

TELLABS 9195
2 WIRE AUTOMATIC RINGDOWN
CONFERENCE REMOTE ANSWER TRUNK

1. GENERAL

1.01 This Section describes the 9195 2W ARD Conference Remote Answer Trunk manufactured by TELLABS Inc. and approved for use by Southwestern Bell Telephone Company.

1.02 This Section is issued to provide guidelines for the installation and maintenance of the TELLABS 9195 2W ARD Conference Remote Answer Trunk.

2. DESCRIPTION AND APPLICATION

2.01 The TELLABS 9195 2W ARD Conference Remote Answer Trunk is designed specifically for use in the TELLABS 291 Conference/Alerting System to provide remote access to the conference circuit via an unlisted telephone number. The 9195 permits emergency personnel away from their residential telephones, upon hearing the community siren, to dial an unpublished number and be connected to the conference circuit. (The 291 System is a multipoint ringdown telephone conference circuit designed primarily for use in emergency reporting and alerting, or business conference applications.) The 9195 module can be used with any ground start PBX or Class 5 central office switching system including SXS, X-Bar and ESS.

2.02 The 9195 module is only operational when a conference call is in progress, and the siren is activated. Therefore, the 9195 module must always be used in conjunction with the 9133 Long Interval Timer module, which provides the required siren control functions. When an emergency conference is not in effect and/or when the community fire siren is not activated, the 9195's associated line circuit is marked busy to all incoming calls.

2.03 Up to three 9195 modules can be connected to a line-hunting connector group to provide up to three emergency personnel with simultaneous access to an on-going conference. This arrangement permits an incoming call to be routed to the second or third 9195 module if the first and second 9195 modules are busy.

2.04 The 9195 is a Type 10 module. When installed in the 291 System, the 9195 is located in positions 3, 4 or 5 of the System's common equipment shelf. (If only one 9195 is used, locate it in position 3; if two, in positions 3 and 4.)

3. INSTALLATION

A INSPECTION

3.01 The 9195 module 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 module should be visually inspected again prior to installation.

B MOUNTING

3.02 The 9195 module mounts in positions 3, 4 or 5 (positions 4 and 5 optional) of the 12-position common equipment shelf of the 291 System. The module plugs physically and electrically into a 56-pin connector at the rear of the shelf.

C INSTALLER CONNECTIONS

3.03 Before making any connections to the mounting shelf, make sure that power is off and modules are removed. Modules should

be put into place only after they are properly optioned and after wiring is completed.

3.04 When the 9195 module is supplied as part of the 291 System, all intermodule wiring is factory wired and external wiring is simplified through the use of connectorized cables. Refer to the 291 System Practice for detailed information regarding wiring procedures, power connections and distributing frame terminations of the connectorized cables. Figure 1 lists the external connections to the 9195 module for reference purposes only.

CONNECT:	TO PIN:
R (ring lead)	49
T (tip lead).	47
C1 (same as CN)	13
CN (C lead input)	11
L (lamp).	45
TB (tip bus).	37
RB (ring bus)	39
G1 (gain control)	21
G2 (gain control common).	19
E (Type II E&M E lead).	55
SG (Type II E&M E lead return).	53
-BATT (-42.75 to -56Vdc).	35
GND (ground).	17

FIGURE 1

D OPTION SELECTION

3.05 Before plugging the 9195 module into place, six options must be selected via slide switches located on the component side of the printed circuit board. Switches are located on the printed circuit board as they appear in Figure 2.

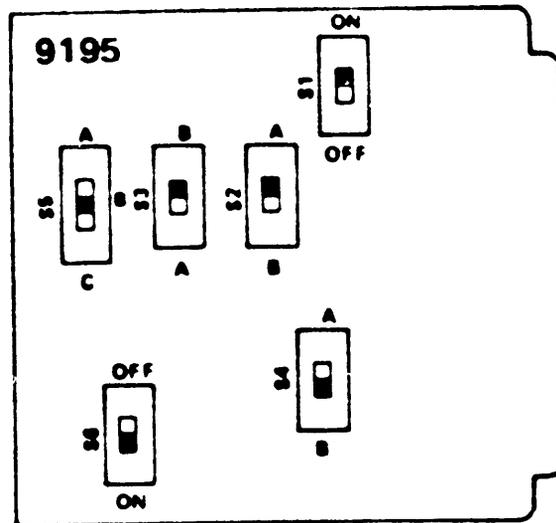


FIGURE 2

3.06 AH option switches (S1 through S6) must be set in various combinations, depending upon the type of central office switching system that the 9195 and the 291 System must interface. TABLE A lists required switch settings for all major switching systems.

