor speaker. Is the test talkers voice being upcut or chopped off? If so, increase the channel input sensitivity. If the channel sounds distorted, or if it will not turn off, turn the input sensitivity down. Next, look at your settings for the channel input sensitivity. Are you at either of the extremes of the adjustment range of the channel input sensitivity control? If so, it might be worth investigating changing the gain of the channel preamplifier by resetting the gain jumper. If for some reason you still cannot get acceptable performance from the input channel, review the troubleshooting tips or call the factory for technical assistance.

7. For more precise adjustments, a sound level calibrator may be used. Using the previous method to perform a coarse adjustment, use the average acoustical gain of the microphone preamps, as measured from the preamp outputs on the DJ-4114A, as a reference. Using the sound level calibrator as a reference, adjust all of the microphone preamps for identical acoustic gain. By making adjustments in this manner, variations in the microphone and preamp circuitry are compensated for.

When calibrating the preamplifier gain of the input channels on the DJ-4114A input modules, the preamp output must be configured for pre-gate or post-gate operation. If the preamp output is configured for pre-level operation, the change in gain of the preamp is not reflected at the preamp output.

8. At this point you may turn on the sound system power amplifier(s) to finish adjustment of the rest of the system. It is best for the master module to operate at near nominal level and, if necessary, to reduce the system gain at the power amplifier to the desired operating levels. If utilizing the remote level control function, turn up the remote controls to maximum gain and verify that the system does not go into feedback. If it does, reduce the gain of the power amplifier(s) until the system is stable.

9. Set the Last Mic Hold jumper on the DJ-4115A Master Module to the desired setting (Last On or STD).

10. Once your adjustments have been finalized, document them on the supplied control record. Duplicate the input sensitivity control settings and the input channel mode switch positions on the Documentation Panel and close up the mainframe. It is recommended that you photocopy the control records, keep a copy in-house and keep a copy in the rack where the mainframe is located. This will become a convenient reference during any needed future service.

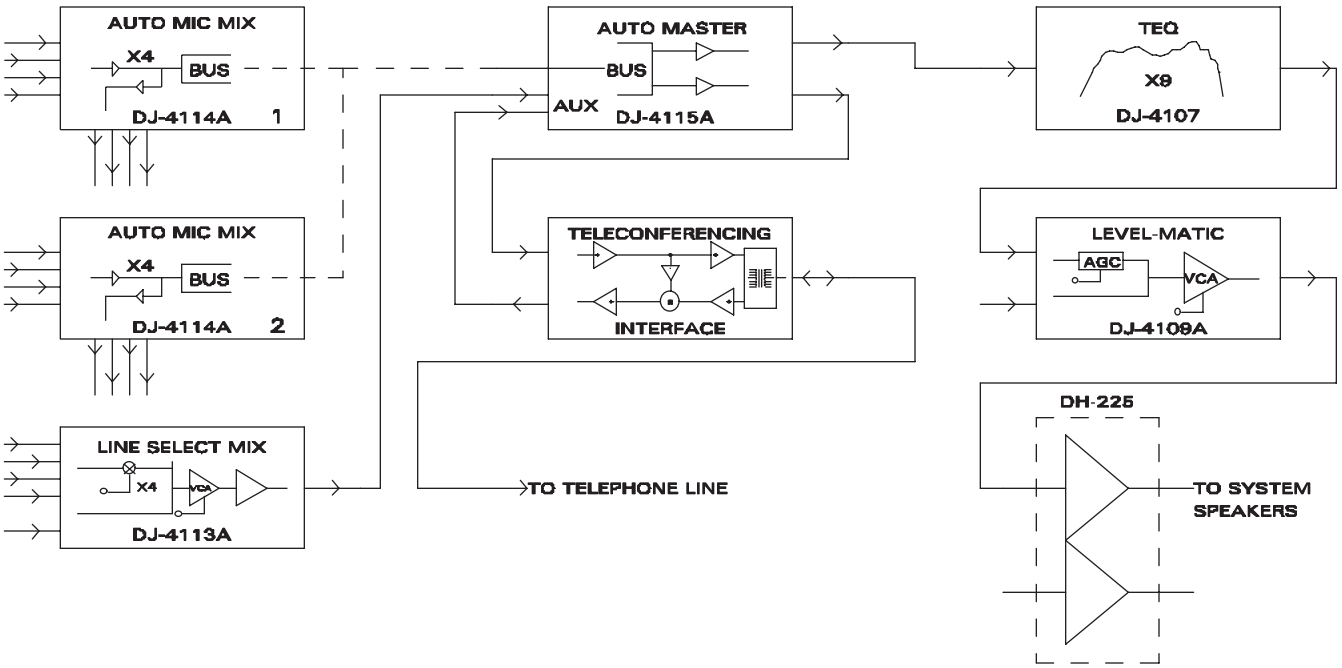
TROUBLESHOOTING TIPS

PROBLEM	CAUSE	CORRECTION
No signal activity in Master Module	Module not fully inserted	Insert module completely into mainframe and secure it
	DJ-4114A module(s) not configured correctly	Verify the jumper configurations on all DJ-4114A modules
	Lower ribbon cable not properly installed or damaged	Verify ribbon cable wiring and inspect for possible damage
	Upper ribbon cable not properly installed or damaged	Verify ribbon cable wiring and inspect for possible damage
Module appears to be working but no output from either the main and/or auxiliary output	Output gain controls set to minimum gain (CCW) position	Reset gain controls to at least nominal (50% rotation) position
	VCA bypass jumper on output missing or rotated out of circuit	Place jumper to either "In" or “Out” position
Input channels on DJ-4114A turn on only with very large input signals	Linking interface jumper is set to the "RMCMB" position in stand alone application	Set linking interface jumper to the "STD" position
System will not operate in Automatic mode	Standard/Automatic mode remote control closed to ground	Deactivate remote control or remove from ground
	Master "Std/Auto" switch in "Std" position	Move switch to "Auto" position

