

BOGEN®

COMMUNICATIONS, INC.

POWER AMPLIFIERS

DPA-80, DPA-160

INSTALLATION & OPERATION INSTRUCTIONS

The Bogen DPA-80 and DPA-160 are two-channel (1 module, 1 program) power amplifiers designed with the flexibility to meet a wide range of application requirements. Each has a built-in program input and a module input which will accept any of the Bogen D-Series plug-in modules. The DPA-80 is rated at 80 watts; the DPA-160 is rated at 160 watts.

The function of the module input is defined by the installation of a plug-in module. Active-bus mixing allows interaction between the program and module inputs; modules with priority features can be user-set to mute the program input. The program mute level is variable (60dB range) and is activated by a contact closure (terminals provided) or a priority signal from the module input.

The DPA amplifiers are designed for maintenance-free operation. Bi-polar power supplies and MOSFET output circuitry assure peak performance even under demanding conditions. The frequency response is flat within ± 0.3 dB from 20Hz to 20kHz. Distortion is less than 0.3% at maximum output across the entire bandwidth of 20Hz to 20kHz (± 0.2 dB), and is typically less than 0.01%. Maximum noise level is 75dB with the MASTER control at maximum. Input sensitivity is 100mV/10 kilohms for both inputs.

Direct and transformer-coupled outputs match 4- and 8-ohm speaker systems, and 25V and 70V distributed systems. The DPA-80 also has a 25V center-tapped output for applications requiring a true balanced 25V line. A low-cut filter (-3 dB @ 65Hz, 6dB/octave) is included to reduce unnecessary low frequency when using transformer-coupled outputs. The filter switch is located in the module port to prevent tampering with its setting.

The program input and module input have separate level controls. The overall output level is set with the MASTER level control. The output level is indicated by a three-color, bar-type LED meter, which illuminates red to indicate possible signal clipping.

The amplifier may be strapped to other D-Series amplifiers through bridging jacks. Preamp Out/Power Amp In jacks permit the installation of signal processing equipment. A preamp link switch disconnects the preamplifier and power amplifier circuitry. The preamp link switch is located in the module port to prevent unauthorized use after installation.

INSTALLATION

UNPACKING

The amplifier was carefully checked before leaving the factory. Inspect the shipping container and the unit closely for evidence of improper handling. If the unit has been damaged, place an immediate claim with the dealer/distributor from whom the unit was

purchased. If the unit was shipped directly to you, notify the transportation carrier without delay and file a claim.

RACK MOUNTING

The amplifiers are designed for installation in standard equipment racks, using Model DRK-3 Rack Panel Kit.

MODULES

Caution

Be sure that the front-panel-mounted POWER switch is in the OFF position before installing or removing modules.

Modules are easily inserted into the port of the module cage. Slide the module into the cage to engage the card edge connectors. Secure the module to the amplifier with two screws.

PRIORITY

Set the priority level on modules so equipped to the desired level before installing them in the amplifier. The level is set by repositioning printed circuit board-mounted shunts. The screening on the module printed circuit board shows which pins to connect for the desired priority level.

PRIORITY LEVEL 1 — The module receives, and is muted by priority signals from any module set to priority level 2 or 3. A module set to priority level 1 is also muted when the rear panel MUTE terminals are shorted through a contact closure. (The program input is pre-set at level 1.)

PRIORITY LEVEL 2 — The module sends priority signals to mute any module set to priority level 1, and receives priority signals from any module set to priority level 3. A module set to priority level 2 is also muted when the rear panel MUTE terminals are shorted through a contact closure.

PRIORITY LEVEL 3 — The module set to priority level 3 sends priority signals to mute the program (PGM) input and modules set to priority level 1 or 2. (The rear panel MUTE terminals function at level 3 when shorted through a contact closure.)

OUTPUT TERMINAL STRIP

The DPA-80 and DPA-160 each provide an unbalanced direct output at 4-ohms, 8-ohm; 25V and 70V transformer-coupled taps are provided for distributed systems (25V center-tap on DPA-80).

When using transformer-coupled outputs, (1) be sure that the link on the output terminal strip connects the **OUTPUT XMFR IN** terminal to the **DIRECT+** terminal, and (2) set the Lo-Cut filter switch to the IN position. When using the direct output, open this link and return the Lo-Cut filter switch to the OUT position.

