

P/Os

293 One-Way Alerting System Installation

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1. general information

1.01 The Tellabs 293 One-Way Alerting System (figure 1) is a multistation ringdown telephone circuit used in emergency-alerting applications. With the 293 System, large numbers of people can be simultaneously alerted via their telephones when emergencies such as fires, industrial accidents, or threatening weather conditions occur. Thus, the 293 System can serve small communities, hotels, motels, apartment buildings, condominiums, high-rise buildings, hospitals, department stores, shopping malls, schools, campus facilities, factories, chemical and nuclear facilities, and numerous other applications where personnel require immediate notification of emergency and/or evacuation procedures when disaster threatens or strikes.

1.02 In the event that this Practice section is reissued, the reason for reissue will be stated in this paragraph.

system configuration

1.03 The 293 System is modular in design and configured in 100-station increments. Each fully autonomous 100-station increment is subdivided into 10-station increments, 10 stations being the number accommodated by each line-circuit module in a 293 Mounting Assembly. A minimum-size 293 System consists of one 293 Mounting Assembly equipped with 2 common-control modules and 1 to 10 line circuit modules, a ringing generator, and a power supply. Optional backup batteries, a message-announcement device, a wall-mounted activation panel, and a cabinet that houses all of the above equipment (except the activation panel) can be provided if required.

system application

1.04 The 293 System can be used with any conventional PBX switching system; maximum length of each station loop is 1000 ohms. Generally, the 293 System is used in either of two on-premises applications. Specifically, the System can be installed in series with station telephones served by a PBX, such as in a hotel or office building, or the System can be installed in series with CO lines, such as in an apartment complex.

293-to-PBX interconnection

1.05 The 293 System is easy to install because it is compact in size, does not require extensive wir-

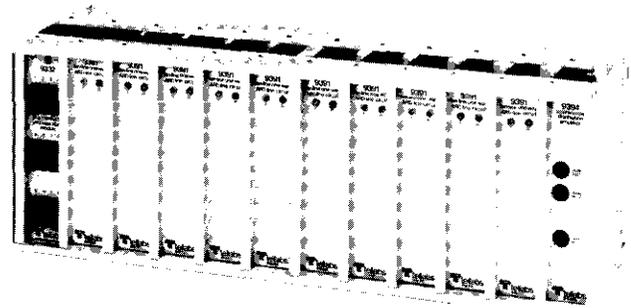


figure 1. 293 One-Way Alerting System

ing, and features connectorized shelves. When the 293 System is located near the switching equipment, connectorized cables permit quick interconnection between the 293 System and the switching-equipment cross-connect frame. Station and switching-equipment connections to the 293 System are made via Universal Service Order Code (USOC) RJ71C connectors. This arrangement allows bridging plugs to take the place of the 293 System connectors, allowing normal telephone service both before the System is installed and after the 293 System is taken out of service.

installation and power

1.06 The standard 293-System Mounting Assembly is a prewired Tellabs Type 10 Mounting Shelf with a connectorized backplate. This connectorized configuration allows quick interconnection to the cross-connect frame and associated peripheral equipment. The Mounting Assembly or Assemblies mount in a standard 19-inch or 23-inch relay rack or in a cabinet, either of which is optionally available with the System. The System is powered from -48Vdc filtered, ground-referenced power supply or battery. This voltage source can be provided via a standard telephone-type power supply or by sharing the PBX's battery, as desired.

2. installation site preparation

2.01 As defined in Part 68 of the FCC rules, registered terminal equipment can be directly connected to the telephone network through standard connectors referred to as Universal Service Order Code (USOC) connectors. It is the customer's responsibility to inform the telephone company of the quantities and types of USOC connectors that are required. In addition, the sequence of PBX extension numbers for each USOC connector must be identified by cable pair and pin numbers. The 293 System is connectorized and wired in accordance with USOC RJ71C.

2.02 Two blank "293 USOC Assignment Worksheets" (table 1) are provided at the back of this Practice (page 15) to help the customer obtain the necessary information to determine equipment requirements, establish zoning groups, and provide the necessary information for the telephone company. Before ordering a 293 System, one or more 293 USOC Assignment Worksheets must be filled out (100 stations per worksheet). Additional worksheets are available at no charge. Please call Tellabs' Application Engineering Group at one of the telephone numbers listed in paragraph 6.03 of this Practice for additional copies. To complete this worksheet, the following is required:

- (1) The total number of stations must be determined.
- (2) The PBX extension numbers of all stations must be determined.
- (3) The desired zone arrangements (the telephone numbers within each zone) must be defined.

These worksheets should be retained for System troubleshooting if and when needed.

2.03 The customer data (table 2, below) and an example of a completed worksheet (table 3 on page 17 of this Practice) for a theoretical three-floor hotel alerting application are provided as a guide. Please notice that zones in which the total number of stations is not a multiple of 10 causes the remaining circuits on that module to be reserved for future stations within that particular zone. This is because each module (10 circuits) has only one *group* (control) lead to activate all 10 circuits on that module. These groups are connected together on the cross-connect field to form zones. This information can also be obtained from the worksheet under the zone sections.

floor	zone	room and extension numbers
1:		
A) 8 administrative phones	1	ext. 301 through 308
B) 47 rooms	2	ext. 001 through 047
C) 1 alerting panel		
2: 100 rooms	3	ext. 100 through 199
3: 25 rooms	4	ext. 200 through 224
Notes:		
1) For simplicity, the room numbers are equivalent to the room extension numbers.		
2) In some applications, the zoning requirements may be defined by local ordinances.		

table 2. Customer data for three-floor hotel

Note: One 8108 Ringing Generator provides ringing for 100 ringers. This must be taken into account when determining ringing requirements where two or more telephones share the same extension number.

2.04 Once all customer data is determined, the 293 USOC Assignment Worksheet can be completed. After completing the worksheet, equipment requirements and the information necessary for the telephone company can be obtained, as shown in table 4. Table 4 also contains callout numbers which are correlated with numbers on the completed worksheet (table 3) for easy identification.

equipment requirements

- ① shelf requirements: 2
- ② 9391 Line Circuit Modules: 19

telephone company information

- ③ total number of RJ71C USOC connectors: 17
- ④ USOC connector number and cable appearance for each extension number
example:
 ext. 301: tip and ring in are pins 26 and 27, respectively, and tip and ring out are pins 1 and 2, respectively, of connector J1, shelf 1.
Note: J1 of shelf 2 should be designated J10 (as reported to the telephone company), since J9 is the last connector on shelf 1. The telephone company labels connectors in this configuration as J1 through J17.

zoning information

- ⑤ zone 1 appears on J12, pin 27, W/O wire;
 zone 2 appears on J12, pin 28, W/G wire, strapped to J12, pin 29, W/BR wire, strapped to J12, pin 30, W/S wire, strapped to J12, pin 31, R/BL wire, strapped to J12, pin 32, R/O wire
 zone 3 (etc.)

table 4. Summary of information from completed worksheet

Note: Under FCC rules, this information must be supplied to the serving telephone company. Please refer to section 7 of the 293 System Description Practice, section 8X293-1, for additional information.

inspection

2.05 The 293 One-Way Alerting System and its component modules should be inspected upon arrival to find possible damage incurred during shipment. If damage is noted, a claim should immediately be filed with the carrier. If stored, the equipment should be inspected again prior to installation.

2.06 293 Systems can vary greatly in size and configuration. Therefore, the System shown in this section is a hypothetical "typical" System. This System is configured for four zones with varied numbers of stations in each zone. This installation is also equipped with a wall-mounted activation panel. All equipment is relay-rack mounted except the activation panel, which is wall mounted. The following list will assist in verifying that all necessary equipment for this particular installation has been provided, and will familiarize you with the various mounting assemblies, modules, and hardware.

equipment list

A. Rack-mounted equipment:

- Relay rack, 5.5 feet high/19 inches wide/17 inches deep.
- Two 293A-1 Mounting Assemblies.
- One 8007 48Vdc Power Supply.
- One 8001 24Vdc Power Supply.
- Two 8108 20Hz Ringing Generators.
- One pair 14-9002 (19-inch) mounting bars for ringing generators and 8001 Power Supply.

B. System modules and cables:

- Two 9332 Ringing Interrupter and Fuse Modules.

- Nineteen 9391 Ten-Line One-Way ARD Line Circuit Modules.
- Two 9394 Conference Distribution Amplifier modules.
- One 79-0098 Type 66 Quick-Connect Terminal Block.
- Twenty 50-5721 25-foot System interface cables.
- Miscellaneous 22, 18, and 14 AWG wire, as needed.

C. External equipment:

- Wall-mounted activation panel.
- Mounting hardware.
- Required amount of 25-pair 24 AWG cable (Belden Type 9585 or equivalent).
- Required amount of two-conductor 18 AWG cable (Belden Type 8461 or equivalent).

mounting

2.07 The 293 System is designed for installation in a PBX equipment room. All equipment except the wall-mounted activation panel is mounted in a standard 19-inch equipment rack. The activation panel should be mounted so that it is out of the way of equipment used for everyday operations yet easily accessible in the event of an emergency.

2.08 The required mounting arrangement for this typical 293 System's equipment is shown in figure 2. The two 293 Mounting Assemblies mount at the top of the equipment rack. The ringing generators and power supplies mount below the last (lowermost) equipment shelf.

installer connections

power

2.09 Before beginning the power wiring procedure, ensure that input power is **not** applied to the power supplies and/or ringing generators. Power must be applied only after all wiring is completed and all modules are properly optioned. Reference to figure 3 will aid in completing this wiring procedure. Wire the System's power connections according to the following list:

- A. System power connections (ground return):
 - Use 14AWG wire for all ground-return power connections.
 - Connect the two terminals labeled *POS. BATT.* on the 8108 20Hz Ringing Generators to the *positive (+)* output of the 8007 Power Supply.
 - Connect the *+ power* terminals on each of the two 293 Mounting Assemblies to the *positive (+)* output of the 8007 Power Supply.
 - Connect the *positive (+)* terminal of the 8001 Power Supply to the *common* terminal on the 8001 and also to the *positive (+)* terminal of the 8007 Power Supply.
- B. System power connections (–48Vdc):
 - Use 18AWG wire for all –48Vdc power connections.
 - Connect the *negative (–)* output of the 8007 Power Supply to the *RG COMM* and

NEG. BATT. terminals on the two 8108 20Hz Ringing Generators.

