T tellabs
technical manual
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practice section 829133
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9133 Long Interval Timer Module

contents

1.   description and application

1.01   The Tellabs 9133 Long Interval Timer module (figure 1) 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 form-C 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.*

1.02   This practice section is revised to update the text portion of section 6.

1.03   The timing interval of the 9133 can 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.

1.04   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.

1.05   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.

1.06   The 9133 module provides 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
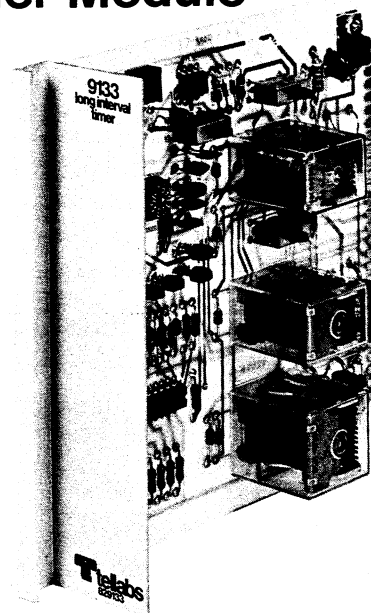
preset interval, unless the pushbutton is depressed a second time to override the module's timer and prematurely cut off the siren. In the *manual* mode, operation of the 9133's timer is completely defeated and the siren is activated only as long as the pushbutton is depressed. (In applications outside 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.)

1.07   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.

1.08   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 apparatus-case installation. In relay-rack applications, a maximum of 12 modules can be mounted across a 19-inch rack, while up to 14 modules can be mounted across a 23-inch rack. In either case, 6 inches of vertical rack space is used.

1.09   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.

1.10   The 9133 module contains an internally regulated power supply that permits operation on −24 to −56Vdc, filtered, positive-ground-referenced input. Maximum current requirement is 85mA.

2. installation

inspection

2.01 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.

mounting

2.02 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.

installer connections

2.03 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.

2.04 Table 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.

2.05 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.

option selection

2.06 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.

connect:	to pin:
HVR (high voltage relay)	29
P (siren activation lead)	31
LG (locking ground)	15
H_1 (make-busy lead for first No. 2 EAX line)*	12
H_2 (make-busy lead for second No. 2 EAX line)*	14
H_3 (make-busy lead for third No. 2 EAX line)*	21
C_1 (C lead for first CO line)	10
C_2 (C lead for second CO line)	2
C_3 (C lead for third CO line)	6
$C_1 1$ (C lead for first 9195 module)	9
$C_2 1$ (C lead for second 9195 module)	1
$C_3 1$ (C lead for third 9195 module)	5
SR N.O. (normally open contact of SR relay)	23
SR COM. (common contact of SR relay)	27
SR N.C. (normally closed contact of SR relay)	25
−BATT (−24 to −56Vdc, filtered, positive-ground-referenced input)	35
GND (ground)	17

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

table 1. External connections to 9133

2.07 Rotary switches S1 and S2 and potentiometer R2 are used to select the timing interval. Set S1 and S2 as indicated in table 2 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.
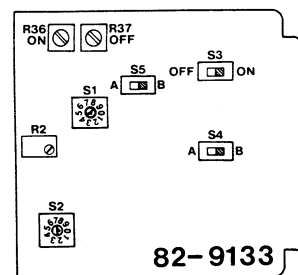

figure 2. Option locations

2.08 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.

		switch 1 positions																		
		0		**1**		**2**		**3**		**4**		**5**		**6**		**7**		**8**		**9**	
		max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min	max	min
switch 2 positions	**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	6.10	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
	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
	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
	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
	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
	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
	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
	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
	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

Notes:

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

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).

table 2. Switch settings for timing interval ranges

2.09 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 preset 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 within a 1 to 10 second range.

3. circuit description

3.01 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 (section 4) as an aid in following this circuit description.

3.02 The 9133's *SR* (slow-to-release) relay has its release delay controlled by the *digital timer*. Application of a P-lead (pin 31) ground momentarily operates the *SDI* relay, applying a −15Vdc pulse to the start lead via the normally closed contact of the *SR* relay. The *SR* relay then operates, and the *digital timer* starts. At the end of the preset time interval, the *SR* relay releases.

3.03 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.

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

3.05 Switch *S5* is used to select the method used to activate the *SR* relay. When switch *S5* is in position *A*, the *SR* relay 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.

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

3.07 The *RAC* relay 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 the *SDI* relay operates. When the *SDI* relay operates, the *RAC* relay 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.