TECHNICAL SPECIFICATIONS

Output Power Rating: DPA-80 DPA-160	80 Watts @ 4-ohms, 8-ohms, 25VCT, 25V and 70V 160 Watts @ 4-ohms, 8-ohms, 25V and 70V
Frequency Response:	20Hz-20,000Hz, +0, -2dB
Distortion: Direct Transformer	0.3%5(maximum), 20Hz-20kHz, +0, -2dB, 1 watt to rated output power 0.5% (maximum), 65Hz-20kHz, +0, -2dB, 1 watt to rated output power
Signal-to-Noise Ratio:	75dB or better
Input Sensitivity/Impedance: Module Input Program Input Bridging I/O Power Amp Input	100mV/10-kilohms 100mV/10-kilohms 100mV/3-kilohms 1V/10-kilohms
Preamp Out:	1V @ 600-ohms
Variable Mute Range:	60dB (min.)
Lo-Cut Filter:	-3dB @ 65Hz, 6dB/octave
Dimensions:	5-1/2"H x 16-1/2"W x 11-3/8"D

OPERATION

POWER

The front-panel-mounted rocker switch applies power to the amplifier and illuminates when power is applied.

LOW-CUT FILTER

A low cut switch is used to reduce unnecessary low frequency when using transformer-coupled outputs. Set this switch to **IN** when using transformer-coupled outputs, and **OUT** when using the direct output.

VARIABLE MUTE

Operation of the variable-mute feature (0 to 60dB range) requires a customer-supplied contact closure across the MUTE terminals. This contact closure will mute the program input (PGM) and any module set to priority level 1 or 2.

LEVEL CONTROL

Set gain and filter controls on modules so equipped to mid-rotation. Set the amplifier front-panel level controls to their full counterclockwise position. Control the level of each input with clockwise rotation of these controls. The overall output level is adjusted with the MASTER control. The output level LED meter will begin to illuminate red as the amplifier reaches full output power. Continuous red illumination indicates possible clipping.

MAINTENANCE

Caution

There are no user-serviceable parts within the unit. Removal of the cover presents an electrical shock hazard. Refer all servicing to qualified service personnel only.

AC CIRCUIT BREAKER

If the AC circuit breaker trips, the power switch pilot lamp will go out and there will be no output. Set the AC power switch to **OFF** and depress the red button on the circuit breaker to reset it. Return the AC power switch to **ON**. If the breaker trips again, have the trouble investigated by a qualified technician.

THERMAL BREAKER

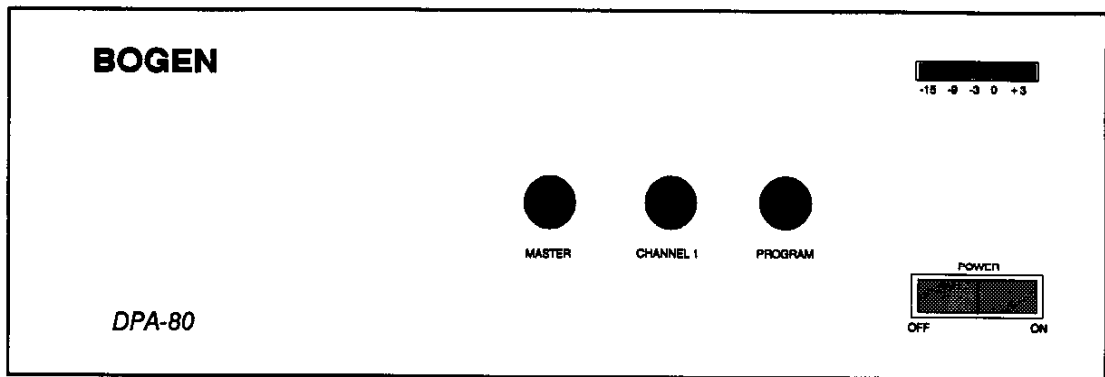
The thermal breaker will open when the temperature at the output transistor heat sink reaches 105°C (221°F) on all models. If the breaker opens, there will be no output but the power switch pilot lamp will remain illuminated. Wait approximately two minutes for the breaker to reset. If the breaker resets and then opens again, investigate the cause of the temperature overload. This may be due to improper connections at the output terminals or excessive environmental heat with inadequate ventilation.

SERVICE

We are interested in the maintenance of your Bogen equipment. If you encounter difficulty, do not hesitate to ask our advice or assistance. Information can be obtained by writing to Service Department, Bogen Communications Inc., P.O. Box 575, Ramsey, NJ 07446.