- Connect the *negative (–)* output of the 8007 Power Supply to the *negative (–)* power terminals on the two 293 Mounting Assemblies.

ringing

2.10 Make the following connections between the 8108 20Hz Ringing Generators and the 293 Mounting Assemblies (reference to figure 3 will aid in completing this wiring procedure):

- Use 18AWG wire for all ringing connections.
- Connect the *RG* output terminal of the *first* 8108 to the *RING GEN (RG)* terminal on the *first* 293 Mounting Assembly.
- Connect the *RG* output terminal of the *second* 8108 to the *RING GEN (RG)* terminal on the *second* 293 Mounting Assembly.

cabling

2.11 Make the following connections via male connectorized cables to the corresponding female connectors (reference to figure 4 will aid in completing this procedure):

- Mount the Type 66 Quick-Connect Terminal Blocks on the existing cross-connect field.
- Connect a cable between each common-control connector (J12) of each 293 Mounting Assembly to the connector on the Type 66 Terminal Blocks.
- Connect the 18 station interface cables from the USOC demarcation point (supplied by the local telephone company) to the correct female connectors on the 293 Mounting Assemblies.

activation panel

2.12 Perform the following procedures to mount the activation panel and wire it to the 293 equipment shelves:

- Mount the activation panel on the wall, following the supplied instructions and using the hardware supplied with the unit. It should be located in a restricted area to ensure access by authorized personnel only.
- Use two-conductor 18AWG cable to wire power cable from the 8001 24Vdc Power Supply to the activation panel (see figure 4).
- Make connections to the activation panel, using 24AWG 25-pair cable.
- Route the cable (in accordance with local codes) to the Type 66 Terminal Blocks mounted on the cross-connect field.
- Connect the 24AWG 25-pair cable to the Type 66 Terminal Block to provide the activation panel with the zone-assignment, trouble, and audio connections. Please refer to figure 5 and table 5 for wiring instructions and to the paragraphs below for additional information.

zone assignments

2.13 Zone assignments are made by following the 293 USOC Assignment Worksheets that were filled out in the **site preparation** section. Table 6

