

ADVANTAGE DP/M 28
Distribution Preamplifier/Mixer

Operation Manual



ADVANTAGE DP/M 28

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INTRODUCTION

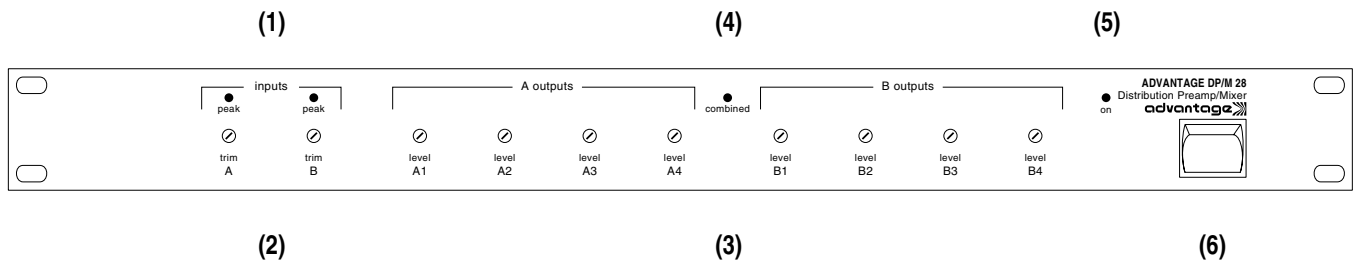
The **ADVANTAGE DP/M 28** is a single rack space unit, which combines a two channel mic/line mixer with an eight output distribution preamplifier. Both input channels accept either mic or line level signals, and provide phantom powering for condenser microphones, and patch points for insertion of external signal processing equipment. All outputs are electronically balanced line level outputs with 600 ohm drive capability. A rear panel "mode" switch allows the ADVANTAGE DP/M 28 to function either as one 2x8 mixer/distribution preamplifier...OR...as two independent 1x4 distribution preamplifiers.

ADVANTAGE DP/M 28 features include:

- ◆ two electronically balanced, low-noise, differential mic/line inputs
- ◆ 30dB pad switch and 50dB trim control on each input channel
- ◆ peak indicator on each input channel
- ◆ patch point on each input channel, for insertion of external signal processing
- ◆ +12 Volt Phantom Power assignable on each input channel (+48 Volt optional)
- ◆ eight electronically balanced & floating outputs with 600 ohm drive capability
- ◆ rear panel "mode" switch with front panel indicator (one 2x8...or...two 1x4 operation)
- ◆ screwdriver adjustable input trim and output level controls with security plugs
- ◆ input and output connections on barrier strip
- ◆ optional transformers for inputs or outputs
- ◆ covered by Advantage Five-Year 'Gold Seal' Warranty
- ◆ UL listed power source

After reading this manual, if you have any questions or need technical assistance, please call Biamp Systems toll-free at 1-800-826-1457.

FRONT PANEL



(1) Peak Indicator (Inputs A & B): These two red LEDs indicate signal levels in the respective input channels have reached +15dB (3dB below clipping). For best performance, adjust the associated Trim controls (2) so the Peak indicators flash only on occasional peaks in signal level (see Rear Panel: Pad on page 3).

(2) Trim (Inputs A & B): These two screwdriver adjustable controls provide 50dB of gain adjustment for the respective input channels. Use the Trim controls to compensate for various input signal levels. For best performance, adjust these controls so the associated Peak indicators flash only on occasional peaks in signal level (see Rear Panel: Pad on page 3). Once the Trim controls are adjusted, the front panel access holes may be plugged to prevent tampering (Security Plugs included as an accessory item).

