GLOBENET™

AXS Telephone Control Unit

Least Cost Routing / Store and Forward / Call Back Dialer

Manual

Issue 2.44 November 1998

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LIMITED WARRANTY

TERMS AND CONDITIONS

Warranty

1) Telcom Research warrants to the original purchaser that each unit of the Globenet™ AXS Telephone Control Unit is free from defects of material or workmanship; this warranty is limited as follows:
a) in respect of Parts,

- All versions of AXS dialers shipped from our premises prior to January 1 1996 carry a 15 month warranty commencing from our recorded ship date.
- North American (NA) version AXS dialers shipped from our premises as of January 1 1996 carry a 60 month (5 year) warranty commencing from our recorded ship date. All other versions of the AXS dialer shipped from our premises between January 1 1996 and December 31 1996 carry a 15 month warranty from our recorded ship date.
- All versions of AXS dialers shipped from our premises as of January 1 1997 carry a 60 month (5 year) warranty commencing from our recorded ship date. Each such replacement part is warranted for the balance of the original warranty.

b) in respect of labor required to remedy defects in equipment or workmanship,

- All versions of AXS dialers shipped from our premises prior to January 1 1996 carry a 15 month warranty commencing from our recorded ship date.
- North American (NA) version AXS dialers shipped from our premises as of January 1 1996 carry a 60 month (5 year) warranty commencing from our recorded ship date. All other versions of the AXS dialer shipped from our premises between January 1 1996 and December 31 1996 carry a 15 month warranty from our recorded ship date.
- All versions of AXS dialers shipped from our premises as of January 1 1997 carry a 60 month (5 year) 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 which 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 which 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

Telcom Research shall not be liable for any delay or for failure to perform its obligations hereunder resulting from any cause beyond Telcom Research's reasonable control, including but not limited to fires, explosions, floods, strikes, work stoppages or slow downs or other industrial disputes, accidents, riots, or civil disturbances, acts of civil or military authorities, inability to obtain licenses or consents necessary to service the Equipment, delays by suppliers or material shortages, or acts of third parties.

Limitation of Liability

Telcom Research shall have no liability for property damage or personal injury unless such damage or injury is directly caused by Telcom Research's negligence. In no event shall Telcom Research be liable for lost profits or for incidental, special or consequential damages, or for damages to related equipment arising out of or in connection with the sale, delivery, installation, performance or use of the Equipment.

TELCOM RESEARCH'S LIMITED WARRANTY EXTENDS TO THE PURCHASER AND IS NOT TRANSFERABLE. ALL CLAIMS UNDER THIS WARRANTY MUST ORIGINATE WITH THE ORIGINAL PURCHASER AND THE PURCHASER WILL INDEMNIFY AND HOLD TELCOM RESEARCH HARMLESS FROM ANY CLAIMS FOR BREACH OF WARRANTY ASSERTED AGAINST TELCOM RESEARCH BY ANY PERSON OWNING THE EQUIPMENT AFTER RESALE THEREOF BY THE PURCHASER.

TELCOM RESEARCH DOES NOT AUTHORIZE ANY PERSON (WHETHER NATURAL OR CORPORATE) TO ASSUME FOR TELCOM RESEARCH ANY OBLIGATION OR LIABILITY IN CONNECTION WITH OR WITH RESPECT TO ANY PART OR PARTS OF THE EQUIPMENT. THE SELLER OR DEALER OF ANY EQUIPMENT MANUFACTURED BY TELCOM RESEARCH HAS NO AUTHORITY TO MAKE ANY REPRESENTATION OR PROMISES ON BEHALF OF TELCOM RESEARCH OR TO MODIFY THE TERMS OR LIMITATIONS OF THIS WARRANTY IN ANY WAY.

ISC NOTICE TO USERS

Industry Science Canada (formerly the Canadian Department of Communications) label identifies certified equipment. This certification means that the equipment meets certain telecommunications network protective, operational and safety requirements. The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of certified connector assembly (telephone extension cord). The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be made by an authorized Canadian maintenance facility designated by the supplier. Any repairs to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user to disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution:

Users should not attempt to make such connections themselves, but should contact the appropriate electric inspection authority, or electrician, as appropriate.

AVIS:

L'étiquette du ministère des Communications du Canada identifie le matériel homologue. Cette étiquette certifie que le matériel est conforme a certaines normes de protection, d'exploitation et de sécurité des réseaux de télécommunications. Le Ministère n'assure toutefois pas que le matériel fonctionnera a la satisfaction de l'utilisateur.

