HARRIS

Communications Products Division

Direct Access Test Unit Loop Conditioning (DATU-LC) Model 24820

next level solutions

Service Manual

Service Manual

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Overview

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System Features **1-3**

Description

Note: If the CO is not equipped with an MFT frame, Harris has a suitable card mounting available (P/N 25460-002).

The Direct Access Test Unit - Loop Conditioning (DATU-LC) System allows a field repair technician to access and perform specific line preparation functions on any working subscriber POTS line. These preparations condition the line for use with a wide variety of common field test equipment. DATU-LC is a printed wiring card that employs micro-processor control of line preparation functions and provides voice prompted menus and status reports to the field technician. The card is installed in the Metallic Facility Terminal (MFT) frame and connected to the switching facility.

System Options

Using the System Password authorized personnel are able to set the User Password, counters and timers, as well as configuration for installation.

User Options

The Users can access and apply a line preparation function to a subscriber's line. Each access, job, and line preparation will increment the associated counter by one. Each line preparation is timed and summed to the total. The user only has access to line preparation functions. Using the DATU-LC, the technician, working from a location in the field, can set up the following conditions on the line:

Audio Monitor—Audio Monitor allows the technician to monitor traffic on a busy line. Audio Monitor may be used on either busy or idle lines. During Audio Monitor, traffic on a busy line is scrambled so that it is audible but unintelligible.

Note: The DATU-LC automatically monitors a line for 15 seconds after connection. The Audio Monitor function provides additional monitoring as required. After the 15 second Audio Monitor period, the DATU-LC will automatically open the line if it is idle. The line will remain open until another line preparation function is selected or the maximum timeout period has been exceeded. After the line has been opened for one minute and no line preparation functions have been selected, the DATU-LC will announce the available options.

Open Line—The subscriber line is opened by removing battery and ground.

Short Line—A metallic short is placed across the tip and ring of the subscriber line. (Not available on a busy line.)

Short-to-Ground—This feature establishes a metallic connection between tip, ring, and ground. (Not available on a busy line.)

Tip-to-Ground—This feature establishes a metallic connection between tip and ground with the ring open. (Not available on a busy line.)

Ring-to-Ground—This feature establishes a metallic connection between ring and ground with the tip open. (Not available on a busy line.)

High Level Test Tone—This is a high level, 577 Hz, metallic-tracing tone, and is interrupted four times per second for identification purposes. (Not available on a busy line.)

Note: On busy lines, the line is not conditioned by the DATU-LC, but the high impedance monitoring circuit is removed when the Open Line feature is requested.

High Level Tone on Tip—This is a high level test tone that is placed only on the tip side of the line, with the ring side grounded. (Not available on a busy line.)

High Level Tone on Ring—This is a high level test tone that is placed only on the ring side of the line, with the tip side grounded. (Not available on a busy line.)

Low Level Test Tone—This is a low level, 577 Hz, longitudinal tracing tone that will not disturb traffic on a busy line. This tone is interrupted four times per second for identification purposes, and may be applied even if the line under test is busy. A standard technician's handheld Test Set can be used to monitor this tone by connecting from tip to ground or ring to ground.

Hold—The Hold feature is used to continue a line preparation function after disconnecting from the DATU-LC access line, for a user specified time less than or equal to the time limit set in the System Mode. If a hold time is not entered, the DATU-LC will automatically hold the preparation function for one-half the maximum time limit set in the System Mode.

New Subscriber Line—This feature allows the technician to release one subscriber line and access another without going on-hook.

Permanent Signal Release—Used in Step-by-Step offices, this feature removes battery and ground on permanent signal lines. It is used only on busy lines.

Forced Disconnect—Forced Disconnect allows the technician to disconnect from the DATU-LC at any time by dialing ## (touching the pound key twice). The # key must be pressed twice in rapid succession (within one second), or the unit may read it as a single #, which is the New Subscriber Line function.

System Features

Authorized personnel may also perform system programming functions that configure the DATU-LC to operate with the CO equipment.

System Password—The System password is required to gain access to the System functions. It is a seven-digit number, preceded by a Dual-Tone Multi-Frequency (DTMF) "✻", that is programmed into the unit and can be changed when necessary.

User Password—The User password is required to gain access to all DATU-LC line preparation functions. The User password is a four-digit code that can be changed in the System Mode.

Dialing Method—Either multi-frequency (MF) or dial pulse signaling to the No Test Trunk (NTT) with wink, reversal sensing (half-wink) or neither may be selected.

Prefix Table—The DATU-LC must be programmed for those subscriber line prefixes that will be used unless 10-digit dialing mode is used. A total of 62 three-digit prefixes can be programmed into the unit.

Note: If an attempt is made to access a prefix that has not been programmed, the unit will respond with the error message, INVALID PREFIX.

Number of Digits to Access Subscriber Line—This feature sets the number of digits required by the switch at the incoming trunk level to access the subscriber line: 4, 5, 7, or 0 (for 10).

Access, Job, and Function Counters—The DATU-LC provides the following event counters:

- **Access—**Records the number of times the User password has been successfully entered, when accessed from a separate line from the line being tested.
- **Single Line Access—**Records the number of times the DATU-LC is accessed from the same line that is being tested.
- **Job—**Records the number of times the user successfully enters a subscriber line number.
- **Function—**Records the total number of times each individual line preparation function has been requested.

Note: The two least significant digits of the counters will be lost when power is removed from the DATU-LC.

Enable/Disable Permanent Signal Release—The permanent signal release function may be either enabled or disabled.

Clear Alarm Condition—There are three conditions that will generate an alarm. These conditions are:

- Failing on three consecutive attempts to drop the NTT.
- Sixteen consecutive unsuccessful attempts to enter a User or System password.
- DATU-LC System failure. When an alarm condition is **NOT** due to a DATU-LC system failure, the Clear Alarm feature will clear the alarm signal.

Access Time Out Parameter—This feature sets the maximum amount of time per access a technician can use the NTT to test a subscriber line.

Access, Job and Function Timers—The DATU-LC provides the following activity timers that records the total usage in hours and minutes:

- **Access (Normal)—**This timing period begins when the technician enters a valid password and ends when the DATU-LC becomes idle.
- **Access (Single Line)—**This timing period begins when the hold time set by the technician starts and ends when the hold time has expired.

- **Job—**This timing period begins when the dialed subscriber line is connected to the NTT and ends when the user disconnects or enters a pound (#) to access a new subscriber line.
- **Function—**This timing period begins when the technician enters dial code for a line preparation function. The time period ends when another line preparation function is requested or upon disconnecting from the DATU-LC.

Installation

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The DATU-RT is compatible with most CO switches (see Table 2-1). For specific information concerning CO switch compatibility, contact Harris Technical Support.

Table 2-1. Compatible Switches

Manufacturer	Switch	No Test Trunk
Lucent Technologies	1A ESS	SD-1A186-01
	2B ESS	SD-2H109-01
	3B ESS	SD-3H520-01
	5 ESS	SN107
	1 Crossbar	SD-25432-01
	5 Crossbar	SD-26136-01
	Step-By-Step	SD-31401-01
		SD-31402-01
		SD-32007-31
NEC	NEAX-61	DLTT-S4900D
Nortel Networks	DMS-10 with MLT	2T16/2T14
	DMS-100 with MLT	2X90AC/AD
Siemens	EWSD	MTAM
Stromberg-Carlson	DCO	S822040-526

All Central Offices

1. Make the translations for DATU-LC look exactly like the Mechanized Loop Testing (MLT) trunk, except, of course, for the trunk group number.
2. Optional ground source for line conditioning functions:
   - With J2 installed (factory provided) on the DATU-LC, the ground supplied to the MFT bay is the ground source for the DATU-LC line conditioning functions.
   - To provide an external ground source for the DATU-LC line conditioning functions, remove the J2 shorting pin and connect the appropriate ground to R1/B (A side) on the MFT bay (DATU-LC pin 5), refer to Figure 2-1.
   - For all switches except the GTD-5, verify that S1 is set to the STD position.

Note: Refer to Figure 2-2 for the location of J2.