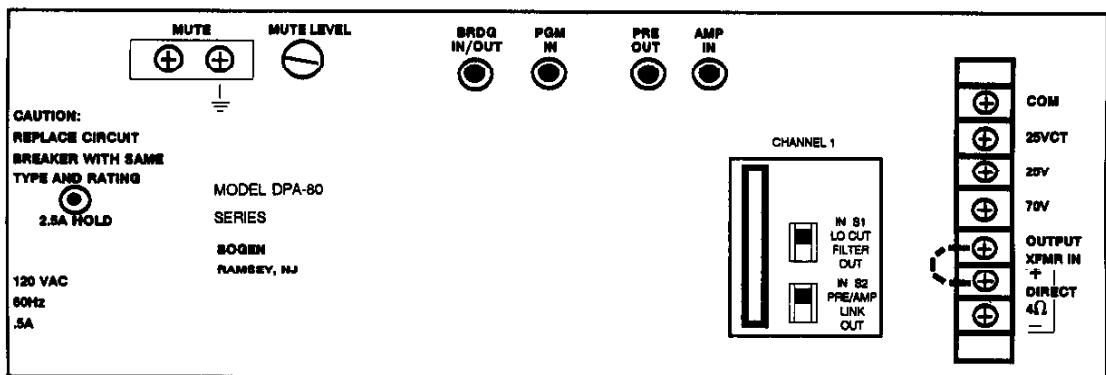
When communicating with us, give the model and series designation (stamped on the rear panel) of your unit. Describe the difficulty and include details on the electrical connection to associated equipment. We will send you service information if the trouble appears simple. If the amplifier requires servicing, we will send you the name and address of the nearest Bogen Service Agency to which you can send the unit for repairs.

When shipping the unit, remove all modules. Send the unit, insured and freight prepaid, via any responsible carrier. The unit will be promptly repaired and returned to you collect (freight prepaid while in warranty).



