
“SLC”-96 SUBSCRIBER LOOP CARRIER SYSTEM
DIGITAL LINE PRESERVICE TESTS
DIGITAL SUBSCRIBER CARRIER SYSTEMS

This section provides procedures for performing preservice tests on a SLC-96 digital line from the central office terminal (COT) to the remote terminal (RT) using the ED7C351-30 LINE TEST ADAPTER to access the line at each location. When the LINE TEST ADAPTER is not available, Chart 3 provides procedures for performing preservice tests from the central office main distributing frame (CO MDF) to the last repeater or to the power looping repeater if the system is powered from the COT and RT. The methods for testing 238A, 239A, 208-, 209-, 217-, and 251-type repeaters prior to installing them in a digital line can be found in Section 363-201-225. Pair loss measurements and dc tests are provided in Section 640-527-220 when using the J98725AA Test Set or in Section 640-525-220 when using the 113A or 113B Test Set. The SLC-96 system is described in Section 363-202-100. Information on system number, cable pairs, RT location, and repeater locations can be found in the work print and SLC-96 System Facility Record.

This section is reissued to include the remote power feed terminal (RPFT) and the use of the new ED7C351-30 LINE TEST ADAPTER which plugs into the LINE INTERFACE UNIT (LIU) slots at the COT and RT to access the entire digital line being tested (Fig. 1). Since this is a general revision, arrows normally used to indicate changes have been omitted.

Charts 1 and 2 are the preferred methods of preservice testing the digital line since those procedures test the complete line and all wiring and cabling at the central office and remote terminal. Chart 3 only provides for testing from the main distributing frame (MDF) at the central office to the apparatus case closest to the remote terminal. The preservice tests in Chart 3 may be performed before the channel banks at either end of the system are installed. An alternate method of using Chart 3 is to access the digital line at the RT splice instead of at the last apparatus case. In order to access the digital line at the RT splice, the test equipment must be clipped onto the cable conductors. To connect directly to the cable conductors at the splice location closest to the RT channel bank, a Sierra 247A-1 cable splitting cord (Fig. 2) must be used with the Sierra 317B T1 Line and Repeater Test Set. To use the 417A-2 PCM Line and Repeater Test Set, a Sierra CO325600 adapter must be used along with the Sierra 247A-1 cable splitting cord. With this method of testing a power looping bidirectional repeater must be inserted in the 317B or 417A-2 test sets instead of using the repeater from the digital line as stated in Step 1 of Chart 3. All other steps in Chart 3 apply for testing from the central office MDF to the splice at the RT.

Prior to starting **terminal-to-terminal** installation tests of TOP 363-202-400 and 363-202-401, performance of all main and protection digital lines of each SLC-96 system should be checked.

When the media for a SLC-96 system is T1 digital lines (with standard or low power repeaters) terminating in T1 office repeater bays, the preservice tests are performed per Section 365-224-500 which is used for T1 trunk facilities.

If the digital lines are equipped with optional fault-locating filters, fault-locating tests will be performed in addition to the tests of this section. Fault-locating tests are performed using the procedures

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of Section 363-202-515 (passive filters) or 363-202-516 (active filters). Appropriate records of initial fault-locating tests should be retained for future reference.

CHART	PAGE
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CHART 1

LINE POWERED FROM COT ONLY USING LINE TEST ADAPTER (WITH OR WITHOUT REMOTE POWER FEED TERMINAL)

APPARATUS:

At the Remote Terminal

- 1 — 602B Terminating Unit (Fig. 3)
- 1 — ED7C351-30 Line Test Adapter (Fig. 4)

At the Central Office Terminal

- 1 — 107B Power Unit (Fig. 5)
- 1 — ED7C351-30 Line Test Adapter

Note: If equivalent test equipment is used, the manufacturer's operation manual must be used.

STEP	PROCEDURE				
<i>At the RT</i>					
1	Connect the 602B Terminating Unit to the LINE TEST ADAPTER as follows: <div style="text-align: center;"> <table style="border: none;"> <tr> <td style="padding-right: 10px;"><i>From</i> 602B SIDE 1 <i>to</i> LSI</td> <td rowspan="2" style="font-size: 2em; padding: 0 10px;">}</td> <td rowspan="2">ONE CORD</td> </tr> <tr> <td><i>From</i> 602B SIDE 2 <i>to</i> LSO</td> </tr> </table> </div>	<i>From</i> 602B SIDE 1 <i>to</i> LSI	}	ONE CORD	<i>From</i> 602B SIDE 2 <i>to</i> LSO
<i>From</i> 602B SIDE 1 <i>to</i> LSI	}	ONE CORD			
<i>From</i> 602B SIDE 2 <i>to</i> LSO					
2	Plug LINE TEST ADAPTER into LIU slot for digital line to be tested (Fig. 6).				
	Note: This loops the digital line back toward the COT. This is the only activity required at the RT to test the digital line.				