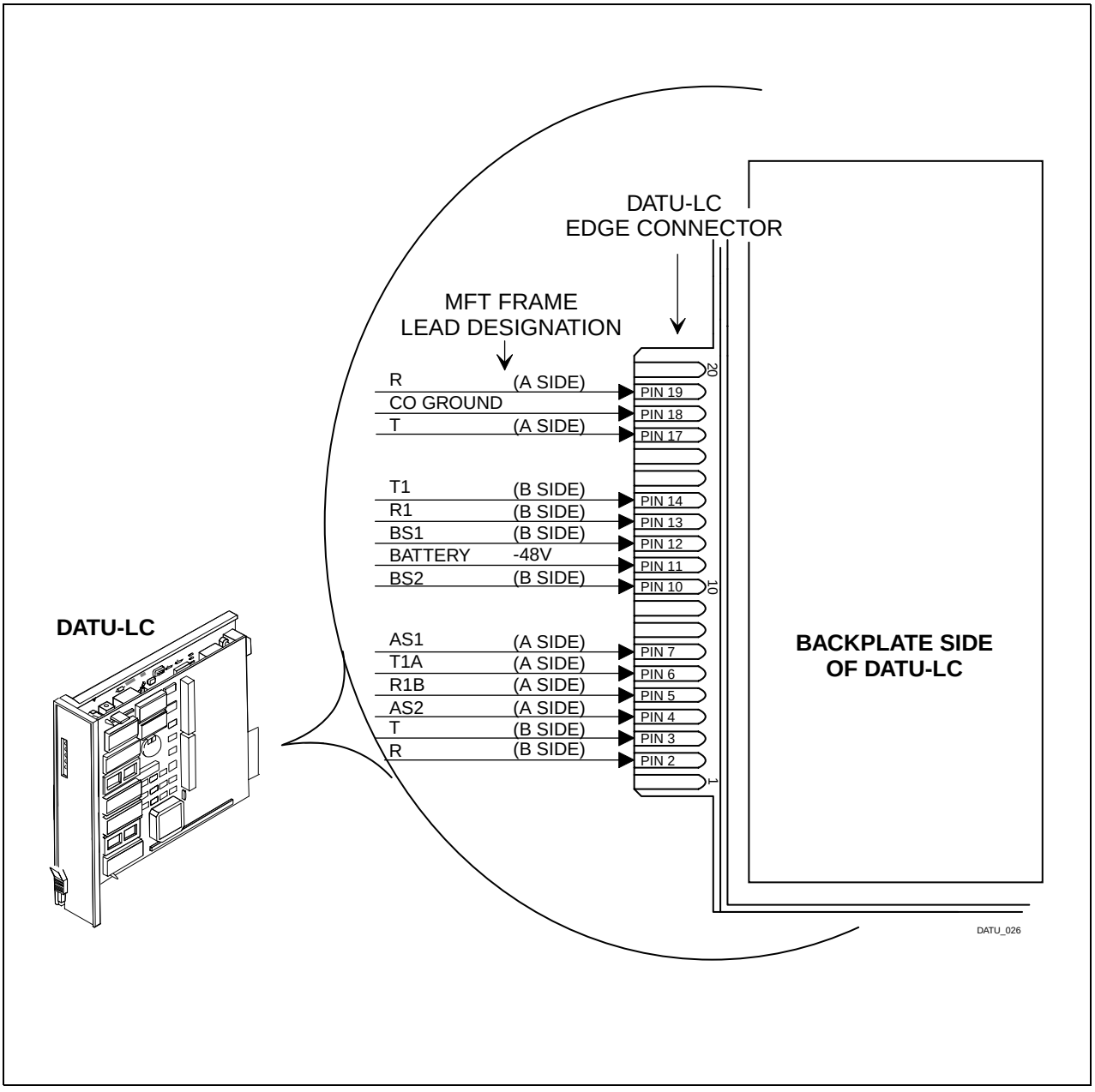

Figure 2-1. DATU-RT Card Pin Locations

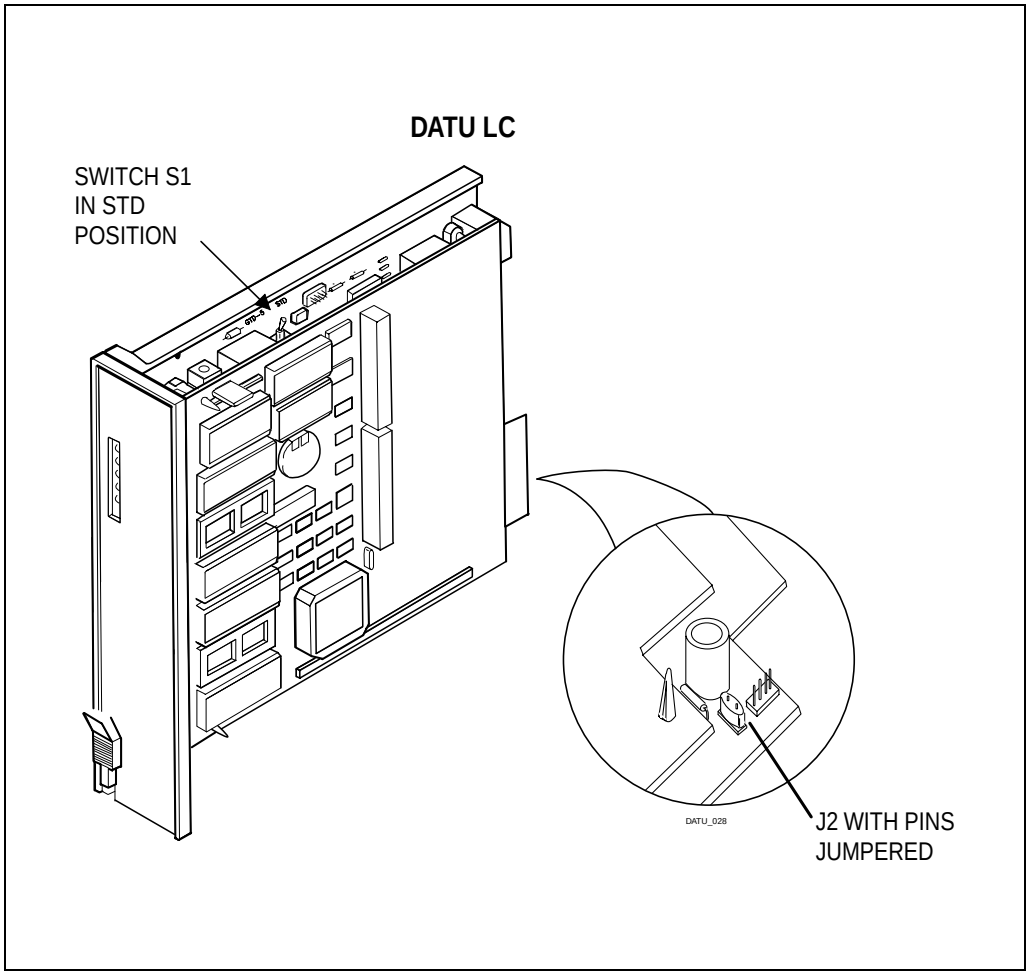

Figure 2-2. DATU-RT J2 and S1 Switch Locations

Note: Trunk translations are normally available from the Switch Configuration Center (SCC).

- DATU-LC requires the same type of NTT translations as used by MLT. DATU-LC also requires exactly the same trunk translations as the trunks used for MLT. Table 2-1 shows the typical trunk circuit associated with most switches.

NEAX-61

Select 5 ESS busy test.

2B ESS

Many smaller COs do not have the BS1 and BS2 leads extended to the frame. "P" wire may need to be run over the cable racks to facilitate DATU-LC installation.

DMS-10 and DMS-100

Sometimes setting the access line to ground start will not release the line on disconnect. At times, building the translation for incoming service only on the access line will allow release of the line. If line release failures continue, set the line translations to COD (Cut Off on Disconnect). This drops the linkage when either party disconnects.

On some DMSs, setting the line translations for ground start will not be accepted by the switch. In this case, remove all translations, then rebuild.

Very old DMS-10s may have line cards that cannot be set for ground start. Replace these older line cards with T44 or later issue line cards.

On both DMS-10 and DMS-100, make sure the Tip and Ring pair is run between the NTT and the Metallic Test Access (MTA). These leads may or may not be in place. There are also instructions in memory that tell which crosspoints to close.

Installation Procedures

General Installation Procedures

The DATU-LC is a plug-in printed circuit card which installs in a single slot of the MFT shelf and is connected to a NTT. When a MFT slot is not available, install the DATU-LC in a Harris card cage (P/N 25460-002) which may be mounted in 19 or 23 inch racks. See Figure 2-3, Figure 2-4, and Figure 2-5 for typical connections for the appropriate switch.