Avant d'installer ce matériel, l'utilisateur doit s'assurer qu'il est permis de le raccorder aux installations de l'entreprise locale de télécommunication. Le matériel doit également etre installé en suivant une méthod acceptée de raccordement. Dans certain cas, les fils intérieurs de l'entreprise utilisés pour un service individuel a ligne unique peuvent etre prolongés au moyen d'un dispositif homologué de raccordement (cordon prolongateur téléphonique interne).
L'abonné ne doit pas oublier qu'il est possible que la conformité aux conditions énoncées ci-dessus n'empechent pas las degradation du service dans certaines situations. Actuellement,

les entreprises de télécommunication ne permettent pas que l'on raccorde leur matériel a des jacks d'abonné, sauf dans les cas précis prevus pas les tarrifs particuliers de ces entreprises.

Les réparations de matériel homologué doivent etre effectuées pas un centre d'entretien canadien autorisé désigné par le fournisseur. La compagnie de télécommunications peut demander a l'utilisateur de débrancher un appareil a la suite de réparations ou de modifications effectuées par l'utilisateur ou a cause de mauvais fonctionnement.

Pour sa propre protection, l'utilisateur doit s'assurer que tous les fils de mise a la terre de la source d'énergie électrique, des lignes téléphoniques et des canalisations d'eau métalliques, s'il y en a, sont raccordés ensemble. Cette précaution est particulièrement importante dans les régions rurales.

Advertissement:

L'utilisateur ne doit pas tenter de faire ces raccordements lui-meme; il doit avoir recours a un service d'inspection des installations électriques, out a électricient, selon le cas.

The **Load Number** (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device, to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the Load Numbers of all the devices does not exceed 100.

The Load Number of this unit is 4

L'indice de charge (IC) assigné a chaque dispositif terminal indique, pour éviter toute surcharge, le pourcentage de la charge totale qui peut etre raccordée a un circuit téléphonique bouclé utilisé par ce dispositif. La terminaison du circuit bouclé peut etre constituée de n'import quelle combinaison de dispositifs, pourvu que las somme des indices de charge de l'ensemble des dispositifs ne dépasse pas 100.

L'indice de charge de cet produit est 4.

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled "Digital Apparatus", ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe B prescrites dans la norme sur le matériel brouilleur: "Appareils Numériques", NMB-003 édictée par le ministre des Communications.

FCC NOTICE TO USERS

1. This equipment complies with Part 68 of the FCC rules. Underneath this equipment is a label that contains, among other information, the FCC Regulation Number and Ringer Equivalent Number (REN) for this equipment. If requested, this information must be provided to your telephone company.

2. An FCC compliant telephone cord must be used to connect this device to the telephone network, or premises wiring. See installation instructions.

3. The REN is used to determine the quality of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total RENs contact the telephone company to determine the maximum REN for the calling area.

4. If the AXS Dialer causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice is not practical, the telephone company will notify the customer as soon as possible. Also you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

5. Your telephone company may make changes in its facilities, equipment, operations or procedures that could affect the proper operation of your equipment. If they do, you will be given advance notice so as to give you an opportunity to maintain uninterrupted service.

6. In the event of operation problems with the AXS Dialer, disconnect your unit by removing the modular plug for the telephone company modular jack. If your regular telephone still works correctly, your unit has a problem and should be returned for repairs (in or out of warranty). If upon disconnection of your unit, there is still a problem on your line, notify the telephone company that they have a problem and request prompt repair service at no cost to the user.

7. There are no user serviceable parts within the AXS Dialer.

8. This equipment may not be used on party lines or coin telephone.

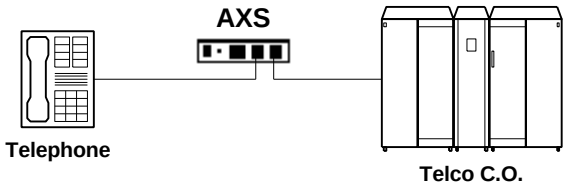
9. The software contained in the automatic Dialer to allow the user to the network must be upgraded to recognize newly established network area codes and exchange codes as they are placed into service.Failure to upgrade the premises systems or peripheral equipment to recognize the new codes as they are established will restrict the customer and the customers employees from gaining access to the network and to use these codes. Bell Communications Research (Bellcore), publishes the North American Numbering Plan (NANP) information in paper, microfiche and tape and can be contacted at (201)829-3071.

10. For repairs contact Telcom Research (905)336-2450 to obtain an authorization number (RMA Number) to return the dialer.