CHART 1 (Contd)

STEP	PROCEDURE
3	If the remote power feed terminal (RPFT) is being used, ensure the RPFT is turned up. Refer to Section 363-202-525 for turn-up procedures.
	<i>At the COT</i>
4	Verify all patch cords are removed from the 107B and the AC switch on the 107B is in the OFF position.
	<i>Danger:</i> The 107B must produce a high dc voltage (+135 and -135 volts to ground) to power the repeatered line under test. It is designed to prevent high voltages on the patch cords until connections have been made to both the 107B jacks and the adapter test jacks. The double patch cord supplied with the 107B must be used to make these connections. Use of substitute cords defeats the safety features and may prevent the 107B from powering the line under test.
5	Using the special patch cord furnished with the 107B, connect the 107B to the LINE TEST ADAPTER as follows:
	$\left. \begin{array}{l} \text{From 107B LSO to LSO} \\ \text{From 107B LSI to LSI} \end{array} \right\} \text{ONE CORD}$
6	Plug LINE TEST ADAPTER into LIU slot for digital line to be tested (Fig. 6).
7	Set the 107B LINE CURRENT switch to 60 mA position.
	<i>Danger:</i> The following steps place voltages of up to 300 volts dc on the cable pairs being tested. Verify that outside plant personnel are notified before continuing the tests.
8	Plug the 107B power cord into a convenient 117-Vac 60-Hz outlet, and operate the AC switch to the ON position.
	<i>Requirement:</i> The OUTPUT ON lamp lights.
9	Set the 107B meter switch to the V OUT position.
	<i>Requirement:</i> The meter indicates between 20 and 270 volts on the 0 to 320 volts scale.
10	Operate the meter switch to the -I position and note the meter indication.
	<i>Requirement:</i> The meter indicates between 50 and 70 mA.
	<i>Note:</i> No current reading indicates an open line or the digital line is connected to the wrong shelf.

CHART 1 (Contd)

STEP	PROCEDURE
11	<p>Operate the meter switch to the +I position and note the meter indication (lower scale).</p> <p>Requirement: The meter indication does not change more than one division (5 mA) from that of Step 10.</p> <p>Note: A difference in meter readings of more than 5 mA indicates a cable pair leakage to ground. Refer cable trouble to the proper work group.</p>
12	<p>Depress the TRANSMIT ERRORS button on the 107B.</p> <p>Requirement: The ERRORS lamp flashes repeatedly, indicating transmission around the loop line.</p> <p>Note: If this requirement is not met, check the test connections and test equipment, then refer to Section 363-202-515 or 363-202-516 for digital line trouble-locating information.</p>
13	<p>Insert a dummy plug into the 107B FL SIG jack.</p> <p>Requirement: The PULSES and ERRORS lamps remain extinguished while the dummy plug is in the FL SIG jack.</p>
14	<p>Remove the dummy plug from the FL SIG jack.</p> <p>Requirement: The PULSES lamp lights continuously, and the ERRORS lamp does not flash more than five times in any 30-second period.</p>
15	<p>Set the 107B POWER UNIT AC switch to the OFF position.</p>
16	<p>Unplug the power cord of the 107B from the 117-Vac outlet.</p>
17	<p>Repeat Steps 1 through 16 for all main and protection digital lines to be tested.</p>
18	<p>When testing is completed, remove all patch cord connections and notify RT personnel that testing is complete.</p>

CHART 2

**LINE POWERED FROM COT AND RT USING LINE TEST ADAPTER
(WITH OR WITHOUT REMOTE POWER FEED TERMINAL)**

APPARATUS:*At the Remote Terminal*

- 1 —107B Power Unit (Fig. 5)
- 1 —ED7C351-30 Line Test Adapter (Fig. 4)

At the Central Office Terminal

- 1 —107B Power Unit
- 1 —ED7C351-30 Line Test Adapter

Note: If equivalent test equipment is used, the manufacturer's operation manual must be used.