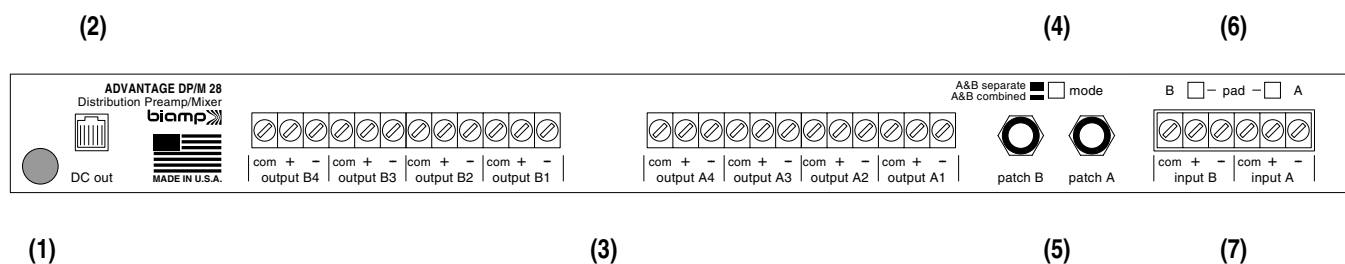
(3) Level (Outputs A & B): These eight screwdriver adjustable controls provide level adjustment for the respective outputs. Use the Level controls individually to set the desired signal level for each sound system or device being fed. The range of these controls is from "off" (fully counter-clockwise) to a maximum of 6dB of gain (fully clockwise). *Level controls are factory set to "off"*. Once the Level controls are adjusted, the front panel access holes may be plugged to prevent tampering (security plugs included as an accessory item).

(4) Combined Indicator: This red LED indicates when the DP/M 28 is operating in the "combined" mode (see Rear Panel: Mode Switch on page 3). When the Combined Indicator is lit, signals from both input channels are mixed together and sent to all eight outputs. In this mode the DP/M 28 functions as a combination mixer/distribution preamplifier, with 2 inputs and eight outputs. When the Combined Indicator is not lit, signal from Input A is sent only to the A Outputs and signal from Input B is sent only to the B Outputs. In this mode the DP/M 28 functions as two independent distribution preamplifiers, each with one input and four outputs.

(5) On Indicator: This red LED indicates when the Power Switch (6) is turned on and power is applied to the unit.

(6) Power Switch: This switch turns the DP/M 28 on. If the On Indicator fails to light and the unit does not pass signal properly, turn the Power Switch off, disconnect the power cord from the AC outlet, and check/replace the AC fuses (see Rear Panel: AC Power Cord on page 3). If the AC fuses are intact, check the power connections (and possibly another AC outlet). If the problem still exists, the unit may require service.

REAR PANEL



(1) AC Power Cord: The external power transformer provides 27 Volts AC to the DP/M 28, and is detachable via a 5-pin DIN connector. The DP/M 28 has two internal 1 amp normal blow (1A NB) fuses. If these fuses should require replacement, use same value and type fuses only. An optional +48 Volt Phantom Power Supply may be inserted 'in-line' with the AC Power Cord (See Modifications/Accessories: +48 Volt Phantom Power on page 5).

(2) DC Out: This modular jack provides +/-12 Volts DC (250mA max.) to power external devices. Contact Biamp Systems for technical data, pin orientation, or information on associated products.

(3) Outputs (A & B): These barrier strip terminals provide eight electronically balanced and floating outputs from the DP/M 28. The Outputs are for connection to line level inputs of various sound system amplifiers, tape decks, etc. Each Output has 600 ohm drive capability, and is wired with high to (+), low to (-), and ground to (com). For unbalanced output, wire with high to (+) and ground to both (-) & (com). Output transformers are available from Biamp Systems as a user installed option (see Modifications/Accessories: Output Transformers on page 5).