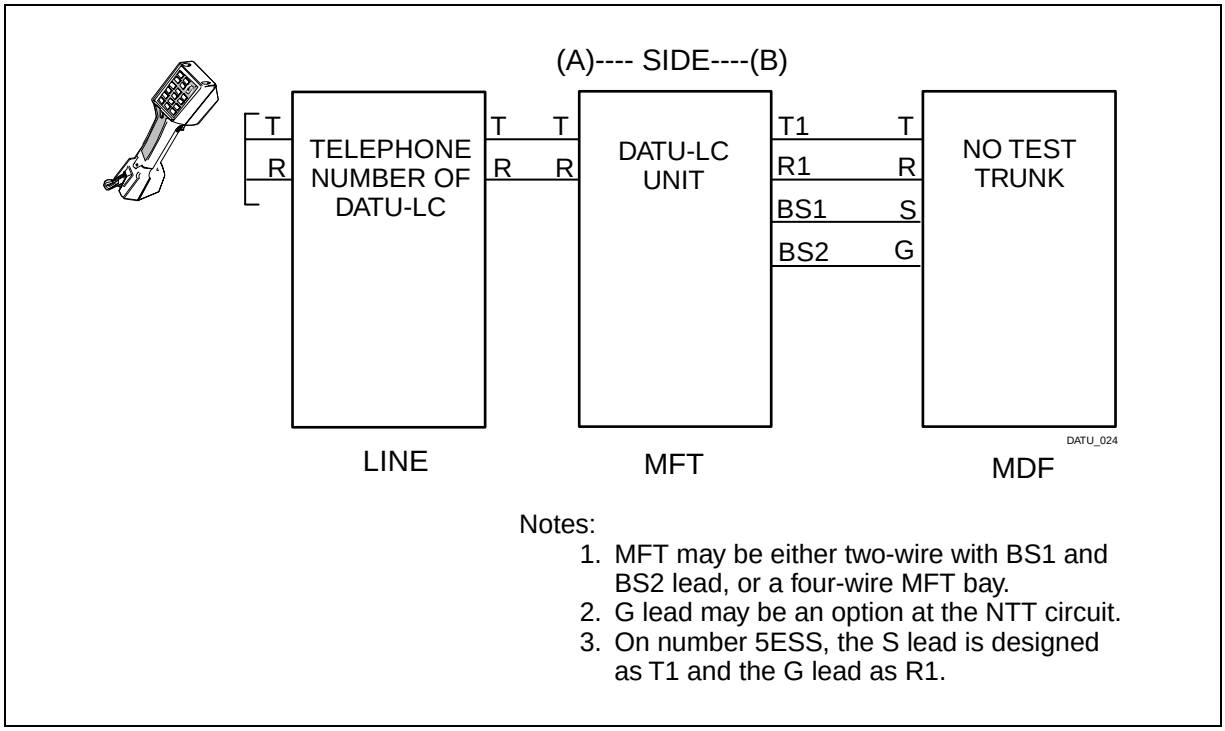

Figure 2-3. Connections for 1/1A ESS, 2/2B ESS, 1/5 XBAR, #5 ESS and Slemens

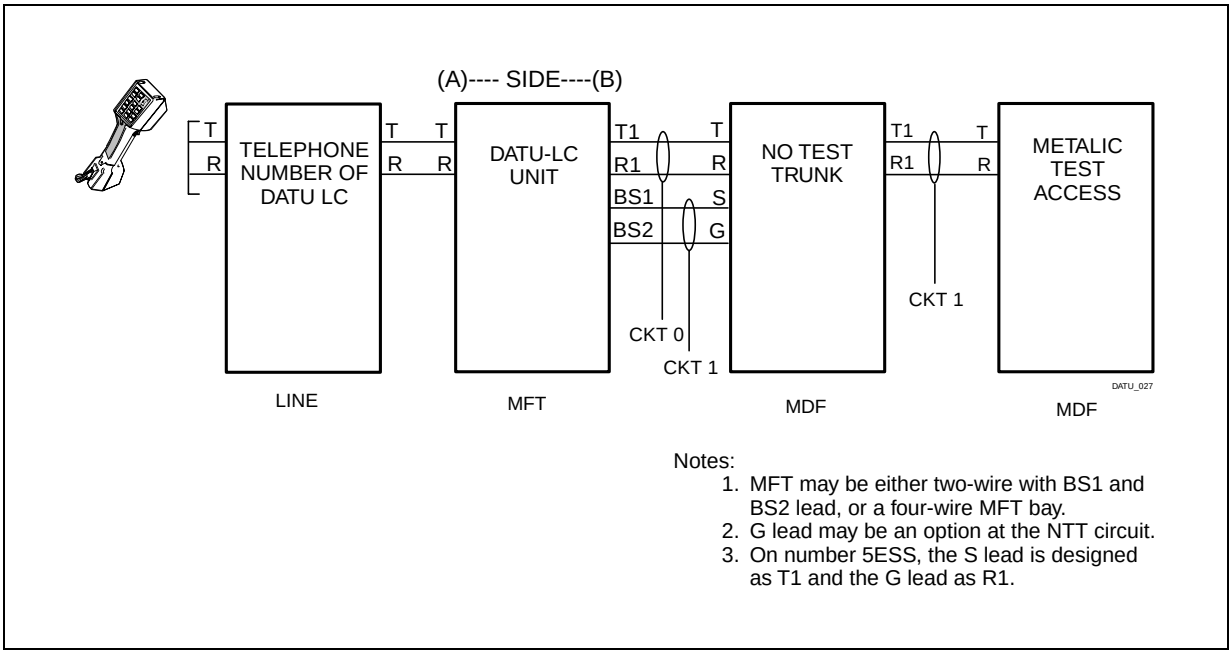

Figure 2-4. Connections for DMS-10 and DMS-100 Offices

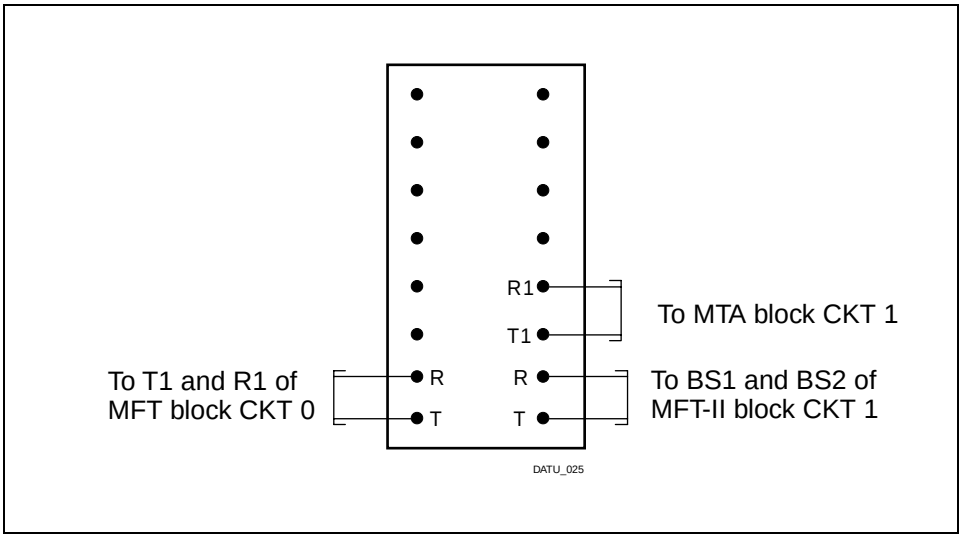

Figure 2-5. MDF Block Connections for DMS-10 and DMS-100

Set Option Switches

Switch S1 (see Figure 2-2) must be set to the STD position. When an external ground is supplied for the DATU-LC line preparation functions, the jumper block on shorting pin J2 (see Figure 2-2) must be removed.

Install in MFT Bay

Note: When using double slot MFT shelves, mount the DATU-LC in the Transmission (TU) slot.

The card edge of the DATU-LC is designed to plug directly into the MFT bays when wired in the standard configuration. Plug the DATU-LC in the assigned MFT slot and the DATU-LC will power up automatically.

Indication LEDs

The five LEDs on the front panel of the DATU-LC (see Table 2-2) provide the visual status of the DATU-LC. The Power LED should illuminate and the Status LED should continuously flash on and off at 60 interruptions per minute.

Table 2-2. LED Functions

LED	Function
Power	Illuminates steadily when power is applied to the DATU-LC.
Alarm	LED is off during normal operation. If it illuminates and all other LEDs indicate normal operation, then 16 unsuccessful attempts to dial a User or System Security Code have been made. Another condition which turns on the alarm is if DATU-LC makes three unsuccessful attempts to release the NTT. This type of alarm will clear as soon as the DATU-LC senses that the trunk has dropped. If an alarm is set because the DATU-LC was unable to drop the NTT, the voice message TRUNK DISCONNECT ERROR will be heard each time the DATU-LC is accessed until the trunk is released. DATU-LC keeps trying to release the trunk with a Lo-sleeve, Hi-sleeve sequence between accesses.
Status	Pulses on and off during normal operation. A continuous on or off condition indicates a microprocessor malfunction. Alarm will illuminate.
Hi Sleeve	Indicates high sleeve current to the NTT.
Lo Sleeve	Indicates low sleeve current to the NTT.

Access Line

Access to the DATU-LC is from a dedicated ground-start telephone line and its Line Equipment Number (LEN) is wired to the MFT terminal on the horizontal side of the Intermediate Distribution Frame (IDF). Translated for terminate only, calling party control, and short time out (i.e., ground start configuration).

No Test Trunk

The DATU-LC requires the same configuration of NTT as used by MLT. Trunk translations for DATU-LC must be the same as the trunks used for MLT except for the assignment of a different trunk group number. The NTT is wired to the MLT terminal on the horizontal side of the IDF.

Programming System Functions

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Note: After the programming of the DATU-LC has been completed, follow the fault location flow diagram (Figure 5-1) and the verification diagram (Figure 5-2) to prove out the installation.

Authorized personnel may select or change any of the factory-provided System functions (see Table 3-1) by accessing the System Menu (see Table 3-2) and using standard DTMF dial codes. The menu options may be selected in any order.

During programming of System functions, no changes to the DATU-LC parameters are made until the DATU-LC asks for confirmation with the voice prompt **DIAL POUND IF OK**. A pound (#) sign entered at this point causes the programming to take effect and returns to the Main Menu. Any other entry abandons the operation. Whenever the Main Menu is accessed or re-accessed a 440 Hz tone is provided.

To move from the System (authorized personnel) functions to Line Preparation (technician) functions, or vice versa, the existing connection to DATU-LC must be released and re-established.

When disconnecting from the DATU-LC, if the access line does not have calling party control, use the forced disconnect feature by entering ## and go on-hook immediately.

Table 3-1. Factory-Provided System Function Values

Program Function	Values
System Password	✳2222222
User Password	1111
Prefix Table	Empty
Job, Access, and Function Counters	0000
Job, Access, and Function Timers	00 hrs. 00 min.
Dialing Method	MF with wink
Number of Digits	7
Access Time-Out	10 minutes and resettable
Note: Program function values are stored in permanent memory, except the System password is reset to ✳2222222 when power is removed from the DATU-LC for more than seven seconds.	

Table 3-2. System Menu Parameters

Main Menu		First Sub Menu		SECOND SUB MENU		Third Sub Menu	
Dial Code	**Description**	**Dial Code**	**Description**	**Dial Code**	**Description**	**Dial Code**	**Description**
1	To Change Passwords	1	Set System Password				
		2	Set User Password				
2	Select Dialing Method/ Busy Test/ Trunk Sleeve Sensing	1	Select Busy Test	4	Standard Busy Test		
				5	5 ESS Busy Test		
				6	Special Busy Test†		
		2	Select Dialing Method	1	MF w/Wink		
				2	MF		
				3	Pulse w/Wink		
				4	Pulse		
				5	MF w/Reversal Sensing		
				6	Pulse w/Reversal Sensing		
		3	Select Trunk Sleeve Sensing	1	Standard Trunk Sleeve Sensing		
				2	Special Trunk Sleeve Sensing[1]	1	Trunk Share
						2	No Trunk Share
		4	Busy Test Timer[2]				
3	Read or Change Prefixes	3	Add Prefix				
		4	Delete All Prefixes				
		5	Delete One Prefix				
		6	Read All Prefixes				
4	Read or Clear Timers	1	Read Timers	1	Usage Timers		
				2	Function Timers		
		2	Clear Timers	1	Usage Timers		
				2	Function Timers		
				3	Clear All Timers		
5	Setting Number of Digits to Select Subscriber's Line	4, 5, 7, or 0 (for 10) for number of digits					
6	To Set Access Time Out Parameters	0 or 1 01 to 99	0 = reset timer, 1 = won't reset timer. 2 digit code for number of minutes.				
7	To Read or Clear Counters	1	Read Counters	1	Usage Counters		
				2	Function Counters		
		2	Clear Counters	1	Usage Counters		
				2	Function Counters		
				3	Clear All Counters		
8	To Enable or Disable Permanent Signal Release						

Notes:
1. Select Special Trunk Sleeve Sensing for Stromberg DCO Switches.
2. Issue 4 or later feature.

Setting System Password

To access the DATU-LC and set System password, follow the steps below:

1. Enter **1** and DATU-LC will respond **DIAL ONE TO SET SYSTEM PASSWORD. DIAL TWO TO SET USER PASSWORD**.
2. Enter **1** again and DATU-LC will respond **DIAL SEVEN DIGITS**.
3. Enter the new System password and DATU-LC will respond **REPEAT**.
4. Enter the System password again. It must be repeated exactly. If the first and second entries match, DATU-LC will respond **DIAL POUND IF OK**. If the entries don't match, DATU-LC will respond **ERROR** and return to Main Menu.
5. Enter **#** and DATU-LC will return a 440 Hz dial tone.
6. Select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Setting User Password

To set the User password:

1. Access the DATU-LC and enter the System password.
2. Enter **1** and DATU-LC will respond **DIAL ONE TO SET SYSTEM PASSWORD. DIAL TWO TO SET USER PASSWORD**.
3. Enter **2** and DATU-LC will respond **DIAL FOUR DIGITS**.
4. Enter the new User (technician) password and DATU-LC will respond **REPEAT**.
5. Enter the new User password again. It must be repeated exactly. If the first and second entries match, DATU-LC will respond **DIAL POUND IF OK**. If the entries don't match, DATU-LC will respond **ERROR** and return to the main menu.
6. Enter **#** and DATU-LC will return a 440 Hz dial tone.
7. Select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Note: The confirming # must be entered before the entry becomes active. Any other entry will abort the change.

Selecting Dialing Method

To select dialing method:

1. Access the DATU-LC and enter the System password.
2. Enter **2**. The DATU-LC will respond **DIAL ONE TO SELECT BUSY TEST, DIAL TWO TO SELECT DIALING METHOD, DIAL THREE TO SELECT TRUNK SLEEVE SENSING, DIAL FOUR TO SELECT BUSY TEST TIMER**.
3. Enter **2** again and DATU-LC will announce the available Dialing Method options.
4. Enter the appropriate code (see Table 3-2 for options). DATU-LC will repeat the selected option and respond **DIAL POUND IF OK**.
5. Enter # and DATU-LC will confirm the action with OK and then return a 440 Hz dial tone.
6. Select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

If a dialing method with WINK is chosen, the DATU-LC expects the Tip and Ring of the NTT to reverse polarity within 7 seconds after the NTT is seized and the DATU-LC expects the NTT to return to normal polarity within 7 seconds after the digits have been dialed. If a dialing method with REVERSAL SENSING is selected, the DATU-LC expects the Tip and Ring of the NTT to reverse within 7 seconds after the NTT is seized, but it does not expect (or wait for) the polarity to return to normal after the digits are dialed.