STEP	PROCEDURE				
<i>At the RT</i>					
1	Verify commercial ac power is available at the RT.				
2	Verify all patch cords are removed from the 107B and the AC switch on the 107B is in the OFF position.				
	<i>Danger:</i> <i>The 107B must produce a high dc voltage (+135 and -135 volts to ground) to power the repeatered line under test. It is designed to prevent high voltages on the patch cords until connections have been made to both the 107B jacks and the RT test jacks. The double patch cord supplied with the 107B must be used to make these connections. Use of substitute cords defeats the safety features and may prevent the 107B from powering the line under test.</i>				
3	Using the special patch cord furnished with the 107B, connect the 107B to the LINE TEST ADAPTER as follows:				
	<table style="margin-left: auto; margin-right: auto;"> <tr> <td style="padding-right: 10px;"><i>From 107B LSO to LSO</i></td> <td rowspan="2" style="font-size: 3em; padding: 0 10px;">}</td> <td rowspan="2" style="padding-left: 10px;">ONE CORD</td> </tr> <tr> <td><i>From 107B LSI to LSI</i></td> </tr> </table>	<i>From 107B LSO to LSO</i>	}	ONE CORD	<i>From 107B LSI to LSI</i>
<i>From 107B LSO to LSO</i>	}	ONE CORD			
<i>From 107B LSI to LSI</i>					
4	Plug the LINE TEST ADAPTER into the LIU slot for the digital line to be tested (Fig. 6).				
5	Complete the following patch on the 107B:				
	<i>From:</i> FL SIG <i>to</i> RECEIVE DS1				

CHART 2 (Contd)

STEP	PROCEDURE
6	Set the 107B LINE CURRENT switch to the 60 mA position. Danger: <i>The following steps place voltages of up to 300 volts dc on the cable pairs being tested. Verify that outside plant personnel are notified before continuing the tests.</i>
7	Plug the 107B power cord into a convenient 117-Vac 60-Hz outlet, and operate the AC switch to the ON position. Requirement: The OUTPUT ON lamp lights.
8	Set the 107B meter switch to the V OUT position. Requirement: The meter indicates between 20 and 270 volts on the 0 to 320 volts scale.
9	Set the meter switch to the -I position. Requirement: The meter indicates between 50 and 70 mA. Note: No current reading indicates an open line or the digital line is connected to the wrong shelf.
10	Set the meter switch to the +I position. Requirement: A meter change of not more than 5 mA from that of Step 9. Note: A difference in meter readings of more than 5 mA indicates a cable pair leakage to ground. Refer cable trouble to the proper work group.
11	The digital line under test is now looped back toward the COT. Advise CO personnel that the RT arrangements are complete.
12	If the remote power feed terminal (RPFT) is being used, ensure the RPFT terminal is turned up. Refer to Section 363-202-525 for turn-up procedures.
13	Verify all patch cords are removed from the 107B and the AC switch on the 107B is in the OFF position. Danger: <i>The 107B must produce a high dc voltage (+135 and -135 volts to ground) to power the repeatered line under test. It is designed to prevent high voltages on the patch cords until connections have been made to both the 107B jacks</i>

CHART 2 (Contd)

STEP	PROCEDURE
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and the adapter test jacks. The double patch cord supplied with the 107B must be used to make these connections. Use of substitute cords defeats the safety features and may prevent the 107B from powering the line under test.

- 14 Using the special patch cord furnished with the 107B, connect the 107B to the LINE TEST ADAPTER as follows:

$$\left. \begin{array}{l} \text{From 107B LSO to LSO} \\ \text{From 107B LSI to LSI} \end{array} \right\} \text{ONE CORD}$$

- 15 Plug the LINE TEST ADAPTER into the LIU slot for the digital line to be tested (Fig. 6).
 16 Set the 107B LINE CURRENT switch to the 60 mA position.

Danger: The following steps place voltages of up to 300 volts dc on the cable pairs being tested. Verify that outside plant personnel are notified before continuing the tests.

- 17 Plug the 107B power cord into a convenient 117-Vac 60-Hz outlet, and operate the AC switch to the ON position.

Requirement: The OUTPUT ON lamp lights.

- 18 Set the 107B meter switch to the V OUT position.

Requirement: The meter indicates between 20 and 270 volts on the 0 to 320 volts scale.

- 19 Operate the meter switch to the -I position and note the meter indication.

Requirement: The meter indicates between 50 and 70 mA.

Note: No current reading indicates an open line or the digital line is connected to the wrong shelf.

- 20 Operate the meter switch to the +I position and note the meter indication (lower scale).

Requirement: The meter indication does not change more than one division (5 mA) from that of Step 19.

Note: A difference in meter readings of more than 5 mA indicates a cable pair leakage to ground. Refer cable trouble to the proper work group.

- 21 Depress the TRANSMIT ERRORS button on the 107B.

CHART 2 (Contd)

STEP	PROCEDURE
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Requirement: The ERRORS lamp flashes repeatedly, indicating transmission around the looped line.

Note: If this requirement is not met, check the test connections and test equipment, then refer to Section 363-202-515 or 363-202-516 for digital line trouble-locating information.