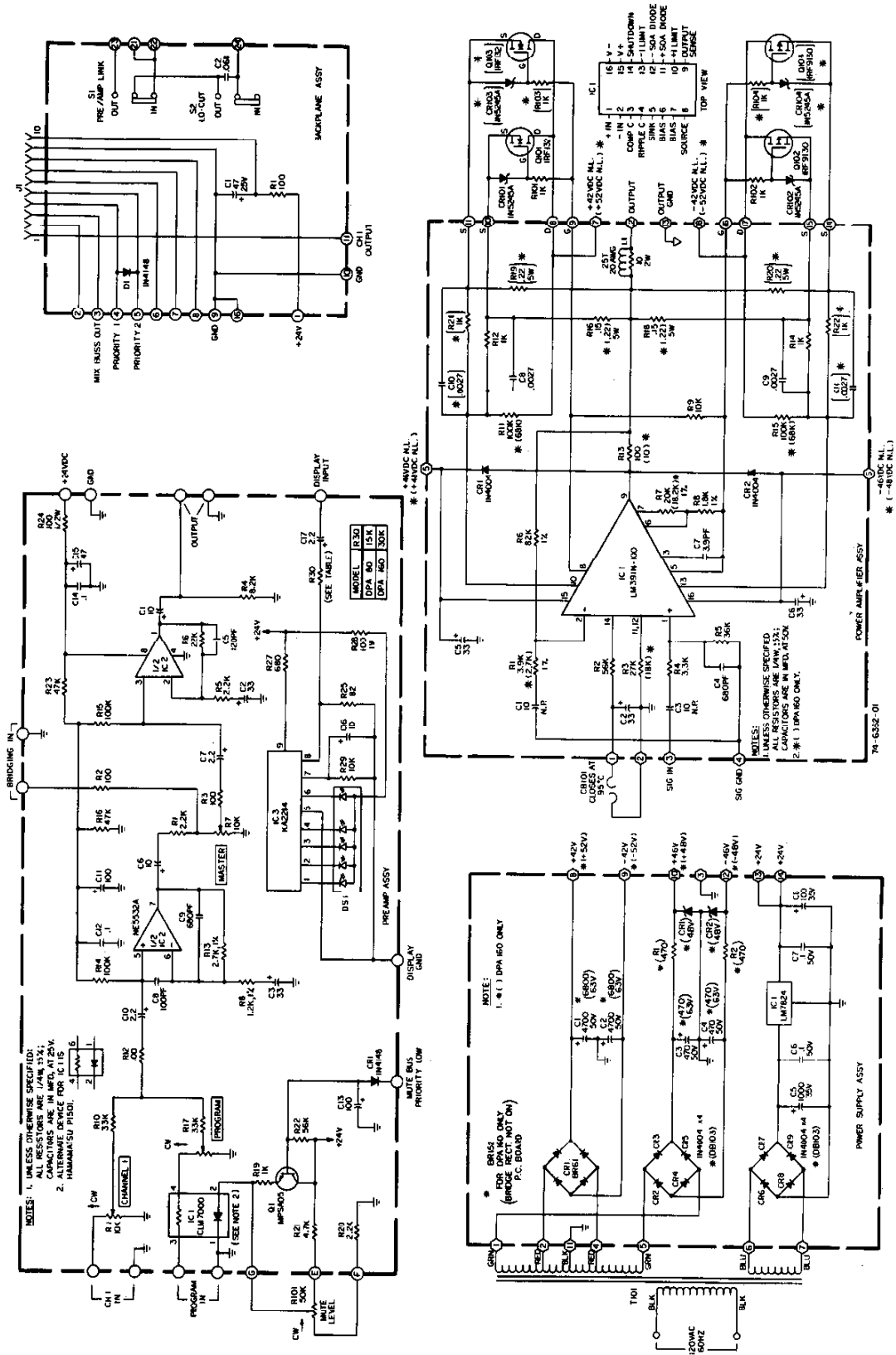
FRONT PANEL CONTROLS AND INDICATORS

POWER LEVEL	Rocker-type switch illuminates when power has been applied. Bar-type LED meter provides a graphic display of the output level. Continuous red illumination indicates possible signal clipping.
CHANNEL 1	Level control for the module input.
PROGRAM	Level control for the built-in program input.
MASTER	Master output level control.



REAR PANEL CONTROLS AND CONNECTORS

LINE CORD	Three-wire line cord supplies power to the amplifier.
AC BREAKER	Press-to-reset AC circuit breaker protects against excessive current flow.
INPUT PORT	Card edge connector accepts plug-in module.
PGM IN	Built-in program input for high level source (cassette tape player, receiver, etc.)
MUTE	Terminals provided activate mute bus. Requires a customer-supplied contact closure. The Program input (PGM IN) and any module set for priority level 1 or 2 will be muted by contact closure.
MUTE LEVEL	Screwdriver-adjustable mute level control for the program input. 60dB range.
BRDG IN/OUT	Allows strapping of mixing busses from another D-Series amplifier. The output level is independent of the master control and may be used as an output for a tape recorder.
PREAMP OUT	Provides output of preamp for connection to signal processing modules. Used with PRE/AMP LINK switch OUT.
AMP IN	Input connector for power amplifier when PRE/AMP LINK switch is OUT.
OUTPUT	Screw-terminal strip for connection to direct and transformer-coupled outputs.
LOW CUT	<i>IN</i> : Provides -3dB attenuation @ 65Hz 6dB/octave. <i>OUT</i> : Disables low-cut filter action.
PRE/AMP LINK	<i>IN</i> : Connection between preamplifier and power amplifier. <i>OUT</i> : Provides disconnect between preamplifier and power amplifier.



DPA-80/DPA-160 - Schematic Diagram

PLUG-IN MODULES

Sound Reinforcement — Modules MM-F & MM-S

Low-impedance, transformer-balanced microphone preamplifier module with **HIGH-/LOW-CUT** filters, **GAIN** control (25dB range), phantom power. MM-F — female XLR-type connector; MM-S — screw terminals (**Terminal #1** is GND, **#2** is LO, and **#3** is HI on all modules).

Operation

Phantom Power: Move **PHANTOM P.S.** jumper to the ON position for +22V phantom supply. Select **OFF** position to bypass.

Microphone Paging — Module MP-S

Signal-activated low-impedance, transformer-balanced microphone preamplifier module with **HIGH-/LOW-CUT** filters, **GAIN** control (25dB range). Automatic Level Control (ALC), three levels of priority and phantom power are jumper selected. Screw terminal connectors.

Operation

Phantom Power: Move **PH. P.S.** jumper to ON position for +22V phantom supply. Place jumper on either header pin to bypass.

ALC: Move ALC jumper to ON position; move to OFF to bypass.

Muting Priority (using PRIORITY ASSIGN jumpers):

Level 1 — Place one jumper in the "1" position and store the unused jumper on an empty pin.

Level 2 — Place both jumpers in the "2" position.

Level 3 — Place one jumper in the "3" position and store the unused jumper on an empty pin.

Telephone Paging — Module TP-S

Signal-activated telephone paging module provides a 600-ohm balanced input with -24dBm sensitivity for matching to telephone page lines. Includes **HIGH-/LOW-CUT** filters and **GAIN** control (25dB range). Automatic Level Control (ALC) and three levels of priority are jumper-selected. Screw terminal connectors.

