

LP 301 Line Power Dialer

Firmware Version 400

Installation and Programming Manual
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LIMITED WARRANTY	4
INSTALLATION.....	6
INITIAL POWER UP PROCEDURE.....	6
GENERAL DESCRIPTION	8
TECHNICAL SPECIFICATIONS	8
OPERATION.....	9
GENERAL.....	9
TABLES.....	9
PROGRAMS	9
DROP PROGRAM.....	9
PARALLEL PROGRAM	10
GENERAL PURPOSE NUMBER BINS	10
SYSTEM PARAMETERS.....	10
LP 301 PROGRAMMING	10
DTMF TELEPHONE PROGRAMMING.....	10
P.C PROGRAMMING.....	10
SYSTEM OPTIONS PROGRAMMING.....	13
GENERAL OPTIONS	13
FAILURE - RETRIES	13
PASSWORD.....	13
CALL HOME MODE.....	13
AUTOMATIC CALL HOME.....	14
CALL HOME RETRY INTERVAL.....	14
TRUNK SIDE OPTIONS	14
DIALLING TYPE	14
PULSE DIALLING SPEED.....	14
PULSE INTER-DIGIT TIME.....	14
DTMF DIALLING SPEED (ON TIME).....	15
DTMF INTER-DIGIT TIME (OFF TIME).....	15
RELEASE/RESEIZE TIME.....	15
RING DETECT CADENCE.....	15
DIAL TONE FREQUENCY.....	15
TONE BURST FREQUENCY.....	16
DROP SIDE OPTIONS	16
OFF HOOK RECOGNITION.....	16
DIALLING TYPE	16
INTER-DIGIT TIME OUT - FIRST DIGIT.....	16
INTER-DIGIT TIME OUT - NOT-FIRST DIGIT.....	16
END OF DESTINATION NUMBER DIGIT.....	17
SET DATE.....	17
SET TIME.....	17
DROP/RING/PARALLEL PROGRAM INSTRUCTIONS.....	18
NO-OPERATION.....	18
DIAL DIGITS.....	18
SWITCH TO TONE DIALLING.....	18
SWITCH TO PULSE DIALLING.....	18
WAIT FOR USER.....	18
RESEIZE LINE.....	19

<i>DETECT DIAL TONE ON TRUNK SIDE **</i>	19
<i>DETECT DTMF DIGIT ON TRUNK SIDE **</i>	19
<i>DETECT TONE BURST ON TRUNK SIDE **</i>	19
<i>WAIT FOR HOST**</i>	20
<i>DELAY</i>	20
<i>DIAL DROP RECORDED DESTINATION NUMBER TO TRUNK</i>	20
<i>DIAL DIGITS IN BIN XX TO TRUNK</i>	20
<i>RECORD DROP DIALLED DIGITS, SEARCH PRIMARY TABLE</i>	21
<i>RECORD DROP DIALLED DIGITS, SEARCH PRIMARY AND SECONDARY TABLE</i>	21
<i>BEEP TO DROP SIDE</i>	21
<i>DELETE DIGITS FROM USER DIALLED STRING</i>	21
<i>INSERT DIGITS INTO USER DIALLED STRING</i>	21
<i>JOIN TRUNK AND DROP</i>	21
<i>HANG-UP AND REORDER</i>	22
<i>WAIT FOR HANG-UP BY USER OR TIMEOUT</i>	22
DIAGNOSTIC COMMANDS	23
<i>DIALER MASTER RESET</i>	23
<i>PLAY/DISPLAY VERSION NUMBER</i>	23
<i>PLAY/DISPLAY SERIAL NUMBER</i>	23
<i>PLAY/DISPLAY PROGRAMS</i>	23
<i>EMERGENCY BYPASS</i>	23
<i>ABOUT PASSWORD</i>	23
PROGRAM UPLOADING	24
APPENDIX "A"	26
PROGRAM MODE COMMANDS.....	26
APPENDIX "B"	26
SYSTEM PARAMETERS.....	26
APPENDIX "C"	28
PROGRAM INSTRUCTIONS.....	28
APPENDIX "D"	29
DTMF / Data Port Differences / Wildcards.....	29

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Warranty

- 1) Telcom Research warrants to the original purchaser that each unit of the LP 301 Line Power Dialer is free from defects of material or workmanship; this warranty is limited as follows:
 - a) In respect of Parts,
 - All versions of LP 301 dialers shipped from our premises carry a 6 month warranty commencing from our recorded ship date. Each such replacement part is warranted for the balance of the original warranty.
 - b) In respect of labour required to remedy defects in equipment or workmanship,
 - All versions of LP 301 dialers shipped from our premises carry a 6 month warranty commencing from our recorded ship date. Each such replacement part is warranted for the balance of the original warranty.
- 2) Telcom Research may, in its sole discretion, repair defective Parts or replace same with new or comparable remanufactured parts.
- 3) This warranty does not apply to any of the following:
 - a) Damage to Equipment caused or occurring during shipment of Equipment;
 - b) Equipment that has been damaged by misuse, neglect, abuse, accident, lightning, excessive voltage, mechanical shock, water damage, alteration, improper installation or for any reason other than innate defect or reasonable wear and tear
 - c) Equipment that has been serviced or altered except by Telcom Research.
 - d) The FCC Certification Label and/or Country Specific Certification Label has been removed, damaged or altered in any manner.
- 5) The Purchaser is responsible for removal, repackaging, delivery charges, and reinstallation in respect of all warranty work.
- 6) The Purchaser must assume responsibility and expense for the proper packaging, shipment, and all costs associated with the delivery of the equipment to and from the Telcom Research manufacturing facility.