22 Insert a dummy plug into the 107B FL SIG jack.

Requirement: The PULSES and ERRORS lamps remain extinguished while the dummy plug is in the FL SIG jack.

23 Remove the dummy plug from the FL SIG jack.

Requirement: The PULSES lamp lights continuously, and the ERRORS lamp does not flash more than five times in any 30-second period.

24 Set the 107B POWER UNIT AC switch to the OFF position.

25 Unplug the power cord of the 107B from the 117-Vac outlet.

26 Repeat Steps 2 through 25 for all main and protection digital lines to be tested.

27 When testing is complete, remove all patch cord connections and notify RT personnel that testing is complete.

CHART 3
TESTING WITHOUT LINE TEST ADAPTER

APPARATUS:*At the Last Repeater (or Power Looping Repeater)*

- 1 —Sierra 317B T1 Line and Repeater Test Set
- 1 —Sierra 247A-1 Cable Splitting Adapter (Optional)

or

- 1 —Sierra 417A-2 PCM Line and Repeater Test Set
- 1 —Sierra 247A-1 Cable Splitting Adapter (Optional)
- 1 —Sierra CO325600 Adapter (Optional)

At the COT MDF

- 1 —107B Power Unit (Fig. 5)
 - 1 —Cord, W6P, equipped with a safety grounding clip
 - 1 —310-Type Dummy Plug
 - 2 —MDF Test Cords, according to the type of frame protectors
-

FRAME TYPE	TEST CORD
444 Jack	P2CY
C50	P2DC
300	2P34A
302	W2GD
303	W2GM

STEP**PROCEDURE***At the Last Repeater (or Power Looping Repeater)*

- 1 Remove the repeater from the digital line to be tested and insert it into the 317B or 417A-2 repeater slot.
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CHART 3 (Contd)

STEP

PROCEDURE

Note 1: Verify that the proper adapter insert in the 317B or 417A-2 is being used for the type of repeater being tested.

Note 2: When using the Sierra 247A-1 cable splitting cord, the green lead connects to the tip side and the white lead connects to the ring side of output pair of the digital line. The red lead connects to the tip side and the black lead connects to the ring side of the input pair of the digital line.

- 2 Insert the probe from the 317B or 417A-2 into the repeater slot from which the repeater was removed in Step 1.

Note: Verify that the proper probe on the 317B or 417A-2 is being used for the type of repeater housing that you have.

- 3 Set the TERMINATION switch on the 317B or 417A-2 to the LOOP/FROG position and operate the POWER switch to ON.

Note: The digital line to be tested is now looped back toward the CO.

At Central Office MDF

- 4 Verify that all patch cords and power cords have been removed from the 107B and the 107B AC switch is in the OFF position.

Danger: *The 107B must produce a high dc voltage (+135 and -135 volts to ground) to power the repeatered line under test. It is designed to prevent high voltages on the patch cords until connections have been made to the 107B jacks and the safety grounding clip has been connected. The W6P patch cord must be used to make these connections. Use of substitute cords defeats the safety features and may prevent the 107B from powering the line under test.*

- 5 Complete the following patch/test cord connections in the order given (see Fig. 7).

CORD TYPE	FROM	TO
According to Frame Type	MDF Protector/Connector/Jack Side 1 of Digital Line Under Test	W6P Cord Side 1 (No safety grounding clip)
According to Frame Type	MDF Protector/Connector/Jack Side 2 of Digital Line Under Test	W6P Cord Side 2 (Attach safety grounding clip to adjacent framework ground)

CHART 3 (Contd)

STEP

PROCEDURE

Note 1: Side 2 of the W6P cord is equipped with a safety grounding clip which corresponds to the knurled side of the 474A plug on the other end of the cord.

Note 2: Verify that the connections are as given in Step 5 and Fig. 7; otherwise, incorrect readings will result.

- 6 After the above connections are complete and have been checked, insert the 474A plug end of the W6P cord into the 107B LSI/LSO jacks, noting that the knurled side of the 474A plug is connected to the LSI jack.

Danger: *The following steps place voltages of up to 300 volts dc on the cable pairs being tested. Verify that outside plant personnel are notified before connecting the 107B power supply to the line under test.*

- 7 Set the 107B LINE CURRENT switch to the 60 mA position.
- 8 Plug the 107B power cord into a convenient 117-Vac 60-Hz outlet; operate the meter switch to the V OUT position and place the AC switch to ON.

Requirement 1: The OUTPUT ON lamp lights.

Requirement 2: The meter indicates between 20 and 270 volts (0 to 320V scale).

- 9 Operate the meter switch to the -I position and note the meter indication.

Requirement: The meter indicates between 50 and 70 mA.

Note: No current reading indicates an open line.

