

# Classic Series Public Address Amplifiers

## Models C35, C60 & C100



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### Description

The Bogen Classic Series Models C35, C60, and C100 are public address mixer amplifiers that provide mixing of microphones, telephone, and auxiliary sources.

Output screw terminals are provided for 4-ohm (direct) and 8-ohm, 16-ohm, 25V and 70V (transformer-coupled) speaker systems. Output jacks let you connect to a tape recorder or an additional booster amplifier, or feed a 600-ohm telephone line when an accessory transformer (Model WMT1A) is used.

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### Features

- 3 models: 35, 60, and 100 watts
- 4 inputs: 1 MIC (Lo-Z), 1 AUX (Hi-Z), 1 TEL, plus 1 selectable MIC or AUX
- Each input controlled by an independent volume control
- Treble and bass controls
- AUX muting by external contact closure for push-to-talk mic's
- Tel input for telephone paging applications
- TEL input voice-activated (VOX) mute over AUX input
- Variable threshold for TEL input voice-activated AUX mute
- Audio output for tape recorder or booster amplifier
- Outputs for 4-ohm (direct), 8-ohm, and 16-ohm, 25V and 70V speaker systems (transformer coupled)
- Output jack to connect a tape recorder or booster amplifier
- Output jack to connect a general-purpose 600-ohm matching transformer (model WMT1A)
- Thermal protection and electronic shutdown
- Rack mountable with accessory mounting kit (model RPK50)
- UL and CSA listed

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# **Classic Series Amplifiers**

## **C35, C60, & C100 Models**

Installation and Use Manual

## Notice

Every effort was made to ensure that the information in this guide was complete and accurate at the time of printing. However, information is subject to change.

## Important Safety Information

**WARNING:** To Reduce The Risk of Fire Or Electric Shock, Do Not Expose This Apparatus To Rain Or Moisture.

Always follow these basic safety precautions when installing and using the unit:

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. DO NOT block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade, or the third prong, are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## IMPORTANT

**CAUTION**

**RISK OF ELECTRIC SHOCK  
DO NOT OPEN**

**CAUTION: TO PREVENT THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.**



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



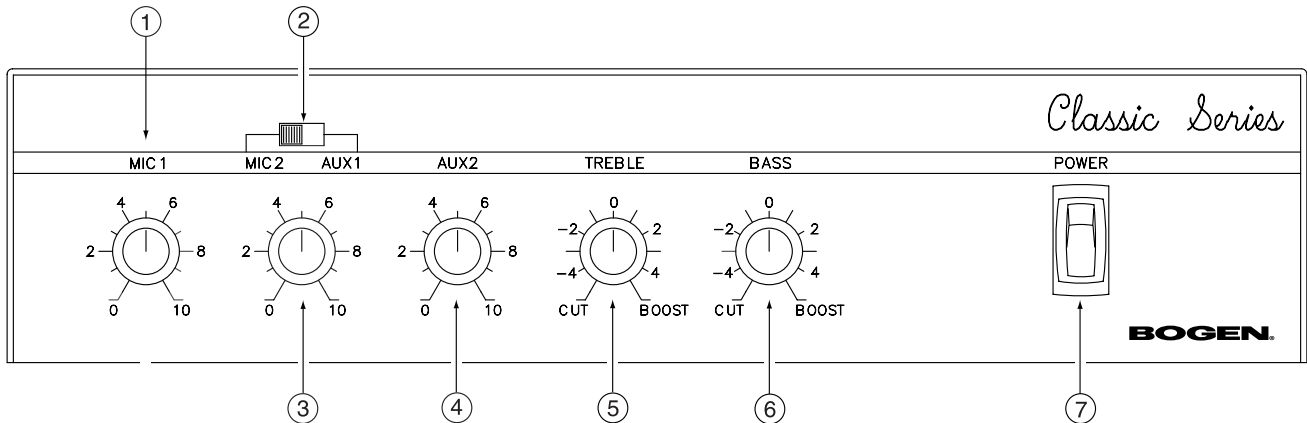
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

