TELLABS 9193
2 WIRE AUTOMATIC RINGDOWN
CONFERENCE ORIGINATE LINE CIRCUIT

1. GENERAL

1.01 This Section describes the 9193 2 Wire Automatic Ring Down (ARD) Conference Originate Line Circuit 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 9193 2 Wire ARD Conference Originate Line Circuit.

2. DESCRIPTION/APPLICATION

2.01 The TELLABS 9193 2Wire Automatic Ring Down (ARD) Conference Originate Line Circuit module is designed specifically for use in the TELLABS 291 Conference/ Alerting System, where it provides a means to initiate a conference call manually via a dedicated conference origination telephone (master station). The 291 System is a multistation ringdown telephone conference circuit designed primarily for use in emergency reporting and alerting or business conference applications. In the 291 System, the 9193 supplies talk battery to the master station and performs all switching functions to originate a conference when the master station goes offhook.

2.02 A conference call is initiated when the 9193 module generates a start pulse to all 9191 2 Wire ARD Conference Terminate Line Circuit modules in response to the master station going offhook. Ringback tone is then extended to the master station until the first conference station answers. The 9193 module also provides system locking ground to hold up the conference until the master station goes on hook, or via switch option, until the last conference station goes on hook.

2.03 Additional 9193 circuitry allows the master station to be equipped with a pushbutton (not supplied) to control, through activation of the 9133 Long Interval Timer Module, a community siren (in emergency reporting applications) if one is used.

2.04 The 9193 module may be used in conjunction with a 9192 2Wire ARD Conference Access Trunk Circuit module to permit the 291 System to operate in a combined manual and automatic conference arrangement. This combined manual and automatic conference origination capability is used in applications where the master station can be manned only on a part time basis. While the master station is manned, the manual conferencing mode is enabled, and when the master station is unmanned, the automatic conferencing mode is enabled. The conferencing modes are selected by a two-position switch (not supplied) that busies out the dedicated line to the 9192 (automatic conferencing) module when manual conferencing is desired.

2.05 The 9193 module is designed to operate on filtered 42.75 to 56Vdc with positive ground. Maximum input current is 60mA plus loop current.

2.06 The 9193 is a Type 10 module. When installed in the 291 System, the 9193 is located in position 1 (for manual conferencing) or position 2 (for combined manual and automatic conferencing) of the System's common equipment shelf.

3. INSTALLATION

A INSPECTION

3.01 The 9193 2W ARD Conference Originate Line Circuit 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 9193 module mounts in position 1 (manual conferencing only) or position 2 (combined manual and automatic conferencing) of the 12-position common equipment shelf of the 291 Conference/ Alerting 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 9193 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 cable. Refer to the 291 System Practice (Section 310-530-900SW) for detailed information regarding power connections, wiring procedures and distributing frame terminations of the connectorized cables. Figure 1 lists the external connections to the 9193 module for reference purposes only.

CONNECT:	TO PINS:
T (master station tip)	47
R (master station ring)	49
RBT (ringback tone input tip)	41
RBR (ringback tone input ring)	43
*TG (tone generator input)	42
ANS (answer bus)	23
HVR (lead from 9133 to hold up conference)	29
*R.M.S.T. (ring machine start lead)	28
*TS (tone generator start lead)	27
+L (conference bus)	37
-L (conference bus)	39
STR (start lead)	25
P (siren start lead)	31
LG (system locking ground)	15
*ST (start lead)	33
G1 (gain control lead)	21
G2 (gain control lead)	19
SD1 (common) (spare SDI relay contacts)	34
SD1 (normally open) (spare SDI relay contacts)	32
SD1 (normally closed) (spare SDI relay contacts)	36
-BATT (-42.75 to -56Vdc filtered input)	35
GND (ground)	17

*Not required with 291 System-possible future application.

FIGURE 1

D OPTIONS AND ALIGNMENT

3.05 The 9193 module contains one option switch, S1, which is located on the component side of the module's printed circuit board. Switch S1 determines whether a conference is to be terminated by the master station going on hook or whether a conference is to be held up as long as any conference station remains off hook (instead of the master station). Set S1 to the ON position if it is desired that the conference be held up by any station remaining offhook. Set S1 to the OFF position if it is desired that the conference drop when the master station goes on hook. After this switch is set, no further optioning or alignment of the module is required.

4. CIRCUIT DESCRIPTION

4.01 This circuit description is designed to familiarize you with the 9193 module for engineering and application purposes only. The 9193 Block Diagram (Exhibit 1) is provided to assist in following the circuit description. Attempts to test or troubleshoot the 9193 internally are not recommended. Procedures for recommended testing and troubleshooting in the field are limited to those prescribed in Part 6 of this Section.