- 10 Operate the meter switch to the +I position and note the meter indication (lower scale).

Requirement: The meter indication does not change more than one division (5 mA) from that of Step 9.

Note: A difference in meter readings of more than 5 mA indicates a cable pair leakage to ground. Refer cable trouble to the proper work group.

- 11 Depress the TRANSMIT ERRORS button on the 107B.

Requirement: The ERRORS lamp flashes repeatedly, indicating transmission around the looped line.

Note: If this requirement is not met, check the test connections and test equipment, then refer to Section 363-202-515 or 363-202-516 for digital line trouble-locating information.

CHART 3 (Contd)

STEP	PROCEDURE
12	Insert a dummy plug into the 107B FL SIG jack. Requirement: The PULSES and ERRORS lamps remain extinguished while the dummy plug is in the FL SIG jack.
13	Remove the dummy plug from the FL SIG jack. Requirement: The PULSES lamp lights continuously, and the ERRORS lamp does not flash more than five times in any 30-second period.
14	Set the 107B POWER UNIT AC switch to the OFF position.
15	Unplug the power cord of the 107B from the 117-Vac outlet.
16	Repeat Steps 1 through 15 for all main and protection digital lines to be tested.
17	When testing is completed, turn the 107B AC switch to the OFF position, and remove all connections at the MDF and at the last repeater location.