Force Majeure

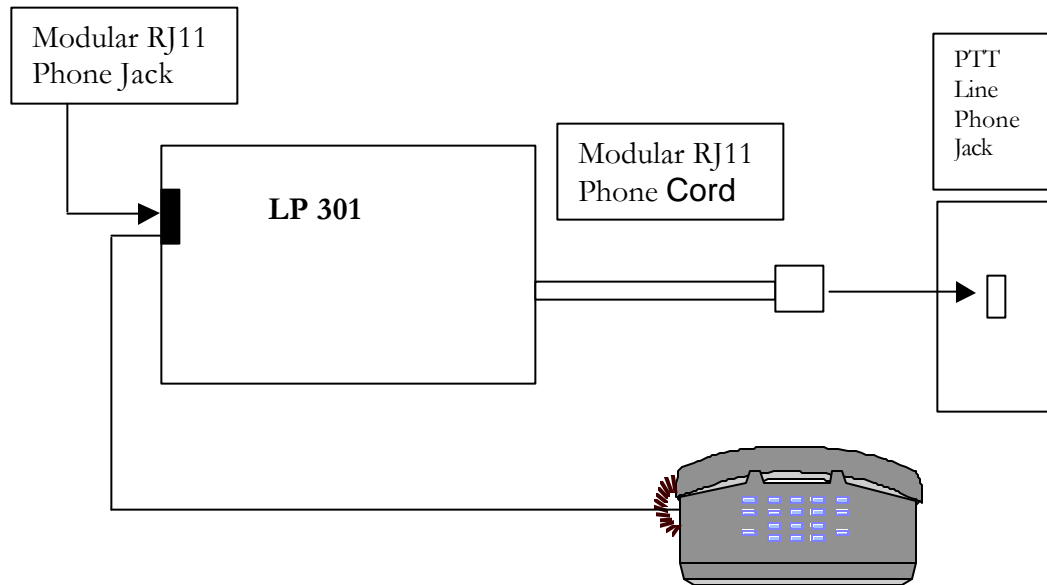
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INSTALLATION



1. Unplug the telephone line cord from the PTT Line phone jack.
2. Plug the line cord from the telephone into the modular RJ11 jack provided on the LP 301.
3. Plug the 6 inch line phone cord from the LP 301 into the PTT Line phone jack.

The LP 301 must be connected as above. If it is connected in any other manner it will not function.

The telephone handset must not be picked up when the dialer is being plugged into the telephone line jack before power up.

INITIAL POWER UP PROCEDURE

Install the dialer as above. Pick up the handset of the telephone connected to the LP and remain off hook for approximately 2-3 seconds. Hang up the handset for 1 second and then pick it back up. The relay will click and the dialer will go into split mode. It is now ready for programming and use.

GENERAL DESCRIPTION

The LP 301 Line Power Dialer is a Line Power Dialer used for ROUTING of telephone calls as required by Long Distance Carriers, Inter-Exchange Carriers, FAX Store and Forward Service Providers, and Internet Fax Service Providers. The power and versatility of the LP 301 is derived from its built in programming language.

FEATURES

- Line Powered
- Non volatile memory
- 100% surface mount technology
- Fully Programmable both Locally and Remotely
- Real Time Clock
- Least Cost Routing Tables with a capacity of about 2,000 digits
- 10 General Purpose Number Bins, for Local Access Numbers, Auth. Codes, etc.
- Loop Start Compatibility
- DTMF Dialling, (towards Line) with variable speed from 50 to 450 MS.
- DTMF Detection, (From Line or Drop)
- Pulse Dialling towards Line (10 PPS)
- Pulse Detection from Drop (10 PPS)
- Switchable from Tone to Pulse and back within the same Program
- Call Progress Detection (Dial Tone) with programmable frequency and tolerance
- Programmable Delay from 1 to 9.9 seconds
- Off Keypad Dialling (A, B, C, D)
- Centrex/PBX Compatibility
- Call Peg Count Registers
- Remote Programming using Zoo Keeper Software
- Password Protection

TECHNICAL SPECIFICATIONS

Physical: Size 8.5 X 4 X 2 cm

Weight: 48 gms

Colour: White

Material: ABS Plastic

Voltage Telephone Line Loop Current: 23 –70 mA

Off Hook Voltage: 5 VDC

Line Requirement: Loop Start

Digit Recognition: DTMF & Pulse

Operating Temp.: 0 –60 DEGREES C

Line Connection: RJ11

Dialer Output: DTMF & Pulse

OPERATION

GENERAL

The LP 301 contains 12 programs; One executed upon the user (Drop Side) going off hook (DROP PROGRAM); and one of ten programs (PARALLEL PROGRAM) launched by DROP program as a result of a search table match, or program instruction. There is an additional program used with the Call Home function.

Programming can be done either locally or remotely.

Programming provides control over the content of all Tables, Programs, General Purpose Number Bins as well as various parameters.

TABLES

The LP 301 has 2 search tables. Primary (usually searched when a user dials a phone number) and the Secondary (Searched after a match in the Primary Table has caused an ACTION to Occur). The LP 301 begins searching its Primary Table once the Drop Program executes a 700/701 instruction, and the user begins dialling a phone number. When a match is found, the appropriate ACTION is taken. At this point, the Secondary table is searched for a match, if a 701 instruction has been used. Should a match be found, then the secondary tables ACTION will take precedence.

The Primary and Secondary Tables consist of the same 2 components; A phone Number to match (including wild cards) and an Action to be executed once a match is found. The Phone Number portion can be any length from 1 to 15 digits. If the user has Dialed only one digit, only table entries of one digit in length are checked for a match. When the user has Dialed 2 digits, then only table entries of two digits in length are checked for a match, and so on.

PROGRAMS

The LP 301 contains 10 Parallel Programs generally used for controlling the Trunk Side of the unit, and a DROP Program executed when the user goes off hook. Programs consist of Programming Instructions, which instruct the LP 301 to do various tasks.

The following is an example of the program to dial into the long distance carrier network

6401 6000 93 99

```
|      |      |      |
|      |      |      \ Wait for Hang Up by User
|      |      \ Join Trunk and Drop
|      \ Dial Drop Recorded Destination Number
\ Dial Carrier Network Access Code contained in Bin 01
```

DROP PROGRAM

This program is used to define what actions the LP take when the telephone goes off hook (i.e. look at the Search Tables to determine what trunk group to place the call over). This program may also cause a Parallel Program to be launched and run simultaneously with the DROP PROGRAM.

The Drop program will automatically go into split mode upon picking up the handset. The standard Drop programs that should be used are **700 99** or **701 99**.

PARALLEL PROGRAM

This program is used to define how the LP 301 will interact with the trunk (i.e. what to dial to the trunk and/or what to expect from the trunk). PARALLEL PROGRAMS, once launched by the DROP program, run simultaneously with it. There can be up to 10 Parallel Programs.

GENERAL PURPOSE NUMBER BINS

The LP 301 contains 10 General Purpose Number Bins of 20 digits each, for holding commonly used Number Strings. Items such as Local Access Phone Numbers, Authorization Codes, etc. may be programmed into a Bin. When a Program executes, it may contain an instruction to dial the digits contained in one of the bins.

