

## 9791 Loudspeaker

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### 1. general description

1.01 The Tellabs 9791 Loudspeaker (figure 1) is a 0.5 watt amplifier unit with an integral 5-inch speaker. The 9791 features automatic gain control circuitry and is equivalent to the industry-standard Type 106B Loudspeaker.

1.02 The 9791 is enclosed in an attractive, neutral-green metal enclosure with a brushed aluminum front screen and bezel. Four rubber feet (removable) are provided on the 9791 for desktop applications.

1.03 Input impedances of 2400, 600 or 1.5 ohms (wire optional) are provided on the 9791 Loudspeaker. The 2400 and 600 ohm impedance inputs are capacitively coupled, while the 1.5-ohm input features direct coupling.

1.04 Three controls for amplifier gain are incorporated into the 9791 Loudspeaker. One is externally adjustable; the other two may only be accessed internally. One of the internal controls, the output level control, sets a maximum speaker output level (even in overload conditions). The other, the chassis gain control, sets the minimum and maximum volume level ranges through which the front-panel volume control can be adjusted. The front-panel volume control may be optionally disabled, allowing adjustment from an external control.

1.05 Incorporated into the front-panel volume control is an on/off switch that allows the unit to be turned on and off at the user's convenience. This on/off control may be optionally disabled to provide continuous operation, or it may be optionally replaced with an external control. Also located on the front panel is a pilot lamp that lights when the unit is active.

1.06 The 9791 Loudspeaker will operate on  $\pm 20$  to 56Vdc, 200mA input power source.

### 2. application

2.01 The 9791 Loudspeaker may be used to provide amplification and voice broadcasting in a wide variety of applications. It is commonly used with the Tellabs 265A Voice Signaling System as the loudspeaker for a voice paging network. In this "hoot'n'-holler" system, any telephone in the system going off-hook seizes the network and broadcasts a message through loudspeakers at all other locations. For more detailed information, refer to the Tellabs 265A Voice Signaling System Practice.



Figure 1. 9791 Loudspeaker

2.02 The internal speaker of the 9791 may be optionally disabled and the amplifier's output (3.2 ohm impedance) used to drive an external device.

### 3. installation inspection

3.01 The 9791 Loudspeaker should be visually inspected upon arrival in order to find possible damage incurred during shipment. If damage is noted, a claim should immediately be filed with the carrier. If stored, the unit should be visually inspected again prior to installation.

#### desk mounting

3.02 The Loudspeaker is equipped with four rubber feet for desktop use. Select a location that is free from excessive noise. If the Loudspeaker is used on a telephone line, allow a minimum separation of 3 feet between the unit and the telephone set to minimize feedback.

#### cover removal

3.03 In order to make the installer connections to the 9791, the rear cover must be removed. Loosen the two screws on the rear of the unit and remove the cover. An access hole is provided through the cover for cable entry. Make sure that the external leads to the 9791 Loudspeaker pass through this opening.

3.04 All connections (except power) are made to screws located on the back of the 9791. Make the installer connections in accordance with the functional wiring diagram (section 5) and the option instructions in paragraphs 3.05 through 3.11.

3.05 The 9791 Loudspeaker is factory optioned with the front-panel off/on/volume control functional and the integral speaker strapped in. If the Loudspeaker is to be used in this standard arrangement, only two option selections plus input power connections need be made.

#### **Off/On/volume control option**

3.06 The front-panel volume control is factory wired so that the integral speaker is cut-off at minimum volume setting. If it is desired that the speaker be audible at minimum volume settings, remove the white wire from terminal D and connect it to terminal C.

3.07 The 9791 Loudspeaker will operate from within a positive or negative grounded 20 to 56Vdc power supply. If a negative grounded supply is used, connect the negative side of the power supply to the - terminal, and the positive side of the supply to the +V1 terminal. Remove one end of the green jumper from the chassis ground screw and connect it to the -V terminal. If the power supply is positive grounded, remove one end of the green jumper wire from the chassis ground screw and connect it to the +V1 terminal.

3.08 If the on/off function of the front panel on/off/volume control is to be removed from the circuit, connect the positive side of the power supply to the +V2 terminal.

**Note:** *If one end of the green jumper wire from the chassis ground is connected to the +V1 terminal, remove it, and connect it to the +V2 terminal. To disable the volume control function of the on/off/volume control remove the white wire from terminal D and connect it to terminal B.*

#### **remote volume control**

3.09 If the volume control function of the front panel on/off/volume control was disabled (paragraph 3.08) and because a remote volume control is required, connect the remote volume control as follows: remove and tape the red, blue and white leads from terminals A, B and D, respectively, and connect the external volume control to the appropriate terminals.

#### **input impedance options**

3.10 The 9791 Loudspeaker can be wire-optioned for 2400, 600 or 1.5 ohm input impedance. If 2400 ohm input impedance is required connect the input leads to screw terminals com and 2400. For 600-ohm input, connect the leads to screw terminals com and 600; and for 1.5-ohm input impedance, connect the leads to screw terminals com and 1.5.

