

TELLABS 9133
LONG INTERVAL TIMER

1. GENERAL

1.01 This Section describes the 9133 Long Interval Timer manufactured by TELLABS Inc. which is approved for installation by Southwestern Bell Telephone Company.

1.02 This Section is issued to provide guidelines for the installation and maintenance of the TELLABS 9133 Long Interval Timer.

2. DESCRIPTION AND APPLICATION

2.01 The TELLABS 9133 Long Interval Timer module provides the means to activate an external device or circuit for a predetermined period of time. The 9133 incorporates a manually activated relay with automatic release after a variable time interval. In response to an incoming ground, the 9133 provides a relay contact closure as the means of activating an external circuit. Release of the relay is under control of a digital timer. Primary application of the 9133 is in the TELLABS 291 Conference/Alerting System, a self-contained multistation ringdown conference system designed for emergency reporting and business conference applications.

2.02 The timing interval of the 9133 may be continuously adjusted from approximately 1 second to 26 minutes. Two miniature rotary switches and a potentiometer on the 9133's printed circuit board are used to select the timing interval.

2.03 In the 291 System, the 9133 module provides the means to activate a community siren or other alerting device for a predetermined period of time. The 9133 module also marks the System's one to three optional remote access lines busy while the conference circuit is idle to ensure that inadvertent calls (e.g., wrong numbers) receive a busy indication.

2.04 Outside of the 291 System, the 9133 is well suited to a variety of applications that require activation of a device or circuit for a predetermined period of time. For example, the 9133 module might be used in conjunction with a device designed to cut off calls in progress after a preset time interval has elapsed.

2.05 The 9133 module affords three different modes of operation: fixed time interval, fixed time interval with override, or manual. For convenience, let us assume that the 9133 is being used in the 291 System to activate a community siren. In the fixed time interval mode, the siren is activated when a nonlocking pushbutton is depressed and continues to sound until the end of the 9133's preset interval. Further operation of the pushbutton during the preset interval has no effect. In the fixed time interval with override mode, depressing the pushbutton activates the siren for the length of the preset interval, unless the pushbutton is depressed a second time to override the module's timer and prematurely cuts off the siren. In the manual mode, operation of the

9133's timer is completely defeated and the siren is activated only as long as the push-button is depressed. (In applications outside of the 291 System, the device or circuit under the 9133's control may be activated by a device other than a pushbutton, but the operation of the 9133 remains essentially the same.)

2.06 When the 9133 module is optioned for either the fixed time interval or the fixed time interval with override mode, an additional siren interrupter timing option can be implemented. This feature permits the siren to be continuously interrupted (on and off) during the entire time the siren is activated. Both the on-time and off-time intervals can be independently adjusted over a 1 to 10 second range.

2.07 A Type 10 module, the 9133 mounts in one position of a TELLABS Type 10 Mounting Shelf, versions of which are available for either relay rack or KTU apparatus case installation. In relay rack applications, a maximum of 12 modules may be mounted across a 19-inch rack, while up to 14 modules may be mounted across a 23-inch rack. In either case, 6 inches of vertical rack space is used.

2.08 When installed in the 291 System, the 9133 mounts in position 10 of the common equipment shelf. For specific information on use of the 9133 in the 291 System, refer to the TELLABS 291 Conference/Alerting System Practice (Section 310-530-900SW).

2.09 The 9133 module contains an internally regulated power supply that permits operation on -24 to -56Vdc filtered output. Current requirement is 85mA maximum.

3. INSTALLATION

A INSPECTION

3.01 The 9133 Long Interval Timer 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 9133 module mounts in one position of a TELLABS Type 10 Mounting Shelf or in position 10 of the 291 System's common equipment shelf. 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 Figure 1 lists external connections to the 9133 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.