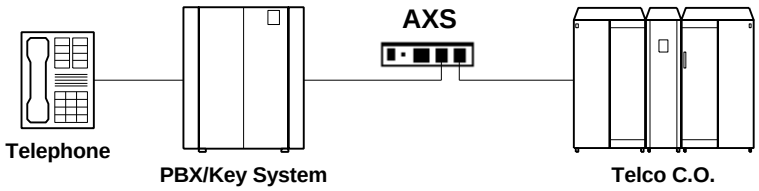
INSTALLATION

AXS can be installed in various configurations:

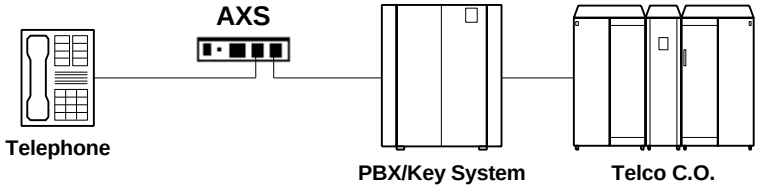
Between C.O. and Telephone



Between C.O. and PBX

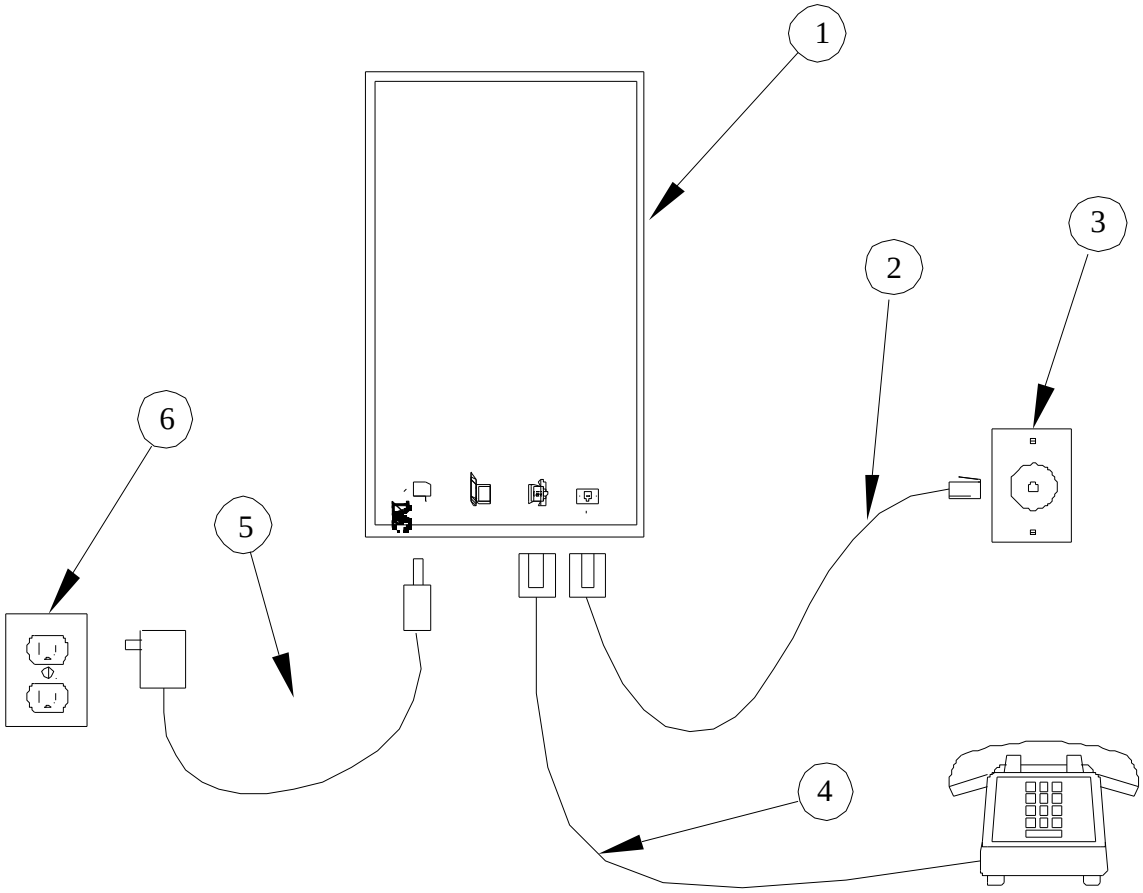


Between PBX and Telephone



Power (14 Volts AC) is provided through an external A/C adaptor which allows an appropriate adaptor to be selected based on the Voltage and Regulatory requirements of various countries.

Below is a diagram detailing the installation.