Selecting Busy Test

To select Busy Test:

1. Access the DATU-LC and enter the System password.
2. Enter **2**. The DATU-LC will respond **DIAL ONE TO SELECT BUSY TEST, DIAL TWO TO SELECT DIALING METHOD, DIAL THREE TO SELECT TRUNK SLEEVE SENSING**.
3. Enter **1**. The DATU-LC will announce **DIAL FOUR TO SELECT STANDARD BUSY TEST, DIAL FIVE TO SELECT 5ESS BUSY TEST**.

4. Dial the appropriate code. Use the standard busy test for all switches except 5ESS and NEAX-61. The DATU-LC will repeat the selection then prompt **DIAL POUND IF OK**.

5. Enter # and DATU-LC will confirm the action with **OK** and then return a 440 Hz dial tone.

6. Select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Selecting Trunk Sleeve Sensing

To select Trunk Sleeve Sensing:

1. Access the DATU-LC and enter the System password.

2. Enter **2**. The DATU-LC will respond **DIAL ONE TO SELECT BUSY TEST, DIAL TWO TO SELECT DIALING METHOD, DIAL THREE TO SELECT TRUNK SLEEVE SENSING.**

3. Enter **3**. The DATU-LC will respond **DIAL ONE TO SELECT STANDARD TRUNK SLEEVE SENSING, DIAL TWO TO SELECT SPECIAL TRUNK SLEEVE SENSING**. Dial the appropriate code. Use special trunk sleeve sensing for Stromberg DCO switches.

4. If dial code **2** is entered, the DATU-LC will prompt **DIAL ONE IF TRUNK SHARE, DIAL TWO IF NO TRUNK SHARE**. If a Harris Trunk Share Applique is being used with the DATU-LC, dial **1**. Otherwise dial **2**.

5. The selected sleeve sensing type will be repeated, followed by **DIAL POUND IF OK**.

6. Enter # and DATU-LC will confirm the action with **OK** and then return a 440 Hz dial tone.

7. Select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Selecting Busy Test Timer (Issue 4 and Later)

This optional function is used with the Special Busy Test (used with DMS switches which have integrated DLC). The busy test timer controls the length of the delay between no-test trunk cut through to the line and the DATU-LC busy test on the line.

1. Enter **2**. The DATU-RT will respond **DIAL ONE TO SELECT BUSY TEST, DIAL TWO TO SELECT DIALING METHOD, DIAL THREE TO SELECT TRUNK SLEEVE SENSING, DIAL FOUR TO SELECT BUSY TEST TIMER**.
2. Enter **4**. The DATU-LC will read the current timer value in seconds <point> tenths of seconds (for example, **3 point 5** would mean that the timer is set to 3.5 seconds). The default is 0.0 seconds.
3. The DATU-LC will then prompt, **DIAL TWO DIGITS**. Enter the desired length of time in seconds followed by tenths of seconds. For example, enter **9 2** for 9.2 seconds.
4. The DATU-LC will read back the time entered then prompt **DIAL POUND IF OK**.
5. Enter # and select a new item from the Main Menu.

Reading or Changing Prefixes

Note: If the switch requires five digit access to the NTT, program the number of digits to access the subscriber's line as described in the Setting Number of Digits to Select Subscriber Lines paragraph before entering any prefixes.

This function is for entering, reading, and maintaining the office prefixes for the subscriber line numbers that the DATU-LC will be accessing.

1. Access the DATU-LC and enter the System password.
2. Enter **3**. DATU-LC will announce the available Prefix options.
   a. Enter **3** again to add a prefix.

      Enter the three digit prefix and (if applicable) steering digit to be added to the prefix table. DATU-LC will repeat the prefix and steering digit, if provided, and prompt **DIAL POUND IF OK**. Enter a # to complete the addition of the prefix.

      Enter the next prefix and (if applicable) steering digit and DATU-LC will respond as previously described. When the last prefix has been added and accepted, enter a #. DATU-LC will prompt **ERROR**, and return to the Main Menu.

b. Enter **4** to delete all prefixes.

   DATU-LC will repeat the selected option and ask for a confirmation with the prompt **DIAL POUND IF OK**. Enter a # to delete all prefixes. Enter any other key to abandon the operation.

c. Enter **5** to delete a single prefix.

   Enter the three prefix digits to be deleted. DATU-LC will repeat the prefix and prompt **DIAL POUND IF OK**. Enter a # to complete the deletion of the prefix and return to the Main Menu.

d. Enter **6** to read all prefixes.

   DATU-LC will read all the prefixes and applicable steering digits from the Prefix Table and return to the Main Menu.

Reading or Clearing Timers

Note: When reading the timers, the DATU-LC will announce the function and then the time in hours and minutes. Example: ACCESS TIMER, ZERO FOUR FIVE SIX HOURS, FOUR THREE MINUTES. JOB TIMER, ZERO FOUR SEVEN FIVE HOURS, THREE FIVE MINUTES. Maximum timer readout is 9,999 hours and 59 minutes. After each function timer is read, a # must be entered to go to the next timer in sequence. Dialing a 11# at any time during the reading of a timer will cause the DATU to go to the next time, but any other key will cause the DATU to return to the Main Menu.

1. Access the DATU-LC and enter the System password.
2. Enter **4** and DATU-LC will announce the available options.

   a. Enter **1** to read Timers.
      – Enter **1** to read Usage Timers.
      – Enter **2** to Read All Function Timers.

   b. Enter **2** to clear Timers.
      – Enter **1** to clear Usage Timers.
      – Enter **2** to clear Function Timers.
      – Enter **3** to clear **ALL** Timers.
      DATU-LC will repeat the times to clear, then prompt **DIAL POUND IF OK**.

3. Enter #. DATU will return to the Main Menu.

Table 3-3 is provided for record keeping convenience.

Table 3-3. Usage and Job Function Counter Timer Log

Line Preparation Function	Timer Reading	
	Hours	Minutes
Audio Monitor		
Tip and Ring Short-to-Ground		
Tip-to-Ground		
Ring-to-Ground		
Tip and Ring High Level Tone		
Low Level Tone		
Tip High Level Tone		
Ring High Level Tone		
Short Line		
Open Line		

Setting Number of Digits to Select Subscriber Lines

Note: Selecting zero from this submenu will cause the DATU to use 10 digit dialing through the NTT.

To set the number of digits to select subscriber lines:

1. Access the DATU-LC and enter the System password.
2. Enter **5** and DATU-RT will respond **DIAL FOUR, FIVE, SEVEN, or ZERO**.
3. Enter either **4**, **5**, **7**, or **0** (for 10) depending on the number of digits required to access a subscriber line through the DATU-LC. DATU-LC will repeat the digit selected, then prompt **DIAL POUND IF OK**.
4. Enter # and DATU-LC will return a 440 Hz dial tone.
5. Select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Setting Access Time Out Parameters

This feature allows the Supervisors to set the maximum time allowed for holding a line preparation function (see Table 3-4). This is an optional feature with a factory preset of 10 minutes with the extension of a test permitted. **If there is no change desired, skip the rest of this section.**

1. Access the DATU-LC and enter the System password.
2. Enter **6**. DATU-LC will respond **DIAL THREE DIGITS**.

*Note: The first digit is used to allow or prohibit the resetting of the access timer. Pressing a "0" will allow the timer to be reset. This means that every time the user presses a key to call a function, the ACCESS TIMER will be reset to the number of minutes allowed. Pressing a **1** will prohibit the resetting of the timer in user mode. The last two digits are the maximum number of minutes, from 01 to 99 minutes, that the access timer will run. See Example 1 and 2.*

3. Enter three digits (see Table 3-4 for available choices). DATU-LC will repeat the entry and prompt **DIAL POUND IF OK**.

Table 3-4. Time Out Parameters

Digit 1	Digit 2 Tens of Minutes	Digit 3 Whole Minutes
0 = Timer will reset	0-9	0-9
1 = Timer will not reset		

4. Enter **#** and select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

   Example 1: Enter the three digits **110**.

   This permits the technician to access the subscriber's line for a maximum of ten minutes to perform all tests on the line before the access timer will timeout, disconnecting the DATU-LC from the NTT.

   Calling the Hold After Disconnect function will hold the line preparation function on the subscriber's line from one minute to a maximum of ten minutes after disconnecting from the DATU-LC access line.

   Example 2: Enter the three digits **004**.

   This permits the technician to access the subscriber's line for a maximum of four minutes to perform individual tests on the line before the access timer will timeout, disconnecting the DATU-LC from the NTT. Calling the same test or a different test prior to the timeout will reset the timer and start a new four-minute time frame.

   Calling the Hold After Disconnect function will hold the line preparation function on the subscriber's line from one minute to a maximum of four minutes after disconnecting from the DATU-LC access line.

Reading or Clearing Counters

To read or clear counters:

1. Access the DATU-LC and enter the System password.
2. Enter **7** and DATU-RT will announce the available options.
   a. Enter **1** to read Counters.
      – Enter **1** to read Usage Counters.
      – Enter **2** to read Function Counters.

Note: When reading the counters, the DATU-LC will announce the function and then the number of accesses. Example: ACCESS COUNTER, ZERO FOUR FIVE SIX. Maximum counter readout is 9,999. After each counter is read, a # must be entered to go to the next counter in sequence. The # may be entered, at any time, but any other key will stop the readings and return to the Main Menu.

b. Enter **2** to clear counters
   – Enter **1** to clear Usage Counters.
   – Enter **2** to clear all Function Counters.
   – Enter **3** to clear **ALL** Counters.

   DATU-RT will repeat the counters to be cleared, then prompt **DIAL POUND IF OK**

3. Enter # and select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Enabling or Disabling Permanent Signal Release

To enable or disable permanent signal release:

1. Access the DATU-LC and enter the System password.

Note: Permanent Signal Release requires access to a standard Permanent Signal Release Trunk.

2. Enter **8**. You will receive a voice message asking you to either Enable or Disable Permanent Signal Release (toggles each time selected). You will then receive a voice message confirming the selected choice and a prompt to **DIAL POUND IF OK**.

3. Enter # and select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Clear Alarm

To clear an alarm:

1. Access the DATU-LC and enter the System password.

2. Dial **0**. DATU-LC will prompt **CLEAR ALARM, DIAL POUND IF OK**.

3. Dial #. The alarm will be cleared, providing it is not due to a DATU-LC system failure.

4. Select a new item from the Main Menu or go on-hook on the access line, or force a disconnect by entering ##.

Time Out and Disconnects

The automatic time outs and disconnects provided by DATU-LC are described below.

Dialing a System or User Password

The first digit must be dialed within 7 seconds or the DATU-LC will disconnect.

The elapsed time between digits dialed must be less than 7 seconds or the DATU-LC will disconnect.

The DATU-LC will disconnect after 7 seconds or after the 16th incorrect digit, if incorrect dial codes are attempted.

User Mode

If the first digit of the subscriber line number is not dialed within 7 seconds, or if more than 7 seconds elapse between digits, the DATU-LC will provide voice announcements and then disconnect after 1 minute.