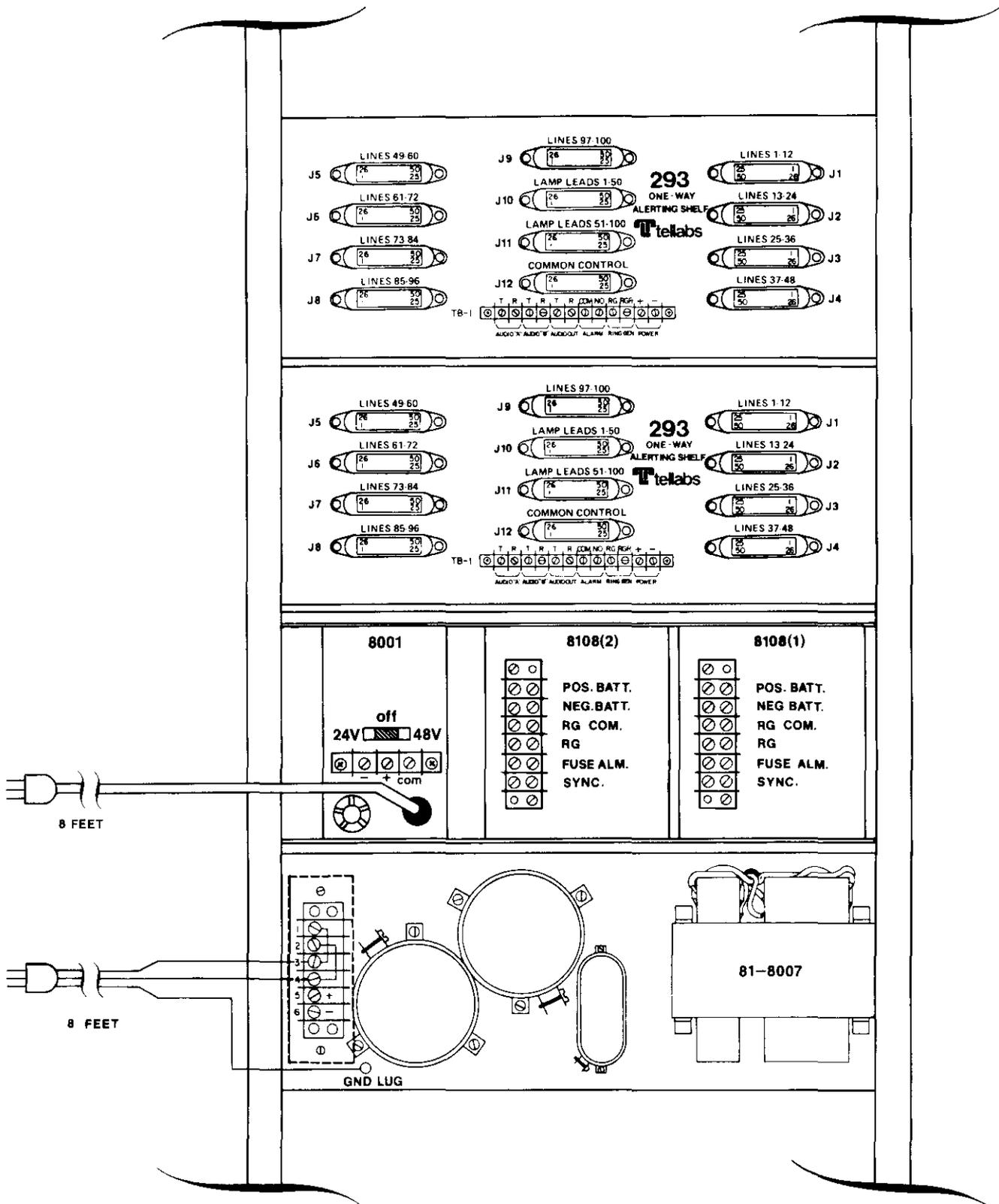


figure 2. Typical 200-line 293 System

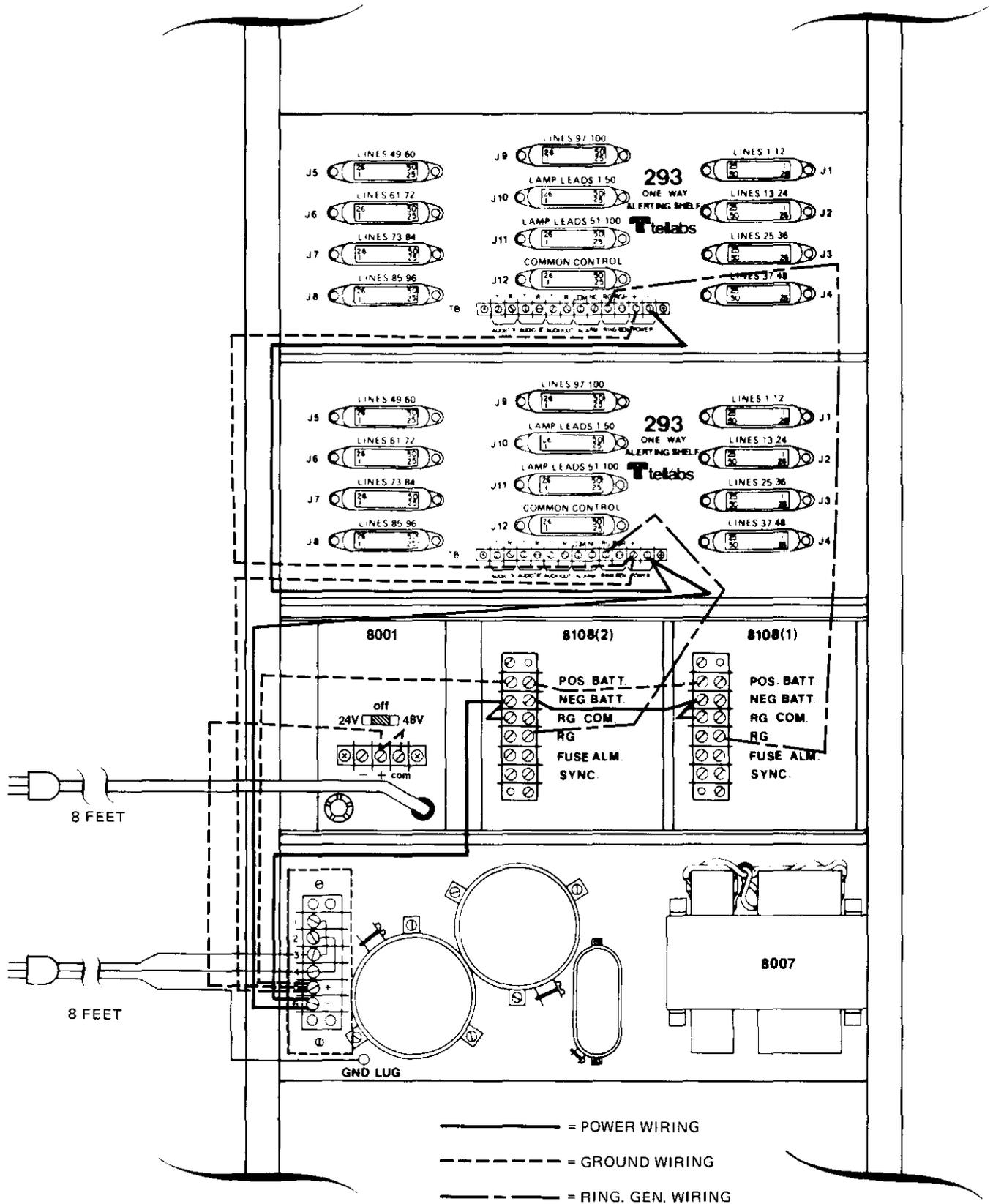


figure 3. Power, ground, and ringing generator wiring

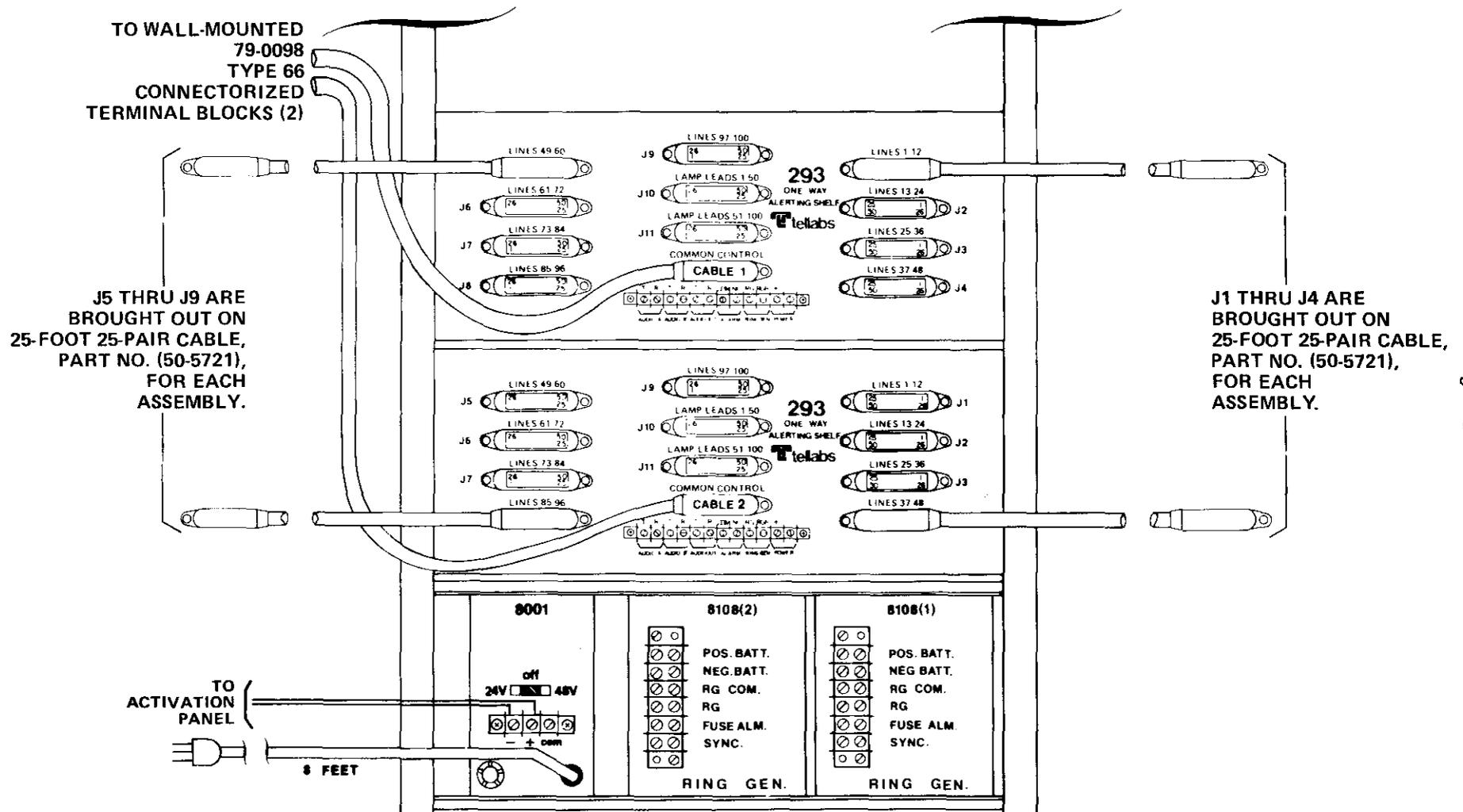


figure 4. Cabling connections

symbol designation	function	description
T and R (tip and ring)	input	In small system applications (less than 100 stations) a standard telephone connected to these terminals can be used to activate the system by going off-hook. Please refer to the Tellabs 9394 module Practice for additional information.
G1, GND to G10, GND	inputs	These are group activation inputs. A ground applied to G1 activates the 9391 module in shelf position 2, a ground applied to G2 activates the 9391 module in shelf position 3, etc. All connections labeled GND are connected internally (via the 293 prewired Mounting Assembly) to the positive (+) side of the -48Vdc power supply.
ALC GND	input	A ground connected to the ALC (all call) input activates all 9391 modules in the 293 Mounting Assembly.
T-A and R-A	input	This is the tip and ring input for audio bus A. Audio connected to this input is connected to the first five 9391 modules.
T-B and R-B	input	This is the tip and ring input for audio bus B. Audio connected to this input is connected to the second five 9391 modules.
IE	output	This is the interrupter enable. This output transfers to an active ground state whenever any of the group inputs are active. This output is normally not used and is provided for special-purpose applications only.
N.O. COM. N.C.	output	These are normally open, common, and normally closed form C relay contacts. This relay output is normally used to indicate system trouble (fault) to a remote location. A blown fuse, loss of ringing generator, or a loss of the -48Vdc power supply on the corresponding 293 System Mounting Assembly causes this relay to change states.

table 5. J12 connections and descriptions

floor (zone) pushbutton	group leads
1	to G1 (shelf 1)
2	to G2, G3, G4, G5, G6 (shelf 1)
3	to G7, G8, G9, G10 (shelf 1) and G1, G2, G3, G4, G5, G6 (shelf 2)
4	to G7, G8, G9 (shelf 2)

table 6. Zone strapping

shows the strapping that must be done for each zone, and figure 6 shows the locations of the group leads on the activation panel.

trouble connections

2.14 For the 293 System to indicate a fuse, power supply, or ringing generator failure, make the following connections: Bridge the trouble contacts on shelf 1 with the trouble contacts on shelf 2 and wire them to the activation panel. Please refer to figure 6 for a typical wiring configuration.

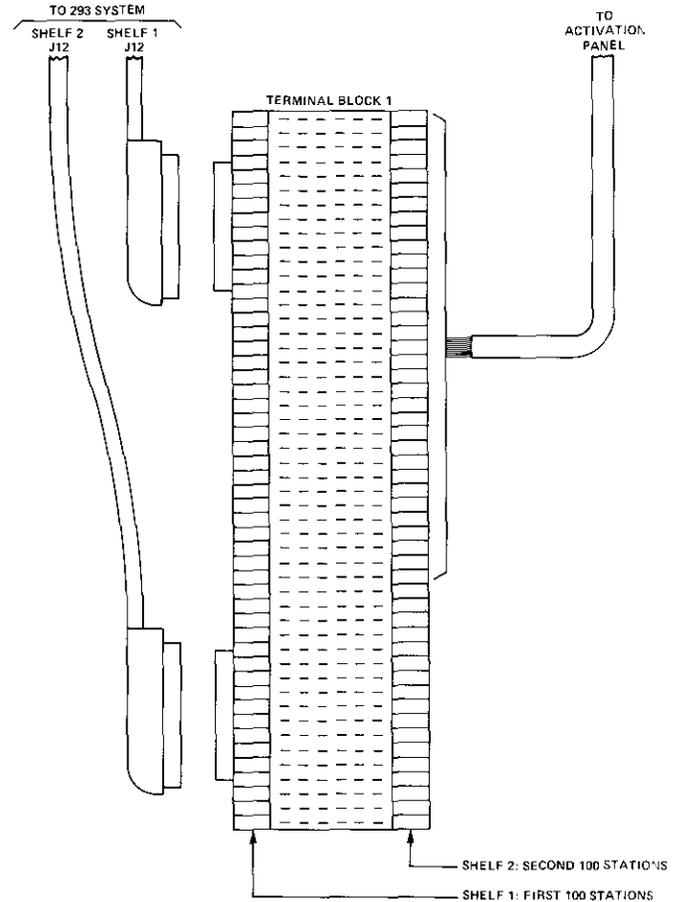


figure 5. 293 System terminal block configuration

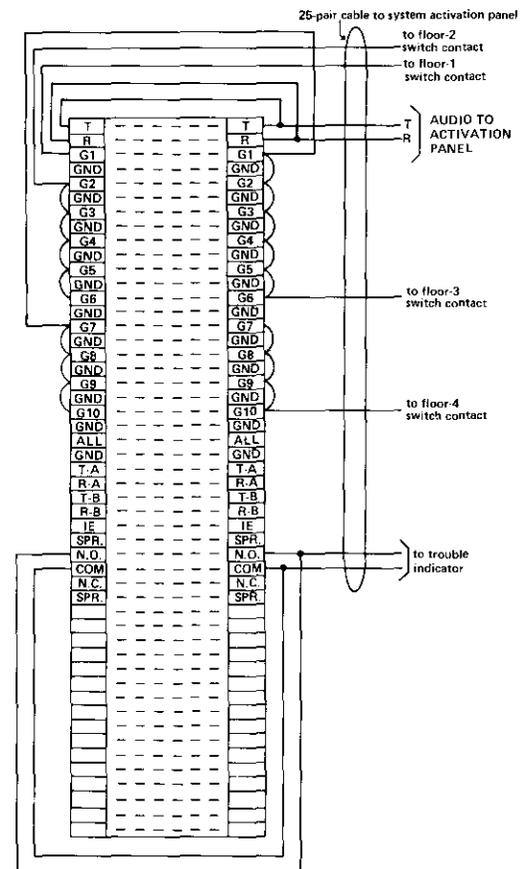


figure 6. Typical activation-panel interface wiring

audio connections

2.15 Each prewired 293 Mounting Assembly is factory wired to accept a common audio bus for all 100 stations. In our hypothetical installation, one common audio message is used for all zones. To accomplish this, bridge the T (tip) and R (ring) audio from the activation panel to both 293 Mounting Assemblies by making appropriate connections to the Type 66 Terminal Block. Then jumper the tip and ring audio from the terminals associated with the first 100 stations to the terminals associated with the second 100 stations. Last, connect the tip and ring audio from the activation panel to the tip and ring audio on Assembly 2. Please refer to figure 6 for additional details.

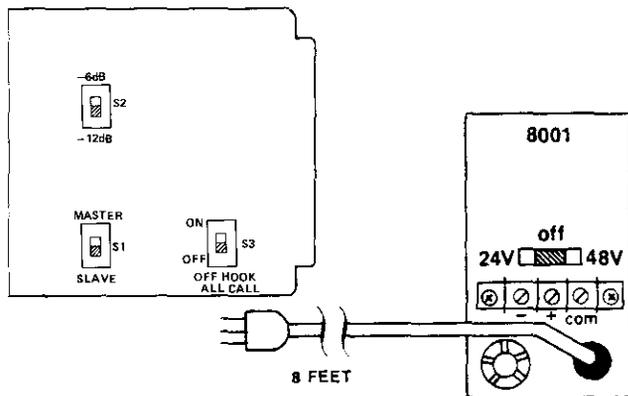


figure 7. Option switch locations

option switch selection

2.16 The only optioning required for the 293 System is the setting of three slide switches on the 9394 module's printed circuit board and the setting of one slide switch on the back of the 8001 Power Supply. Locations of these option switches are shown in figure 7. The 9332 and 9391 modules, 8108 Ringing Generators, and 8007 Power Supply have no options. For our hypothetical 293 System application, set the option switches in accordance with the following checklist (the 9394 modules are located in position 12 of the two mounting shelves):

- Set the 24V/OFF/48V switch on the 8001 Power Supply to the 24V position.
- Set switch S1 (MASTER/SLAVE switch) on the first 9394 module to the MASTER position.
- Set switch S1 (MASTER/SLAVE switch) on the second 9394 module to the SLAVE position.

Note: For applications that require additional 9394 modules (Systems larger than 200 lines), set S1 to the MASTER position on only one 9394 module. For all other 9394 modules, set S1 to the SLAVE position.

- Set switch S3 (OFF-HOOK ALL-CALL switch) on both modules to the OFF position.

Note: Switch S3 is used in conjunction with S1. For other applications, set S3 to the ON position when live hot-line announcements are made (S1

must be in the MASTER position); set S3 to the OFF position when manual or zone activation is being used.

- Set switch S2 (-6dB/-12dB switch) on both modules to the -12dB position.

Note: Switch S2 controls the loudness of the broadcasted message. Set switch S2 to the -12dB position for most local applications; set S2 to the -6dB position for applications that require additional loudness.

module mounting

2.17 After the 9394 modules are properly optioned, install all modules in their proper positions in the two Mounting Assemblies, as shown in figure 8. The 9394 module is factory aligned; no further alignment of the 293 System is required.

9	9	9	9	9	9	9	9	9	9	9
3	3	3	3	3	3	3	3	3	3	3
3	9	9	9	9	9	9	9	9	9	9
2	1	1	1	1	1	1	1	1	1	4
9	9	9	9	9	9	9	9	9	9	9
3	3	3	3	3	3	3	3	3	3	3
3	9	9	9	9	9	9	9	9	9	9
2	1	1	1	1	1	1	1	1	1	4

figure 8. Module positions in Mounting Assemblies

system test

2.18 When all wiring is completed and all cables and modules are installed, apply power to the System by plugging the line cords of the Power Supplies into a conventional 117Vac, earth-grounded power receptacle. To verify proper operation of the 293 System, complete the checklist below. If any difficulties are encountered, please refer to the Troubleshooting Checklist in section 6 of this Practice.

Note: Some of these tests require two people, one to control the activation panel and one to verify the System's operation.

- With the System idle, verify that all telephones connected to the 293 System are functioning normally.
- Use a VOM to verify proper operation of the 8001 and 8007 Power Supplies (nominal -24Vdc and -48Vdc, respectively).
- From the remote activation panel, verify that the green power on indicator is on.
- With the System idle, go off-hook with the telephone set in the activation panel. Connect a test telephone equipped with a standard 310-type test plug first to the audio out 1 jack and then to the audio out 2 jack on the 9394 module in the first Mounting Assembly. Verify that there is an audio path to the audio out 1 and audio out 2 jacks. Repeat this test for the 9394 in the second Mounting Assembly. (This test may require two people.)

- Remove each ringing generator's fuse (located on the front panel of the 8108 Ringing Generator) one at a time, and verify that the trouble indicator on the activation panel and the audible alarm go on. (Replace each fuse after the test is completed.)
- Activate each zone and broadcast a test message. Verify that the message is received at each telephone connected to that zone. Return the System to the idle state when testing is completed.
- If the System functions normally, with no fault signals generated, no further testing is required. If faults are encountered, refer to the Troubleshooting Checklist in section 6 of this Practice.