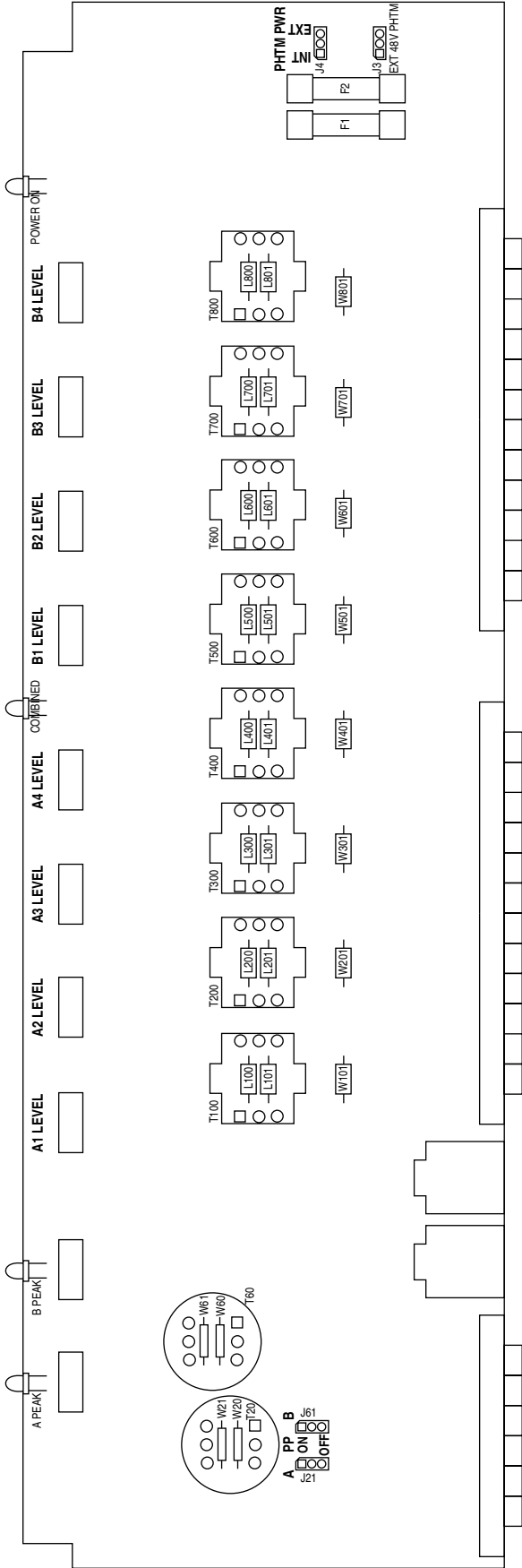
(4) Mode: When the Mode switch is depressed (A & B Combined), the signals from both input channels are mixed together and sent to all eight outputs. In this mode the DP/M 28 functions as a combination mixer/distribution preamplifier, with 2 inputs and eight outputs. When the Mode switch is released (A & B Separate), signal from Input A is sent only to the A Outputs and signal from Input B is sent only to the B Outputs. In this mode the DP/M 28 functions as two independent distribution preamplifiers, each with one input and four outputs. The Combined Indicator on the front panel shows the status of the Mode switch.

(5) Patch (A & B): These 3-conductor 1/4" phone jacks are for connection of external signal processing devices to the respective input channels. Patch jacks are wired with Tip as send (output), Ring as return (input), and Sleeve as ground (common). Special "Patch" cables are required, which allow signal to leave the channel, be processed, and then return to the channel (see Modifications/Accessories: Patch Cables on page 5). Patch jacks may also be used to provide a direct output from each input channel. To accomplish this, without interrupting the input signal, connect to Patch with Tip & Ring as high (+) and Sleeve as ground (common). A standard 2-conductor 1/4" phone cable may be used to extract signal from Patch, however, this will interrupt the input signal before it reaches the output section.

(6) Pad (A & B): When depressed, these switches reduce the signal levels at the respective input channels by 30dB. Use the Pad switches whenever signal levels at the associated input channels exceed the operating range of the front panel Trim controls.

