

TELLABS 9132
RINGING TIMER MODULE

1. GENERAL

1.01 This Section provides a description of the 9132 Ringing Timer Module manufactured by TELLABS Inc. which is approved for installation by Southwestern Bell Telephone Co.

1.02 This Section is issued to provide guidelines for the installation and maintenance of the TELLABS 9132 Ringing Timer Module.

2. GENERAL DESCRIPTION

2.01 The TELLABS 9132 Ringing Timer module provides adjustable ringing timeout to control the length of time a station will ring if not answered. The 9132 is designed specifically for use with the 9003 Ringing Interrupter module, which provides the 9003 with the 1-second-on, 1-second-off control signals required for distinctive station ringing, and the timing circuitry required for ringing timeout control. These modules together are used in applications where both distinctive station ringing and ringing timeout are required (e.g., in certain automatic ringdown applications such as TELLABS' 291 Conference/Alerting System.

2.02 The ringing timeout period is continuously adjustable over a range between 1.5 and 5 minutes. An optional two-position lever key switch (not supplied) may be installed to provide a short ringing timeout period that is

continuously adjustable over a range from 0 to 2 minutes. Within either of these ranges, the timeout period is adjusted via potentiometers located on the module's printed circuit board.

2.03 The 9132 module incorporates an internally regulated power supply that permits operation on -42.75 to -56Vdc filtered input. Current requirement is 50mA.

2.04 As a Type 10 module, the 9132 mounts in one position of a TELLABS Type 10 Mounting Shelf, versions of which are available for relay rack and KTU apparatus case installations. In relay rack applications, a maximum of 12 modules may be mounted across a 19-inch rack, and up to 14 modules may be mounted across a 23-inch rack. In either case, 6 inches of vertical rack space is used.

3. APPLICATION

3.01 The 9132 Ringing Timer module, which operates only in conjunction with an associated 9003 Ringing Interrupter Relay Module, is primarily used to control station ringing functions in Tellabs' 291 Conference/Alerting System. (The 291 System is a self-contained multi station ringdown conference circuit designed for emergency reporting and business conference applications. The 291 System provides simultaneous conference access to up to 30 local stations from a dedicated master telephone via a listed directory number.) In the 291 System, the 9132 module provides the associated 9003

Ringling Interrupter Relay module with the 1-second control signals required by the 9003 to switch the two groups of conference stations between the ringing source and battery or ground. This distinctive 1-second-on, 1-second-off ringing interruption rate makes a conference call readily discernible from a normal call.

3.02 The 9132 module also provides an adjustable timeout circuit to control the length of time each conference station will ring if not answered. An optional two-position lever-key switch (not supplied) may be installed to select either a short or long ringing timeout period. The short ringing timeout period may be used, for example, in instances where the duty fireman or dispatcher has determined that enough firemen have responded to make further station ringing unnecessary.

3.03 The long-interval timeout circuitry permits selection of a timeout period between 1.5 and 5 minutes in duration. Continuous adjustment within this range is afforded by a potentiometer located on the module's printed circuit board. If a lever-key switch is supplied to provide the necessary activation for an optional short timeout period, a second potentiometer affords continuous adjustment within a 0 to 2 minute range.

3.04 An option switch is provided on the 9132 to control the method in which a conference call is terminated. The conference can either be maintained until the last conference station goes onhook, or the conference can be forced idle after the 1.5 to 5-minute ringing timeout interval has expired. The latter option clears the conference in the event that a conference station is accidentally left off hook.

NOTE: This conference terminating feature can only be implemented when the 9132 module is used with an associated issue 2 9191A 2 Wire ARD Conference Terminate Line Circuit and with issue 2 system wiring.

3.05 Outside of the 291 System, the 9132 module can be used wherever station ringing control is required (e.g., in conjunction with automatic ringdown operation). In all applications, however, the 9132 module must be used with an associated 9003 Ringing Interrupter Relay Module.

3.06 In applications other than the 291 System, the 9132 mounts in one position of a TELLABS Type 10 Mounting Shelf. When used in the 291 System, the 9132 mounts in position 8 of the System's 12-position common equipment shelf. For specific information on use of the 9132 in the 291 System, refer to the TELLABS 291 Conference/Alerting System Practice (section 310-530-900SW).