4.02 The 9193 module provides the means for a dedicated master telephone station to originate a conference call by going off hook. The 9193 supplies loop current to the master station through the primary windings of its transformer to the tip and ring leads (pins 47 and 49) of the master station. When the master station goes off hook, the resultant voltage drop is sensed by the loop sensing circuit, which in turn operates the A and B relays.

4.03 Operation of the A and B relays provides a ground on the STR lead (pin 25) and on the 291 System's LG lead. A grounded STR lead causes all conference stations to ring. A ground supplied to the System's LG lead is required to hold up the conference until all conference stations go onhook and to activate the 9132 Ringing Timer module. Operation of the B relay also extends ringback tone to the tip lead (pin 47) and ring lead (pin 49) of the master station via the RBT lead (pin 41) and the RBR lead (pin 43), respectively.

4.04 As soon as the first conference station answers, a ground is applied to the ANS bus (pin 23), operating the ANS relay. When the ANS and B relays are operated, a path is provided to operate the RB relay, which then locks operated through its own contact via the operated A and B relays.

4.05 Operation of the normally closed contacts of the RB relay, in series with the ringback tone input leads (RBT and RBR), disconnects ringback tone from the master station. Ground is also removed from the STR lead, preventing rering of any station that answers and disconnects prior to termination of the conference. The operated ANS and A relays also complete the circuit through the secondary of the transformer, allowing audio access to the common amplifier bus, +L (pin 37) and L (pin 39). Other contacts on the ANS and A relays are connected to the gain control leads of the 9194 Conference Amplifier module and cause the gain to be increased to compensate for the bridging loss of the 9193 module.

4.06 If the master station is equipped with a siren control pushbutton, depressing the pushbutton activates the

9193's ADI relay, which places ground on the P lead (pin 31). Ground on the P lead causes the SDI relay on the 9133 module to operate and begin its timing cycle.

4.07 The 9193 module has one option switch, S1. When switch S1 is in the ON position, any conference station off-hook will maintain a ground on the LG lead and hold up the conference even though the 9193 module goes on-hook. This is accomplished by the ANS relay, which maintains the ground as long as it is operated. In this way, the master station can assign a conference station the duty of relaying information to the other stations entering the conference after the master station goes on-hook. When S1 is set to OFF, the conference is terminated when the master station goes on-hook.

5. SPECIFICATIONS

- LOOP RANGE
  2000 ohms maximum
  1486 ohms for 23mA loop current
- TRANSFORMER INPEDANCE RATIO
  1:1
- INSERTION LOSS
  0.5dB at 1000Hz
- FREQUENCY RESPONSE
  ±0.5dB, 300 to 3500Hz, rel1000Hz
- LONGITUDINAL BALANCE
  60dB minimum, 200 to 4000Hz
- POWER REQUIREMENTS
  input voltage: -42.75 to 56Vdc
  input current: 60mA maximum plus loop current
- OPERATING ENVIRONMENT
  -40o to +140oF (40o to +60oC), humidity to 95%, no condensation
- DIMENSIONS
  5.58 inches (14.17cm) high
  1.42 inches (3.61 cm) wide
  5.96 inches (15.14cm) deep
- WEIGHT
  18 ounces (560 grams)
- MOUNTING
  position 1 or 2 of 291 System's common equipment shelf or one position of TELLABS Type 10 Mounting Shelf

6. TESTING AND TROUBLESHOOTING

6.01 The Testing Guide Checklist (Exhibit 2) may be used to assist in the installation, testing or troubleshooting of the 9193 2 Wire ARD Conference Originate Line Circuit module. The Testing Guide 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 substitutes 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 9193 module. Unauthorized testing or repairs may void the 9193 warranty.

6.02 If a situation arises that is not covered in the Checklist, contact TELLABS Customer Service at (312) 969-8800 for further assistance.

6.03 If a 9193 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

6.04 If a defective module is encountered on central office installed equipment, Network Maintenance will arrange for a replacement by notifying TELLABS via telephone (312) 969-8800, letter (see below), or TWX (910) 695-3530. Notification should include all relevant information, including the 8X9193 part number (from which TELLABS can determine the issue of the module in question). Upon notification, TELLABS will ship a replacement module to the installation site or other designated location. If the warranty period of the defective module has not elapsed, the replacement module will be shipped at no charge. Package the defective 9193 in the replacement module's carton; sign the packing list included with the replacement module (this is your return authorization); affix the preaddressed label provided with the replacement module to the carton being returned; and ship the equipment prepaid to TELLABS.

6.05 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 6.06.

B. REPAIR AND RETURN

6.06 Return the defective 9193 module shipment prepaid, to:

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

6.07 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.