5. system specifications

system capacity

10 stations per 9391 module; 100 stations per 293 Mounting Assembly; any size system can be configured by using multiple shelves

transmission

idle System has no effect on normal telephone service (because of direct metallic connection through module and lack of bridging elements in System)

ringing

ring trip loop limit: 1000-ohm loop between module and telephone set

interruption rate: 0.5 second on, 2.0 seconds off, $\pm 10\%$ (others optionally available)

voltage output: 90Vac $\pm 15\%$, negatively biased at -48Vdc

frequency: 20Hz $\pm 0.2\text{Hz}$

harmonic distortion: less than 5%

ringing capacity: 1 watt per station average; 100 stations total per 293 Mounting Assembly

audio

compression range: -25 to -5dBm

output level: -6dBm or -12dBm , switch selectable

frequency response: $\pm 1.0\text{dB}$, re 1000Hz, 300 to 3000Hz

answered-call loop current

approximately 5mA

lamp-lead drive current

50mA maximum to a negative-dc voltage return

power requirements

dc input voltage: -44 to -56Vdc , filtered, positive-ground-referenced

dc input current: (per 100-station Mounting Assembly and ringing generator) system idle, 0.25 amperes maximum; system active, 3 amperes maximum

operating environment

32° to 122°F (0° to 50°C), humidity to 95% (no condensation)

dimensions

Mounting Assembly:

5.92 inches (15.04cm) high

17.5 inches (44.45cm) wide (excluding mounting ears)

9.5 inches (24.1cm) deep

ringing generator:

4.75 inches (12.07cm) high

7.0 inches (17.78cm) wide

7.25 inches (18.42cm) deep

weight

approximately 19 pounds (8.7kg) (for a 100-line System with no ringing or power)

mounting

prewired 293 Mounting Assembly: 19-inch or 23-inch relay rack and 6 inches of vertical rack space

ringing generator: KTU apparatus case or relay rack via mounting bars

6. testing and troubleshooting

6.01 The test procedures and Troubleshooting Checklist in this section may be used to assist in the installation, testing, or troubleshooting of the 293 One-Way Alerting System. The tests and Checklist are intended as an aid in the localization of trouble to a specific Mounting Assembly and/or module. If a 293-System Assembly or module is suspected of being defective, a new one should be substituted and the test conducted again. If the substitute item operates correctly, the original should be considered defective and returned to Tellabs for repair or replacement. In compliance with FCC Registration, no internal (component-level) testing or repairs must be attempted on the modules or Assemblies in the 293 System. Return malfunctioning items to Tellabs for repair or replacement. Unauthorized testing or repairs may void the item's warranty.

6.02 Tellabs warrants the 293 System Assemblies and modules to be free of defective components, workmanship, and design for a period of two years from the date of manufacture, when applied as outlined in our Practices, subject to handling and installation commensurate with industry standards for solid-state electronic equipment. If a 293-System Assembly or module does not prove to be free of defective components, workmanship, and design under these criteria, Tellabs will replace or repair it free of charge.

Note: *Warranty service does not include removal of permanent customer markings on the front panels of Tellabs modules, although an attempt will be made to do so. If a module must be marked defective, we recommend that it be done on a piece of tape or on a removable stick-on label.*

6.03 If a situation arises that is not covered in the tests and Checklist, contact Tellabs Customer Service at your Tellabs Regional Office or at our Lisle, Illinois, or Mississauga, Ontario, Headquarters. Telephone numbers are as follows:

US central region: (312) 969-8800

US northeast region: (412) 787-7860

US southeast region: (305) 645-5888

US western region: (702) 827-3400

Lisle Headquarters: (312) 969-8800

Mississauga Headquarters: (416) 624-0052

6.04 If a 293-System Assembly or module is diagnosed as defective, the situation may be remedied by either *replacement* or *repair and return*. Because it is more expedient, the *replacement*

procedure should be followed whenever time is a critical factor (e.g., service outages, etc.).

replacement

6.05 To obtain a replacement 293 System Assembly or module, notify Tellabs via letter (see addresses below), telephone (see numbers above), or twx (910-695-3530 in the USA, 610-492-4387 in Canada). Be sure to provide all relevant information, including the 8XXXX(X) part number that indicates the issue of the item in question. Upon notification, we shall ship a replacement item to you. If the item in question is in warranty, the replacement will be shipped at no charge. Pack the defective 293 System Assembly or module in the replacement item's carton, sign the packing slip included with the replacement, and enclose it with the defective item (this is your return authorization). Affix the preaddressed label provided with the replacement item to the carton being returned, and ship the item prepaid to Tellabs.

repair and return

6.06 Return the defective 293-System Assembly or module, shipment prepaid, to Tellabs (attn: repair and return).

in the USA: Tellabs Incorporated
4951 Indiana Avenue
Lisle, Illinois 60532

in Canada: Tellabs Communications Canada, Ltd.
1200 Aerowood Drive, Unit 39
Mississauga, Ontario, Canada L4W 2S7

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

293 System testing

6.07 After the 293 System is installed and optioned, it must be tested to verify proper System operation. Two sets of tests are required. The first set of tests is performed with the System in the idle condition (power applied but not in the alerting state). The second set of tests requires the 293 System to be activated (in the alerting state). The second set of tests should include the broadcasting of a live or recorded test message to all stations.

6.08 As a courtesy, be sure to give prior notice to System station users that testing will be conducted at a prescribed time. The station users should be informed that they will be involved in the test of the emergency alerting system and that it is **only** a test. They should also be told that when the test begins, they will hear distinctive ringing on their telephones and that calls in progress will be cut off; when the calls are answered, a test alerting message will be received.

idle System test procedure

Note: *This first set of tests is made with the System in the idle state. Some of these tests may require two people to complete. If the System fails any of the following tests, proceed to the Troubleshooting Checklist for specific procedures.*

6.09 To test the System in the idle state, proceed as follows:

A) Verify that all telephones connected to the 293 System function normally .

B) Use a VOM to verify that the proper outputs of all power supplies and ringing generators are present .

C) Verify that all of the *fault* indicators on the front panels of the 9332 modules are *off* .

D) Verify that all of the *trouble* indicators on the System's activation panel are *off* .

E) Disable the 8108 Ringing Generators one at a time by removing their front-panel fuses. Verify that the *fault* indicators on the associated 9332 modules and the *trouble* indicators on the activation panel are *on* .

F) Go off-hook with the telephone set in the activation panel. Connect a test telephone equipped with a standard 310 test plug first to the *audio out 1* and then to the *audio out 2* jacks on a 9394 module. Verify that there is an audio path to the *audio out 1* and *audio out 2* jacks (audio A and audio B) .

Repeat this test for the other 9394 modules used in the System .

This test may require two people, one to broadcast a message from the activation panel and one to perform the tests in the equipment room.

active System test procedure

Note: *This second set of tests requires activation of the 293 System. Some of these tests may require two people to complete. Before starting this test, notify station users that their telephone service will be interrupted and that a test alerting message will be broadcast. If the System fails any of the following tests, proceed to the Troubleshooting Checklist for specific procedures.*

6.10 To test the System in the active state, proceed as follows:

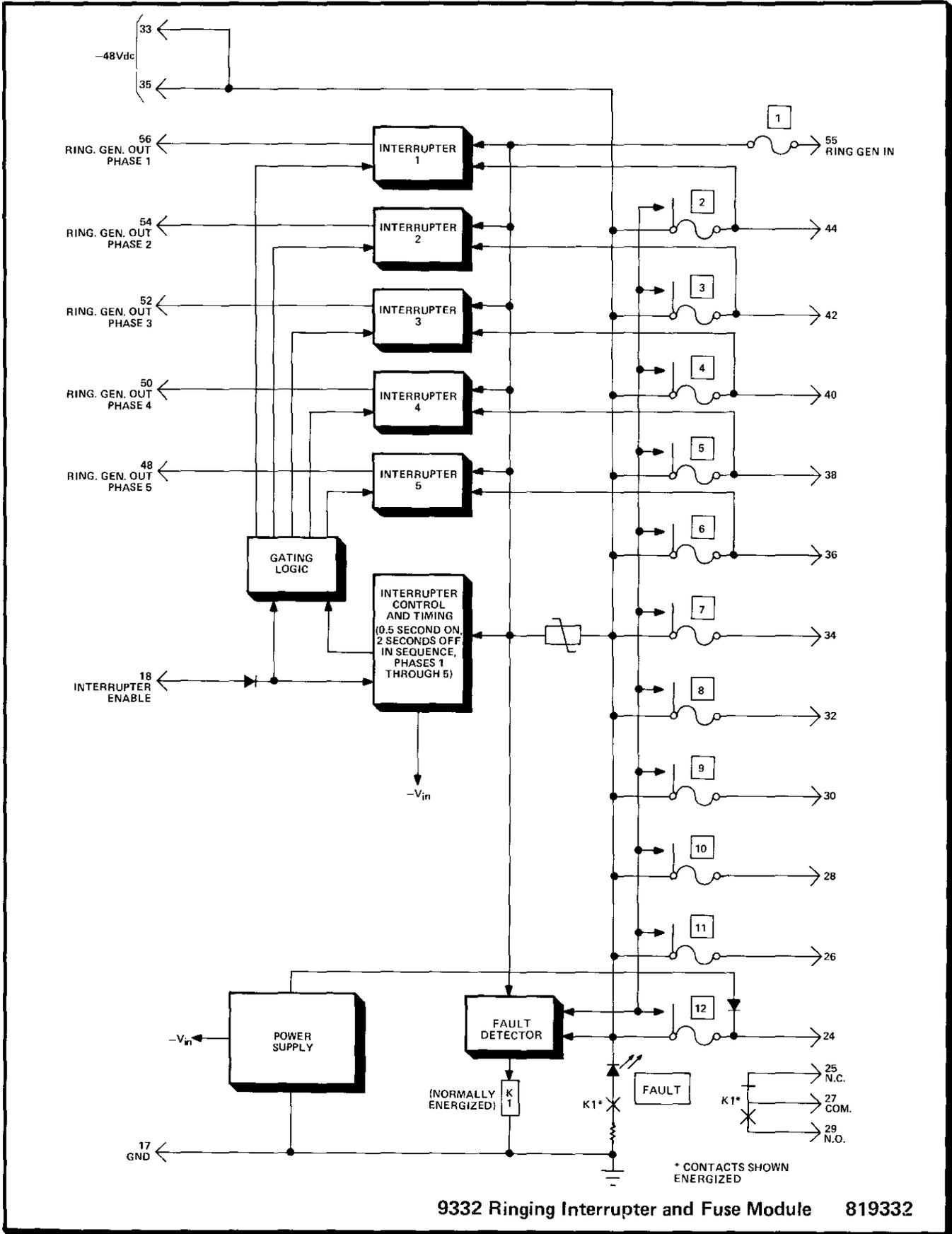
A) 1. If the 293 System is equipped with a recorder, record the following message: "This is a test of the emergency alerting system. In the event of an actual emergency, you would be given specific instructions. Thank you."
2. If the 293 System is not equipped with a recorder, the message in step A must be verbally repeated while steps B through D are conducted.

B) Activate each zone (floor, room, etc.) one at a time and verify that only the stations within that zone are ringing at a distinctive rate .