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4. block diagram

page 3
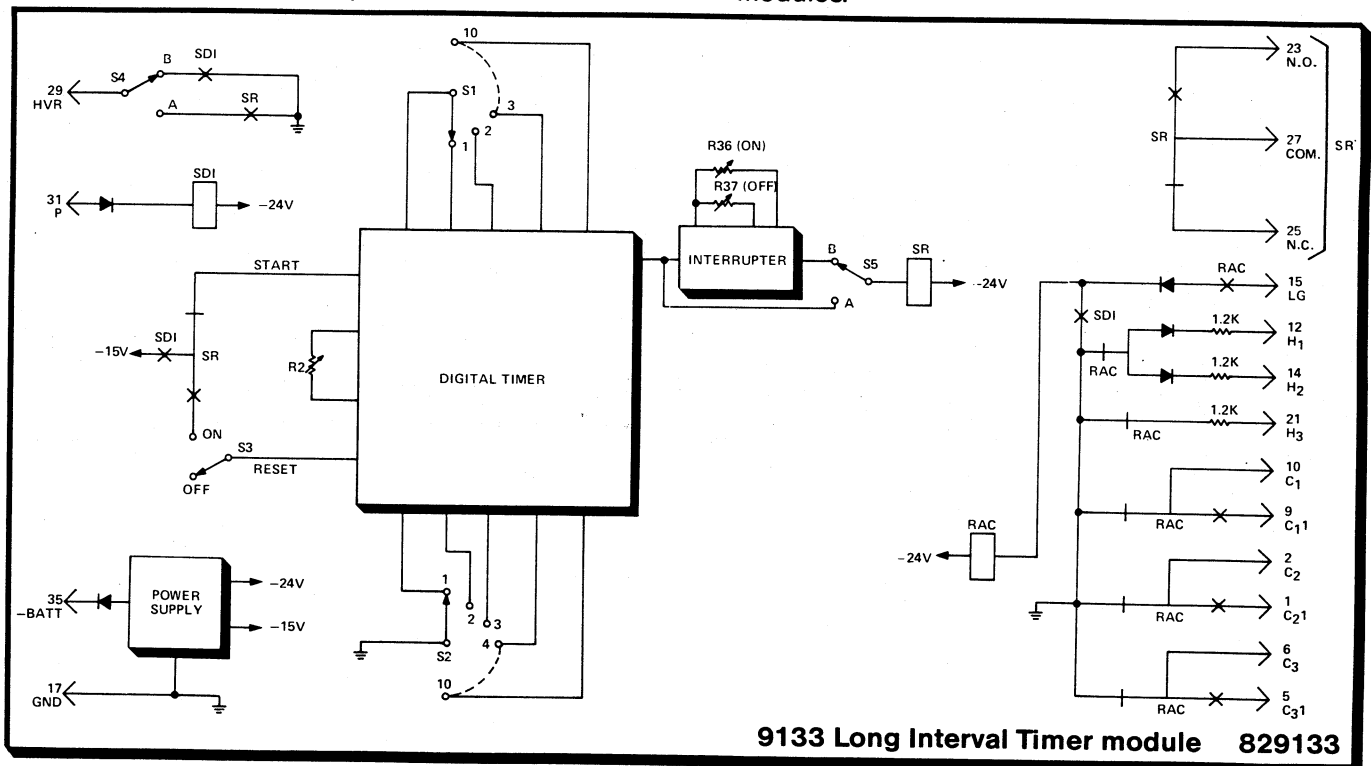
5. specifications

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: −24 to −56Vdc, filtered, positive-ground-referenced
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 Tellabs 291 Conference/Alerting System's common equipment shelf or relay rack or apparatus case via one position of Tellabs Type 10 Mounting Shelf

6. testing and troubleshooting

6.01 The **testing guide checklist** in this section may be used to assist in the installation, testing, or troubleshooting of the 9133 Long Internal Timer module. The checklist is intended as an aid in the localization of trouble to this specific equipment. If the equipment is suspected of being defective, substitute new equipment (if possible) and conduct the test again. If the substitute operates correctly, the original should be considered defective and returned to Tellabs for repair or replacement as directed below. We strongly recommend that no internal (component-level) testing or repairs be attempted on the equipment. Unauthorized testing or repairs may void its warranty. Also, if the equipment is part of a registered system, unauthorized repairs will result in noncompliance with Parts 15 and/or 68 of the FCC Rules and Regulations.

Note: *Although repair service always includes an attempt to remove any permanent markings made by customers on Tellabs equipment, the success of such attempts cannot be guaranteed. Therefore, if equipment must be marked* **defective** *or* **bad,** *we recommend that it be done on a piece of tape or on a removable stick-on label.*

technical assistance via telephone
6.02 If a situation arises that is not covered in the **testing guide checklist**, contact Tellabs Customer Service as follows:

USA customers: Contact your Tellabs Regional Office listed below.

region	telephone	office location
US Atlantic	(203)798-0506	Danbury, CT
US Capital	(703)478-0468	Washington, DC
US Central	(312)357-7400	Chicago, IL
US Southeast	(305)834-8311	Orlando, FL
US Southwest	(214)869-4114	Dallas, TX
US Western	(714)850-1300	Orange County, CA

Canadian customers: Contact our Canadian headquarters in Mississauga, Ontario. Telephone (416)624-0052.