CONNECT:	TO PIN:
HVR (high voltage relay)	29
P (siren activation lead).	31
LG (locking ground).	15
H1 (make-busy lead for first No. 2 EAX line)*.	12
H2 (make-busy lead for second No. 2 EAX line)*.	14
H3 (make-busy lead for third No. 2 EAX line)*.	21
C1 (C-lead for first CO line).	10
C2 (C-lead for second CO line)	2
C3 (C-lead for third CO line).	6
C1 1 (C-lead for first 9195 module).	9
C2 1 (C-lead for second 9195 module)	1
C3 1 (C-lead for third 9195 module).	5
-BATT (-24 to -56Vdc power source)	35
GND (ground)	17

*Used when 9133 interfaces a No. 2 EAX switching system.

FIGURE 1

3.05 When the 9133 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 Conference/Alerting System Practice for detailed information regarding wiring procedures and distributing frame terminations.

D OPTION SELECTION

3.06 Five option switches and three user-adjustable potentiometers condition the operation of the 9133. Locations of these controls are shown in Figure 2. After these controls are set, no further optioning or alignment of the module is required.

3.07 Rotary switches S1 and S2 and potentiometer R2 are used to select the timing interval. Set S1 and S2 as indicated in Table A to obtain the timing range within which the desired timing interval falls. Then adjust potentiometer R2, if necessary, to achieve the precise timing interval desired.

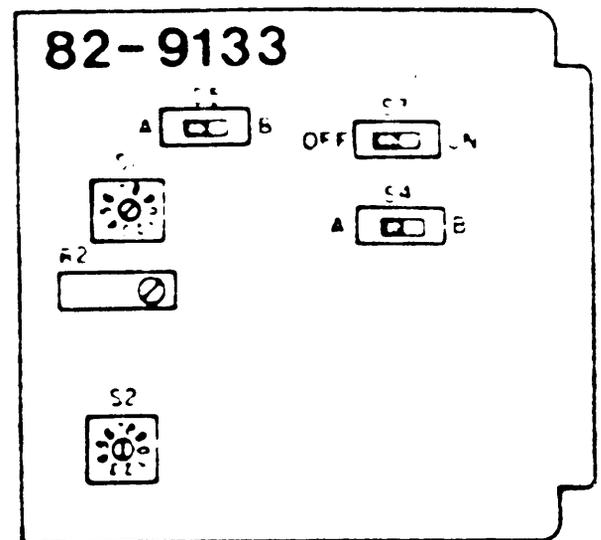


FIGURE 2

3.08 Option switches S3 and S4 are used to select the 9133's mode of operation. To select the fixed-time-interval mode, set S4 to the A position and S3 to the OFF position. To select the fixed time interval with override mode, set S4 to the A position and S3 to the ON position. To select manual operation, set S4 to the B position. Please note that setting S4 to the B position defeats the operation of S1, S2, S3 and S5.

3.09 Option switch S5 is used to enable or disable the siren interrupter circuitry. Set switch S5 to the A position if the siren is to operate continuously during either the fixed time interval or fixed time interval

with override mode selected in paragraph 2.08. Set switch S5 to the B position if interrupted siren operation during the present timing interval is desired. With switch S5 set to the B position, adjust potentiometer R36 for the desired on-time interval and potentiometer R37 for the desired off-time interval. Both timing intervals can be continuously adjusted between 1 and 10 second range.

4. CIRCUIT DESCRIPTION

4.01 This circuit description is intended to familiarize you with the 9133 Long Interval Timer module for engineering and application purposes only. Attempts to troubleshoot the 9133 internally are not recommended. Troubleshooting procedures should be limited to those prescribed in section 6 of this Practice. Please refer to the 9133 Block Diagram (Exhibit 1) as an aid in following this circuit description.

4.02 The 9133 contains a slow-to-release relay SR with its release delay controlled by a digital timer. A P-lead (pin 31) ground momentarily operates relay SDI, applying a -15Vdc pulse to the start lead via the normally closed contact of relay SR. Relay SR then operates, and the digital timer starts. At the end of the present time interval, relay SR releases.

4.03 The timing interval is selected by two binary-coded option switches. Switch S1 controls the internal oscillator's period of oscillation, while switch S2 controls the counter portion of the internal oscillator and selects the particular number of oscillator cycles necessary to trigger the output. Thus, by selecting the frequency and number of cycles required, any time interval from approximately 1 second to 26 minutes can be obtained.