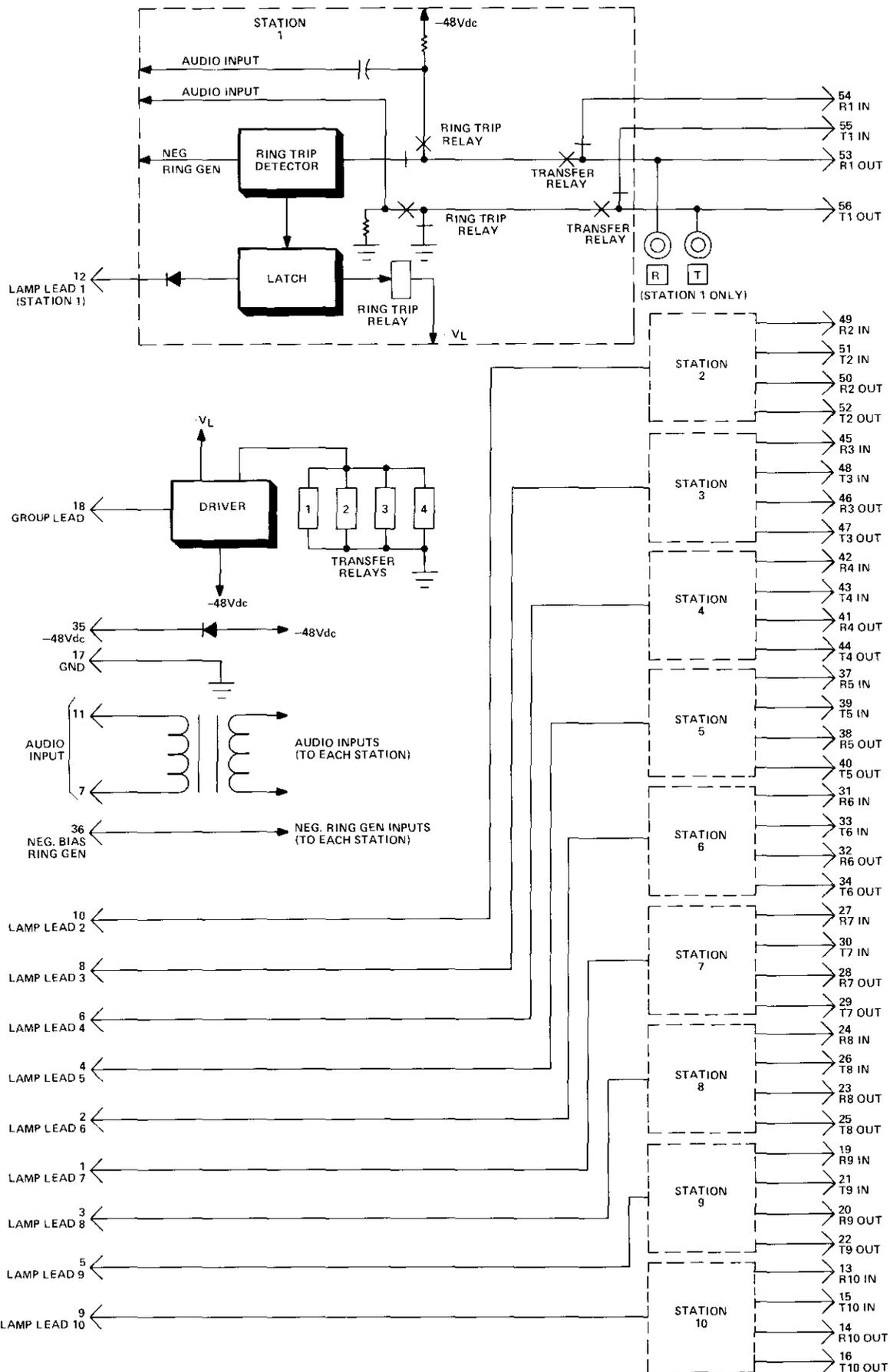
Note: *Any stations that are engaged in normal telephone calls at this time are disconnected and immediately transferred to the audio message.*

C) As the stations within an activated zone are answered, verify that they receive the one-way alerting test message .

D) Deactivate the zone and verify that normal telephone service is restored .

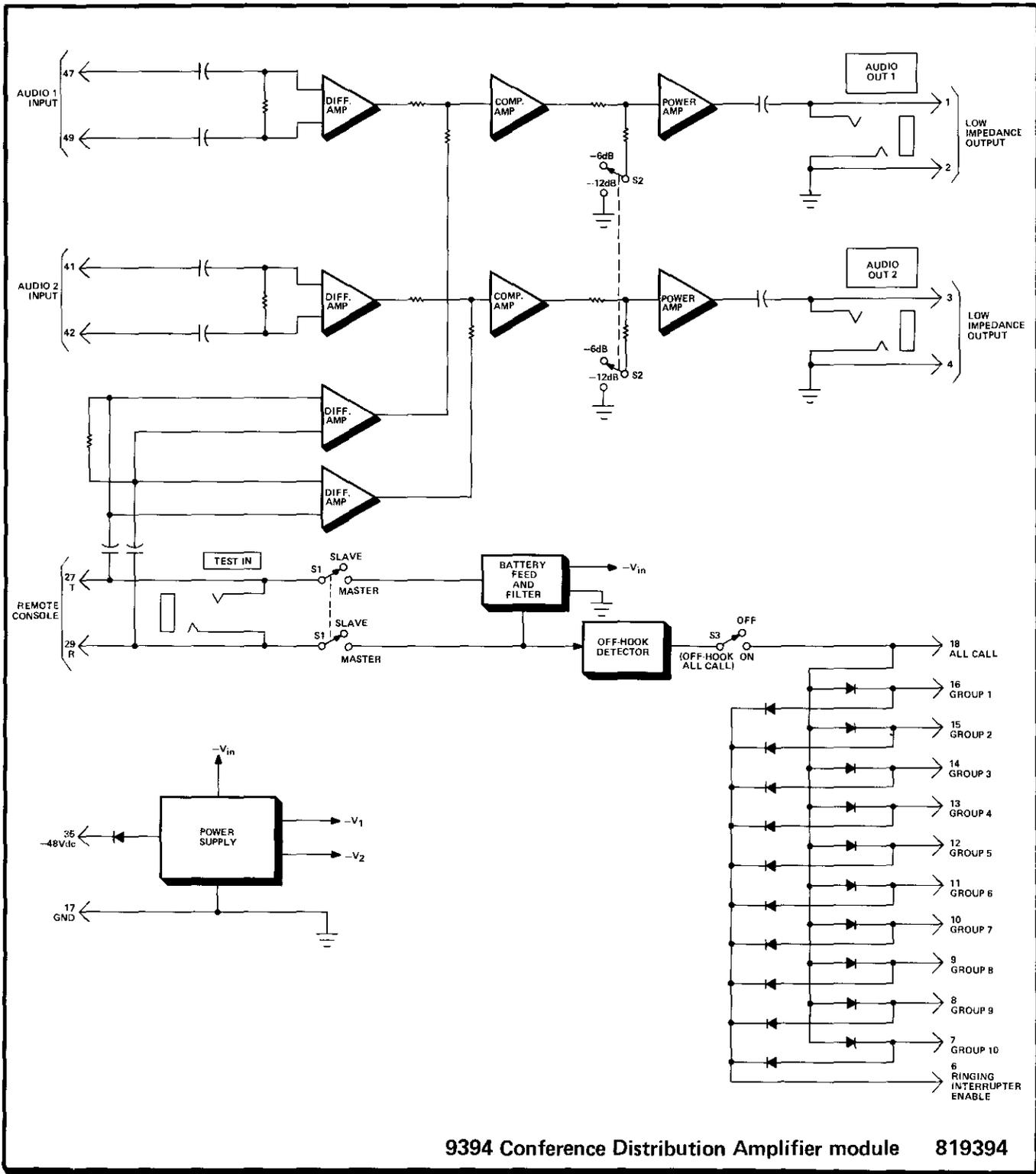


4. module block diagrams



9391 Ten-Line One-Way ARD Line Circuit Module 819391

4. module block diagrams



9394 Conference Distribution Amplifier module 819394

4. module block diagrams

troubleshooting checklist

Note: If a fault is isolated to a particular module in the 293 System but cannot be corrected with the information provided in this checklist, please refer to the Tellabs module Practice for detailed testing information.

problem	steps toward solution
normal telephone service is disrupted when System is idle.	<ul style="list-style-type: none"> <input type="checkbox"/> Remove the 9391 module that controls the defective telephone circuits. (Refer to the "293 USOC Assignment Worksheet" for the exact module location.) Note: Because special spring-loaded card-edge connectors are used, the System is effectively bypassed when the 9391 module is removed. <input type="checkbox"/> If normal telephone service is restored, replace with a new 9391 module and retest. <p>If normal telephone service remains disrupted:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verify cable assignments on worksheet(s). <input type="checkbox"/> Verify cabling on the RJ71C USOC connectors. <input type="checkbox"/> Use a VOM (set to ohmmeter function) to verify continuity through the 293 System (T in to T out, R in to R out, etc.).
power supply's output voltage is low or not present	<ul style="list-style-type: none"> <input type="checkbox"/> Use a VOM (set to voltmeter function) to verify 115Vac input (105 to 120Vac). <input type="checkbox"/> Verify wiring from power supply to equipment shelves. <p>Disconnect the output wiring from the power supply and check the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> If voltage is still out of range, replace power supply. <input type="checkbox"/> If voltage is present, remove all modules from System and recheck voltage. <input type="checkbox"/> If voltage is out of range, verify wiring.
trouble condition present on one of the 9332 modules or on the System's activation panel	<ul style="list-style-type: none"> <input type="checkbox"/> Replace blown fuse in the 9332 module. <p>If ringing generator input to shelf is not present, check the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Use a VOM (set to voltmeter function) to verify ringing voltage on rear terminal strip. <input type="checkbox"/> If correct voltage not present, verify wiring. <input type="checkbox"/> If wiring is correct, replace ringing generator and retest. <input type="checkbox"/> -48Vdc input is out of range; refer to previous step ("power supply's output voltage is low or not present"). <input type="checkbox"/> Verify wiring to System's activation panel.
loss of ringing generator does not generate a fault condition	<p>(When the fuse on a ringing generator is blown or removed, a fault indication is present on both the associated 9332 module's <i>fault</i> LED and on the System's activation panel.)</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the 9332 module does not indicate a fault, replace and retest the 9332 module. <p>If the activation panel does not indicate a fault, check the following:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Verify wiring to the activation panel. <input type="checkbox"/> Replace and retest the <i>trouble indicator</i> section of the activation panel.
one of the audio distribution busses is inoperative	<ul style="list-style-type: none"> <input type="checkbox"/> Verify wiring to the 293 prewired Mounting Assembly. <input type="checkbox"/> Replace the 9394 module and retest.
station telephones outside of the selected zone are being alerted	<ul style="list-style-type: none"> <input type="checkbox"/> Verify zone wiring. <input type="checkbox"/> Replace 9394 module associated with the affected lines and retest.
station telephones within a selected zone fail to ring	<ul style="list-style-type: none"> <input type="checkbox"/> Verify zone wiring. <input type="checkbox"/> Replace associated 9391 module and retest. <input type="checkbox"/> Replace associated 9332 module and retest.
alerted stations within a selected zone do not hear the alerting message	<ul style="list-style-type: none"> <input type="checkbox"/> Replace the associated 9391 module and retest.
normal telephone service is not restored when the 293 System is deactivated	<ul style="list-style-type: none"> <input type="checkbox"/> Replace the associated 9391 module and retest.