4. CIRCUIT DESCRIPTION

4.01 This circuit description is designed to familiarize you with the 9195 module for engineering and application purposes only. Attempts to test or troubleshoot the 9195 internally are not recommended. Procedures for recommended testing and troubleshooting in the field are limited to those prescribed in Part 6. Refer to Block Diagram (Exhibit 1) as an aid in following the circuit description.

4.02 The 9195 module is designed to interface the 291 System with various ground-start central office or PBX line circuits. The

9195 is principally used as a remote answer trunk circuit that provides remote access to the conference via an unlisted telephone number. When the conference circuit is idle, the CO line circuit associated with the 9195 is marked busy by the RAC relay of the 9133 module. The 9195 can only be accessed when a conference is in progress and the siren has been activated.

4.03 The tip and ring leads of the 9195 module are connected to the tip and ring leads of a connector terminal with the line relay equipment removed. The sleeve lead from the connector terminal is routed via the 9133 module's RAC relay either to ground, to make it busy when the conference circuit is idle, or to the 9195, when RAC relay is operated (conference and siren operated). If the 291 System is equipped with two or three 9195 modules, the associated connector terminals should be arranged in a PBX trunk hunting group. This arrangement permits an incoming call to be routed to the second or third 9195 module if the first and second 9195 modules are busy.

4.04 Upon receipt of an incoming call, the CO applies a ground to the sleeve lead (CN lead, pin 11) of the 9195 module. This ground operates the SRA relay via the unoperated RMS relay contact. The operated SRA relay applies a resistance termination toward the transformer, preventing ringing and ring-trip transients from entering the voice path. The SRA relay also provides a resistance between the tip and ring leads and ground, to aid ring trip without providing answer supervision. This feature provides for a no-charge call.

4.05 The CN lead ground is routed via a diode to the RMS relay driver which operates the RMS relay after a delay inter-

val. The RMS relay, when operated, completes the path from the transformer secondary to the conference bus and also provides a closure between the gain control leads, G1 and G2. The operated RMS relay also disconnects the operate path of the SRA relay allowing it after its release delay, to drop, thus completing the audio path.

4.06 Ringing voltage applied to the tip and ring leads causes the back-to-back zener diodes in the ring trip circuitry to conduct, and thus, trip ringing.

4.07 At the conclusion of the call ground is removed from the CN lead, causing the RMS relay to restore, and the 9195 module to return to the idle state.

4.08 When the 9195 is used in central offices that do not supply a C or sleeve lead, the properly optioned 9195 module operates in the following manner. Ringing voltage is applied across the opto-isolator causing the RM relay to operate. This momentarily operates the SRA relay, which, through its slow release feature, blocks any residual ringing transients. The operated RM relay also causes the RMS relay to operate, which completes the circuit for loop current, trips ringing and seizes the line. The loop current holds the opto-isolator energized, thus locking the RM and RMS relays operated.

4.09 As a result of this locking feature, the only way the call can be terminated is by a momentary break in loop current. Thus, it is necessary that only ground start lines be utilized for remote access terminations with the 9195. On a ground start line the tip is opened, when the far end hangs up.

5. SPECIFICATIONS

- C-LEAD RESISTANCE
830 or 1200 ohms, switchable, with battery bias
- TIP-TO-GROUND AND RING-TO-GROUND RESISTANCE (SEIZED)
1200, 1400, or 2020 ohms, switchblade
- CO LINE CIRCUIT INTERFACE
ground start only
- INSERTION LOSS
0.5dB at 1000Hz
- FREQUENCY RESPONSE
+0.5dB, 300 to 3500Hz, re 1000Hz
- LONGITUDINAL BALANCE
60dB minimum, 200 to 4000Hz
- POWER REQUIREMENTS
input voltage: -42.75 to -56Vdc with positive ground
input current: 60mA maximum
- OPERATING ENVIRONMENT
-40° to +140°F (-40° to +60°C), humidity to 95% (no condensation)
- DIMENSIONS
5.58 inches (14.17cm) high
1.42 inches (3.61dm) wide
5.96 inches (15.14cm) deep
- WEIGHT
12 ounces (340 grams)
- MOUNTING
position 3, 4 and 5 (4 and 5 optional) of the 291 System's Common Equipment shelf.