4.04 If option switch S3 is in the ON position, a second P-lead ground will cause relay SDI to apply a -15Vdc pulse, via the operated normally open contact of relay SR, to the reset lead of the timing circuit, thereby releasing relay SR before the end of the timing interval. With option switch S3 in the OFF position, no direct path exists between relay SDI and the reset lead of the timing circuit.

4.05 Switch S5 is used to select the method used to activate relay SR. When switch S5 is in position A, relay SR follows the output of the digital timer. When switch S5 is in position B the output of the digital timer is gated by the interrupter circuit. The on- and off-times of the interrupter are controlled by potentiometers R36 and R37, respectively.

4.06 When switch S4 is set to A, ground is supplied on the HVR lead (pin 29) whenever relay SR operates. When S4 is set to B, the HVR lead is held at ground only when relay SDI operates.

4.07 Relay RAC controls access to remote-access lines when the 9133 is used in the 291 System. The C leads (or H leads in EAX offices) for up to three remote-access lines are held at ground and marked busy unless relay SDI operates. When relay SDI operates, relay RAC operates and locks to the LG lead. Ground is removed from both the C and H leads, and the C leads are connected to their respective remote-access trunk modules.

5. SPECIFICATIONS

- OUTPUT
form-C relay contact closure
- TIMING INTERVAL
adjustable from approximately 1 second to 26 minutes
- TIMING CONSISTENCY AFTER ADJUSTMENT
+5%
- INTERRUPTER TIMING INTERVAL
on time: adjustable from 1 to 10 seconds
off time: adjustable from 1 to 10 seconds
- POWER REQUIREMENTS
input voltage: filtered -24 to -56Vdc with positive ground
input current: 85mA 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 (3.61cm) wide
5.96 inches (15.14cm) deep
- WEIGHT
10.5 ounces (298 grams)
- MOUNTING
position 10 of common equipment shelf of TELLABS 291 Conference/Alerting System, 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 9133 Single Digit Dial Decoder. 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 9133 module. Unauthorized testing or repairs may void the module's warranty.

6.02 If a 9133 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 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 8X9133 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 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 preaddressed 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 9133 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

9133 S1 AND S2 SWITCH POSITIONS

		SWITCH 1 POSITIONS																			
		0		1		2		3		4		5		6		7		8		9	
SWITCH 2 POSITIONS	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max
	9	3.05	2.03	2.88	1.92	2.71	1.81	2.54	1.70	2.37	1.56	2.20	1.47	2.03	1.36	1.87	1.24	1.70	1.13	1.53	1.02
8	6.20	4.06	5.76	3.84	5.42	3.62	5.08	3.40	4.74	3.12	4.40	2.94	4.06	2.72	3.74	2.48	3.40	2.26	3.06	2.03	2.03
7	12.21	8.12	11.52	7.68	10.84	7.24	10.16	6.80	9.48	6.24	8.80	5.88	8.12	5.44	7.48	4.96	6.80	4.52	6.12	4.07	4.07
6	24.42	16.24	23.04	15.36	21.68	14.48	20.32	13.60	18.96	12.48	17.60	11.76	16.24	10.88	14.96	9.92	13.60	9.04	12.24	8.14	8.14
5	48.84	32.48	46.08	30.72	43.36	28.96	40.64	27.20	37.92	24.96	35.20	23.52	32.48	21.76	29.92	19.84	27.20	18.08	24.48	16.28	16.28
4	1.38	1:05	1:32	1:01	1:27	57:92	1:21	54:40	1:16	49:92	1:10	47:04	1:05	43:52	59:84	39:68	54:40	36:16	48:96	32:56	32:56
3	3:15	2:10	3:04	2:03	2:53	1:56	2:42	1:49	2:32	1:40	2:21	1:34	2:10	1:27	2:00	1:19	1:49	1:12	1:38	1:05	1:05
2	6:31	4:20	6:09	4:06	5:47	3:52	5:25	3:38	5:03	3:20	4:42	3:08	4:20	2:54	3:59	2:38	3:38	2:25	3:16	2:10	2:10
1	13:01	8:40	12:17	8:12	11:34	7:43	10:50	7:15	10:06	6:39	9:23	6:16	8:40	5:48	7:59	5:17	7:15	4:49	6:32	4:20	4:20
0	26:02	17:20	24:35	16:23	23:08	15:27	21:41	14:30	20:13	13:14	18:46	12:33	17:19	11:36	15:57	10:35	14:30	9:39	13:03	8:41	8:41