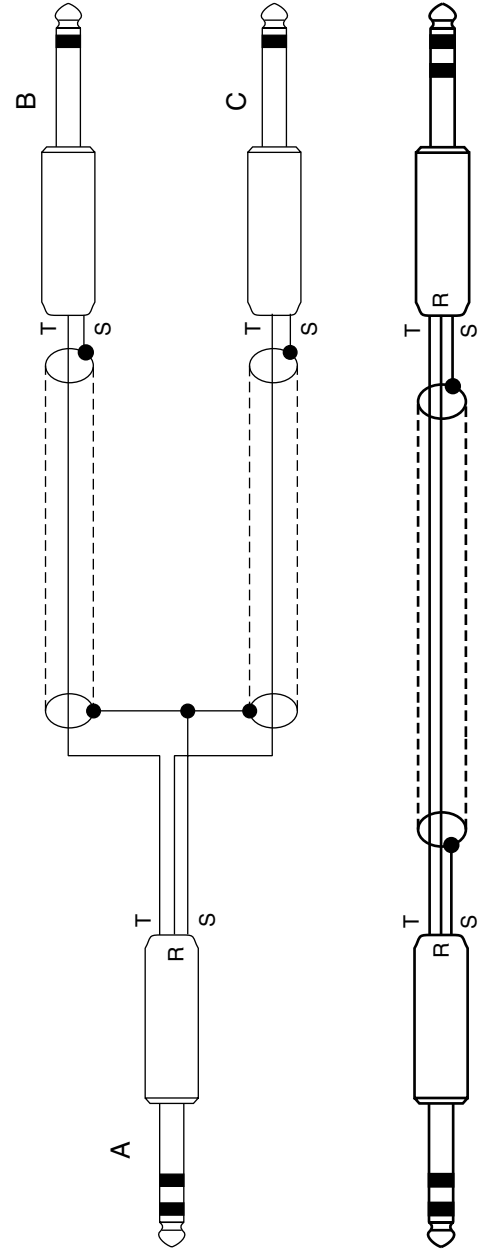
(7) Inputs (A & B): These barrier strip terminals provide two electronically balanced, differential inputs to the DP/M 28. The Inputs are for connection of signals from either microphones or line level devices, and are wired with high to (+), low to (-), and ground to (com). For unbalanced input, wire with high to (+) and ground to both (-) & (com). Phantom Power is assignable on each Input, for operation of condenser microphones (see Modifications/Accessories: +12 Volt Phantom Power on page 5). If +48 Volt Phantom Power is required, an external power supply is available from Biamp Systems as a user installed option (see Modifications/Accessories: +48 Volt Phantom Power on page 5). Input transformers are also available from Biamp Systems as a user installed option (see Modifications/Accessories: Input Transformers on page 5).

MODIFICATIONS/ACCESSORIES



CIRCUIT BOARD

PATCH CABLES



MODIFICATIONS/ACCESSORIES

NOTE: *Disconnect the power cord from the AC outlet. Remove the bottom panel to access the internal modifications. The circuit board diagram on page 4 shows the components as they appear when the unit is placed upside down, with the front panel facing away. When performing modifications which require soldering, it may be necessary to remove the top panel from the unit.*

+12 Volt Phantom Power: Near the left-rear corner of the DP/M 28, a movable jumper strap is provided for each input channel. Either or both of the input channels may be assigned Phantom Power by moving the respective jumpers, labelled **PP** (**A/J21** for Input A, **B/J61** for Input B), towards the front panel, to the ON position. Internal Phantom Power is +12 Volts DC. An external +48 Volt Phantom Power supply is available as an option.

+48 Volt Phantom Power: The internal +12 Volt Phantom Power of the DP/M 28 may not be sufficient power for some condenser microphones. When using condenser microphones that require +48 Volt Phantom Power, an external power supply may be added to convert Phantom Power to +48 Volts. To connect an external +48 Volt Phantom Power Supply: A) remove the detachable power transformer from the DP/M 28 by separating the 5-pin DIN connection in the AC Power Cord; B) insert the +48V Phantom Power Supply into the AC Power Cord (between the power transformer & the DP/M 28) using the 5-pin DIN connectors provided; C) Move jumper strap labelled **PHTM PWR** (J4) towards the right, to the **EXT** position (selects external supply). D) Assign Phantom Power to the desired input channel (see +12 Volt Phantom Power above).