SHELF _____ OF _____

MODULE	EQUIPMENT REFERENCE NUMBERS		CUSTOMER SUPPLIED INFORMATION		NETWORK		STATION		NETWORK		STATION		USOC RJ71C JACK				
	MODULE CIRCUIT NUMBER	SHELF LINE NUMBER	ZONE (G NUMBER)	TELEPHONE EXTENSION	TIP IN PIN COLOR	TIP OUT PIN COLOR	RING IN PIN COLOR	RING OUT PIN COLOR	RING IN PIN COLOR	RING OUT PIN COLOR	RING IN PIN COLOR	RING OUT PIN COLOR	RING IN PIN COLOR	RING OUT PIN COLOR			
9391 (1)	1	1	ZONE # (G1) J12		26 W/BL 1	BL/W 1	27 W/O 2	W/O 2	27 W/O 2	W/O 2	2 O/W			J1			
	2	2		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
	3	3		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6					
	4	4		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8					
	5	5		ZONE # (G2) J12		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10				J2	
	6	6			36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12				
	7	7			38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14				
	8	8			40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16				
	9	9			42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18				
	10	10			44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20				
1	1	ZONE # (G3) J12			46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22			J3			
2	2		48 V/G 23		G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
3	3		26 W/BL 1		BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2					
4	4		28 W/G 3		G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
5	5		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6						
6	6		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8						
7	7		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10						
8	8		36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12						
9	9		38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14						
10	10		40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16						
9391 (2)	1	1	ZONE # (G4) J12		42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18			J4			
	2	2		44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20						
	3	3		46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22						
	4	4		48 V/G 23	G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
	5	5		26 W/BL 1	BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2					
	6	6		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
	7	7		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6					
	8	8		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8					
	9	9		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10					
	10	10		36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12					
9391 (3)	1	1	ZONE # (G5) J12		38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14			J5			
	2	2		40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16						
	3	3		42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18						
	4	4		44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20						
	5	5		46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22						
	6	6		48 V/G 23	G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
	7	7		26 W/BL 1	BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2					
	8	8		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
	9	9		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6					
	10	10		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8					
9391 (4)	1	1	ZONE # (G6) J12		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10			J6			
	2	2		36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12					
	3	3		38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14					
	4	4		40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16					
	5	5		42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18					
	6	6		44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20					
	7	7		46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22					
	8	8		48 V/G 23	G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
	9	9		26 W/BL 1	BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2					
	10	10		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
9391 (5)	1	1	ZONE # (G7) J12		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6			J7			
	2	2		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8					
	3	3		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10					
	4	4		36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12					
	5	5		38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14					
	6	6		40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16					
	7	7		42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18					
	8	8		44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20					
	9	9		46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22					
	10	10		48 V/G 23	G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
9391 (6)	1	1	ZONE # (G8) J12		26 W/BL 1	BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2			J8			
	2	2		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
	3	3		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6					
	4	4		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8					
	5	5		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10					
	6	6		36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12					
	7	7		38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14					
	8	8		40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16					
	9	9		42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18					
	10	10		44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20					
9391 (7)	1	1	ZONE # (G9) J12		46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22			J9			
	2	2		48 V/G 23	G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
	3	3		26 W/BL 1	BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2					
	4	4		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
	5	5		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6					
	6	6		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8					
	7	7		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10					
	8	8		36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12					
	9	9		38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14					
	10	10		40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16					
9391 (8)	1	1	ZONE # (G10) J12		42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18			J10			
	2	2		44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20					
	3	3		46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22					
	4	4		48 V/G 23	G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
	5	5		26 W/BL 1	BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2					
	6	6		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
	7	7		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6					
	8	8		32 R/O 7	O/R 7	33 R/G 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8	G/R 8					
	9	9		34 R/BR 9	BR/R 9	35 R/S 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10	S/R 10					
	10	10		36 BK/BL 11	BL/BK 11	37 G/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12	O/BK 12					
9391 (9)	1	1	ZONE # (G11) J12		38 BK/G 13	G/BK 13	39 BK/BR 14	BR/BK 14	BR/BK 14	BR/BK 14	BR/BK 14			J11			
	2	2		40 BK/S 15	S/BK 15	41 Y/BL 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16	BL/Y 16					
	3	3		42 Y/O 17	O/Y 17	43 Y/G 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18	G/Y 18					
	4	4		44 Y/BR 19	BR/Y 19	45 Y/S 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20	S/Y 20					
	5	5		46 V/BL 21	BL/V 21	47 V/O 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22	O/V 22					
	6	6		48 V/G 23	G/V 23	49 V/BR 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24	BR/V 24					
	7	7		26 W/BL 1	BL/W 1	27 W/O 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2	O/W 2					
	8	8		28 W/G 3	G/W 3	29 W/BR 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4	BR/W 4					
	9	9		30 W/S 5	S/W 5	31 R/BL 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6	BL/R 6					
	10	10		32 R/O 7	O/R 7	33 R/G 8	G/R 8										

SHELF ____ OF ____

EQUIPMENT REFERENCE NUMBERS			CUSTOMER SUPPLIED INFORMATION		NETWORK		STATION		NETWORK		STATION		USOC RJ71C
MODULE	MODULE CIRCUIT NUMBER	SHELF LINE NUMBER	ZONE (G NUMBER)	TELEPHONE EXTENSION	TIP IN		TIP OUT		RING IN		RING OUT		JACK
					PIN	COLOR	PIN	COLOR	PIN	COLOR	PIN	COLOR	
9391 (1)	1	1	ZONE # (G1) J12 27-W/O		26	W/BL	1	BL/W	27	W/O	2	O/W	J1
	2	2		28	W/G	3	G/W	29	W/BR	4	BR/W		
	3	3		30	W/S	5	S/W	31	R/BL	6	BL/R		
	4	4		32	R/O	7	O/R	33	R/G	8	G/R		
	5	5		34	R/BR	9	BR/R	35	R/S	10	S/R		
	6	6		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
	7	7		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK		
	8	8		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
	9	9		42	Y/O	17	O/Y	43	Y/G	18	G/Y		
	10	10		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
9391 (2)	11	11	ZONE # (G2) J12 28-W/G		46	V/BL	21	BL/V	47	V/O	22	O/V	J2
	2	12		48	V/G	23	G/V	49	V/BR	24	BR/V		
	3	13		26	W/BL	1	BL/W	27	W/O	2	O/W		
	4	14		28	W/G	3	G/W	29	W/BR	4	BR/W		
	5	15		30	W/S	5	S/W	31	R/BL	6	BL/R		
	6	16		32	R/O	7	O/R	33	R/G	8	G/R		
	7	17		34	R/BR	9	BR/R	35	R/S	10	S/R		
	8	18		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
	9	19		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK		
	10	20		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
9391 (3)	21	21	ZONE # (G3) J12 29-W/BR		42	Y/O	17	O/Y	43	Y/G	18	G/Y	J3
	2	22		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
	3	23		46	V/BL	21	BL/V	47	V/O	22	O/V		
	4	24		48	V/G	23	G/V	49	V/BR	24	BR/V		
	5	25		26	W/BL	1	BL/W	27	W/O	2	O/W		
	6	26		28	W/G	3	G/W	29	W/BR	4	BR/W		
	7	27		30	W/S	5	S/W	31	R/BL	6	BL/R		
	8	28		32	R/O	7	O/R	33	R/G	8	G/R		
	9	29		34	R/BR	9	BR/R	35	R/S	10	S/R		
	10	30		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
9391 (4)	31	31	ZONE # (G4) J12 30-W/S		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	J4
	2	32		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
	3	33		42	Y/O	17	O/Y	43	Y/G	18	G/Y		
	4	34		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
	5	35		46	V/BL	21	BL/V	47	V/O	22	O/V		
	6	36		48	V/G	23	G/V	49	V/BR	24	BR/V		
	7	37		26	W/BL	1	BL/W	27	W/O	2	O/W		
	8	38		28	W/G	3	G/W	29	W/BR	4	BR/W		
	9	39		30	W/S	5	S/W	31	R/BL	6	BL/R		
	10	40		32	R/O	7	O/R	33	R/G	8	G/R		
9391 (5)	41	41	ZONE # (G5) J12 31-R/B/L		34	R/BR	9	BR/R	35	R/S	10	S/R	J5
	2	42		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
	3	43		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK		
	4	44		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
	5	45		42	Y/O	17	O/Y	43	Y/G	18	G/Y		
	6	46		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
	7	47		46	V/BL	21	BL/V	47	V/O	22	O/V		
	8	48		48	V/G	23	G/V	49	V/BR	24	BR/V		
	9	49		26	W/BL	1	BL/W	27	W/O	2	O/W		
	10	50		28	W/G	3	G/W	29	W/BR	4	BR/W		
9391 (6)	51	51	ZONE # (G6) J12 32-R/O		30	W/S	5	S/W	31	R/BL	6	BL/R	J6
	2	52		32	R/O	7	O/R	33	R/G	8	G/R		
	3	53		34	R/BR	9	BR/R	35	R/S	10	S/R		
	4	54		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
	5	55		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK		
	6	56		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
	7	57		42	Y/O	17	O/Y	43	Y/G	18	G/Y		
	8	58		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
	9	59		46	V/BL	21	BL/V	47	V/O	22	O/V		
	10	60		48	V/G	23	G/V	49	V/BR	24	BR/V		
9391 (7)	61	61	ZONE # (G7) J12 33-R/G		26	W/BL	1	BL/W	27	W/O	2	O/W	J7
	2	62		28	W/G	3	G/W	29	W/BR	4	BR/W		
	3	63		30	W/S	5	S/W	31	R/BL	6	BL/R		
	4	64		32	R/O	7	O/R	33	R/G	8	G/R		
	5	65		34	R/BR	9	BR/R	35	R/S	10	S/R		
	6	66		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
	7	67		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK		
	8	68		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
	9	69		42	Y/O	17	O/Y	43	Y/G	18	G/Y		
	10	70		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
9391 (8)	71	71	ZONE # (G8) J12 34-R/BR		46	V/BL	21	BL/V	47	V/O	22	O/V	J8
	2	72		48	V/G	23	G/V	49	V/BR	24	BR/V		
	3	73		26	W/BL	1	BL/W	27	W/O	2	O/W		
	4	74		28	W/G	3	G/W	29	W/BR	4	BR/W		
	5	75		30	W/S	5	S/W	31	R/BL	6	BL/R		
	6	76		32	R/O	7	O/R	33	R/G	8	G/R		
	7	77		34	R/BR	9	BR/R	35	R/S	10	S/R		
	8	78		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
	9	79		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK		
	10	80		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
9391 (9)	81	81	ZONE # (G9) J12 35-R/S		42	Y/O	17	O/Y	43	Y/G	18	G/Y	J9
	2	82		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
	3	83		46	V/BL	21	BL/V	47	V/O	22	O/V		
	4	84		48	V/G	23	G/V	49	V/BR	24	BR/V		
	5	85		26	W/BL	1	BL/W	27	W/O	2	O/W		
	6	86		28	W/G	3	G/W	29	W/BR	4	BR/W		
	7	87		30	W/S	5	S/W	31	R/BL	6	BL/R		
	8	88		32	R/O	7	O/R	33	R/G	8	G/R		
	9	89		34	R/BR	9	BR/R	35	R/S	10	S/R		
	10	90		36	BK/BL	11	BL/BK	37	BK/O	12	O/BK		
9391 (10)	91	91	ZONE # (G10) J12 36-BK/BL		38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	J9
	2	92		40	BK/S	15	S/BK	41	Y/BL	16	BL/Y		
	3	93		42	Y/O	17	O/Y	43	Y/G	18	G/Y		
	4	94		44	Y/BR	19	BR/Y	45	Y/S	20	S/Y		
	5	95		46	V/BL	21	BL/V	47	V/O	22	O/V		
	6	96		48	V/G	23	G/V	49	V/BR	24	BR/V		
	7	97		26	W/BL	1	BL/W	27	W/O	2	O/W		
	8	98		28	W/G	3	G/W	29	W/BR	4	BR/W		
	9	99		30	W/S	5	S/W	31	R/BL	6	BL/R		
	10	100		32	R/O	7	O/R	33	R/G	8	G/R		

NOTE: REMAINING CABLE PAIRS ARE SPARE.