International customers: Contact your Tellabs distributor.

selecting correct product service procedure
6.03 If equipment is diagnosed as defective or if in-service equipment needs repair, follow the **product return procedure** in paragraph 6.04 in all cases except those where a critical service outage exists (e.g., where a system or a critical circuit is down and no spares are available). In critical situations, or if you wish to return equipment for reasons other than repair, follow the **product replacement procedure** in paragraph 6.05.

product return procedure (for repair)
6.04 To return equipment for repair, first contact Tellabs Product Services (see addresses and numbers below) to obtain a Material Return Authorization (MRA). A service representative will request key data (your company's name and address, the equipment's model and issue numbers and warranty date code, and the purchase order number for the repair transaction). The service representative will then give you an MRA number that identifies your particular transaction. After you obtain the MRA number, send the equipment prepaid to Tellabs (attn: Product Services).

in the USA:
Tellabs, Inc.
4951 Indiana Avenue
Lisle, Illinois 60532
telephone (312) 969-8800

in Canada:
Tellabs Communications Canada, Ltd.
1200 Aerowood Drive, Unit 39
Mississauga, Ontario, Canada L4W 2S7
telephone (416) 624-0052

Enclose an explanation of the malfunction, your company's name and address, the name of a person to contact for further information, and the purchase order number for the transaction. Be sure to write the MRA number clearly on the outside of the carton being returned. Tellabs will inspect, repair, and retest the equipment so that it meets its original performance specifications and then ship the equipment back to you. If the equipment is in warranty, no invoice will be issued. Should you need to contact Tellabs regarding the status of a repair, call or write the Product Services department at our Lisle or Mississauga headquarters as directed above.

product replacement procedure
6.05 For critical service outages, Tellabs offers a

choice of two replacement services (if the product is in replacement stock) in lieu of the 15-day repair and return service described above. These are **overnight express service** (at extra cost) anywhere in the USA and **five-day expedited delivery** (at no extra cost) anywhere in the USA and Canada. To obtain replacement equipment via either of these services, contact your Tellabs Regional Office in the USA or our Canadian headquarters in Mississauga, Ontario, for details, costs (if applicable), and instructions. Telephone numbers are given in paragraph 6.02. A service representative will request key data (your company's name and address, the equipment's model and issue numbers and warranty date code, and the purchase order number for the replacement transaction). Tellabs will then ship the replacement to you in accordance with the replacement service you request. An invoice in the amount of the replacement's current price plus any applicable service charges will be issued after the replacement is shipped. When you receive the replacement, pack the equipment to be returned in the replacement's carton, sign and enclose the packing list, affix to the carton the preaddressed label provided, and ship the carton prepaid to Tellabs at our USA or Canadian headquarters. When we receive the defective equipment (within 30 days of our issuing the replacement), the invoice will be adjusted to reflect only service charges (if applicable). Please note that OEM, modified, and manufacture-discontinued equipment is not available via overnight express service.

testing guide checklist

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 or 9802 Card Extender or equivalent is necessary for testing of this module in a 291 System.*

test	test procedure	normal result	if normal conditions are not met, verify:
manual operation	Connect a voltmeter (set to appropriate Vdc range) to pins 29 and 35 (positive lead of voltmeter to pin 29). Set *S4* on the 9133 to the *B* position.	Voltmeter indicates 0Vdc □.	HVR lead is not externally grounded □. Replace associated 9193 and retest (291 applications only) □. Replace 9133 and retest □.
	Maintain above and strap pin 17 (ground) to pin 31.	Voltmeter indicates 48Vdc □.	Fuse blown □. −48Vdc on pin 35 □. Ground on pin 17 □. Replace 9133 and retest □.
	Remove strap from pin 31.	Voltmeter indicates 0Vdc □.	Replace 9133 and retest □.
fixed-time-interval operation	Connect a voltmeter (set to appropriate Vdc 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.	When ground is applied, voltmeter indicates 48Vdc. At the end of the time interval, voltmeter indicates 0Vdc □.	Replace 9133 and retest □.
fixed-time-interval-with-override operation	Connect a voltmeter (set to appropriate Vdc 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).	When ground is first applied, voltmeter indicates 48Vdc □. When ground is applied a second time, voltmeter indicates 0Vdc □.	Replace 9133 and retest □.
remote-access line lockout (291 System applications only)	With System idle but power applied, connect a voltmeter (set to appropriate Vdc range) to pin 35 and successively to pins 12, 14, 21, 10, 2, and 6 (negative lead of voltmeter to pin 35).	Voltmeter indicates 48Vdc on each pin □.	Replace 9133 and retest □.
	Connect ground to pin 15 and momentarily ground pin 31. Connect a voltmeter (set to appropriate Vdc range) to pin 35 and successively to pins 12, 14, 21, 10, 2, and 6 (negative lead of voltmeter to pin 35).	Voltmeter indicates 0Vdc on each pin □.	External grounds on C leads □. Replace 9133 and retest □.
	Remove ground on pin 15.	The RAC relay releases □.	Replace 9133 and retest □.