4. INSTALLATION

A. INSPECTION

4.01 The 9132 Ringing Time 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

4.02 Each 9132 module mounts in one position of the TELLABS Type 10 Mounting Shelf.

When used in a 291 System, the 9132 mounts in position 8 of the 291 common equipment shelf. The module plugs physically and electrically into a 56-pin connector at the rear of the Type 10 Shelf.

C. INSTALLER CONNECTIONS

4.03 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 properly optioned and after wiring has been completed.

4.04 Figure 1 lists external connections to the 9132 module. All connections are made via wire wrap at the 56-pin connector at the rear of each module's mounting shelf position. Pin numbers are found on the body of the connector. (Wiring is not required in the prewired, connectorized 291 System.)

| CONNECT: | TO PIN: |
|---------------------------------------|------------|
| STO relay (normally open) | 2 and 12 |
| STO relay (common). | .4 and 8 |
| STO relay (normally closed) | 6 and 10 |
| R1 relay (normally open). | .46 and 36 |
| R1 relay (common) | .38 and 42 |
| R1 relay (normally closed). | .44 and 40 |
| R1 (normally open) spare. | 41 |
| LG1 | 55 |
| RO. | 53 |
| RC. | 49 |
| TG (short timeout key). | 23 |
| TK (short timeout key). | 11 |
| STR | 18 |
| LGC | 32 |
| -V. | .25 and 27 |
| LG. | .13 and 14 |
| -BATT | 35 |

FIGURE 1

D. OPTIONS AND ALIGNMENT

4.05 The 9132 module requires no alignment.

Optioning consists of setting either the long ringing timeout interval or the short ringing timeout interval and selecting the method in which a conference call is terminated. These adjustments are made via two potentiometers and a slide switch located on the module's printed circuit board as shown in Figure 2.

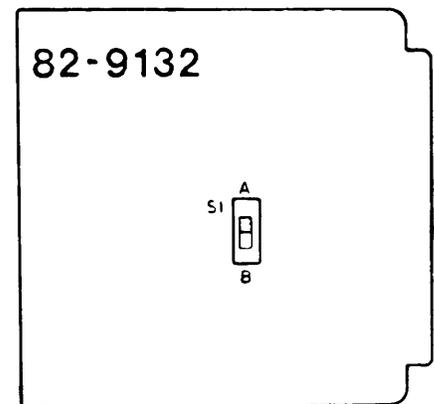


FIGURE 2

E. LONG RINGING TIMEOUT ADJUSTMENT

4.06 Potentiometer R2 affords continuous adjustment of the long-ringing timeout interval within a 1.5 to 5-minute range. Adjust potentiometer R2 as required to obtain the desired timeout interval within this range.

F. SHORT RINGING TIMEOUT ADJUSTMENT

4.07 If a lever key switch is supplied to provide for a short ringing timeout interval, potentiometer R1 affords continuous adjustment of this interval within a 0 to 2-minute range. Adjust potentiometer R1 as required to obtain the desired timeout interval within this range.

4.08 Switch S1 controls the method in which a conference call is terminated. Set switch S1 to the B position if the conference is to be maintained until the last station goes on hook. Set switch S1 to the A position if the conference is to be forced idle after the ringing timeout interval (as adjusted by potentiometer R1 or R2) has expired.

5. CIRCUIT DESCRIPTION

5.01 This circuit description is intended to familiarize you with the 9132 Ringing Timer module for engineering and application purposes only. Attempts to troubleshoot the 9132 module internally are not recommended. Trouble shooting procedures should be limited to those prescribed in Part 7 of this Section. Refer to the 9132 Block Diagram (Exhibit 1) as an aid in following the circuit description.

5.02 The 9132 module is designed to operate in conjunction with the 9003 module to control station ringing and ringing timeout. The distinctive 1-second-on/1-second-off ringing format is derived from an operational amplifier (op-amp) operating as a free-running multivibrator driving the R1 relay. Operation of the number 3 contact of R1, in series with the normally closed number 2 contact of the TO relay supplies the 1-second pulses to the RC lead.