CAUTION: *Do not assign Phantom Power to a channel that is being used for line level or unbalanced input. To avoid possible damage to the sound system, always turn the DP/M 28 off before making connections to channels with Phantom Power.*

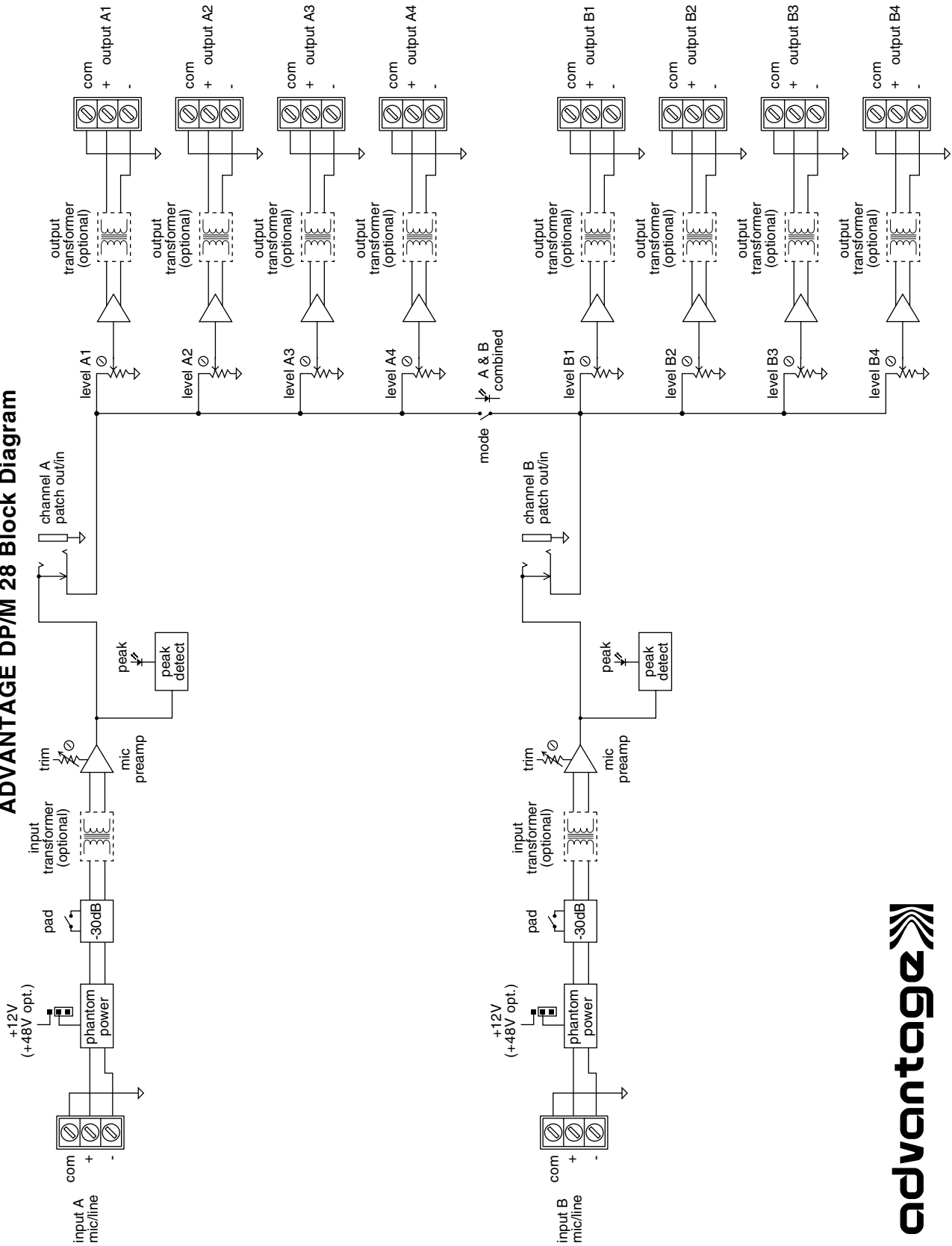
Input Transformers: In some applications, isolation from radio interference and ground potentials at the inputs may be necessary. Input transformers are available from Biamp Systems, with internal circuit board mounting provided. To install input transformers: A) Locate the two circular transformer mounting positions (T20 for Input A, T60 for Input B) near the left side of the circuit board. B) Remove two jumpers from each channel being modified (W20 & W21 for Input A, W60 & W61 for Input B). These jumpers may be de-soldered or clipped out. C) Solder transformers into position with pin 1 (indicated by black line) located at the square solder pad.