Operation

ALC: Move the ALC jumper to ON position to enable ALC; move to OFF position to bypass.

Muting Priority (using PRIORITY ASSIGN jumpers):

Level 1 — Place one jumper in the "1" position and store the unused jumper on an empty pin.

Level 2 — Place both jumpers in the "2" position.

Level 3 — Place one jumper in the "3" position and store the unused jumper on an empty pin.

Auxiliary Input — Module BL-S

Transformer-balanced auxiliary input module suitable for line-bridging or line-matching. Use the printed circuit board jumper to select either 600-ohm input or 10-kilohm input. Screw terminal connectors.

Line Output — Module LO-S

Module provides jumper-selected 600-ohm transformer-balanced (+4dBm) output or 0.5-watt direct output at 8-ohms. May be used for line output from the D-Series mixing bus or for music-on-hold applications. Parallel RCA jacks permit one music source to be used for M.O.H. and background music. A jumper-selected pad provides 20dB attenuation of the signal from the music source. LEVEL control sets the module output level.

Operation

Output Selection: Select **DIRECT** or **XFMR**-coupled output by placing jumper J4 in the appropriate position. (When using the direct output, connect the 8-ohm load between screw terminals #1 and #3. When using transformer output, terminal #1 is GND, #2 is LO, and #3 is HI.)

Place jumper J2 in L.O. position for line output or in M.O.H. position for music-on-hold applications. Connect the music

source to the **MUSIC IN** (RCA) jack; the **MUSIC OUT** jack is paralleled to allow same signal source to be used for background music.

Attenuator Pad: Place jumper J3 in the 20dB position to attenuate the signal connected to the **MUSIC IN** jack. Bypass the pad by placing the jumper in the 0dB position.

Tone Signal Generation — Module TG-S

The module generates four distinct tones: **CHIME**, **STEADY**, **ALARM**, and **BURST**. May be assigned to any of three levels of priority. Requires customer-supplied contact closure between the desired Tone and **ENABLE** screw terminal connectors.

Operation

Muting Priority (using PRIORITY ASSIGN jumpers):

Level 1 — Place one jumper in the "1" position and store the unused jumper on an empty pin.

Level 2 — Place both jumpers in the "2" position.

Level 3 — Place one jumper in the "3" position and store the unused jumper on an empty pin.

Remote Volume Control or Compression — Module VC-C

Dual-function (jumper-selected) compressor/remote volume control module. The compressor limits the power amplifier input signal to 1 volt to prevent overdrive. The DC-operated full range volume control allows any output setting up to the maximum preset on the D-Series unit **MASTER** level control.

Operation

Compression: Set the **PRE/AMP LINK** switch on the D-Series unit to **OUT** position. Connect the **PREAMP OUT** jack on the D-Series unit to the **VC-C IN** connector. Connect the **VC-C OUT** jack to the **AMP IN** connector on the D-Series unit. Place jumper J1 in the IN position to enable the compression function; move to the **OUT** position to bypass.

Remote Volume Control: Connect RVC-D to terminals 1 and 3 on VC-C. (Terminals 1 and 2 are common.)

FM Reception — Module FM-T

FM tuner module designed as a preset background music source. Screwdriver-adjusted tuning. The output is jumper-selected to the mixing bus of the D-Series unit or to the module's RCA-type connector. May be configured to accept priority signals from other modules. Monaural operation. Screw terminals for antenna.

Operation

Output: Place jumper J1 in **OUT** position to assign tuner output to the module's RCA connector. Place jumper J1 in **MIX BUS** position to assign module's output to the D-Series mixing bus.

Mute: Place jumper J2 in the ON position to mute FM-T with any level 2 or 3 priority signal. Place in **OFF** position to prevent muting from priority signals.

MIC/Line Remote Control — Module MR-S

Low-impedance transformer-coupled MIC preamp. or line-level module with **HIGH-/LOW-CUT** filters, **GAIN** control (25dB range), phantom power. Full-range DC-operated full-range RVC allows any output setting up to maximum preset on amplifier channel control. Screw terminal connectors.

Operation

Input: Set Jumper J2 to **MIC** position for microphone input. Set to **LINE** position for line level input.

Phantom Power: Move jumper J1 to ON position for +22V phantom supply. Select **OFF** position to bypass.

Mute: Place jumper J3 in the ON position to mute MR-S with any level 2 or 3 priority signal. Place in **OFF** position to prevent muting from priority signals.

RVC: Connect RVC-D to terminals 1 and 4.