5.03 The ringing timeout period is determined by another op-amp operating as a timer. The normal ringing timeout period is adjustable from 1.5 to 5 minutes via potentiometer R2. Provision is made for selection of a short ringing timeout period via an external key switch. This switch applies a closure between pins 23 and 11, which operates the STO relay. Operation of

the STO relay connects potentiometer R1 in parallel with potentiometer R2, which results in an adjustable short timeout period of from 0 to 2 minutes.

5.04 Once ringing is initiated, the first station to answer the conference call provides a ground to the ANS lead. This ground is used to reset the ringing timer via the one-shot circuit.

5.05 At the completion of the timeout period, the op-amp operates the TO relay. The TO relay is then held operated until ground is removed from the LG lead, which occurs upon termination of the conference call.

5.06 The 9132 module provides its own voltage regulation, which permits operation from any filtered input voltage between -42.75 and -56Vdc.

6. SPECIFICATIONS

- TIMING RANGE
normal: 1.5 to 5.0 minutes
short timeout (optional): 0 to 2 minutes
- INTERRUPTION FREQUENCY
approximately 25ipm, 50% break
- LOOP LIMIT OF OPTIONAL SHORT TIMEOUT KEY
10 kilohms maximum
- POWER REQUIREMENTS
input voltage: filtered -42.75 to -56Vdc
with positive ground
input current: 50mA
- OPERATING ENVIRONMENT
-40o to +140o (-40o to +60oC),
humidity
to 95%, no condensation

- DIMENSIONS
 - 5.58 inches (14.17cm) high
 - 1.42 inches (3.61cm) wide
 - 5.96 inches (15.14cm) deep
- WEIGHT
 - 10 ounces (283 grams)
- MOUNTING
 - one position of TELLABS Type 10 Mounting Shelf or position 8 of a 291 System common equipment shelf.

7. TESTING AND TROUBLESHOOTING

- 7.01 The Testing Guide Checklist (Exhibit 2) may be used to assist in the installation, testing or troubleshooting of the 9132 Ringing Timer 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 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 9132 module. Unauthorized testing or repairs may void the 9132's warranty.
- 7.02 If a situation arises that is not covered in the Checklist, contact TELLABS Customer Service at 312-969-8800 or your TELLABS Regional Office, for further assistance.
- 7.03 If a 9132 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
- 7.04 If a defective 9132 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 8X9132 part number (from which TELLABS can determine the issue of the 9132 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 9132 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 preaddressed label provided with the replacement module to the carton being returned; and ship the equipment prepaid to TELLABS.
- 7.05 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 7.06.