# Contents

	Page
<b>PANEL DESCRIPTIONS.....</b>	<b>2-3</b>
Classic Series Front Panel.....	2
Classic Series Rear Panel .....	3
<b>INSTALLATION .....</b>	<b>4</b>
Package Contents .....	4
Ventilation.....	4
Rack Mounting.....	4
<b>CONNECTIONS.....</b>	<b>5</b>
Input Connections .....	5
<i>Microphone Connections</i> .....	5
<i>Auxiliary</i> .....	5
<i>AUX Muting</i> .....	5
<i>TEL</i> .....	5
Output Connections .....	5
<i>Speakers, General</i> .....	5
<i>Speakers, Low-Impedance</i> .....	5
<i>Tape/Booster Connection</i> .....	5
<i>WMT1A Connection</i> .....	5
<b>OPERATION .....</b>	<b>6-7</b>
Front Panel Controls .....	6
<i>Power</i> .....	6
<i>Input Volume Controls</i> .....	6
<i>MIC2, AUX1 Mode Switch</i> .....	6
<i>Base and Treble Controls</i> .....	6
Rear Panel Controls.....	7
<i>TEL Volume Control</i> .....	7
<i>VOX SENSitivity Control</i> .....	7
<b>SPECIFICATIONS .....</b>	<b>8</b>
<b>TROUBLESHOOTING.....</b>	<b>9</b>
<b>WARRANTY .....</b>	<b>10</b>
<b>ACCESSORIES .....</b>	<b>10</b>

# Panel Descriptions

## Classic Series Front Panel



### 1. MIC1 Level Control

Individual level control for a dedicated microphone input.

### 2. MIC2/AUX1 Mode Switch

Switch selects either the MIC2 or AUX1 connection as the active input.

### 3. MIC2/AUX1 Level Control

Individual level control for a dedicated microphone input or for an auxiliary input depending on input mode selected.

### 4. AUX2 Level Control

Individual level control for a dedicated auxiliary input.

### 5. Treble Control

Controls the amount of cut or boost of treble frequencies above 10 kHz.

### 6. Bass Control

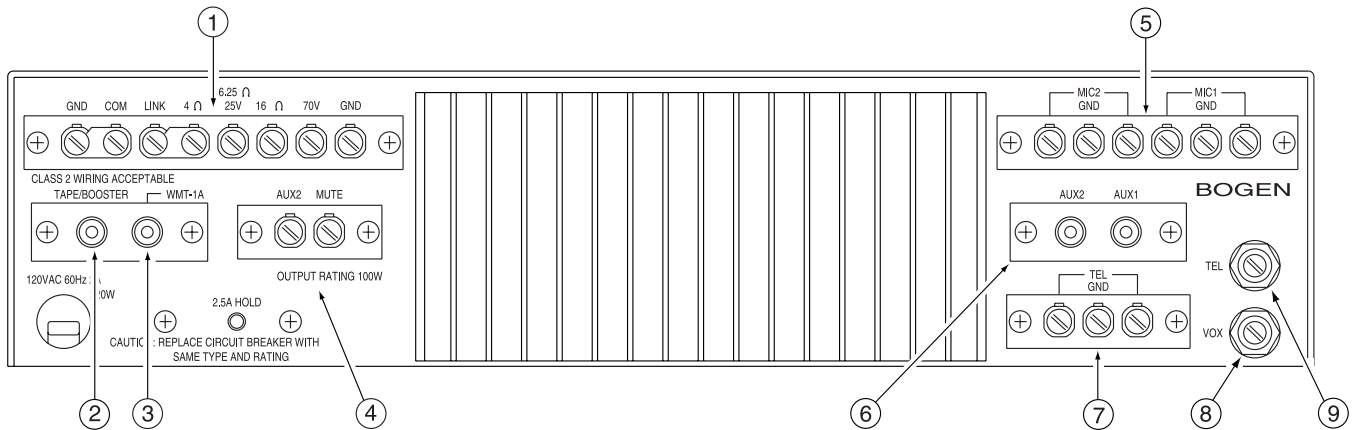
Controls the amount of cut or boost of bass frequencies below 100 Hz.

### 7. Power

AC Power switch. Illuminates when ON.

# Panel Descriptions

## Classic Series Rear Panel



### 1. Amplifier Output

Screw terminal strip containing all available speaker outputs.

### 2. Tape/Booster

RCA unbalanced signal level/output.

### 3. WMT1A

RCA output connection for Bogen's 600-ohm balanced line matching transformer Model WMT1A.