6. TESTING AND TROUBLESHOOTING

6.01 The Testing Guide Checklist (Exhibit 1) may be used to assist in the installation, testing or troubleshooting of the 9195 2W ARD Conference Remote Answer Trunk Circuit. The Testing Checklist is intended as an aid in the localization of trouble to a specific module. If a module is suspected of being defective, a new module should be substituted and the test conducted again. If the substitute module operates correctly, the original module should be considered defective and returned to TELLABS for repair or replacement. It is strongly recommended that no internal (component level) testing or repairs be attempted on the 9195 module. Unauthorized testing or repairs may void the 9195 warranty.

6.02 If a 9195 is diagnosed as defective, the situation may be remedied by either replacement or repair and return. Because it is the more expedient method, the replacement procedure should be followed whenever time is a critical factor (e.g., service outages, etc.).

A REPLACEMENT

6.03 If a defective 9195 module is encountered on central office installed equipment Network Maintenance will arrange for a replacement by notifying TELLABS via telephone on 312-969-8800, letter (see below), or TWX on 910-695-3530. Notification should include all relevant information, including the 8X9195 part number (from which TELLABS can determine the issue of the module in question). Upon notification, TELLABS will ship a replacement module to the site or other designated address. If the warranty period of the defective module has not elapsed, the replacement module will be shipped at no charge. Package the defective module in the replacement module's

carton; sign the packing list included with the replacement module and enclose it with the defective module (this is your return authorization); affix the pre-addressed label, provided with the replacement module, to the carton being returned; and ship the equipment prepaid to TELLABS.

6.04 For defective customer premise installed units, Business I/M will return the defective module to their Supplies Attendent or Material Management coordinate for Repair and Return handling as covered in paragraph 6.05.

B REPAIR AND RETURN

6.05 Return the defective 9195 module, shipment prepaid, to:

TELLABS Incorporated
4951 Indiana Avenue
Lisle, Illinois 60532
Attn: Repair and Return Dept.

6.06 Enclose an explanation of the module's malfunction. TELLABS will repair the module and ship it back to you. If the module is in warranty, no invoice will be issued.

TABLE A

9195 SWITCH SETTINGS

SWITCH POSITIONS						
type of CO equipment	S1	S2	S3	S4	S5	S6
SXS	ON	A	B	B	A or B (note 1)	OFF (note 2)
No. 1 EAX, DMS- 10, or DMS- 100	OFF	A	A	B	X (note 3)	OFF
No. 2 EAX	OFF	A	A	A	X	OFF
X-Bar (or similar)	ON	A	A	B	C	OFF
ESS (or similar) (note 4)	OFF	B	B	A	X	OFF
NOTE 1: Use position A with connectors for 1000 ohm maximum loop. Use position B with connectors for 1200 ohm maximum loop.						
NOTE 2: Set switch S6 to the ON position only when central office requires resistance battery on the C-lead of less than 1200 ohms.						
NOTE 3: "X" denotes that the switch is not utilized in that application (its setting, therefore, is immaterial).						
NOTE 4: Use these switch settings for 2wire (no sleeve) ground start control only.						