SYSTEM PARAMETERS

Various overall system setting may be programmed (See Appendix "B"). This allows adaptation for different services and country requirements.

LP 301 PROGRAMMING

Programming of the LP 301 dialer can be accomplished by using the Windows based program, Zoo Keeper II.

Programming can be done either locally or remote.

DTMF TELEPHONE PROGRAMMING

It is not possible to input data from a DTMF phone, other than setting the date and time. You can recall the Electronic Serial Number and Call Peg Counts from the dialer but you require a digit grabber to have the digits displayed. After you have entered the programming code, referred to as the WAKE-UP code, you enter the data string into the dialer.

To enter program mode locally via a DTMF phone you would enter ***01*#.

To enter program mode from a DTMF telephone you must;

- Go Off-Hook on the Drop Side Telephone
- Enter the Wake-Up Code ***01*#

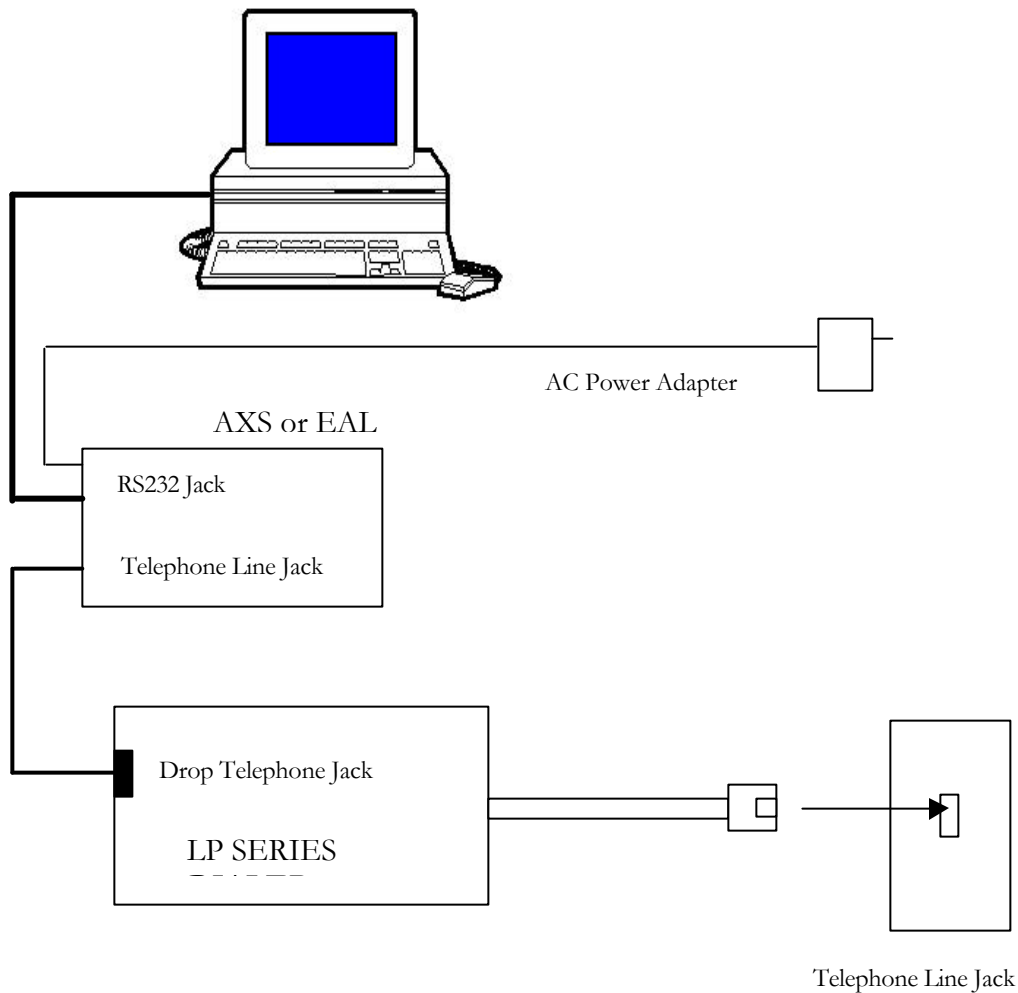
Once Wake-Up Mode has been entered, the dialer will issue 1 beep (DTMF Tone Burst). Upon successful entry into PROGRAM MODE you may now change the date and time, recall the Serial Number or recall and/or reset the Call Peg Counts. LP 301 will issue 1 beep (DTMF Tone Burst) after the successful completion of a programming mode command. If a mistake occurs while inputting a programming mode command, LP 301 will issue 2 beeps (DTMF Tone Bursts).

P.C PROGRAMMING

It is possible to input the database required to have LP 301 perform the call routing necessary for your application, check it for accuracy and then Upload it into the dialer.