B. REPAIR AND RETURN

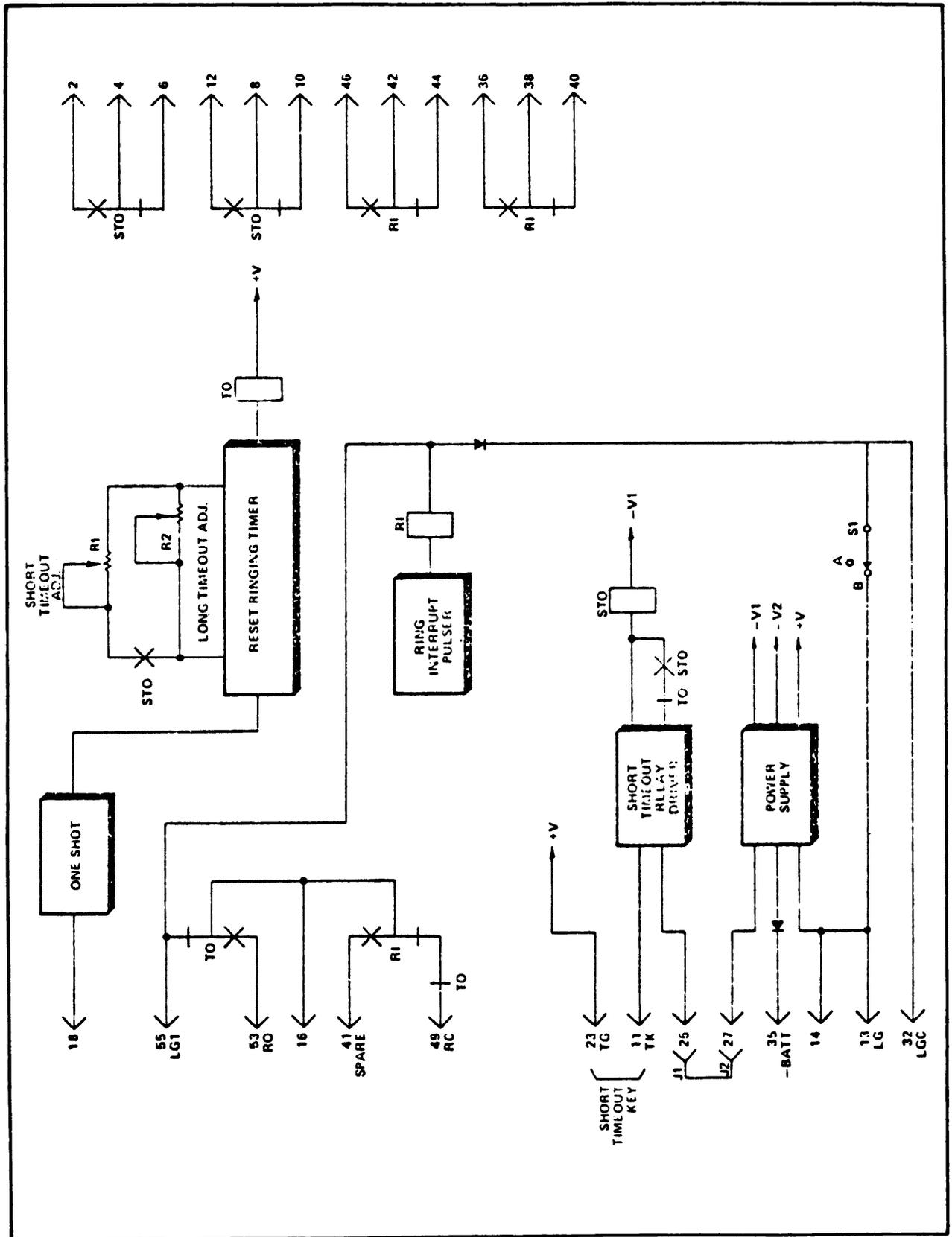
7.06 Return the defective 9132 module,
shipment prepaid, to:

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

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

EXHIBIT 1

9132 RINGING TIMER MODULE
BLOCK DIAGRAM



TESTING GUIDE CHECKLIST

| TEST | TEST PROCEDURE | NORMAL RESULT | IF NORMAL CONDITIONS ARE NOT MET, VERIFY: |
|--|--|---|--|
| operation of RI relay | Connect voltmeter (set to 50Vdc range) between pins 35 (negative) and 41 (positive). Apply a system ground (wire strap) to pin 13. | RI relay begins to pulse (1-second release). Voltmeter alternately reads 48Vdc and 0Vdc. | Battery (-48V) present on pin 35. If not, check for blown fuse in common equipment shelf. Also check battery supply to common equipment shelf. Replace 9132 and retest. |
| operation of TO relay | Connect voltmeter (set to 50Vdc range) between pins 35 (negative) and 55 (positive). Ground pin 13. Wait between 2 and 5 minutes (depending on setting of potentiometer R2). | Voltmeter indicates 48Vdc initially. TO relay operates. Voltage drops to 0Vdc. | Replace 9132 and retest. |
| operation of STO relay | Same as above. While TO relay is operated, apply a momentary short between pins 11 and 23. Time delay dependent on setting of potentiometer R1. | STO relay operates. TO relay operates after a shorter time interval than in previous test. | Replace 9132 and retest. |
| <p>NOTE: Because the connectorized backplane of each 291 System equipment shelf prevents access to the connector pins at the rear of most module positions, use of a TELLABS 9801 Card Extender is necessary for testing of this module in a 291 System.</p> | | | |