EXHIBIT 1

9195 BLOCK DIAGRAM

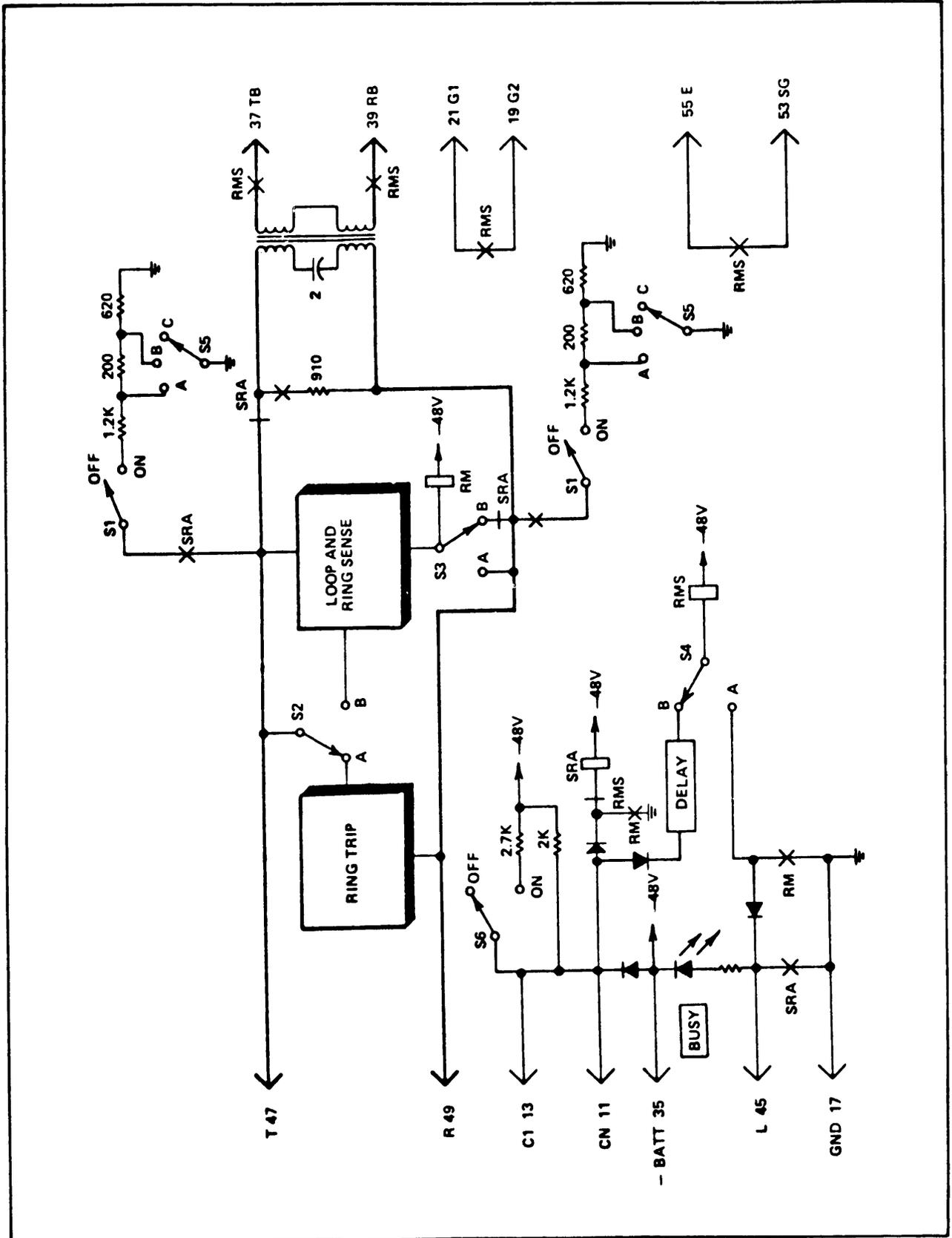


EXHIBIT 2

9195 TESTING GUIDE CHECKLIST

TROUBLE CONDITION	POSSIBLE CAUSE (IN ORDER OF LIKLIHOOD)
Busy signal received when unlisted number is dialed	<ol style="list-style-type: none"> 1) RAC relay on 9133 module not operated. 2) Fuse associated with 9133 module is blown. 3) Switching equipment connecting block miswired. 4) Defective 9195 module. Replace and retest.
No ring-trip	<ol style="list-style-type: none"> 1) 9195 not correctly optioned. 2) 9195 not in correct shelf position. (This is particularly possible if all 3 shelf positions are not required.) 3) Switching equipment connecting block miswired. 4) Defective 9195. Replace and retest.
Line will not release when distant end goes on-hook	<ol style="list-style-type: none"> 1) Line relay equipment not removed from connector terminal. 2) Ground-start CO line circuit not being used. (If loop start CO line circuit, use 9196 module.)
Line ring-tips, but no audio path is established	<ol style="list-style-type: none"> 1) Fuse associated with 9195 is blown. 2) 9195 not correctly optioned. 3) Defective 9195. Replace and retest.