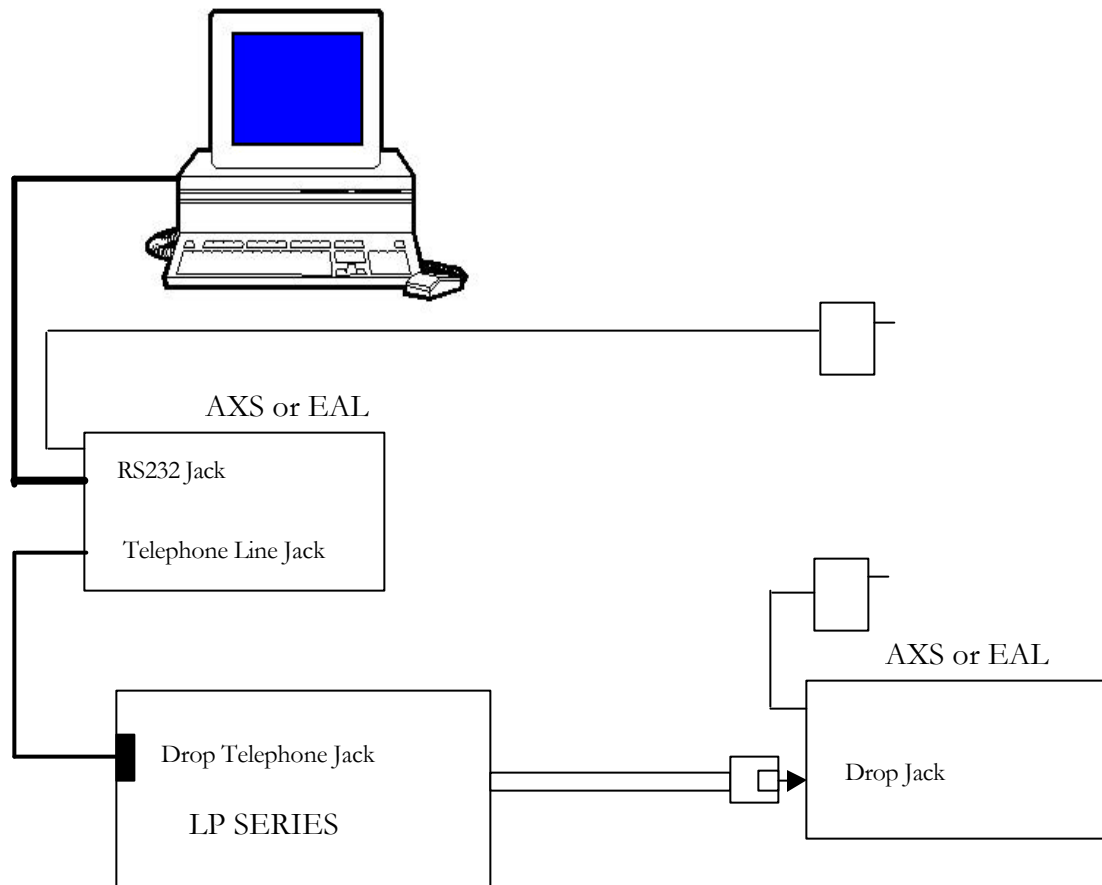
Once you have installed the Zoo Keeper II Dialer Maintenance Program into your computer's Windows program you can begin to customize the database. All the dialers programming can be configured here, stored in a database and recalled for Uploading whenever it is required.

Once this information has been input into the database and you have checked it for accuracy it can now be Uploaded into the LP301. Before you begin Uploading you can choose which parts of the database you wish to Upload into the dialer, all the parameters, the search tables, general purpose bins and programs. The information is sent to the dialer in 'blocks' and therefore, individual parameters can not be modified using the Zoo Keeper II interface to do online programming and remote maintenance.



Local Programming Configuration

1. Connect the programming cable from the computer to an EAL/AXS dialer.
2. Plug the AC adapter plug of the EAL/AXS into an electrical outlet.
3. Connect a line cord from the Line Jack on the EAL/AXS to the Drop jack on the LP Series dialer.
4. Plug the LP Series line cord into a telephone line jack.
5. Click 'Connect' in the Upload screen of Zoo Keeper II.
6. 'Pmh1' sent to EAL/AXS to put it into Programmer Mode.
7. Program Mode Code `***01*#` sent to LP dialer.



Alternate Local Programming Configuration

1. You require 2 EAL/AXS dialers.
2. Connect the programming cable from the computer to the first EAL/AXS dialer.
3. Plug the AC adapter plug of the EAL/AXS into an electrical outlet.
4. Connect a line cord from the Line Jack on the first EAL/AXS to the Drop jack on the LP Series dialer.
5. Plug the AC adapter plug of the second EAL/AXS into an electrical outlet.
6. Program the second EAL dialer as idle mode split and the Drop program as 99.
7. Plug the LP Series line cord into a second EAL/AXS Drop jack.
8. Click 'Connect' in the Upload screen of Zoo Keeper II.
9. 'Pmh1' sent to the first EAL/AXS to put it into Programmer Mode.
10. Program Mode Code `***01*#` sent to LP dialer.

SYSTEM OPTIONS PROGRAMMING

This section contains program code descriptions for all of the LP301's parameters. The Parameter Code shown is so that a reference can be made to our other dialers. The Parameter Numbers are not used in the uploading of the information to the dialer as its value is contained in the 'block' of programming that is sent.

GENERAL OPTIONS

FAILURE - RETRIES

Code 006XX
 Parameters XX = 00 to 10 Retries
 Description Upon failure of any of the Tone Detection Program Instructions (Such as Dial Tone), this parameter determines how many retries to attempt if the Tone Detection Failure instruction allows a retry. An entry of 00 will cause no retries, only the original attempt will be done.
 Default = 3 Retries.

PASSWORD

Code 009XX
 Parameters XX = 1 to 8 digit password
 Description Entering a Password prevents unauthorized access to programming mode. Once a password has been entered, a person attempting to enter programming mode must enter the valid password before programming mode will be allowed. If a Password has been forgotten, LP301 must be RESET to Factory Default with the * (star) Reset. (See 'About Password')
 Default = NONE.

CALL HOME MODE

Code 013XY
 Parameters X = 0 No Call Home
 X = 1 Call Home on Call Home Day at midnight
 X = 2 Call Home on Call Home Day randomly within Call Home Hour
 X = 3 Call Home at Random Time on Call Home Day
 Y = 1 Call Home 10 minutes after power up
 Y = 0 No Call Home after power up.
 Description This parameter allows for the modification of the Call Home program timing. The first variable allows the programmer to determine when the Call Home Program will be executed once the Call Home Day occurs. This day is determined by the parameter 015XXYY.
 The second variable allows the programmer to set the dialer to Call Home automatically 10 minutes after each power up.
 Default = 0 No Call Home, 0 No Call Home after power up

AUTOMATIC CALL HOME

Code	015DDHH
Parameters	DD = Number of days between calls for updates HH = Hour of day to call home
Description	This instruction will allow for the dialers to automatically 'call home'. The 'home' location must have the ability to automatically answer the incoming call. The dialer uses program 24 for 'calling home'. Default = 00 Days, 00 Hour

CALL HOME RETRY INTERVAL

Code	None
Parameters	XX = Number of minutes between retries in 6 minute increments
Description	This timer is only activated if a Call Home attempt fails. Default = 60 minutes

TRUNK SIDE OPTIONS**DIALLING TYPE**

Code	021X
Parameters	X = 0 – Auto X = 1 – DTMF X = 2 - Rotary
Description	The LP 301 can dial using either DTMF Tones or Dial Pulse. This parameter selects the initial method for LP 301 to dial digits towards the Trunk. The Auto selection configures the dialer to detect the type of dialling used on the Drop side and to dial to the PTT using the same dialling type. You may however switch from DTMF to Pulse, or Pulse to DTMF with Program Instructions 20 and 21 while executing a program. Default = 0 – Auto

PULSE DIALLING SPEED

Code	023
Parameters	None
Description	The LP 301 dials towards the Trunk at 10 pulses per second, with a 67/33 percent break/make ratio. For country approvals, we will default the speed to the correct setting for that country.