### 4. AUX Terminal

Screw terminal connection that allows externally controlled muting of AUX inputs with a contact closure.

### 5. Microphone Inputs

Screw terminal strip containing the MIC1 and MIC2 balanced, low-impedance inputs. (MIC2 is switch-selectable.)

### 6. Auxiliary Inputs

RCA unbalanced, AUX1 and AUX2 high-impedance inputs. (AUX1 is switch-selectable.)

### 7. TEL Input

Screw terminal input for 600-ohm balanced telephone signal.

### 8. VOX SENS Control

Variable control for adjusting TEL input signal level trigger point for automatic muting of Aux input.

### 9. TEL Volume Control

Adjusts the telephone input paging level.

# Installation

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## ***Package Contents***

- Classic Series Amplifier
- Instruction Manual

## ***Ventilation***

When using a shelf or table mount, the amplifier should stand alone with no equipment on top of it or below it. If the amplifier must be stacked with other equipment, care must be taken to ensure that all the minimum clearance distances ( $\frac{1}{2}$ " ) are met and that the equipment below the amplifier produces little significant heat.

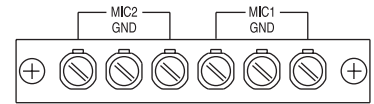
## ***Rack Mounting***

A rack mount bracket kit (Model RPK50) is available as an accessory. (Not included.)

## Input Connections

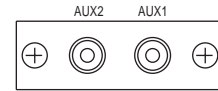
### Microphone Connections

These inputs are for two low-impedance balanced dynamic microphones. Connect cable shield to center screw marked "GND."



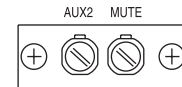
### Auxiliary

The AUX inputs provide unbalanced RCA inputs for connection to external signal-level equipment.



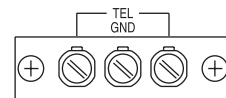
### AUX Muting

For this function, a customer-supplied, normally-open contact closure (switch) must be connected to the AUX 2 MUTE terminals. When the contacts are closed, the AUX 2 input will be muted. Typically activated by a switch in a push-to-talk style microphone. AUX 1, if selected, is not mutable by contact closure.



### TEL

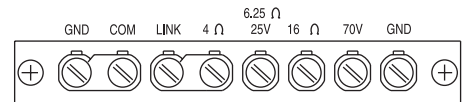
Connect the telephone line to the two outside terminals and the shield, if used, to the center terminal. TEL input signal will trigger automatic muting of AUX 1 and AUX 2. Input impedance is 600-ohm and is transformer balanced. Input is for "Dry" audio signals only, no DC voltage on the signal.



## Output Connections

### Speakers, General

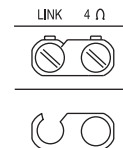
The amplifier may be used with most conventional speaker systems. Connect one speaker lead to the screw terminal that corresponds to the impedance of the type of speakers used in the system and the other lead to the COM terminal. If the line is shielded, connect the shield to GND.



Connecting the GND to the COM terminal when using the transformer-coupled outputs references the transformer output to ground. Disconnecting the GND terminal from COM allows the transformer output to float electrically. This is sometimes useful under certain conditions where a ground connection is undesirable. It is generally a good idea to short the GND to the COM terminal regardless of output type (Trans or Direct).

### Speakers, Low-Impedance

To connect a 4-ohm speaker, remove the the 4-ohm link and connect the speaker between 4-ohm and GND.

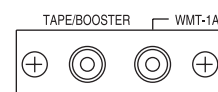


### Tape/Booster Connection

To tape record the amplifier program, connect a patch cord from the TAPE/BOOSTER output jack to the input of a tape recorder. Can also be connected to the input of a booster amplifier.

### WMT1A Connection

This output jack is directly connected to the 25V speaker tap and permits the connection of Bogen's general-purpose matching transformer (WMT1A). The WMT1A steps the signal down by a 5:1 ratio, giving you a 600-ohm balanced signal that can drive long cable runs.





# Operation

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## Front Panel Controls

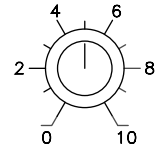
### Power

The front panel ON/OFF switch applies power to the amplifier and is illuminated when power is ON.