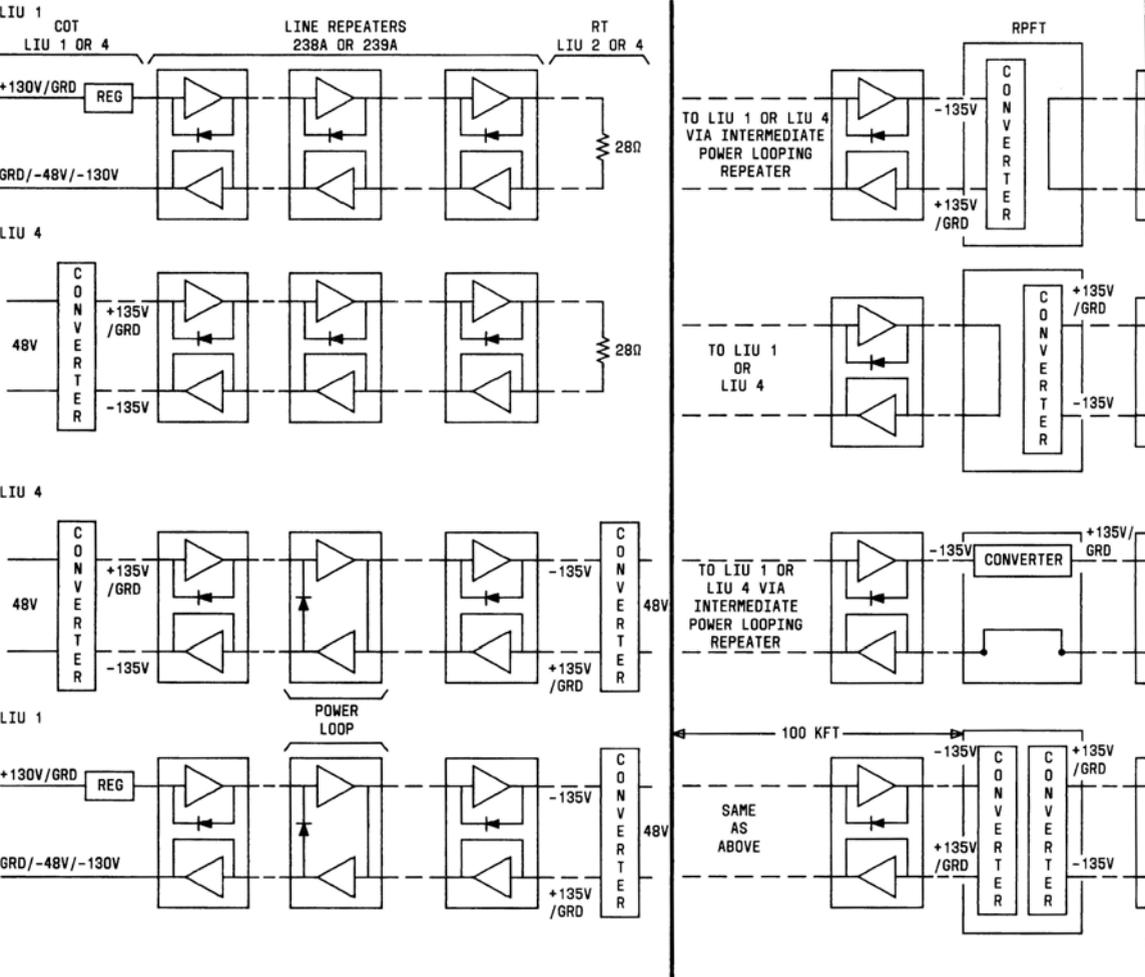


Fig. 1 — Typical SLC-96 Po

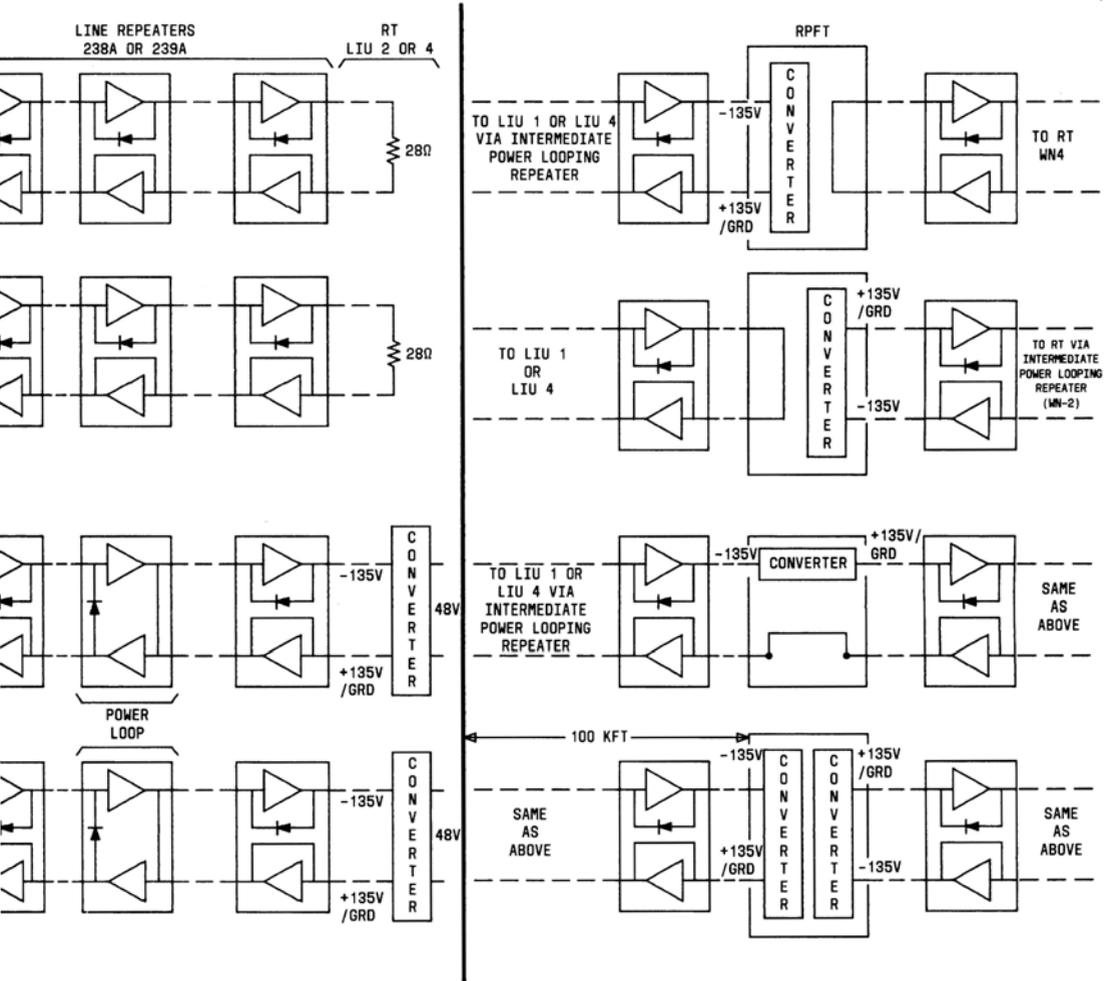


Fig. 1—Typical SLC-96 Powering Applications



Fig. 2—Sierra 247A-1 Cable Splitting Cord