Output Transformers: In some applications, isolation from radio interference and ground potentials at the outputs may be necessary. Output transformers are available from Biamp Systems, with internal circuit board mounting provided. To install output transformers: A) Locate the eight square transformer mounting positions (T100 for Output A1, T200 for Output A2, etc.) along the center of the circuit board. B) Remove two inductors from each output being modified (L100 & L101 for Output A1, L200 & L201 for Output A2, etc.). These inductors may be de-soldered or clipped out. C) Remove one ground jumper (0 Ω resistor) from each output being modified (W101 for Output A1, W201 for Output A2, etc.). These 0 Ω resistors may be de-soldered or clipped out. D) Solder transformers into position with pin 1 located at the square solder pad.

Patch Cables: When the Patch jacks are used to connect external signal processing devices to the input channels, special cables are required. Patch cables use a 3-conductor (Tip/Ring/Sleeve) 1/4" phone connector on one end, which attaches to the DP/M 28 Patch jacks. The other end of the cable may be wired with either one or two connectors, depending upon the type of device being connected. Most devices will provide separate input and output connections, requiring two connectors at that end of the cable. These connectors may be of any 2-conductor type (i.e...1/4" phone, RCA phono, barrier strip, etc.). The diagram on page 4 shows this type of cable utilizing 1/4" phone plugs. It is wired with Tip A to Tip B (send), Ring A to Tip C (return), and Sleeve A to both Sleeves B & C (ground). Therefore, plug B is connected to the input of the external device and plug C is connected to the output of the external device. Some external devices may provide both input and output on one connector (i.e...1/4" phone, barrier strip, etc.), which will require only one connection at that end of the cable. The diagram on page 4 also shows this type of cable utilizing 3-conductor (Tip/Ring/Sleeve) 1/4" phone plugs on both ends. It is wired with Tip to Tip, Ring to Ring, and Sleeve to Sleeve. This type of cable is available from Biamp Systems, and provides both send and return connection from a Patch jack, as well as both input and output connection for devices which utilize special "In/Out" jacks. Various processing devices are available from Biamp Systems, which provide equalization, remote level control, gain management, etc. Contact Biamp Systems for technical data or product information.