SAMPLE APPLICATIONS

1. **TELECONFERENCING HOOKUP.** A common application for automatic microphone mixers is in teleconferencing or distance learning systems. In these applications a teleconferencing interface or CODEC is needed and must be incorporated into the audio system. The flexibility of the design of the DJ-4115A master module makes it is easy to interface the system to outboard equipment such as a teleconferencing hybrid without external mixers. The illustration below is a block diagram of a medium sized teleconferencing system demonstrating how a teleconferencing interface would be wired. The auxiliary output is configured on the DJ-4114A input modules to feed all the microphone inputs Post-Gate to the interface. The DJ-4113A module enhances the system capabilities to accept four additional line level inputs. Auxiliary input 1 on the DJ-4115A master module is configured to route its signal to both the auxiliary and the main outputs. Auxiliary input 2 is configured to route its signal to the main output only. In this manner a feedback loop condition is avoided between the send and receive lines on the teleconferencing interface. A jumper position chart is illustrated below to show how the appropriate jumpers would be positioned in the master module for this application. For information on the proper configuration of the input modules, please refer to the DJ-4114A setup Procedure enclosed with each module.

BLOCK DIAGRAM



MASTER MODULE JUMPER POSITION CHART

Aux Input 1 To Main Output Assignment	X	*In		Out
Aux Input 1 To Aux Output Assignment	X	*In		Out
Aux Input 2 To Main Output Assignment	X	*In		Out
Aux Input 2 To Aux Output Assignment		*In	X	Out
“Last Microphone Hold” Mode		*Std	X	Last On
Linking Interface Combine Mode	X	*Std		RMCMB

FIVE YEAR LIMITED WARRANTY

Five Year Limited Warranty: IRP Professional Sound Products warrants to the original purchaser each product manufactured by it to be free from defect in material and workmanship for a period of five years from the date of sale to original purchaser, and agrees to remedy any such defect, or to furnish a new part in exchange for any part of any product of its manufacture which, under normal installation, use and service, discloses such defect provided such part or product is returned by the original purchaser to the IRP factory within five years from the date of sale, with all transportation charges prepaid, and provided that IRP examination discloses that it is defective.

This warranty does not extend to any IRP product which has been subject to misuse, neglect, accident, incorrect wiring by others, improper installation, or to use in violation of instructions furnished by IRP, nor to products on which the serial or identifying numbers have been removed, defaced or changed, nor to accessories used therewith not of IRP manufacture.

IRP's obligation under this warranty as to any products or parts approved by IRP for remedy or exchange is limited, at its option, to replacing such products or parts in kind without charge to the original purchaser, or to crediting the original purchaser with the purchase price of the returned defective products.

This warranty is in lieu of all other warranties, express or implied, and no representative of IRP or any other person is authorized to assume for IRP any other liability in connection with the sales of its product.

Should you encounter any problems with your IRP product, be sure to contact either your local authorized IRP dealer or the IRP factory before taking it anywhere for repairs. We will help you to identify and locate any specific malfunctions, possibly avoid needless shipment, or instruct you as to the speediest method for authorized repair.

If you must send your IRP product to the factory for repair, be sure to contact the IRP Sales Department for a Return Authorization Number.

Include the following information with the returned product.

1. Your complete name and return shipping address (P.O. box numbers are not acceptable)

2. The model number, serial number and the Return Authorization Number.

3. A complete and detailed description of any and all problems you are experiencing with the product.

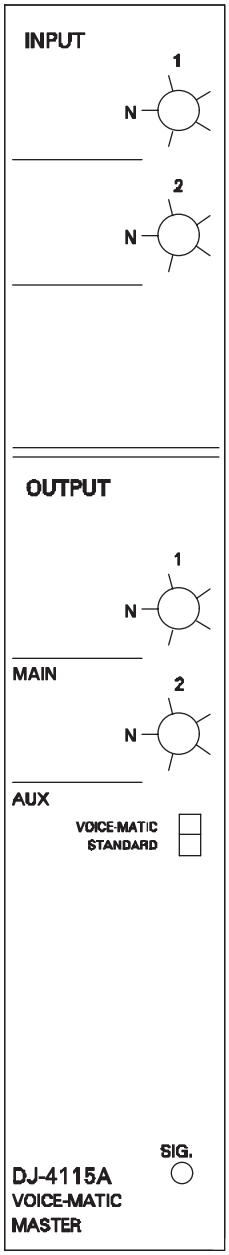
Never ship the unit in any shipping carton other than the original or a replacement supplied by IRP! Ship to us only by a reputable carrier. Be sure to insure the package for the full replacement value. IRP cannot be held responsible for any damage incurred during shipping.

If for some reason you need further assistance concerning the installation, operation or repair of your IRP product, please feel free to contact our office at (800) 255-6993 or fax us at (630) 860-1997.

Control Record

DJ-4115A
VOICE-MATIC® MASTER

Record on the Documentation Panel pictorial to the right all front panel control settings. This must match the Documentation Panel in the mainframe. Record on the jumper configuration chart below all jumper settings for this module.



JUMPER CONFIGURATION CHART

Aux Input 1 To Main Output Assignment		*In		Out
Aux Input 1 To Aux Output Assignment		*In		Out
Aux Input 2 To Main Output Assignment		*In		Out
Aux Input 2 To Aux Output Assignment		*In		Out
"Last Microphone Hold" Mode		*Std		Last On
Linking Interface Combine Mode		*Std		RMCMB

*Factory Setting

Mainframe # _____

Module Position #_____

Contractor_____

Installer_____

Job_____

Date _____