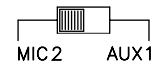
### Input Volume Controls

Each input module may be individually controlled by its corresponding volume control knob.



### MIC2, AUX 1 Mode Switch

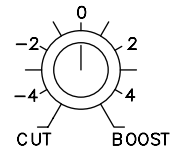
Activates the corresponding input that it is switched to - MIC2 or AUX1. The other input is inactive and any connections to the inactive input will not work.



### Bass and Treble Controls

The Bass and Treble controls are used to adjust the tonal balance of the amplifier output. The center position of these controls provides flat frequency response. Counterclockwise rotation of these controls reduces the bass or treble response, while clockwise rotation increases such response.

The treble control has a cut/boost range of +/- 11 dB at frequencies above 10 kHz and provides a roll off after 20 kHz to reduce gain above the audio range.



The bass control has a cut/boost range of +/- 11 dB at frequencies below 100 Hz. When driving speakers using the direct-coupled output terminals, the bass filter's response is flat to 20 Hz.

## Rear Panel Controls

### TEL Volume Control

The TEL VOLUME control on the rear panel adjusts the TEL input's paging level. It does not affect the microphone level. Rotate the control counterclockwise to decrease the level. Rotate the control clockwise to increase the level.



### VOX SENSitivity Control

When an input signal (such as voice) is detected through the TEL input, the music channels (AUX1 and AUX2) will be muted. The VOX SENSitivity control should be set so that only the desired signal is above the threshold level, while noise and unwanted signal is below it. To adjust the sensitivity of this circuit:

1. Rotate the control fully clockwise. While making a page announcement and talking at a low level, the sound should not be choppy nor missing parts of words. If it is choppy, or if intelligibility is poor, rotate the control counterclockwise to the point where the sound is clear and crisp (but not to the maximum counterclockwise position).
2. If the background music shuts down when no page is in progress, rotate the control clockwise until the music is restored.



# Specifications

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## Power Output (RMS)

C35:	35W
C60:	60W
C100:	100W

## Frequency Response & Distortion

Transformer†:	70 - 16 kHz ( $\pm 2$ dB) @ 1% max.
4-Ohm Direct Output:	20 - 20 kHz ( $\pm 1$ dB) @ 0.5% max.

## Hum and Noise

MIC Input:	55 dB below rated output
AUX Input:	70 dB below rated output
TEL Input:	70 dB below rated output

## Tone Control Action

Bass:	+/- 11 dB @ 100 Hz
Treble:	+/- 11 dB @ 10 kHz

## Input Sensitivity

MIC Lo-Z Balanced:	600 $\mu$ V
AUX:	85 mV
TEL:	75 mV

## Outputs

8, 16 ohms, 25V, and 70V transformer-isolated balanced or unbalanced; 4 ohms direct unbalanced

## Output Connections:

Speaker screw terminal strip, TAPE/BOOSTER jack; WMT1A jack

## Input Connections:

(2) MIC Lo-Z terminals; (2) AUX Hi-Z jacks, Tel

## Controls:

MIC1, MIC2/AUX1 (switch selected), AUX 2, BASS, TREBLE, TEL, VOX

## Power Requirements:

120V AC, 60 Hz

## AC Line Draw

C35:	85W
C60:	148W
C100:	220W

## Dimensions:

14 $\frac{1}{2}$ " W x 3 $\frac{3}{4}$ " H x 11" D (all models)

## Product Weight

C35:	16 lb.
C60:	18 lb.
C100:	20 lb.

† Measured @ 2 dB below FRP

All specifications subject to change without notice.