BLOCK DIAGRAM

ADVANTAGE DP/M 28 Block Diagram



SPECIFICATIONS

Frequency Response (20Hz-20kHz @ +4dBu, 40dB gain)	+0/-3dB
Total Harmonic Distortion (20Hz-20kHz @ +4dBu, 40dB gain)	<0.02%
Intermodulation Distortion (SMPTE @ +4dBu, 40dB gain)	<0.03%
Equivalent Input Noise (20Hz-20kHz, 150 ohm termination)	-129dBu
Output Noise (20Hz-20kHz, inputs @ 40dB gain, combined, outputs @ unity gain)	<-80dBu
Maximum Gain (mic input to balanced output)	60dB
Input Trim Control Range	50dB
Input Pad Switch	-30dB
Input Impedance	
Inputs (balanced/unbalanced)	2k ohms
Patch (unbalanced)	7.7k ohms
Output Impedance	
Outputs (balanced)	100 ohms
Outputs (unbalanced)	50 ohms
Patch (unbalanced)	150 ohms
Maximum Input	
Inputs	+40dBu
Patch	+18dBu
Maximum Output (600 ohm load)	
Balanced	+24dBm
Unbalanced	+18dBm
Patch	+15dBm
Connectors	
Inputs & Outputs	barrier strip
Patch	TRS 1/4" phone
Phantom Power	
Standard	+12 Volts DC
Optional	+48 Volts DC
Power Consumption	10 Watts
Power Requirements	
Standard	120 VAC @ 60Hz
Optional	220 VAC @ 50Hz
Dimensions	
Height	(one rack space) 1.75 inches
Width	19 inches
Depth	5.5 inches
Weight	4.75 lbs.

WARRANTY

BIAMP IS PLEASED TO EXTEND THE FOLLOWING 1-YEAR LIMITED WARRANTY TO THE ORIGINAL PURCHASER OF THE PROFESSIONAL SOUND EQUIPMENT DESCRIBED IN THIS OWNER'S MANUAL.

BIAMP Systems expressly warrants this product to be free from defects in material and workmanship for a period of 1 YEAR from the date of purchase as a new product from an authorized BIAMP dealer under the following conditions.

1. The Purchaser is responsible for completing and mailing to BIAMP, within 10 days of purchase, the attached warranty application.
2. In the event the warranted BIAMP product requires service during the warranty period, BIAMP will repair or replace, at its option, defective materials, provided you have identified yourself as the original purchaser of the product to any authorized BIAMP Service Center. Transportation and insurance charges to and from an authorized Service Center or the BIAMP factory for warranted products or components thereof to obtain repairs shall be the responsibility of the Purchaser.
3. This warranty will be VOIDED if the serial number has been removed or defaced; or if the product has been subjected to accidental damage, abuse, rental usage, alterations, or attempted repair by any person not authorized by BIAMP to make repairs; or if the product has been installed contrary to BIAMP's instructions.
4. The normal wear and tear of appearance items such as paint, knobs, handles, and covers is not covered under this warranty.

5. BIAMP SHALL NOT IN ANY EVENT BE LIABLE FOR SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING LOST PROFITS, LOSS OF USE, PROPERTY DAMAGE, INJURY TO GOODWILL, OR OTHER ECONOMIC LOSS OF ANY SORT. EXCEPT AS EXPRESSLY PROVIDED HEREIN, BIAMP DISCLAIMS ALL OTHER LIABILITY TO PURCHASER OR ANY OTHER PERSONS ARISING OUT OF USE OR PERFORMANCE OF THE PRODUCT, INCLUDING LIABILITY FOR NEGLIGENCE OR STRICT LIABILITY IN TORT.

6. THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED. BIAMP EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE REMEDIES SET FORTH HEREIN SHALL BE THE PURCHASER'S SOLE AND EXCLUSIVE REMEDIES WITH RESPECT TO ANY DEFECTIVE PRODUCT. THE AGENTS, EMPLOYEES, DISTRIBUTORS, AND DEALERS OF BIAMP ARE NOT AUTHORIZED TO MODIFY THIS WARRANTY OR TO MAKE ADDITIONAL WARRANTIES BINDING ON BIAMP. ACCORDINGLY, ADDITIONAL STATEMENTS SUCH AS DEALER ADVERTISEMENTS OR REPRESENTATIONS DO NOT CONSTITUTE WARRANTIES BY BIAMP.

7. No action for breach of this warranty may be commenced more than one year after the expiration of this warranty.

Thank you for purchasing BIAMP...
AMERICAN SOUND CRAFTSMANSHIP

Biamp Systems
14130 N.W. Science Park
Portland, Oregon 97229
(503) 641-7287