PULSE INTER-DIGIT TIME

Code	024
Parameters	None
Description	When pulse Dialling has been selected, this parameter controls the inter-digit time. The delay between completion of pulsing out one digit, and beginning to pulse out the next digit is 900 milliseconds. For country approvals, we will default the time to the correct setting for that country.

DTMF DIALLING SPEED (ON TIME)

Code 026XX
Parameters XX = 04 to 99 (X 10 Milliseconds)
Description DTMF Dialling TONE ON Time can be set to any duration from 40 MS to 990 MS. Along with DTMF Inter-Digit Time, this parameter allows any combination of DTMF Dialling speed desired.
Default = 60 Milliseconds.

DTMF INTER-DIGIT TIME (OFF TIME)

Code 027XX
Parameters XX = 04 to 99 (X 10 Milliseconds)
Description DTMF Dialling TONE OFF Time can be set to any speed from 40 MS to 990 MS. Along with DTMF Dialling Speed, this parameter allows any combination of DTMF Dialling speed desired.
Default = 60 Milliseconds.

RELEASE/RESEIZE TIME

Code 032XX
Parameters XX = 01 to 50 (X 50 Milliseconds)
Description When any instruction is executed that will result in the Trunk Side of LP 301 to go to the OFF-HOOK state, this timer determines if the off hook condition can happen immediately, or not. If a previous instruction had just placed the LP 301 in the ON-HOOK state, then the instruction to go OFF-HOOK might violate this Release/Reseize time. If this should occur, the program will delay execution until this timer is satisfied.
Default = 20 (1000 Milliseconds).

RING DETECT CADENCE

Code 036X
Parameters X = 1 to 9 seconds
Description This parameter allows adjustment of the time that LP 301 will wait at the end of one ring signal for the beginning of the next ring signal, or the call is answered, before the dialer decides that there is no longer a call coming into the dialer.
Default = 7

DIAL TONE FREQUENCY

Code 040XXXXYYYYZZ
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
ZZ = Tolerance (Percent)
Description LP 301 allows you to define all of the parameters required to detect dial tone. since dial tone is not uniform around the world, or even around the country, this insures compatibility. For standard Dial Tone (440 HZ + 350 HZ), set the Low Frequency to 0350; the High Frequency to 0440; and the tolerance to 08
Default = Low: - 350 Hz
High - 440 Hz
Tolerance - 8%

TONE BURST FREQUENCY

Code	043XXXXYYYYZZ
Parameters	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)
Description	LP 301 allows you to define all of the parameters required to detect a Tone burst. This feature may be used if LP 301 is required to detect some form of confirmation tone, such as 1000 HZ. For a single frequency tone, set both the HIGH and LOW frequencies to the same frequency, and the tolerance about 08. Default = Low - 1450 Hz High - 1450 Hz Tolerance -12%

DROP SIDE OPTIONS**OFF HOOK RECOGNITION**

Code	050
Parameters	None
Description	When the Drop Side telephone goes off hook, it must remain off hook and in a stable state for 200 milliseconds, in order for it to be recognized as an OFF-HOOK condition.

DIALLING TYPE

Code	052X
Parameters	X = 0 - DTMF or PULSE X = 1 - DTMF Only X = 2 - PULSE Only
Description	Dialling Type selects what type of Dialling that LP 301 will recognize from the Drop Side telephone. 2 will enable pulse recognition, and any DTMF digits present will not be recognized. 1 will enable DTMF recognition, and any pulse digits present will not be recognized. 0 allows LP 301 to automatically detect the mode of Dialling and will accept either DTMF or Pulse digits. Default = 0 - DTMF or Pulse

INTER-DIGIT TIME OUT - FIRST DIGIT

Code	053XX
Parameters	XX = 05 to 99 Seconds
Description	When the Drop Side telephone goes off hook, this timer determines how long the user can delay dialling the first digit before LP 301 executes it's next instruction. Default = 20 Seconds

INTER-DIGIT TIME OUT - NOT-FIRST DIGIT

Code	054XX
Parameters	XX = 02 to 99 Seconds
Description	When the Drop Side telephone goes off hook, and begins Dialling, this timer determines how long the user can delay dialling another digit, before LP 301 executes it's next instruction. Default = 5 Seconds.

END OF DESTINATION NUMBER DIGIT

Code 062X
Parameters X= 0-9,A, B, C, D, #, *
Description This entry is used to terminate digit collection before a timeout. Once dialled, the digit is discarded.
Default = #

SET DATE

Code 070DDMMYY
Parameters DD = Day (01 to 31)
MM = Month (01 to 12)
YY = Year (00 to 99)
Description The LP301 maintains a Real Time Clock for Day of Week routing. This option simply sets the current date in the form of YYMMDD. For example to enter June 15 2005 you would enter:
070150605.

SET TIME

Code 071HHMMSS
Parameters HH = Hours (00 to 23)
MM = Minutes (00 to 59)
SS = Seconds (00 to 59)
Description The LP 301 maintains a Real Time Clock for time of day routing. This option simply sets the current time in the form of HHMMSS. For example to enter 10:45:20 (AM) you would enter:071104520 (The Test Time of Day feature allows different programs to execute at different times of day)

DROP/RING/PARALLEL PROGRAM INSTRUCTIONS

Programs are what make LP 301 perform all of its tasks. With the correct set of programs, LP 301 can redirect outgoing calls; monitor call traffic or almost any other telecommunications control function. Programs are made up of strings of instructions. This section contains Drop/ Parallel program code instruction descriptions.

NO-OPERATION

Code 00
 Parameters NONE
 Description This instruction does nothing. It is typically used after one of the tone detection instructions (Eg: 50), which skip the following instruction upon success. If no special action is required, on failure, you need to have a "DO NOTHING" instruction.

DIAL DIGITS

Code 10XXYYYY
 Parameters XX = Number of Digits to dial
 YY = Digits to Dial
 Description When LP 301 is required to dial digits towards the telephone company Central Office, such as a telephone number, this instruction can be used. For example the instruction 10075551212 is interpreted by LP 301 as Dial the 7 Digit number 5551212 using the current dialling method (See 20 and 21 below).
 The following are allowed digits in a 10 instruction:
 0 to 9, A, B, C, D, * and #
Note: To dial the '*' digit '**' must be entered

SWITCH TO TONE DIALLING

Code 20
 Parameters NONE
 Description This instruction will make the LP 301 use DTMF Tone dialling from this point on during this call. This command could be used, if LP 301 is set-up to dial Pulse, due to the customer having Pulse Lines, but after dialling into a PBX or Computer, LP 301 would be required to switch to DTMF in order to signal properly. (See Instruction 21 below as well)

SWITCH TO PULSE DIALLING

Code 21
 Parameters NONE
 Description This instruction will make the LP 301 use Dial Pulse dialling from this point on during this call. (See Instruction 20 above for more detail).