EXHIBIT 1

9193 BLOCK DIAGRAM

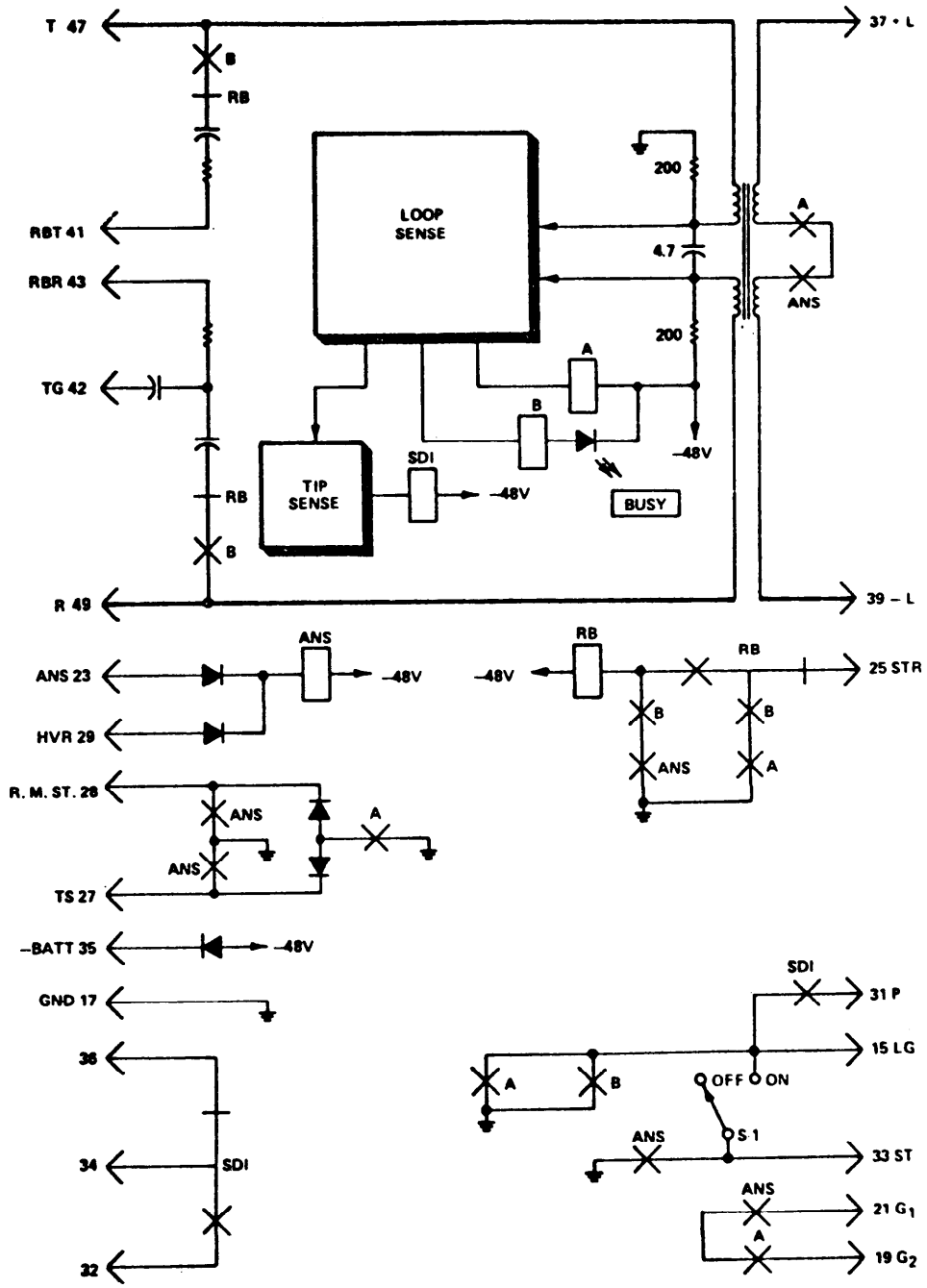

EXHIBIT 2

9193 TESTING GUIDE CHECKLIST

TROUBLE CONDITION	POSSIBLE CAUSE (IN ORDER OF LIKELIHOOD)
No talk battery at master station; conference stations do not ring in response to master station going off-hook.	(1) Fuse blown in common equipment shelf. (2) Loose battery and/or ground connections to common shelf. (3) Subscriber line block (6x20) miswired. Master station wired to wrong position. (4) Defective 9193. Replace and retest.
Talk battery present but ringback tone not received when master station first goes off-hook (before any conference station answers).	(1) Fuse blown in common equipment shelf. (2) Defective 9121 tone supply. (3) Permanent seizure on one of the conference station lines. (Check for lighted LED on one of the 9191's. Remove that 9191 and retest.) (4) Defective 9193. Replace and retest.
Ringback tone does not cease when a conference station answers. Master station unable to activate siren.	(1) Defective 9193. Replace and retest. (1) Pushbutton not connected to tip lead at master station. (2) Pushbutton has a defective ground. (3) Defective 9193. Replace and retest.