#### **speaker options**

3.11 The 9791 is factory optioned to use the integral speaker. If an external speaker or other device is to be used, remove and tape the wires connected to the LS1 terminals, and connect external speaker to the LS1 terminals.

3.12 Two signal level adjustments are required for proper Loudspeaker operation. The chassis gain control (located near the top of the pc board) sets the minimum and maximum volume level range through which the Loudspeaker may be adjusted. The output level control, which is also located near the top of the pc board, prevents output signals from exceeding a predetermined level, even for input overload conditions. To adjust the level controls of the 9791 Loudspeaker, proceed as follows:

- A. Initiate a call to make the 9791 operational.
- B. Turn chassis gain potentiometer 5 turns from maximum clockwise position.  
**Note:** *Chassis gain control is a 20-turn potentiometer.*
- C. Turn front panel on/off/volume control to maximum clockwise position.
- D. Turn output level potentiometer 5 turns from maximum counterclockwise position.  
**Note:** *Output level control is also a 20-turn potentiometer.*
- E. Have called party talk. Turn chassis gain potentiometer to a point just before crosstalk or noise is present.
- F. Turn output level potentiometer to desired loudness.
- G. When all installer connections and level adjustments are completed, the rear cover may be replaced.

## **4. specifications**

### *power requirements*

**input power:  $\pm 20$  to 56Vdc**

**input current (quiescent): 200mA**

### *input impedance*

**2400, 600 or 1.5 ohms**

### *acoustic power output*

**97.5dBA at 18 inches**

### *acoustic response (amplifier and speaker)*

**$\pm 5$ dB, 350 to 5000Hz**

### *frequency response (amplifier)*

**$\pm 3$ dB 200 to 5000Hz**

### *input sensitivity (600 ohms)*

**minimum required for full output: -60dBm**

**maximum allowable for less than 5% distortion:**

**-5dBm at 1000Hz**

### *operating environment*

**32° to 120° F (0° to 49° C), humidity to 95%**

**(no condensation)**

### *dimensions*

**5.5 inches (14.0cm) wide**

**6.20 inches (15.7cm) high**

**4.75 inches (11.7cm) deep**

### *weight*

**5.5 pounds (2.5kg)**

### *mounting*

**desktop**

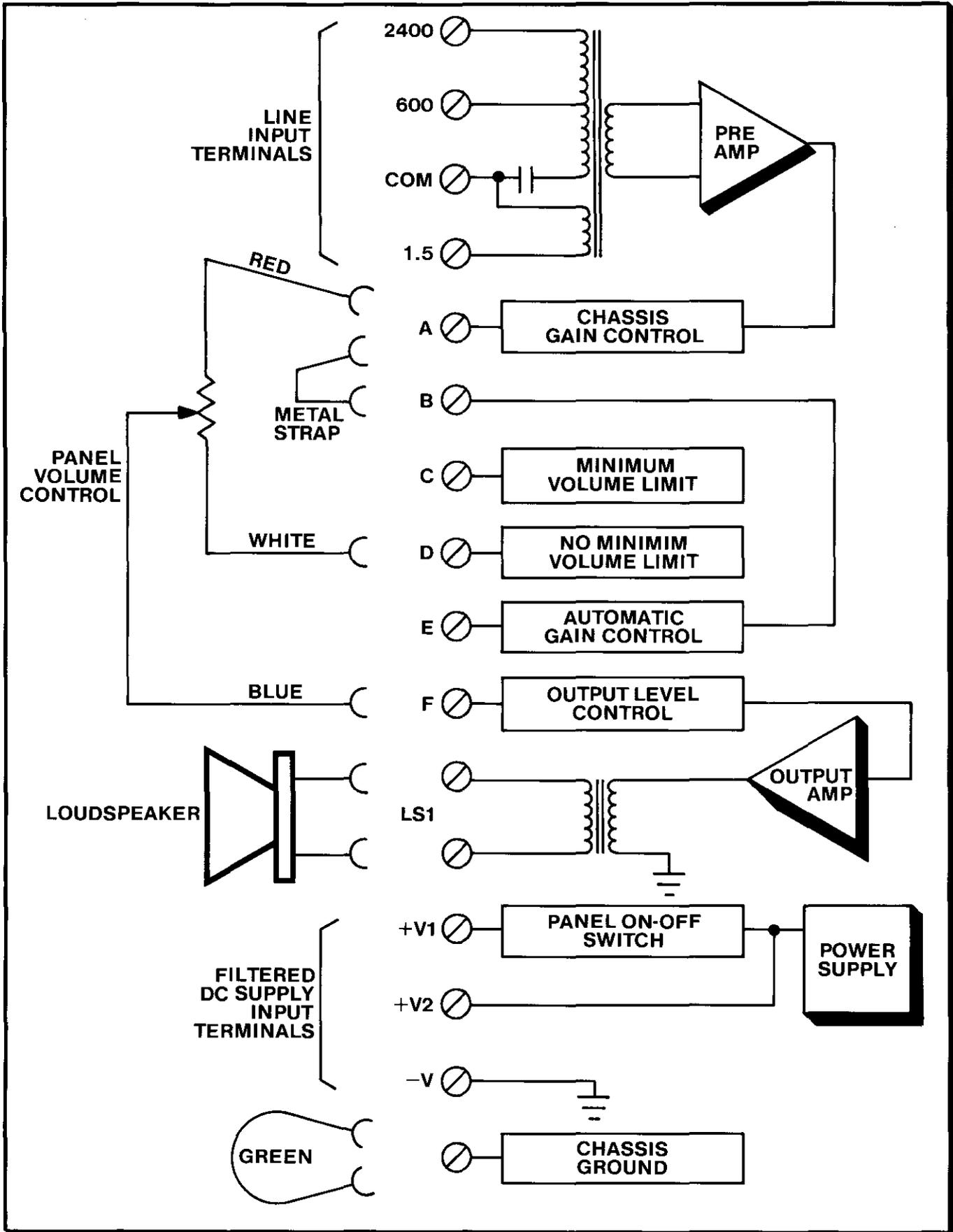


figure 5. Functional wiring diagram

**6. testing and troubleshooting**

6.01 The *testing guide checklist* in this section may be used to assist in the installation, testing, or troubleshooting of the 9791 Loudspeaker. The checklist is intended as an aid in the localization of trouble to the Loudspeaker. If a Loudspeaker is suspected of being defective, a new one should be substituted and the test conducted again. If the substitute Loudspeaker operates correctly, the original Loudspeaker should be considered defective and returned to Tellabs for repair or replacement as directed below. We strongly recommend that non internal (component-level) testing or repairs be attempted on the Loudspeaker. Unauthorized testing or repairs may void the Loudspeaker's warranty. Also, if the Loudspeaker is part of a registered system, unauthorized repairs will result in noncompliance with Part 68 of the FCC Rules and Regulations.