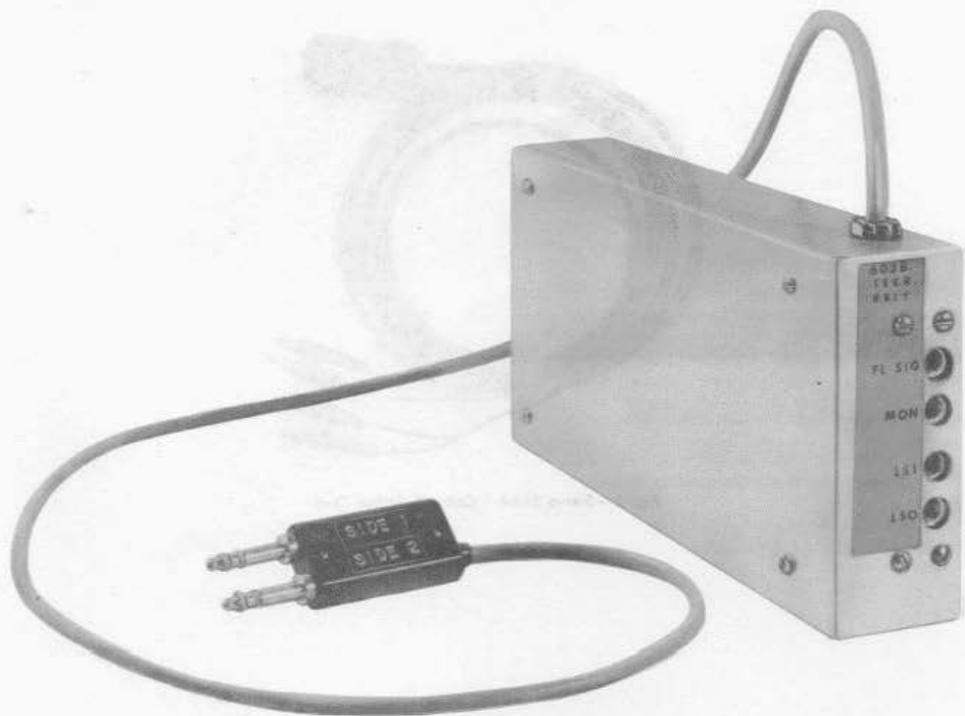


Fig. 3—602B Terminating Unit

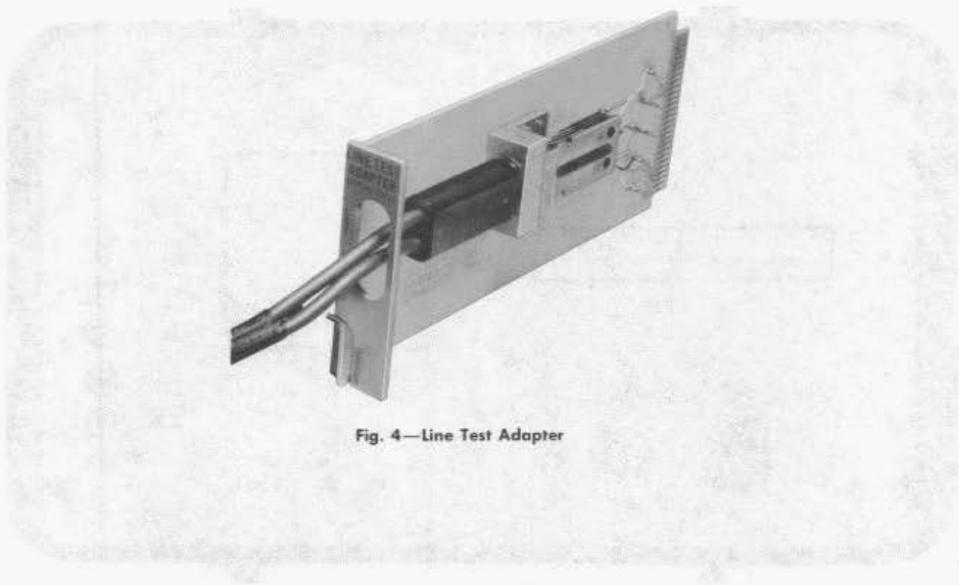


Fig. 4—Line Test Adapter

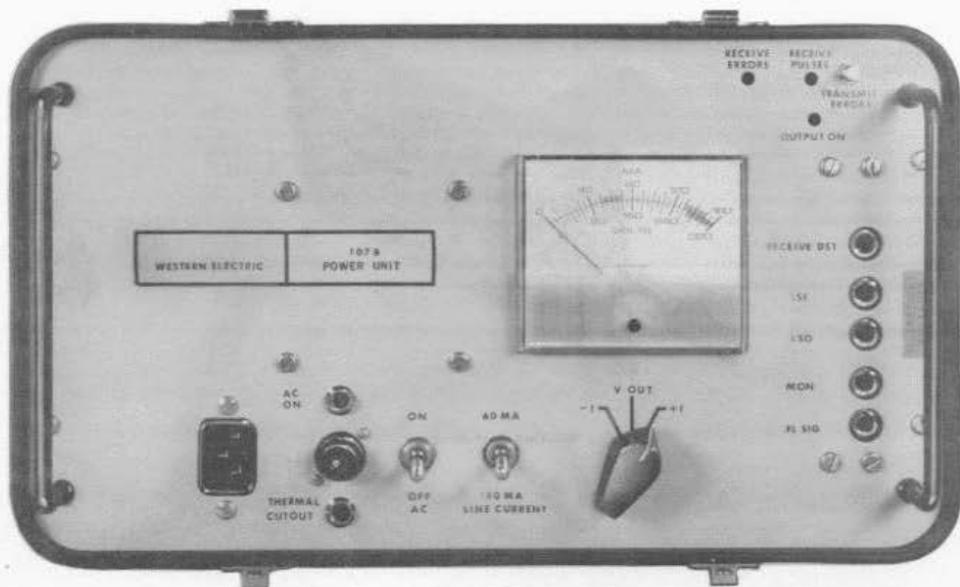


Fig. 5—1078 Power Unit