WAIT FOR USER

Code 45
 Parameters None
 Description This instruction when used in a Parallel Program will cause the Parallel Program to wait for a user time out. Since the Parallel Program is triggered by a match in the Primary Table, and the Drop program and Parallel program run independent of each other, there are times when you may wish the Parallel Program to wait until the Drop Program has finished recording digits. This instruction will wait for a timeout by the user from any of the record digit instructions (700 or 701).

RESEIZE LINE

Code 46
Parameters None
Description This instruction when used in a Parallel Program will cause the LP 301 to disconnect from the PTT line, delay for 2-3 seconds and then go back off hook. The time delay is dependant on the Release/Reseize Timer, 032. It must be used at the beginning of the parallel program if the LP301 is being used in conjunction with a PBX that is using pulse lines.

DETECT DIAL TONE ON TRUNK SIDE **

Code 50XX
Parameters XX = Seconds to Wait (01 to 99)
Description Before dialling a phone number, you may wish to verify that dial tone is present. Adding the '50' instruction to your program will do just that. The 2 digit XX specifies how long to wait for dial tone if it is not immediately present.
Upon successful detection of tone the next instruction in the program will be skipped. This allows you to determine the action upon failure. For example, a 97 instruction following this instruction would hang up and give re-order tone. If you wish to continue regardless, simply place a 00 instruction (NO-OPERATION) following this instruction.

DETECT DTMF DIGIT ON TRUNK SIDE **

Code 51XYY
Parameters X = Digit to Detect
YY = Seconds to Wait (01 to 99)
Description When interacting with a PBX or Computers, LP 301 may be required to detect DTMF digits and respond to them. This 51 instruction does this. It will wait for YY seconds for the digit X.
Upon successful detection of tone the next instruction in the program will be skipped. This allows you to determine the action upon failure.
NOTE: The LP 301 contains only one DTMF receiver, so if this instruction is in a parallel program you must make sure that an instruction in the DROP program is not also using the DTMF receiver. Whichever instruction is executed last will take control of the DTMF receiver, and the other instruction may be delayed.

DETECT TONE BURST ON TRUNK SIDE **

Code 52XX
Parameters XX = Seconds to Wait (01 to 99)
Description When interacting with a PBX or Computers, the LP 301 may be required to detect a TONE and respond to it. The '52' instruction does this. It will wait for XX seconds for the tone.
Upon successful detection of tone the next instruction in the program will be skipped. The frequency of the tone must first have been set in the system parameters (See Tone Burst Frequency 043).

WAIT FOR HOST**

Code	55XX
Parameters	XX = XX = Seconds to Wait (01 to 99)
Description	This is the time to wait for the 'Host' site to answer the incoming call from a remote dialer during the execution of the Call Home Program.

DELAY

Code	59XX
Parameters	XX = 01 to 99 (X 100 Milliseconds)
Description	If a FIXED delay is required, use the '59' instruction. For example, 5950 will cause the program to halt for 5.0 seconds before it executes the next instruction.

DIAL DROP RECORDED DESTINATION NUMBER TO TRUNK

Code	60XX
Parameters	XX - Maximum Digits to Dial (01 to 20)
Description	<p>This instruction is used in a PARALLEL program to dial the destination telephone number dialled by the user. The digits that 60 dials must first have been collected with one of the 70X instructions (See Below) from the Drop Program.</p> <p>When the parallel program executes this instruction it will dial any digits that the user has dialled up to this point. Since the Drop Program may still be executing its 70X instruction, the parallel program will wait at this instruction for digits to dial until one of three things happen; the drop hangs up; the drop reaches an inter-digit timeout in which case the number is assumed to be complete, or the XX number of digits has been input by the user and dialled by this instruction in which case the number is again assumed to be complete.</p> <p>The XX Maximum Digits is intended to be used to eliminate the inter-digit time. For a program that is responsible for dialling long distance telephone numbers in North America, the XX should be set to 11. This means that after the user has dialled 11 digits, the '60' instruction can assume that the number is complete and continue to the next instruction thus avoiding the inter-digit time. If XX is set to 00, then the program will not continue until an inter-digit time out has occurred (no maximum digits).</p>

DIAL DIGITS IN BIN XX TO TRUNK

Code	64XX
Parameters	XX - Bin Number (01 – 10)
Description	When a program is required to dial a local access phone number, or authorization code, it may be easier to place these numbers into one of the General Purpose Number Bins. You could place the local access number in bin 1 and the authorization code in bin 2. Using this technique, many LP 301 diallers could be programmed with exactly the same program, and then each individual LP 301 could have a unique authorization code programmed. For example 6402 will dial the digits contained in bin 2

RECORD DROP DIALLED DIGITS, SEARCH PRIMARY TABLE

Code 700
Parameters NONE
Description This command is used in the Drop or Ring Program. When executed it clears out any digits in the input buffer, and begins recording the user Dialed digits. This command will continue recording digits until either the user hangs up, or an inter-digit timeout occurs. As the user dials digits, the Primary Search table is searched for a match and if a match is found, then a parallel program will begin execution in PARALLEL with the Drop Program.

RECORD DROP DIALLED DIGITS, SEARCH PRIMARY AND SECONDARY TABLE

Code 701
Parameters NONE
Description This command is used in the DROP Program. When executed it clears out any digits in the input buffer, and begins recording the user Dialed digits. This command will continue recording digits until either the user hangs up, or an inter-digit timeout occurs. As the user dials digits, the Primary and Secondary Search table is searched for a match and if a match is found, then a parallel program will begin execution in PARALLEL with the Program.

BEEP TO DROP SIDE

Code 77X
Parameters X - Number of Beeps
Description This command will cause X beeps to be sent to the Drop Telephone. This instruction is useful for letting the user know of a completed instruction such as dialling.