6.02 If a situation arises that is not covered in the checklist, contact Tellabs Customer Service as follows (telephone numbers are given below):

USA customers: Contact Tellabs Customer Service at your Tellabs Regional Office.

Canadian customers: Contact Tellabs Customer Service at our Canadian headquarters in Mississauga, Ontario.

International customers: Contact your Tellabs distributor.

- US central region: (312) 969-8800
- US northeast region: (412) 787-7860
- US southeast region: (305) 645-5888
- US western region: (702) 827-3400
- Canada: (416) 624-0052

6.03 If a Loudspeaker is diagnosed as defective, follow the *replacement* procedure in paragraph 6.04 when a critical circuit is down and no spares

are available). If the situation is not critical, follow the *repair and return* procedure in paragraph 6.05.

**replacement**

6.04 To obtain a replacement Loudspeaker, notify Tellabs via letter or telephone (see addresses and numbers below) or via TWX (910-695-3530 in the USA, 610-492-4387 in Canada). Be sure to provide all relevant information, including the 8X9791 part number that indicates the issue of the Loudspeaker in question. Upon notification, we shall ship a replacement Loudspeaker to you. If the Loudspeaker in question is in warranty, the replacement will be shipped at no charge. Pack the defective Loudspeaker in the replacement Loudspeaker's carton, sign the packing slip included with the replacement, and enclose it with the defective Loudspeaker (this is your return authorization). Affix the preaddressed label provided with the replacement Loudspeaker to the carton being returned, and ship the Loudspeaker prepaid to Tellabs.

**repair and return**

6.05 Return the defective Loudspeaker, shipment prepaid, to Tellabs (attn: repair and return).

in the USA: Tellabs, Inc.  
 4951 Indiana Avenue  
 Lilse, Illinois 60532  
 telephone (312) 969-8800

in Canada: Tellabs Communications Canada, Ltd.  
 1200 Aerowood Drive, Unit 39  
 Mississauga, Ontario, Canada L4W 2S7  
 telephone (416) 624-0052

Enclose an explanation of the Loudspeaker's malfunction. Follow your company's standard procedure with regard to administrative paperwork. Tellabs will repair the Loudspeaker and ship it back to you. If the Loudspeaker is in warranty, no invoice will be issued.

**testing guide checklist**

trouble condition	probable cause (in order of likelihood)
unit dead	1) Power connection faulty and/or on/off switch wiring incorrect. Verify presence of input power by measuring voltage between terminals +V1 and -V (if front panel on/off switch used) or +V2 (if front panel on/off switch bypassed) <input type="checkbox"/> .
no output from speaker	1) Incorrect input wiring <input type="checkbox"/> 2) Volume control wiring incorrect <input type="checkbox"/> .