# Troubleshooting

PROBLEM	CONDITION	CAUSE
NO SOUND	Power Switch Indicator is OFF.	<ul style="list-style-type: none"> <li>• Amplifier not plugged in.</li> <li>• AC outlet dead.</li> <li>• Power switch off.</li> <li>• Circuit breaker tripped.</li> </ul>
	Power Switch Indicator is ON.	<ul style="list-style-type: none"> <li>• No signal from source.</li> <li>• Volume turned down.</li> <li>• Speakers not connected correctly.</li> <li>• Link jumper not set correctly (pg. 5).</li> </ul>
DISTORTED SOUND	Power Switch Indicator is ON. Volume Controls are turned up. Unit is extremely hot. Little volume.	<ul style="list-style-type: none"> <li>• Partial short on the output. Check speakers and wires.</li> </ul>
	Power Switch Indicator is ON. Volume up. Good volume.	<ul style="list-style-type: none"> <li>• Signal from source is already distorted.</li> <li>• Input signal too large for input type (reduce signal level applied to input).</li> <li>• Poor speaker connections.</li> <li>• Transformer output load on wrong tap.</li> <li>• Bass control boosted too much.</li> <li>• Output too great for speakers, reduce level.</li> </ul>
POOR LOW FREQ. RESPONSE (NO BASS)	Power Switch Indicator is ON. Volume controls are in normal, operational position.	<ul style="list-style-type: none"> <li>• Speakers wired out of phase.</li> <li>• Bass control set to cut side</li> </ul> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p><i>Note: Transformer-coupled speakers have less bass response.</i></p> </div>
NOISE/HUM	Power Switch Indicator is ON. Volume controls are in normal, operational position.	<ul style="list-style-type: none"> <li>• Poor electrical connections at input.</li> <li>• Shields of cables not connected.</li> <li>• Input cable routed near AC cables, power transformer, or other EMI radiating devices.</li> <li>• Electrically noisy devices operating on the same AC circuit.</li> <li>• Poor equipment grounding. <ul style="list-style-type: none"> <li>- Ensure that all AC safety grounds are connected.</li> <li>- Make sure that all components in audio chain are tied to the same ground.</li> </ul> </li> </ul>

# Warranty

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Bogen Classic Series Amplifiers are warranted to be free from defects in material or workmanship for two (2) years from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective will be repaired or replaced by Bogen, at our option, provided the product is shipped insured and prepaid to: Bogen Factory Service Department, 50 Spring Street, Ramsey, NJ 07446, USA. The product will be returned to you freight prepaid. This warranty does not extend to any of our products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified or repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced.

**THE FOREGOING LIMITED WARRANTY IS BOGEN'S SOLE AND EXCLUSIVE WARRANTY AND THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY. BOGEN MAKES NO OTHER WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED AND EXCLUDED TO THE MAXIMUM EXTENT ALLOWABLE BY LAW.** Bogen's liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the price of the product. In no event shall Bogen be liable for special, incidental or consequential damages (including, but not limited to, loss of profits, loss of data or loss of use damages) arising out of the manufacture, sale or supplying of products, even if Bogen has been advised of the possibility of such damages or losses. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

Products that are out of warranty will also be repaired by the Bogen Factory Service Department -- same address as above or call 201-934-8500. The parts and labor involved in these repairs are warranted for 90 days when repaired by the Bogen Factory Service Department. All shipping charges in addition to parts and labor charges will be at the owner's expense. All returns require a Return Authorization number.

## Accessories

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### RPK50 - Rack Mounting Kit

- Adapts Classic Series amps (Models C35, C60, and C100) for 19" rack mounting, 2 rack spaces (3-1/2")
- Heavy gauge steel construction



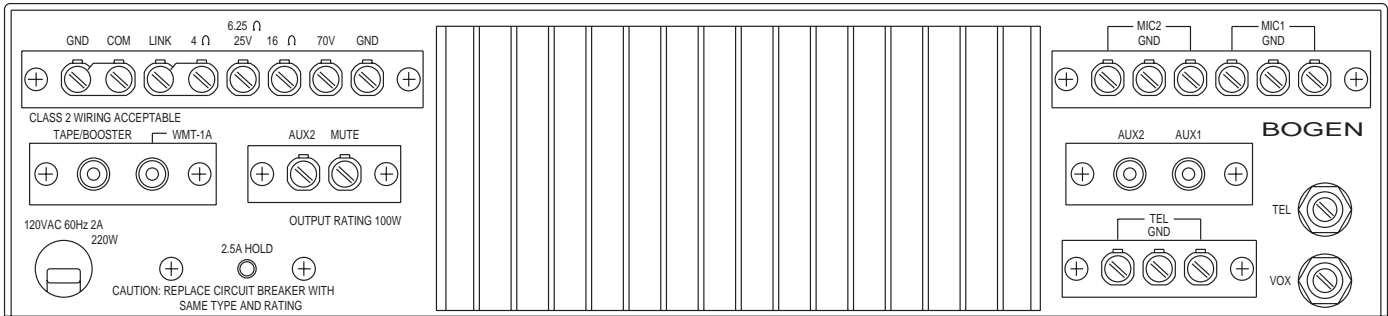
### WMT1A - Matching Transformer

- Hi-Z, 10k-ohm primary impedance
- Lo-Z, 600-ohm secondary impedance, balanced with center tap
- Matches high-impedance unbalanced or low-impedance balanced signals
- Jumper selection allows line level signal to microphone level signal conversion