DELETE DIGITS FROM USER DIALLED STRING

Code 8101XX
Parameters XX = Number of Digits to Delete
Description Certain applications require the modification of the user dialed digits. For example LP 301 may be programmed to redirect all international calls to a local carrier for alternate routing.
In this case, the number dialed by the user might be 001-33-4567890. The carrier may only require the actual phone number, not the 001. The command 810103 will transform 001- 33-4567890 into 33-4567890.

INSERT DIGITS INTO USER DIALLED STRING

Code 8201XXYY
Parameters XX = Number of Digits to Insert
YY = Digit(s) to Insert
Description Certain applications may require the modification of a user Dialed digit. The instruction 8201011 would convert 800-555-1212 to 1-800-555-1212

JOIN TRUNK AND DROP

Code 93
Parameters NONE
Description This instruction will JOIN the Trunk and Drop Circuits. When executed, the Tip and Ring of the Trunk are physically connected to the Tip and Ring of the Drop.

HANG-UP AND REORDER

Code 97
Parameters NONE
Description Execution of instruction 97 will terminate ALL running programs and release the Trunk Line (Go ON-HOOK) and provide the DROP with RE-ORDER tone until they hang up.

WAIT FOR HANG-UP BY USER OR TIMEOUT

Code 99
Parameters NONE
Description The action of the 99 instruction is dependant upon the program in which it is executed. If the instruction is in the DROP program, or a PARALLEL program triggered from a DROP program, then execution of the 99 instruction waits for an ON-HOOK condition of the DROP Telephone before executing the next instruction.

**** REQUIRES FAILURE INSTRUCTION**

DIAGNOSTIC COMMANDS

DIALER MASTER RESET

Code	020
Parameters	None
Description	Once in programming mode, enter 020 to reset the dialer to the default settings. This can be done either local or remotely.

PLAY/DISPLAY VERSION NUMBER

Code	80
Parameters	NONE
Description	Entering "80" will cause LP 301 to play/display its Firmware Version Number.

PLAY/DISPLAY SERIAL NUMBER

Code	095
Parameters	None
Description	Entering "095" will cause LP 301 to play/display the 8 digit electronic serial number.

PLAY/DISPLAY PROGRAMS

Code	98X
Parameters	X = 1
Description	Entering 981 will cause LP301 to play/display all programs. The format that they are played/displayed is the program instructions for each program beginning with program 01 to 10, 21 and 24 followed by a 'D'. If a program is blank then only a 'D' is played/displayed. After all the programs have been played a 'D' is displayed. This is used for verification of the program strings.

EMERGENCY BYPASS

If programming mode has been entered as a result of a Call Home Call, and the handset is picked up on the phone connected to the LP301, the programming session will be stopped. The dialer will hang up on the line side of the dialer and after 3 seconds go back off hook on the line side and connect the telephone directly to the PTT. No routing will be done for this call. The dialer stores a copy of the programming in memory and will automatically retry the Call Home program within 6 minutes of hanging up the Emergency Bypass call.

ABOUT PASSWORD

Password is a feature supported by Software Version 400032 and above. It is required and verified when entering programming mode either locally or remotely, but is not required on a call home call. If a password is required, the dialer will respond with the DTMF digit 'A'. You must begin to enter the correct password within 10 seconds. If the correct password is sent, the dialer will respond with the DTMF digit 'D', and you are now in programming mode.

If the correct password is not entered, or a time out occurs, the dialer will respond with 'B'B' and then disconnect.

If the password is not known, then you will not be able to enter programming mode. However, we have implemented a '*' RESET command. A technician can from the 'local telephone' only, press the '*' key continuously for more than 6 seconds when prompted with the 'A' (for password) . The dialer will then accept this command as a 'RESET' command and proceed to reset the dialer to factory settings. At this point, the dialer will respond with a 'D' and you are now in programming mode. This is done to ensure that if a password is lost or corrupt, that the dialer can be reset and reused. This '*' command is only available from the locally connected telephone, so there is no danger of anyone resetting and 'stealing' diallers remotely.

PROGRAM UPLOADING

Programming of a dialer can be accomplished by developing a database of system parameters and programs using the Zoo Keeper II program and then uploading this program into the dialer(s). Several databases can be developed for different applications and/or countries and then recalled and uploaded into dialers when required.

Once the program has been installed into the dialer any minor changes required, such as the Authorization number in the Bin can be done quickly.

UPLOADING A PROGRAM TO A LOCAL DIALER

Uploading of the database into the dialer can be done using a local AXS/EAL dialer. The LP301 must be connected to a PTT line and a line cord connected from the Trunk Jack of the AXS/EAL to the Drop Jack of the LP301.

1. Select the database record you wish to Upload from the 'Company Name' list.
2. Click the Upload icon on the toolbar or Upload from the main menu. The Upload interface screen will appear.
3. If this is the first time that the Upload is going to be used you should configure the program for the communication port it will use. Click 'Port' on the menu at the top, and then 'Configure'. The 'Settings' dialogue box appears which displays the Com Port and Baud Rate, which must be set to 2400. Once the proper selections have been made, Click 'OK'.
4. Select the connection type as 'Local'.
5. Select the items you wish to send to the dialer in the 'Upload Options' box. Selection is done by moving the cursor to the desired item and clicking.
6. Click the 'Connect' icon from the toolbar or 'Connection', 'Connect' from the main menu.
7. 'Programmer Mode OK' appears in the upper half of the transmission window when you have entered programmer mode on the local AXS/EAL. The Program Mode Access Code of ***01*# is sent to the LP301 through the AXS/EAL Trunk Jack. When programming mode is entered a 'D' appears on the screen followed by the firmware version and serial number. Once this information is received a 'D' appears at the end of the line.
8. Click the 'UPLOAD' button in the bottom right corner of the screen. The first item that was selected in the Uploads options box is highlighted. The program is sent to the LP301 as 'blocks' with checksum values at the end of the string. As each block of information is sent a 'D', for a successful upload of the block, or 'BB', when an error occurs, appears in the Receive Window to indicate the status.
9. When all the selected items have been sent 'TX - Done' is displayed in the Message Window.
10. Click the 'Disconnect' icon from the toolbar or 'Connection', 'Disconnect' from the main menu.