After accessing a subscriber line, if a line preparation dial code has not been entered within 1 minute, 15 seconds, the DATU-LC will announce a voice message indicating the dialing options available.

Unless the Hold Test feature has been activated, the subscriber line under test will be released when the technician goes on-hook, or when a forced disconnect is initiated by dialing ##.

Note: If the DATU-LC is awaiting a # for confirmation, or a # to continue to the next timer or counter, escape to the main menu, then dial ## to force disconnect.

A double pound (**##)** dialed at any time will cause the DATU-LC to disconnect. The pound (**#)** key must be pressed twice within one second to distinguish this function from the new subscriber line function, which is a single **#**.

Selecting Line Preparation Functions

4

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Single Line Access **4-4**

During normal operation of the DATU-LC, Line Preparation functions may be continued for the time limit set in the Access Time Out System option. After which time the DATU-LC terminates the selected function and returns to an idle condition. If the Access Time Out option has been set to resettable, the duration of the selected line preparation function may be continued beyond the timeout period by re-entering the function code before the time limit expires.

To select a Line Preparation function, follow one of the two procedures described on the next page. Table 4-1 describes the line preparation dial codes.

Table 4-1. Line Preparation Dial Codes

Line Preparation Function		Dial Code	
		Menu	**SubMenu**
Audio Monitor		2	
Short-to-Ground		3	
	Tip and Ring-to-Ground		3
	Ring-to-Ground		7
	Tip-to-Ground		8
High-Level Tone		4	
	Tip and Ring		4
	Ring (only)		7
	Tip Tone with Ring Grounded		8
Low-Level Tone		5	
Open Line		6	
Short Line		7	
Permanent Signal Release		9	
New Subscriber Line		#	
Hold Test		✻ plus N[1]	
Forced Disconnect		##	

Note: 1. For the Hold Test, N is the number of minutes the line preparation function is to be held (continued) after going on-hook on the access line to the DATU-LC. If the time-out limit is set to 10 minutes or less, enter 1 through 9 to select 1 through 9 minutes and 0 for 10 minutes. Otherwise, enter two digits for 11 to 99 minutes (the time-out limit can be set in System Functions). If a time is not entered after the prompt **ENTER NUMBER OF MINUTES**, the hold time will be one-half the maximum time set in the System Function Main Menu (Dial Code 6).

Use the following procedure when a separate access line is available:

Note: When attempting to enter a password, 16 consecutive unsuccessful attempts will generate an alarm signal (illuminates the Alarm LED and generates a contact closure to CO ground on DATU-LC).

1. Dial the telephone number assigned to the DATU-LC.
2. Wait for an uninterrupted 440 Hz DATU-LC dial tone indicating DATU-LC has answered and is ready for password entry.
3. Enter User password. The first digit of the User password must be entered within seven seconds after DATU-LC dial tone is heard. If more than seven seconds elapses before entry of the first digit or between subsequent digits, the DATU-LC disconnects and releases the line.
4. After entering the User password, or having returned to this point by entering pound (#), you will hear the 440 Hz dial tone again, and now have one minute to dial the subscriber line number. Voice prompting begins after seven seconds.

Note: When set to 10 digit dialing mode, the prompt will be (ddd) ddd-dddd.

5. If the selected subscriber line is idle, the DATU-LC accesses the line and you will hear the voice message **CONNECTED TO ddd-dddd. OK. AUDIO MONITOR**. You may select a line preparation function anytime after the voice message begins (the line is automatically monitored for 10 seconds).

> ⚠ **CAUTION:**
> *If traffic is heard after connecting to a line that DATU-LC has said is idle, **DO NOT** select High Level Tone or short the line.*

Notes: 1. Only the Low-Level Test Tone, Open Line, Permanent Signal Release, if provided, or Audio Monitor may be used on busy lines.
2. To hold a function while going on-hook on the access line, select HOLD by dialing a ✻ plus the number of minutes desired. This must be the last code dialed before going on-hook or forcing a disconnect by dialing ##.

6. If the voice message **CONNECTED TO ddd-dddd. BUSY LINE. AUDIO MONITOR** is heard, the line is busy. A busy or idle line will be monitored for 10 seconds. Traffic on a busy line will be audible but unintelligible. At the end of the automatic 10 second monitor period DATU-LC will send two 614 Hz tones in rapid succession to indicate the end of the monitor period. On a busy line, the DATU-LC will announce the line preparation functions available immediately following the audio monitor period. You may select an available option or dial # to return to Step (2) and select a different subscriber line. A line preparation function may be selected at any time during the 10 second audio monitor period, or after the voice message begins.
7. After accessing the subscriber line, line preparation functions are selected with DTMF dial codes (see Table 4-1).

Note: If the DATU-LC access line is not equipped for calling party control, dial ## to force disconnect before going on-hook.

8. Go on-hook or force disconnect by dialing ## when finished. Or use # to return to dial tone, after which you may select a new subscriber line.

Single Line Access

When the line to be conditioned is the only line available to access DATU-LC, single line access may be used to call back on that line with a selected test function automatically placed on the line for a specified period of time.

Note: When attempting to enter a password, 16 consecutive unsuccessful attempts will generate an alarm signal (illuminates the Alarm LED and generates a contact closure to CO ground on DATU-LC).

1. Dial the telephone number assigned to the DATU-LC.
2. Wait for an uninterrupted 440 Hz DATU-LC dial tone indicating DATU-LC has answered and is ready for password entry. You will have 30 seconds to enter the User password.
3. Enter User password. The first digit of the User password must be entered within seven seconds after DATU-LC dial tone is heard. If more than seven seconds elapses before entry of the first digit or between subsequent digits, the DATU-LC disconnects and releases the line.
4. After entering the User password, you will hear the 440 Hz dial tone again, and now have one minute to dial the subscriber line number. You must dial a ✻ before the subscriber line number to specify single line access.

Notes: 1. You must remain on-hook while the DATU-LC is making connections, as the DATU-LC will not perform single line access tests on a busy line. If the line is busy, the DATU-LC will make a second attempt after 30 seconds. After waiting an additional 30 seconds, a third and final attempt will be made.

5. After entering ✻ and the subscriber line number, the DATU-LC will prompt you for a line preparation function and the number of minutes the function is to be held. At the prompt enter the dial code for the function, then enter the number of minutes the test is to be held on the line.

2. Do not have test equipment attached to the line to be conditioned. DATU-LC makes measuremensts on the line and any additional faults could cause DATU-LC to misread the line's state and status.

6. When you have entered a function and the number of minutes, the DATU-LC will respond **OK**. At this point, go on-hook, or disconnect by dialing ##. If ## is used, be sure to go on-hook immediately after disconnect. Within 5 to 30 seconds, depending on the type of CO switch, DATU-LC will apply the function to the line.

Troubleshooting Guide

5

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This Troubleshooting Guide applies to the DATU-LC only. It also assumes that all programmable features (e.g., dialing method, prefix list, User and System passwords, etc.) are already properly programmed for the switch application.

Initial LED and Voltage Checks (Step 1)

1. Plug the DATU-LC into the MFT frame and observe the LEDs on the front panel of the DATU-LC.

2. After the initialization time of 10 seconds, the state of the LEDs should be as shown below, if not then go to Calling the DATU Checks (Step 2):

HI SLEEVE	Off
LO SLEEVE	Off
POWER	On
ALARM	Off
STATUS	Flashing

3. If all LEDs are off, check the power connections: Battery (-46 to -52 VDC) on pin 11 and CO ground on pin 18.

4. If the ALARM LED is on and the Hi Sleeve and Lo Sleeve LEDS are cycling on and off (Hi Sleeve on and Lo Sleeve off for 10 seconds, then Hi Sleeve off and Lo Sleeve on for ¾ second), check the NTT sleeve relay connection. DATU-LC has not seen that the NTT has opened the sleeve/ground pair indicating a dropped NTT. The DATU-LC will try three times to drop the NTT after which it will set the alarm. Check to make sure that the sleeve of the DATU-LC (pin 12) is not grounded, but goes through the sleeve relays of the NTT.

5. If the status LED is not flashing, replace the DATU-LC.

Calling the DATU Checks (Step 2)

1. Call the telephone number assigned to the DATU-LC.

2. If there is ringing, but the DATU-LC fails to trip the Ring and provide 440 Hz dial tone:

   a. Check the line Tip and Ring (Tip on pin 17 and Ring on 19) on the access line.

   b. The DATU-LC will not recognize an incoming call while it is making its initial three attempts to disconnect from the NTT. Wait 45 seconds and redial the access number.

3. DATU-LC trips the Ring and provides a 440 Hz dial tone with a High Sleeve. Dial the User password (1111 or whatever is programmed).

4. If a steady 440 Hz tone is heard, go to Calling the Subscriber Line Checks (Step 3).

5. If, after dialing in the User password, an interrupted 440 Hz dial tone is heard:

   a. Check that the sleeve/ground pair is not reversed.

   b. Check for ground on the sleeve lead.

> ⚠ **CAUTION:**
> *Wait at least seven seconds before unplugging the DATU-LC if it has just been plugged in.*

6. Check for a locked-up NTT. To release the NTT, unplug the DATU-LC, wait seven seconds, and plug the DATU-LC back in.

   On ESS switches, if the NTT has been held up for a long time, it may be necessary to remove the busy status from the memory of the switch.

Calling the Subscriber Line Checks (Step 3)

To check the subscriber line:

1. Dial the subscriber line.

2. If **OK** or **BUSY LINE** is heard, go to Cut Through Checks (Step 4).

3. If **DIAL SUBSCRIBER LINE NUMBER** is heard, DATU-LC may not be programmed for the correct number of digits for the NTT.

4. If **ERROR - BAD NO TEST TRUNK** is heard (not applicable in step-by-step offices):

   a. Check the Tip and Ring wiring to the NTT tip (Tip and Ring may be reversed). This would cause the message **BAD NO TEST TRUNK** because the sequence of reversal and re-reversal of the Tip and Ring voltages (as seen at the DATU-LC) would be incorrect (if this dialing method was used).

   b. Check that the correct dialing method for the NTT has been programmed into the DATU-LC.

   c. Check that the Tip and Ring to the NTT are not shorted together or to any other leads as this would also cause the message **BAD NO TEST TRUNK**.

5. If the subscriber's line has an excessive amount of AC (>30 volts^{P-P}) on Tip and/or Ring, the DATU-LC will return the message LINE STATE UNKNOWN and treat the line as though it were busy.

Cut Through Checks (Step 4)

1. If the DATU-LC is returning the message **BUSY LINE** on a line that is not busy observe the High Sleeve LED on the DATU-LC. If it is on, and the DATU-LC is in an office that does not provide a reversal, the DATU-LC may be set for dialing an insufficient number of digits for that office. The NTT will return to the idle state as soon as the Tip and Ring termination is removed by the DATU II (7 seconds after the last digit is dialed).