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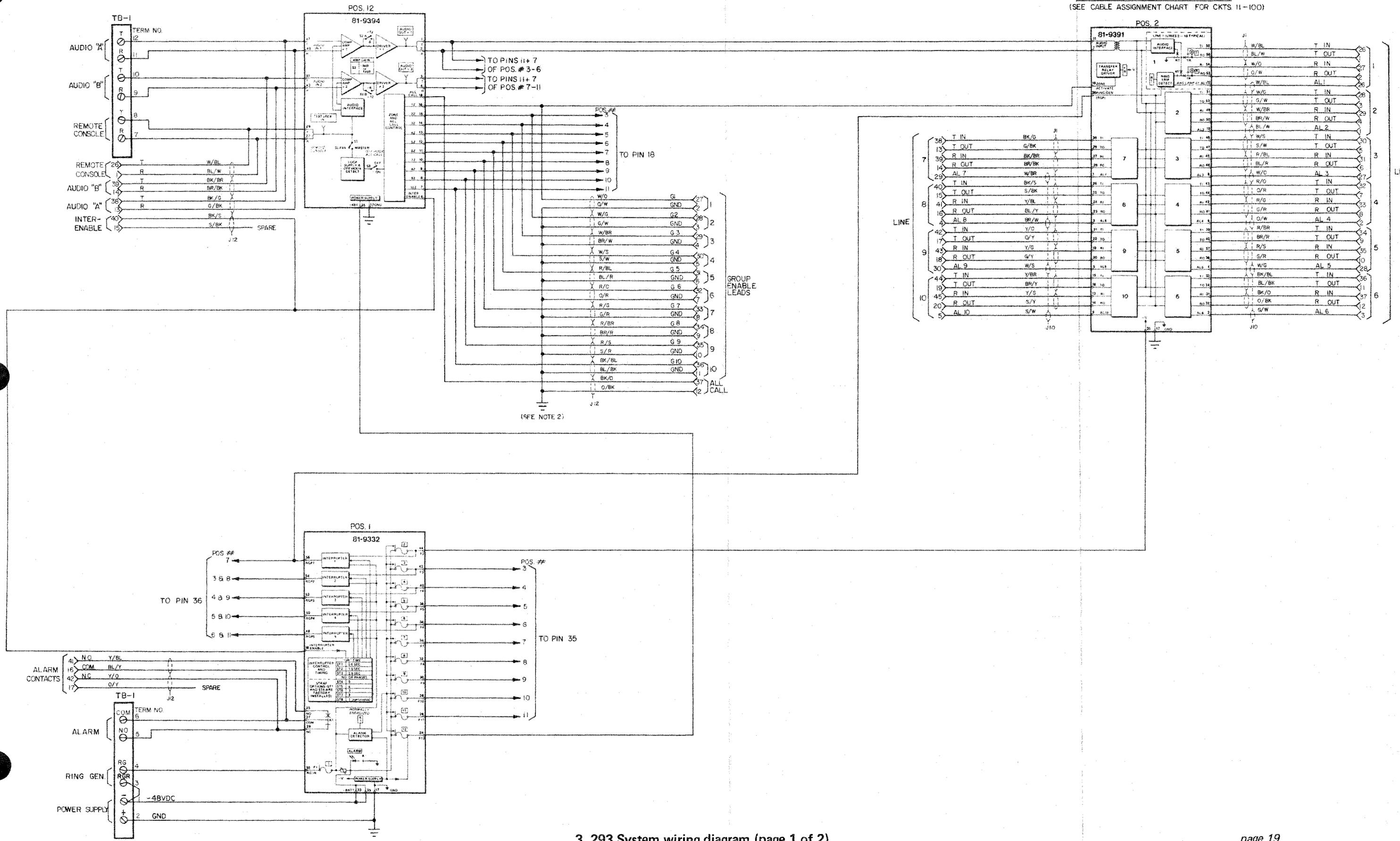
EQUIPMENT REFERENCE NUMBERS			CUSTOMER SUPPLIED INFORMATION		NETWORK		STATION		NETWORK		STATION		USOC RJ71C
MODULE	MODULE CIRCUIT NUMBER	SHELF LINE NUMBER	ZONE (G NUMBER)	TELEPHONE EXTENSION	TIP IN PIN	TIP IN COLOR	TIP OUT PIN	TIP OUT COLOR	RING IN PIN	RING IN COLOR	RING OUT PIN	RING OUT COLOR	JACK
9391 (1)	1	1	ZONE # 1 (G1) J12	301	26	W/BL	1	BL/W	27	W/O	2	O/W	J1
	2	2		302	28	W/G	3	G/W	29	W/BR	4	BR/W	
	3	3		303	30	W/S	5	S/W	31	R/BL	6	BL/R	
	4	4		304	32	R/O	7	O/R	33	R/G	8	G/R	
	5	5		305	34	R/BR	9	BR/R	35	R/S	10	S/R	
	6	6		306	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
	7	7		307	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
	8	8		308	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
	9	9		Future	42	Y/O	17	O/Y	43	Y/G	18	G/Y	
	10	10		Future	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
9391 (2)	1	11	ZONE # 2 (G2) J12	001	46	V/BL	21	BL/V	47	V/O	22	O/V	J2
	2	12		002	48	V/G	23	G/V	49	V/BR	24	BR/V	
	3	13		003	26	W/BL	1	BL/W	27	W/O	2	O/W	
	4	14		004	28	W/G	3	G/W	29	W/BR	4	BR/W	
	5	15		005	30	W/S	5	S/W	31	R/BL	6	BL/R	
	6	16		006	32	R/O	7	O/R	33	R/G	8	G/R	
	7	17		007	34	R/BR	9	BR/R	35	R/S	10	S/R	
	8	18		008	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
	9	19		009	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
	10	20		010	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
9391 (3)	1	21	ZONE # 2 (G3) J12	011	42	Y/O	17	O/Y	43	Y/G	18	G/Y	J3
	2	22		012	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
	3	23		013	46	V/BL	21	BL/V	47	V/O	22	O/V	
	4	24		014	48	V/G	23	G/V	49	V/BR	24	BR/V	
	5	25		015	26	W/BL	1	BL/W	27	W/O	2	O/W	
	6	26		016	28	W/G	3	G/W	29	W/BR	4	BR/W	
	7	27		017	30	W/S	5	S/W	31	R/BL	6	BL/R	
	8	28		018	32	R/O	7	O/R	33	R/G	8	G/R	
	9	29		019	34	R/BR	9	BR/R	35	R/S	10	S/R	
	10	30		020	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
9391 (4)	1	31	ZONE # 2 (G4) J12	021	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	J4
	2	32		022	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
	3	33		023	42	Y/O	17	O/Y	43	Y/G	18	G/Y	
	4	34		024	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
	5	35		025	46	V/BL	21	BL/V	47	V/O	22	O/V	
	6	36		026	48	V/G	23	G/V	49	V/BR	24	BR/V	
	7	37		027	26	W/BL	1	BL/W	27	W/O	2	O/W	
	8	38		028	28	W/G	3	G/W	29	W/BR	4	BR/W	
	9	39		029	30	W/S	5	S/W	31	R/BL	6	BL/R	
	10	40		030	32	R/O	7	O/R	33	R/G	8	G/R	
9391 (5)	1	41	ZONE # 2 (G5) J12	031	34	R/BR	9	BR/R	35	R/S	10	S/R	J5
	2	42		032	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
	3	43		033	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
	4	44		034	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
	5	45		035	42	Y/O	17	O/Y	43	Y/G	18	G/Y	
	6	46		036	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
	7	47		037	46	V/BL	21	BL/V	47	V/O	22	O/V	
	8	48		038	48	V/G	23	G/V	49	V/BR	24	BR/V	
	9	49		039	26	W/BL	1	BL/W	27	W/O	2	O/W	
	10	50		040	28	W/G	3	G/W	29	W/BR	4	BR/W	
9391 (6)	1	51	ZONE # 2 (G6) J12	041	30	W/S	5	S/W	31	R/BL	6	BL/R	J6
	2	52		042	32	R/O	7	O/R	33	R/G	8	G/R	
	3	53		043	34	R/BR	9	BR/R	35	R/S	10	S/R	
	4	54		044	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
	5	55		045	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
	6	56		046	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
	7	57		047	42	Y/O	17	O/Y	43	Y/G	18	G/Y	
	8	58		Future	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
	9	59		Future	46	V/BL	21	BL/V	47	V/O	22	O/V	
	10	60		Future	48	V/G	23	G/V	49	V/BR	24	BR/V	
9391 (7)	1	61	ZONE # 3 (G7) J12	100	26	W/BL	1	BL/W	27	W/O	2	O/W	J7
	2	62		101	28	W/G	3	G/W	29	W/BR	4	BR/W	
	3	63		102	30	W/S	5	S/W	31	R/BL	6	BL/R	
	4	64		103	32	R/O	7	O/R	33	R/G	8	G/R	
	5	65		104	34	R/BR	9	BR/R	35	R/S	10	S/R	
	6	66		105	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
	7	67		106	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
	8	68		107	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
	9	69		108	42	Y/O	17	O/Y	43	Y/G	18	G/Y	
	10	70		109	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
9391 (8)	1	71	ZONE # 3 (G8) J12	110	46	V/BL	21	BL/V	47	V/O	22	O/V	J8
	2	72		111	48	V/G	23	G/V	49	V/BR	24	BR/V	
	3	73		112	26	W/BL	1	BL/W	27	W/O	2	O/W	
	4	74		113	28	W/G	3	G/W	29	W/BR	4	BR/W	
	5	75		114	30	W/S	5	S/W	31	R/BL	6	BL/R	
	6	76		115	32	R/O	7	O/R	33	R/G	8	G/R	
	7	77		116	34	R/BR	9	BR/R	35	R/S	10	S/R	
	8	78		117	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
	9	79		118	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
	10	80		119	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
9391 (9)	1	81	ZONE # 3 (G9) J12	120	42	Y/O	17	O/Y	43	Y/G	18	G/Y	J9
	2	82		121	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
	3	83		122	46	V/BL	21	BL/V	47	V/O	22	O/V	
	4	84		123	48	V/G	23	G/V	49	V/BR	24	BR/V	
	5	85		124	26	W/BL	1	BL/W	27	W/O	2	O/W	
	6	86		125	28	W/G	3	G/W	29	W/BR	4	BR/W	
	7	87		126	30	W/S	5	S/W	31	R/BL	6	BL/R	
	8	88		127	32	R/O	7	O/R	33	R/G	8	G/R	
	9	89		128	34	R/BR	9	BR/R	35	R/S	10	S/R	
	10	90		129	36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
9391 (10)	1	91	ZONE # 3 (G10) J12	130	38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	J9
	2	92		131	40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
	3	93		132	42	Y/O	17	O/Y	43	Y/G	18	G/Y	
	4	94		133	44	Y/BR	19	BR/Y	45	Y/S	20	S/Y	
	5	95		134	46	V/BL	21	BL/V	47	V/O	22	O/V	
	6	96		135	48	V/G	23	G/V	49	V/BR	24	BR/V	
	7	97		136	26	W/BL	1	BL/W	27	W/O	2	O/W	
	8	98		137	28	W/G	3	G/W	29	W/BR	4	BR/W	
	9	99		138	30	W/S	5	S/W	31	R/BL	6	BL/R	
	10	100		139	32	R/O	7	O/R	33	R/G	8	G/R	

Note 1: Remaining cable pairs are spare.
Note 2: For an explanation of callouts, see table 4.