UPLOADING A PROGRAM TO A REMOTE DIALER USING THE MANUAL DIAL FEATURE

1. Select the database record you wish to Upload from the 'Company Name' list.
2. Click the Upload icon on the toolbar or Upload from the main menu. The Upload interface screen will appear.
3. If this is the first time that the Upload screen is going to be used you should configure the program for the communications port it will use. Click 'Port' on the menu at the top, and then 'Configure'. The 'Settings' dialogue box appears which displays the Com Port, and Baud Rate. Once set to the correct values Click 'OK'.
4. Select the connection type as 'Remote Manual'.
5. Select the items you wish to send to the dialer in the 'Upload Options' box. Selection is done by moving the cursor to the desired item and clicking.

6. Place a telephone call to the remote dialer using the telephone connected to the AXS/EAL dialer that is being used to do the programming.
7. When someone answers the remote end, click the 'Connect' icon from the toolbar or 'Connection', 'Connect' from the main menu.
8. 'Programmer Mode OK' appears in the upper half of the transmission window when you have entered programmer mode on the local dialer. 'DIALING Remote Site' appears in the Message box below the transmission windows.
9. Below the Transmit Window is a box indicating the line status. Once the remote end answers and the Program Mode access code has been recognized, the line status message changes to 'Remote OK Received' and 'D' appears in the Receive Window.
10. Click the 'UPLOAD' button in the bottom right corner of the screen. The first parameter that was selected in the Uploads options box is highlighted. The parameters are displayed in the bottom Transmission screen as they are being sent. As each block of programming is sent a 'D' or 'BB' appears in the Receive Window to indicate the status.
11. When all the selected parameters have been sent 'TX - Done' is displayed.
12. Click the 'Disconnect' icon from the toolbar or 'Connection', 'Disconnect' from the main menu.

APPENDIX "A" PROGRAM MODE COMMANDS

<u>Code</u>	<u>Description</u>
***01*#	Program Mode Wake Up Code Local Access
***00*#	Program Mode Wake Up Code Remote Access
80	Play Version Number
095	Play Electronic Serial Number
981	Play/display Programs

APPENDIX "B" SYSTEM PARAMETERS

<u>Code</u>	<u>Description</u>	<u>Parameters</u>
006XX	Failure - Retries	XX = 01 to 10 Retries
009XXXXXXXXX	Password	XXXXXXXXXX=0-9,A, B, C, D, #, *
013XY	Call Home Mode	X = 0 No Call Home X = 1 Call Home on Call Home Day at midnight X = 2 Call Home on Call Home Day randomly within Call Home Hour X = 3 Call Home at Random Time on Call Home Day Y = 1 Call Home 10 minutes after power up Y = 0 No Call Home after power up.
015DDHH	Automatic Call Home	DD = Number of days between calls HH = Hour of day to call home
021X	Dialling Type	X = 1 - DTMF X = 2 - Rotary
023	Pulse Dialling Speed	10 PPS 65/35
024	Pulse Inter-Digit Time	900 Milliseconds
026XX	DTMF Dialling Speed	XX = 01 to 99 (X 10 Milliseconds)
027XX	DTMF Inter-Digit Time	XX = 01 to 99 (X 10 Milliseconds)
032XX	Release/Reseize Time	XX = 01 to 99 (X 50 Milliseconds)
036X	Ring Cadence off time	X = 1-9 (X seconds)
040XXXXYYYYZZ	Dial Tone Frequency	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)

<u>Code</u>	<u>Description</u>	<u>Parameters</u>
043XXXXYYYYZZ	Tone Burst Frequency	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)
050XX	off hook recognition	200 milliseconds
052X	Dialling Type	X = 0 - DTMF or PULSE (Default) X = 1 - DTMF Only X = 2 - PULSE Only
053XX	Inter-digit Time Out First Digit	XX = 01 to 99 Seconds (00 = NO Time Out)
054XX	Inter-digit Time-Out Next Digits	XX = 01 to 99 Seconds (00 = NO Time Out)
070DDMMYY	Set Date	DD = Day (01 to 31) MM = Month (01 to 12) YY = Year (00 to 99)
071HHMMSS	Set Time	HH = Hours (00 to 23) MM = Minutes (00 to 59) SS = Seconds (00 to 59)

APPENDIX "C"**PROGRAM INSTRUCTIONS**

<u>Code</u>	<u>Description</u>	<u>Parameters</u>
00	No-Operation	
10XXYYYY	Dial YY Digits to Trunk Side	XX = Number of Digits to dial YY = Digits to Dial
The following are allowed digits in a 10 Instruction 0 to 9, A, B, C, D, * and #		
20	Switch to Tone Dialling on Trunk Side	
21	Switch to Pulse Dialling on Trunk Side	
45	Wait for User	
46	Reseize Line	
50XX	Detect Dial Tone on Trunk Side	XX = Seconds to Wait (01 to 99)
51XYY	Detect DTMF Digit on Trunk Side	X = Digit to Detect YY = Seconds to Wait (01 to 99)
52XX	Detect Tone Burst on Trunk Side	XX = Seconds to Wait (01 to 99)
55XX	Wait for Host	XX = Seconds to Wait (01 to 99)
59XX	Delay	XX = 01 to 99 (X 100 Milliseconds)
60XX	Dial Drop Recorded Digits	XX = Number of Digits to dial
64XX	Dial Digits in Bin # XX to Trunk	XX = 01 to 10
700	Record Dialed Destination Number - Searches Primary Table	
701	Record Dialed Destination Number - Search Primary and Secondary table	
77X	Provide X Beeps to Drop Side	X = 1 to 9
8101XX	Delete Digits from Dialed String	XX = Number of Digits to Delete
8201YYZZ	Insert Digits into Dialed String	YY = Number of Digits to Insert ZZ = Digit(s) to Insert
93	Join Trunk and Drop	
97	Hang-Up and Re-Order	
99	Wait for Hang-Up by User	

APPENDIX "D"**DTMF / DATA PORT DIFFERENCES / WILDCARDS**

Equivalent Codes:

<u>Description</u>	<u>DTMF Version</u>	<u>Data Port Version</u>	<u>Applies</u>
Enter	*#	Enter (HEX 0D)	Universal
Don't Care Wildcard (Any digits)	*0	?	Search Tables
Any Digit except 0 or 1 Wildcard	*1	!	Search Tables
0 or 1 Only Wildcard	*2	\$	Search Tables
DTMF DIGIT "A"	A, or *5	A	Search Tables
DTMF DIGIT "B"	B, or *6	B	Search Tables
DTMF DIGIT "C"	C, or *7	C	Search Tables
DTMF DIGIT "D"	D, or *8	D	Search Tables
DTMF DIGIT "*"	**	**	Search Tables