2. If the Low Sleeve LED is on and the DATU-LC is returning the message **BUSY LINE** on a line that is known to be idle:

   a. Check that the correct number of digits to access the NTT has been programmed into the DATU-LC. Too many digits may have been originally programmed.

   b. Check that the subscriber's number is served by that switch.

3. If the Low Sleeve LED is on and the DATU-LC has returned the message **OK** on a line that is busy:

   a. The subscriber's number may be in a Hunt Group and is not testable by the DATU-LC.

   b. The subscriber's number may have been entered wrong. Re-enter the number.

Disconnect Checks (Step 5)

Trouble with disconnecting:

1. Receive a CO busy tone when reaccessing the DATU-LC. The assigned number may not be a ground start line.

2. Check that the access line is a ground start line.

3. DATU-LC trips Ring but gets busy tone after dialing User password. The H relay (#1 ESS) or SL relay (step-by-step [SXS]) of the NTT may be out of adjustment. Consult the appropriate SD for trunk calibration procedures.

1. Translate the NTT access to DATU-LC exactly the same as the MLT NTT has been translated. Use a separate Trunk Group Number.
2. Configure the DATU-LC access line for incoming ground start only.
3. Complete all frame wiring in accordance with Section 2, Installation.
4. Select the correct model of DATU-LC for the type of switch the DATU will be connected to.
5. Install the DATU-LC in the assigned MFT slot and observe the LEDs on the front panel of the DATU-LC.
6. Go to Flow Charts (see Figure 5-1).

Note: For technical assistance, contact Harris Technical Support.

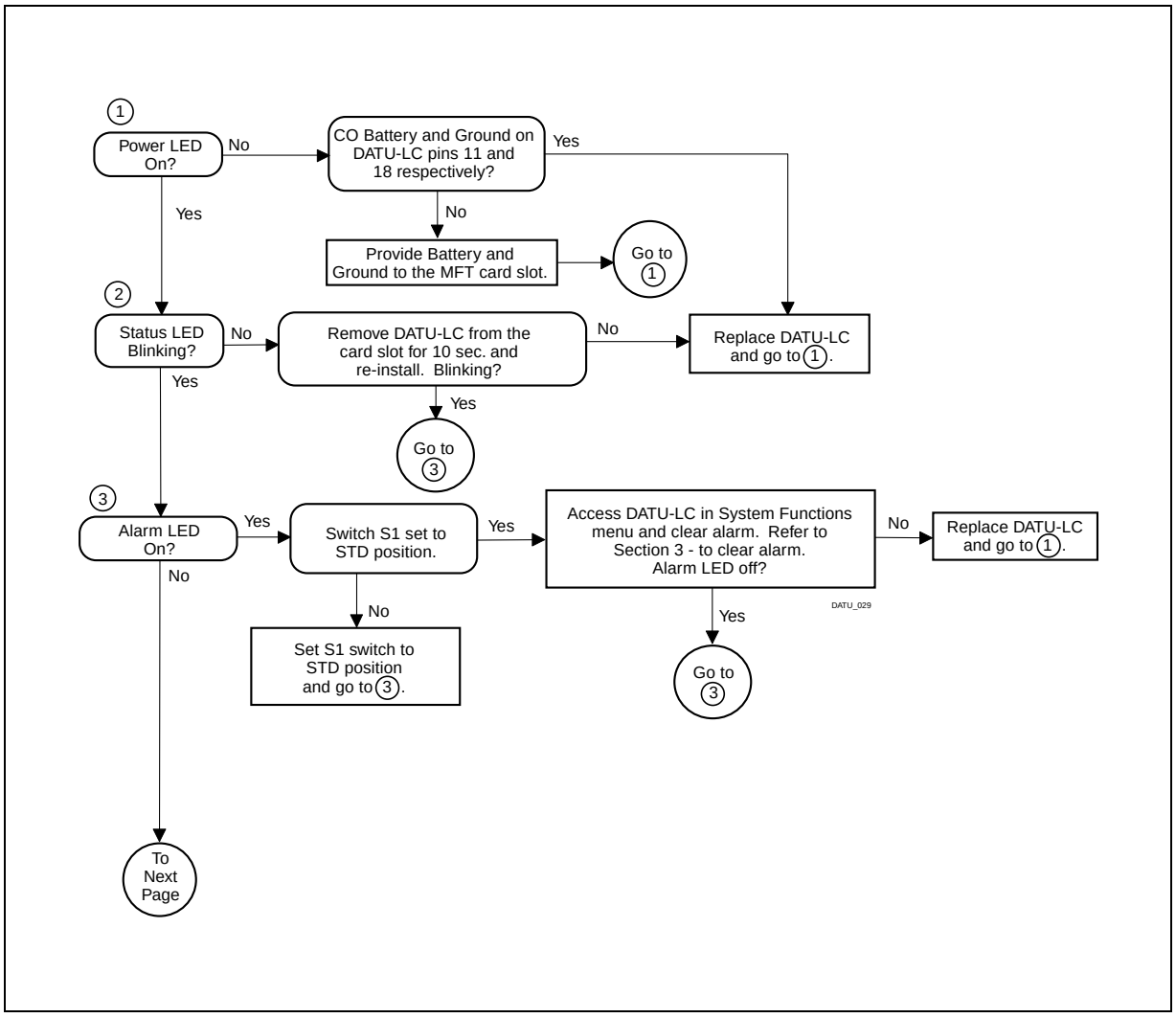

Figure 5-1. Fault Location Flow Chart (Sheet 1 of 6)

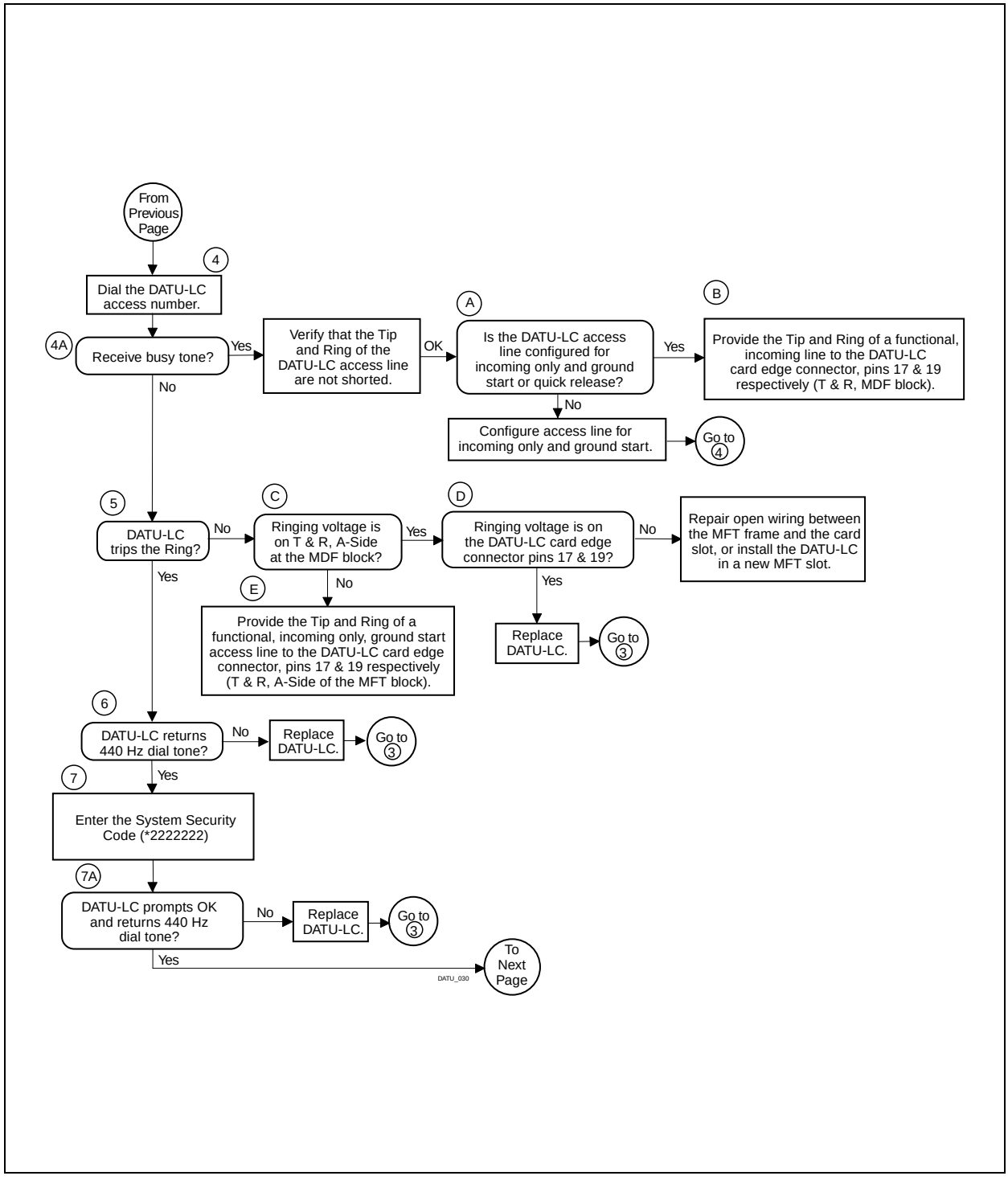

Figure 5-1. Fault Location Flow Chart (Sheet 2 of 6)