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## Technical Specifications

**Power Output (RMS):** C35    C60    C100  
*Rated*                    35W    60W    100W

### Frequency Response & Distortion:

*Transformer†* –                    70 - 16 kHz (± 2 dB) @ 1% max.  
*4-Ohm Direct Output* –        20 - 20 kHz (± 1 dB) @ 0.5% max.

### Hum and Noise:

*MIC*                                    55 dB below rated output  
*AUX*                                    70 dB below rated output  
*TEL*                                    70 dB below rated output

### Input Sensitivity:

*MIC Lo-Z Balanced* –            600µV  
*AUX* –                                 85mV  
*TEL* –                                 75mV

### Outputs:

8, 16 ohms, 25V, 70V transformer-isolated balanced or unbalanced;  
 4 ohms direct unbalanced

**Output Connections:** Screw terminal strip, TAPE/BOOSTER jack; WMT1A jack (requires accessory transformer)

**Input Connections:** Screw terminals for MIC and TEL, two AUX Hi-Z jacks

**Controls:** MIC1, MIC2/AUX (switch selected), AUX 2, BASS, TREBLE, TEL, VOX

**Tone Control:** Treble, ±11 dB @ 10 kHz;  
 Bass ±11 dB @ 100 Hz

**Power Requirements:** 120V AC, 60 Hz  
 C35 - 85W; C60 - 148W;  
 C100 - 220W

**Dimensions:** 14-1/2" W x 3-3/4" H x 11" D

**Shipping Weight:** C35 - 16 lb; C60 - 18 lb;  
 C100 - 20 lb.

## Architect and Engineer Specifications

The public address amplifier shall be a Bogen Model \_\_\_\_\_, or approved equivalent, with a full power rating of \_\_\_\_\_ watts. (Specify: C35/35 watts, C60/60 watts or C100/100 watts.) The frequency response (transformer) shall be 70 Hz to 16 kHz ±2 dB†, with less than 1% distortion†. Input sensitivity shall be 600µV for low-impedance balanced microphones, 85mV for auxiliary inputs, and 75mV for TEL input. Hum and noise shall be 55 dB below rated output for the MIC inputs and 70 dB below rated output for the AUX and TEL inputs.

The amplifier shall provide one dedicated low-impedance balanced microphone input, one dedicated Hi-Z auxiliary input, and one dedicated telephone line input, as well as a fourth input that is switch selectable to be either a microphone or auxiliary input.

The microphone inputs shall be equipped with filters to protect against RF interference. Independent volume controls for each input as well as TREBLE control (±11 dB @ 10 kHz) and BASS control (±11 dB @ 100 Hz) shall be incorporated. A precedence circuit shall mute the AUX 2 input when a customer-supplied external switch is actuated.

The amplifier shall include a TEL volume control to adjust the telephone paging level and a VOX volume control to adjust the TEL input signal level trigger point for automatic muting of the AUX inputs.

The amplifier shall provide output impedances of 4- (direct), 8-, and 16-ohm speaker systems as well as for 25V and 70V constant voltage systems. Two high-impedance outputs shall be provided to drive a tape recorder or booster amplifier and, when used with an accessory transformer (WMT1A), to feed a 600-ohm telephone line.

The amplifier shall contain a resettable thermostat in the power transformer to protect against heat build-up and short-circuited or overloaded connections.

Provision shall be included to mount the amplifier in 19-inch equipment racks, using an optional rack panel kit (Model RPK50). Dimensions shall be 14-1/2" W x 3-3/4" H x 11" D. Shipping weight shall be \_\_\_\_\_ lb. (Insert 16 lb. for C35, 18 lb. for C60 or 20 lb. for C100.)

† Measured @ 2 dB below FRP

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Figure 3 — Schematic Diagram, Models C35, C60, and C100