NOTE 1: Adjustment of potentiometer R2 allows selection of time interval within the range indicated for each switch combination.

NOTE 2: Timing intervals shorter than 1 minute are given in seconds and hundredths of a second (e.g., 14.96). Intervals longer than 1 minute are given in minutes and seconds (e.g., 23:08).

EXHIBIT 2

TESTING GUIDE CHECKLIST

TEST	TEST PROCEDURE	NORMAL RESULT	IF NORMAL CONDITIONS ARE NOT MET, VERIFY:
Manual operation	<p>Connect a voltmeter (set to 50Vdc range) to pins 29 and 35 (positive lead of voltmeter to pin 29). Set S4 on the 9133 to the B position.</p> <p>Maintain above and strap pin 17 (ground) to pin 31.</p> <p>Remove strap from pin 31.</p>	<p>Voltmeter indicates 0Vdc.</p> <p>Voltmeter indicates 48Vdc.</p> <p>Voltmeter indicates 0Vdc.</p>	<p>HVR lead is not externally grounded. Replace associated 9193 and retest (291 applications only). Replace 9133 and retest.</p> <p>Fuse blown. -48Vdc on pin 35. Ground on pin 17. Replace 9133 and retest.</p> <p>Replace 9133 and retest.</p>
Fixed-time-interval operation	<p>Connect a voltmeter (set to 50Vdc range) to pins 29 and 35 (positive lead of voltmeter to pin 29). Set S4 to the A position and S3 to OFF. Set S1 to 0 and S2 to 8 (to obtain a 4 to 6-second time interval). Momentarily strap pin 17 (ground) to pin 31.</p>	<p>When ground is applied, volt meter indicates 48Vdc. At the end of the time interval, voltmeter indicates 0Vdc.</p>	<p>Replace 9133 and retest.</p>
Fixed-time-interval-with-override operation	<p>Connect a voltmeter (set to 50Vdc range) to pins 29 and 35 (positive lead of voltmeter to pin 29). Set S4 to the A position and S3 to ON. Momentarily strap pin 17 (ground) to pin 31. Momentarily ground pin 31 again before end of time interval. (Interval set as above test)</p>	<p>When ground is first applied, voltmeter indicates 48Vdc. When ground is applied a second time, voltmeter indicates 0Vdc.</p>	<p>Replace 9133 and retest.</p>

EXHIBIT 2 (Cont'd)

9133 TESTING GUIDE CHECKLIST

TEST	TEST PROCEDURE	NORMAL RESULT	IF NORMAL CONDITIONS ARE NOT MET, VERIFY:
Remote-access line lockout (291 System applications only)	<p>With System idle but power applied, connect a voltmeter (set to 50Vdc range) to pin 35 and successively to pins 12, 14, 21, 10, 2 and 6 (negative lead of voltmeter to pin 35).</p> <p>Connect ground to pin 15 and momentarily ground pin 31. Connect a voltmeter (set to 50Vdc range) to pin 35 and successively to pins 12, 14, 21, 10, 2, and 6 (negative lead of voltmeter to pin 35).</p> <p>Remove ground on pin 15.</p>	<p>Voltmeter indicates 48Vdc on each pin.</p> <p>Voltmeter indicates 0Vdc on each pin.</p> <p>Relay RAC releases.</p>	<p>Replace 9133 and retest.</p> <p>External grounds on C leads. Replace 9133 and retest.</p> <p>Replace 9133 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.