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EQUIPMENT REFERENCE NUMBERS	MODULE	MODULE CIRCUIT NUMBER	SHELF LINE NUMBER	ZONE (G NUMBER)	TELEPHONE EXTENSION	NETWORK		STATION		NETWORK		STATION		USOC RJ71C
						TIP IN	PIN COLOR	TIP OUT	COLOR	PIN COLOR	COLOR	PIN COLOR	COLOR	
9391 (11)		1	1	ZONE # 3	140	26	W/BL	1	BL/W	27	W/O	2	O/W	J1
						28	W/G	3	G/W	29	W/BR	4	BR/W	
						30	W/S	5	S/W	31	R/BL	6	BL/R	
						32	R/O	7	O/R	33	R/G	8	G/R	
						34	R/BR	9	BR/R	35	R/S	10	S/R	
						36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
						38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
						40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
						42	Y/O	17	O/Y	43	Y/G	18	G/Y	
						44	Y/BR	19	BR/Y	45	V/S	20	S/V	
9391 (12)		1	1	ZONE # 3	150	46	V/BL	21	BL/V	47	V/O	22	O/V	J2
						48	V/G	23	G/V	49	V/BR	24	BR/V	
						26	W/BL	1	BL/W	27	W/O	2	O/W	
						28	W/G	3	G/W	29	W/BR	4	BR/W	
						30	W/S	5	S/W	31	R/BL	6	BL/R	
						32	R/O	7	O/R	33	R/G	8	G/R	
						34	R/BR	9	BR/R	35	R/S	10	S/R	
						36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
						38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
						9391 (13)		2	2	ZONE # 3	160	42	Y/O	
44	Y/BR	19	BR/Y	45	V/S							20	S/V	
46	V/BL	21	BL/V	47	V/O							22	O/V	
48	V/G	23	G/V	49	V/BR							24	BR/V	
26	W/BL	1	BL/W	27	W/O							2	O/W	
28	W/G	3	G/W	29	W/BR							4	BR/W	
30	W/S	5	S/W	31	R/BL							6	BL/R	
32	R/O	7	O/R	33	R/G							8	G/R	
34	R/BR	9	BR/R	35	R/S							10	S/R	
9391 (4)		3	3	ZONE # 3	170							38	BK/G	13
						40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
						42	Y/O	17	O/Y	43	Y/G	18	G/Y	
						44	Y/BR	19	BR/Y	45	V/S	20	S/V	
						46	V/BL	21	BL/V	47	V/O	22	O/V	
						48	V/G	23	G/V	49	V/BR	24	BR/V	
						26	W/BL	1	BL/W	27	W/O	2	O/W	
						28	W/G	3	G/W	29	W/BR	4	BR/W	
						30	W/S	5	S/W	31	R/BL	6	BL/R	
						9391 (5)		4	4	ZONE # 3	180	34	R/BR	9
36	BK/BL	11	BL/BK	37	BK/O							12	O/BK	
38	BK/G	13	G/BK	39	BK/BR							14	BR/BK	
40	BK/S	15	S/BK	41	Y/BL							16	BL/Y	
42	Y/O	17	O/Y	43	Y/G							18	G/Y	
44	Y/BR	19	BR/Y	45	V/S							20	S/V	
46	V/BL	21	BL/V	47	V/O							22	O/V	
48	V/G	23	G/V	49	V/BR							24	BR/V	
26	W/BL	1	BL/W	27	W/O							2	O/W	
9391 (6)		5	5	ZONE # 3	190							30	W/S	5
						32	R/O	7	O/R	33	R/G	8	G/R	
						34	R/BR	9	BR/R	35	R/S	10	S/R	
						36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
						38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
						40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
						42	Y/O	17	O/Y	43	Y/G	18	G/Y	
						44	Y/BR	19	BR/Y	45	V/S	20	S/V	
						46	V/BL	21	BL/V	47	V/O	22	O/V	
						48	V/G	23	G/V	49	V/BR	24	BR/V	
9391 (7)		6	6	ZONE # 4	200	26	W/BL	1	BL/W	27	W/O	2	O/W	J7
						28	W/G	3	G/W	29	W/BR	4	BR/W	
						30	W/S	5	S/W	31	R/BL	6	BL/R	
						32	R/O	7	O/R	33	R/G	8	G/R	
						34	R/BR	9	BR/R	35	R/S	10	S/R	
						36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
						38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
						40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
						42	Y/O	17	O/Y	43	Y/G	18	G/Y	
						44	Y/BR	19	BR/Y	45	V/S	20	S/V	
9391 (8)		7	7	ZONE # 4	210	46	V/BL	21	BL/V	47	V/O	22	O/V	J8
						48	V/G	23	G/V	49	V/BR	24	BR/V	
						26	W/BL	1	BL/W	27	W/O	2	O/W	
						28	W/G	3	G/W	29	W/BR	4	BR/W	
						30	W/S	5	S/W	31	R/BL	6	BL/R	
						32	R/O	7	O/R	33	R/G	8	G/R	
						34	R/BR	9	BR/R	35	R/S	10	S/R	
						36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
						38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	
						40	BK/S	15	S/BK	41	Y/BL	16	BL/Y	
9391 (9)		8	8	ZONE # 4	220	42	Y/O	17	O/Y	43	Y/G	18	G/Y	J9
						44	Y/BR	19	BR/Y	45	V/S	20	S/V	
						46	V/BL	21	BL/V	47	V/O	22	O/V	
						48	V/G	23	G/V	49	V/BR	24	BR/V	
						26	W/BL	1	BL/W	27	W/O	2	O/W	
						28	W/G	3	G/W	29	W/BR	4	BR/W	
						30	W/S	5	S/W	31	R/BL	6	BL/R	
						32	R/O	7	O/R	33	R/G	8	G/R	
						34	R/BR	9	BR/R	35	R/S	10	S/R	
						36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
9391 (10)		9	9	ZONE # 4	230	44	Y/BR	19	BR/Y	45	V/S	20	S/V	J19
						46	V/BL	21	BL/V	47	V/O	22	O/V	
						48	V/G	23	G/V	49	V/BR	24	BR/V	
						26	W/BL	1	BL/W	27	W/O	2	O/W	
						28	W/G	3	G/W	29	W/BR	4	BR/W	
						30	W/S	5	S/W	31	R/BL	6	BL/R	
						32	R/O	7	O/R	33	R/G	8	G/R	
						34	R/BR	9	BR/R	35	R/S	10	S/R	
						36	BK/BL	11	BL/BK	37	BK/O	12	O/BK	
						38	BK/G	13	G/BK	39	BK/BR	14	BR/BK	

Notes: 1) Remaining cable pairs are spare.
2) The tenth 9391 module is not used in this application.



3. 293 System wiring diagram (page 1 of 2)

CABLE ASSIGNMENT CHART

			J1	J2	J3	J4	J5	J6	J7	J8	J9	J10	J11	J12	
PIN NO.	COLOR	DESIG.	LINE #									DESIGNATION	DESIGNATION	DESIGNATION	
26	W/BL	T IN										AL 1	AL 51	T	REMOTE
1	BL/W	T OUT										AL 2	AL 52	R	CONSOLE
27	W/O	R IN	1	13	25	37	49	61	73	85	97	AL 3	AL 53	G1	GROUP 1
2	O/W	R OUT										AL 4	AL 54	GND	1
28	W/G	T IN										AL 5	AL 55	G2	GROUP 2
3	G/W	T OUT	2	14	26	38	50	62	74	86	98	AL 6	AL 56	GND	2
29	W/BR	R IN										AL 7	AL 57	G3	GROUP 3
4	BR/W	R OUT										AL 8	AL 58	G4	GROUP 4
30	W/S	T IN										AL 9	AL 59	GND	4
5	S/W	T OUT	3	15	27	39	51	63	75	87	99	AL 10	AL 60	G5	GROUP 5
31	R/BL	R IN										AL 11	AL 61	GND	5
6	BL/R	R OUT										AL 12	AL 62	G6	GROUP 6
32	R/O	T IN										AL 13	AL 63	GND	6
7	O/R	T OUT	4	16	28	40	52	64	76	88	100	AL 14	AL 64	G7	GROUP 7
33	R/G	R IN										AL 15	AL 65	GND	7
8	G/R	R OUT										AL 16	AL 66	G8	GROUP 8
34	R/BR	T IN										AL 17	AL 67	GND	8
9	BR/R	T OUT	5	17	29	41	53	65	77	89	SPARE	AL 18	AL 68	G9	GROUP 9
35	R/S	R IN										AL 19	AL 69	GND	9
10	S/R	R OUT										AL 20	AL 70	G10	GROUP 10
36	BK/BL	T IN										AL 21	AL 71	GND	10
11	BL/BK	T OUT	6	18	30	42	54	66	78	90		AL 22	AL 72	ALC	ALL CALL
37	BK/O	R IN										AL 23	AL 73	GND	
12	O/BK	R OUT										AL 24	AL 74	T	AUDIO A
38	BK/G	T IN										AL 25	AL 75	R	A
13	G/BK	T OUT	7	19	31	43	55	67	79	91		AL 26	AL 76	T	AUDIO B
39	BK/BR	R IN										AL 27	AL 77	R	B
14	BR/BK	R OUT										AL 28	AL 78	IE	INTER ENABLE
40	BK/S	T IN										AL 29	AL 79	SPARE	SPARE
15	S/BK	T OUT	8	20	32	44	56	68	80	92		AL 30	AL 80	NO	ALARM
41	Y/BL	R IN										AL 31	AL 81	COM.	CONTACT
16	BL/Y	R OUT										AL 32	AL 82	NC.	
42	Y/O	T IN										AL 33	AL 83	SPARE	SPARE
17	O/Y	T OUT	9	21	33	45	57	69	81	93		AL 34	AL 84		
43	Y/G	R IN										AL 35	AL 85		
18	G/Y	R OUT										AL 36	AL 86		
44	Y/BR	T IN										AL 37	AL 87		
19	BR/Y	T OUT	10	22	34	46	58	70	82	94		AL 38	AL 88		
45	Y/S	R IN										AL 39	AL 89		
20	S/Y	R OUT										AL 40	AL 90		
46	V/BL	T IN										AL 41	AL 91		
21	BL/V	T OUT	11	23	35	47	59	71	83	95		AL 42	AL 92		
47	V/O	R IN										AL 43	AL 93		
22	O/V	R OUT										AL 44	AL 94		
48	V/G	T IN										AL 45	AL 95		
23	G/V	T OUT	12	24	36	48	60	72	84	96		AL 46	AL 96		
49	V/BR	R IN										AL 47	AL 97		
24	BR/V	R OUT										AL 48	AL 98		
50	V/S	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE	SPARE		AL 49	AL 99		
25	S/V	SPARE										AL 50	AL 100		

3. 293 System wiring diagram (page 2 of 2)



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