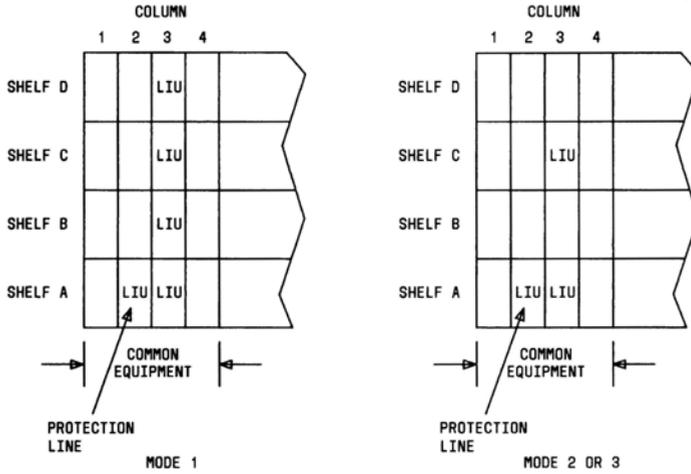


Fig. 6—Positions of LIU Slots in SLC-96 System Channel Banks

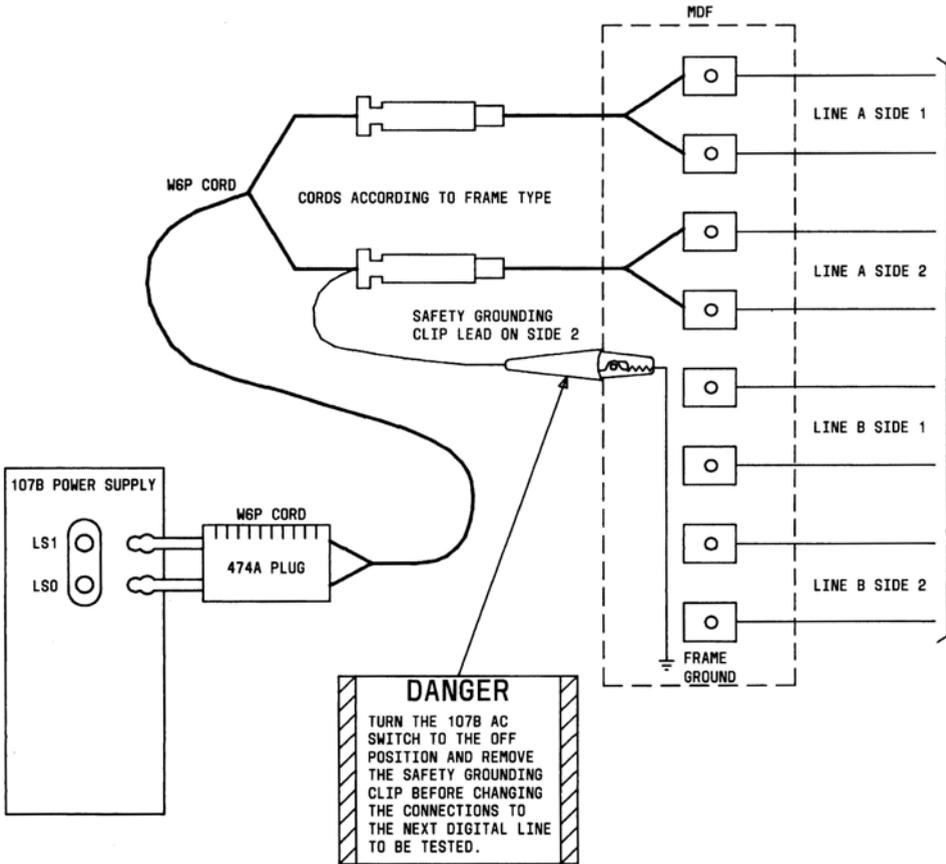


Fig. 7—Test Arrangement Without Use of Line Test Adapter