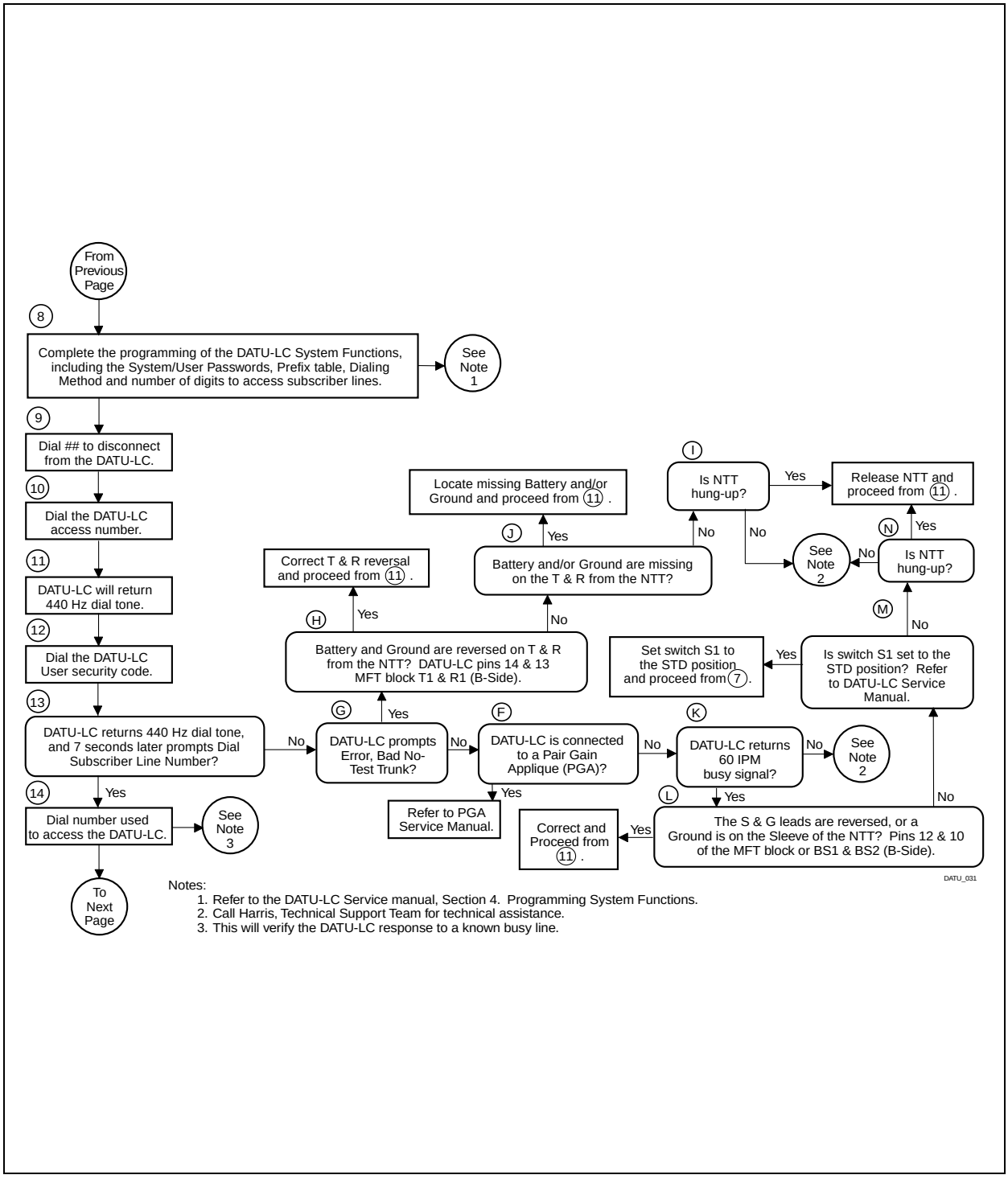

Figure 5-1. Fault Location Flow Chart (Sheet 3 of 6)

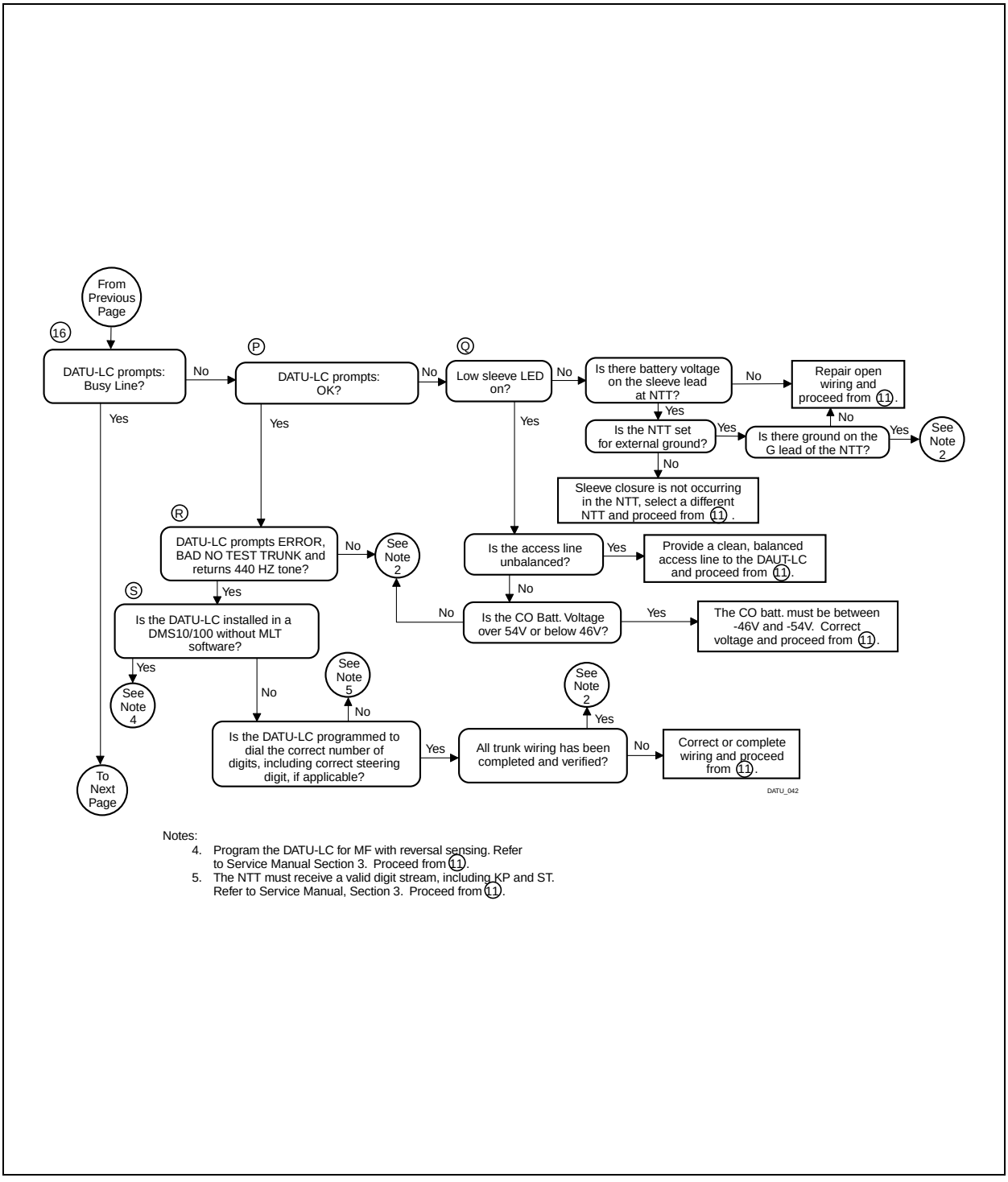

Figure 5-1. Fault Location Flow Chart (Sheet 4 of 6)

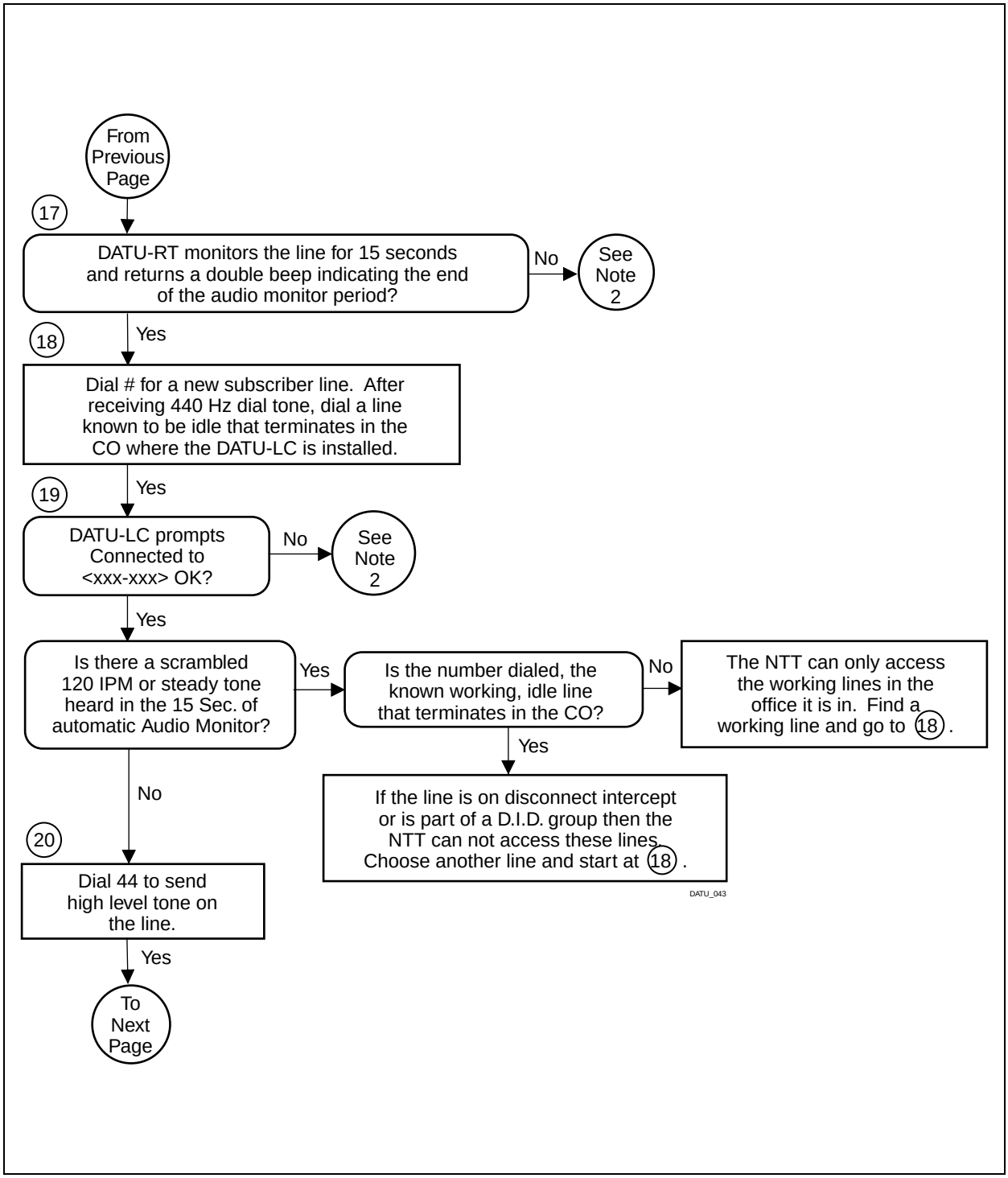

Figure 5-1. Fault Location Flow Chart (Sheet 5 of 6)

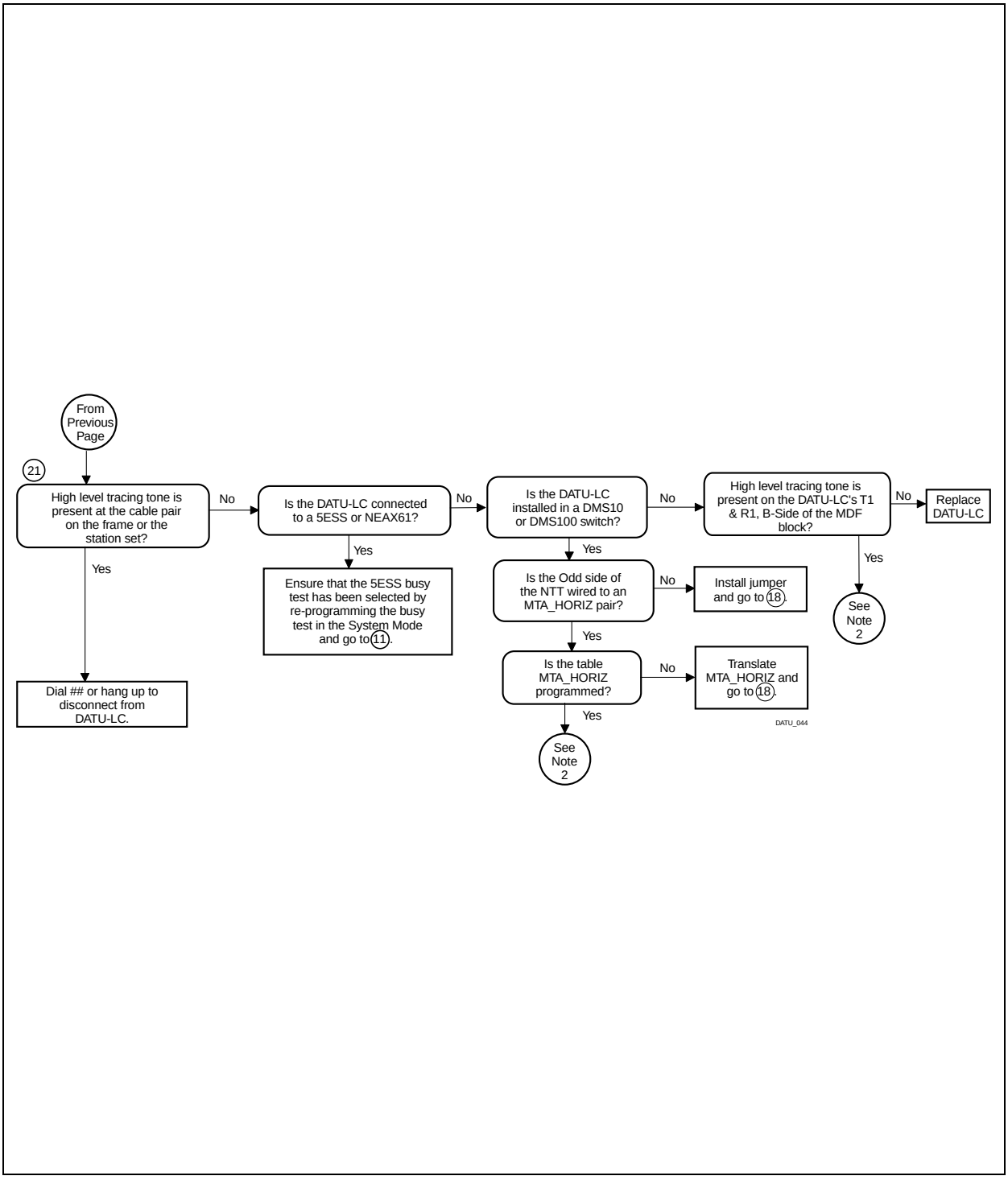

Figure 5-1. Fault Location Flow Chart (Sheet 6 of 6)

Specifications

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Physical Dimensions

Length: 8.0 inches
Width: 7.5 inches
Height: 2.0 inches
Weight: 1 pound 11 ounces

Electrical

External Connections

Table 6-1 shows pinouts for MFT block connection.

Table 6-1. DTMF Decoding

Lead	DATU Pin	Signal Direction	Description
Side A			
T	17	IN	Access Tip[1]
R	19	IN	Access Ring[1]
Side B			
T1	14	OUT	Tip No Test Trunk
R1	13	OUT	Ring No Test
BS1	12	OUT	Trunk
BS2	10	OUT	Sleeve No Test
	11	IN	Trunk
	18	IN	Ground NO Test
R1/B (A Side)	5	IN	Trunk
T1/A (A Side)	6	OUT	CO Battery
T (B Side)	3	OUT	CO Ground
R (B Side)	2	OUT	Optional Ground
AS1 (A Side)	7		Alarm[2]
AS2 (A Side)	4		Used by PGA
			Used by PGA
			Used by TSA
			Used by TSA

Notes:

1. Access line must be ground start.
2. Normally open contact provides ground on alarm condition.

Battery Input Requirement

Battery Input Requirement (measured with respect to CO ground):

- -46 VDC minimum to -54 VDC maximum.
- 600 mA maximum.
- 2V peak-to-peak noise maximum from CO.
- 5 Amp fuse.

Access Port Line Interface

Tip and Ring Parameters in Off-Hook Mode (requires ground start station line):

- On and off-hook conditions meet FCC Part 68 requirements.
- Tip and Ring resistance in off-hook mode is 210 ohms at ±10% at 80 mA.
- Tip-to-Ring minimum current required is 20 mA.
- Tip and Ring AC impedance at 1 kHz is 640 ohms, typical.

Ring Detect Parameters in On-Hook Mode:

- Ringing and on-hook conditions meet FCC Part 68 requirements.
- Minimum Ring detect level is 65 volts AC rms.
- Uninterrupted pre-trip Ring duration is 300 ms.
- Ringing equivalence is 0.5B.

Secondary Dial Tone:

- Secondary dial tone is provided upon Ring trip, password entry, and new subscriber line selection.
- Dial tone is silenced when a digit is dialed or when the DATU-LC times out.

- Dial tone level is -19 dBm ±3 dBm.
- Dial tone frequency is 440 Hz ±8Hz.
- Harmonic distortion is less than 10%.

DTMF Dial Decoding:

- Each incoming dual-tone sinusodial signal is translated into one of the 12 character sets (see Table 6-2).
- The signal is composed of a low-group and a high-group frequency (see Table 6-2).

Table 6-2. DTMF Decoding and MF Output

Character Set	Frequency Groups			
	DTMF		MF	
	Nominal Low-Group	Nominal High-Group	Nominal Low-Group	Nominal High-Group
1	697	1209	700	900
2 (ABC)	697	1336	700	1100
3 (DEF)	697	1477	900	1100
4 (GHI)	770	1209	700	1300
5 (JKL)	770	1336	900	1300
6 (MNO)	770	1477	1100	1300
7 (PRS)	852	1209	700	1500
8 (TUV)	852	1336	900	1500
9 (WXY)	852	1477	1100	1500
✻	941	1209		
0	941	1336	1300	1500
#	941	1477		
KP✻			1100	1700
ST#			1500	1700

- Frequency deviations of up to ±2.5% are accepted and all deviations greater than ±3.5% are rejected.
- DTMF tones greater than 50 ms are accepted.
- Interdigit timing is greater than 40 ms and less than seven seconds are accepted.
- Signal strength per frequency of -20 to 0 dBm is accepted.

Voice Message Output:

- Average voice level is -13 dBm.
- Voice frequency range is 200 Hz to 3 kHz.

No Test Trunk Interface

Tip and Ring Parameters in Idle Mode:

- DC resistance is 200 Kohms ±10%.

Tip and Ring Parameters in Active Mode:

- Resistance is 130 ohms at ±10%.
- Maximum DC loop current is 86 mA ±10%.
- Typical AC impedance at 1 kHz is 660 ohms.

MF Output Parameters:

- The MF generator produces a dual-tone sinusoidal signal in response to the entry of a digit letter or character (see Table 6-2). The signal consists of a low-group and high-group frequency (see Table 6-2).
- Frequency deviation is less than ±2%.
- Signal strength per frequency is -5 to -15 dBm.
- Digit duration is 70 ms per digit.
- Interdigit pause is 70 ms.

Dial Pulse Addressing Parameters:

- Break ratio is 60%.
- Repetition rate is 10 pulses per second.
- Interdigital time is 1,000 ms.

Sleeve Current Parameters:

- During low-current state, sink is 10 mA -3mA/+0 mA.
- During high-current state, sink is 32 mA.
- Maximum external sleeve loop resistance is 700 ohms.

Test Function Parameters

Open test resistance is greater than 20M ohms.

Short Tip-Ring Test:

- DC resistance is less than 2 ohms.

Low-Level Tone Test:

- Frequency is 577 Hz.

- Frequency error is less than ±3%.
- Typical signal strength measured Tip-to-Ground or Ring-to-Ground:
  - At the CO is -12 dBm ±3 dBm.
  - At 18,000 cable feet from the CO is -19 dBm.

High-Level Tone Test (Differential):

- Frequency is 577 Hz.
- Fequency error is less than ±3%.
- Tip-to-Ring tone strength is +22 dBm ±3 dBm.
- Tip or Ring tone strength is +17 dBm ±3 dBm.

Warranty

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Warranty and Repair Policy

Harris Corporation guarantees equipment of its manufacture and each part or component thereof against all defects in material and/or workmanship and agree to remedy any such defect at no charge provided that the defective unit is returned, transportation prepaid to the factory, or to an authorized repair center. This warranty for most electronic products extends for a period of one year from the date of installation or initial use, provided that this period shall not exceed 18 months from the date of manufacture. Some specific products have different periods of warranty (consult the Harris quotation or order acknowledgment for specific details). Any product which has been repaired or replaced shall be similarly warranted as to such repair or replacement for the remaining warranty period of the product as originally installed or 90 days from date of repair or replacement, whichsoever expires last.

This warranty does not extend to products which have been subjected to neglect, accident, or improper use, nor to units which have been altered by other than authorized personnel.

No warranties other than those set forth in this section (article) are given or implied with respect to the equipment furnished hereunder and Harris shall, in no event, be liable for consequential damage, or for loss, damage or expense directly or indirectly arising from the use of the products, or any liability using materials, or from any other cause.

Non-Warranty

Harris electronic products are not field serviceable, and customers are encouraged to return them directly to Harris Customer Service for all repairs. Certain selected products because of their applications can be supported for non-warranty maintenance by our customers. Some documentation and replacement components are available for purchase from Harris.

Please contact Harris Customer Service for ordering information and availability.

Harris Corporation
809 Calle Plano
Camarillo, CA 93012
Telephone: (805) 987-9511

Return of Equipment

Products returned for "in warranty" and "out of warranty" repair must be shipped prepaid to Harris. Products returned for warranty repair are subject to handling charges if no defects are found during our inspection. All products returned to Harris should be packaged to prevent damage during shipment. Harris will return repaired units by prepaid freight. Equipment returned for "out of warranty repair" which is found to be damaged beyond repair will either be returned to the user "as is" or scrapped by Harris at the user's option. Equipment returned for repair, whether in or out of warranty, which has failed due to misuse or negligence or has components removed, will be repaired in accordance with our standard "out of warranty" charge.

To return the DATU-LC to Harris, first obtain a Return Authorization (RA) Number from our Customer Service. This RA number must be clearly marked on the shipping label, or the container will not be accepted by Harris. See the sample label below:

To: HARRIS CORPORATION
809 Calle Plano
Camarillo, California, USA 93012-8516
Attention: Customer Support, RA #XXXXXX

HARRIS

next level solutions

Communications Product Division | 809 Calle Plano | Camarillo, CA 93012-8519 USA
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