Legend:

1) AXS Telephone Control Unit
2) Modular RJ-11 Line cord to connect AXS to the Trunk Line or PBX
3) Trunk Line or PBX Extension
4) Telephone (FAX, Modem, PBX/Key System)
5) A/C Adaptor supplying 14 VAC @ 500 mA
6) A/C outlet to plug the A/C Adaptor into

CABLING

Trunk Jack

4 Pin Jack

Contact	Description
1	No Connection
2	Trunk Tip
3	Trunk Ring
4	No Connection

6 Pin Jack

Contact	Description
1	No Connection
2	No Connection
3	Trunk Tip
4	Trunk Ring
5	No Connection
6	No Connection

Drop Jack

4 Pin Jack

Contact	Description
1	No Connection
2	Drop Tip
3	Drop Ring
4	No Connection

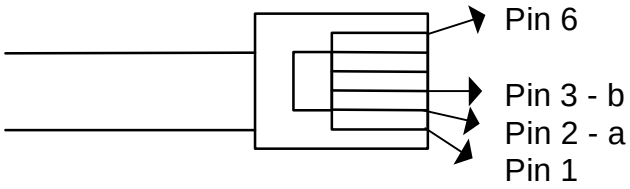
AXS Programming / SMDR Cable

Modular Plug Pin Number	DB9 Connector Pin Number
1	2
4	3
5	4
6	5

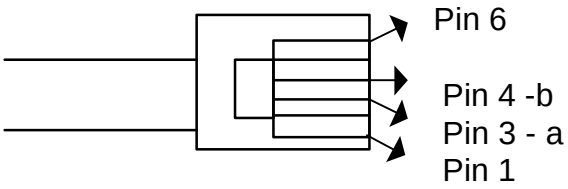
SPECIAL INSTALLATION CABLE ASSEMBLY

The pin locations of the PTT dial tone of Swiss telephone line cords is different that what is required for the AXS dialer. The standard pin outs for Switzerland is 2 and 3 at the modular plug end. However, the AXS dialer requires dial tone to be input on pins 3 and 4 of the trunk jack. The output of the dial tone is on pins 3 and 4 of the Drop jack of the dialer . However, the telephones require the dial tone on pins 2 and 3.

Swiss Modular Plug



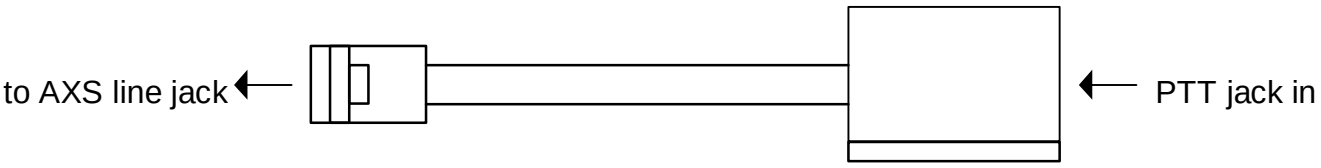
AXS Modular Plug (North American)



Note: ‘a’ and ‘b’ designations correspond to North American ‘Tip’ and ‘Ring’

We are having built 2 telephone adapter cords that will provide these conversions. One of the adapter cables will be a cable of approximately 6” that will have a modular plug, that will go into the dialer’s Line jack, and a receptacle on the other that the domestic line cord from the PTT jack plugs into. This cable will move the dial tone from pins 2 and 3 to 3 and 4 for input into the AXS. The second cable will be a standard 7’ cable with modular plugs on both ends. One end will be configured as a North American cable, dial tone output on pins 3 and 4, which will plug into the dialer’s Drop jack. The other end will be configured so that dial tone will be on pins 2 and 3, which is to be plugged into the telephone.

6” Adapter Cable



INITIAL POWER UP

After installation, AXS can be cleared to factory default by the following procedure:

a) Unplug A/C Adaptor
b) Place Telephone Set in the OFF-HOOK state
c) Plug in A/C Adaptor
d) You will hear AXS Dial Tone on the telephone handset
e) Dial 123
f) Wait 3 to 5 seconds
g) You will hear 5 beeps on the telephone handset
h) Hang-Up

At this point, AXS has reset all of its parameters to Factory Default. The AXS Unit is now configured to be a passive device and to allow both incoming and outgoing calls to be processed with no interuptions or modifications.

This procedure can also be used if programs with errors have been entered.

There is now an 8 digit number that is output by the dialer at power up along with the regular sign on message. This 8 digit number is an information message used by the Telcom Research Engineers. After Power Up you will see F0 F0 FF 01 included in the normal sign on message. This change was made in firmware 091.

TECHNICAL SPECIFICATIONS

Physical:

Size	5.6" X 3.5" X 1.1"
Weight	7.76 OZ
Colour	Black
Material	ABS Plastic

Specification	**Min.**	**Typ.**	**Max.**	**Units**
Power Requirement:				
Voltage	12		14	VAC RMS
Current	250		500	mA
Operating Temp.	0	20	40	DEGREES C
Storage Temp.	-40	--	+85	DEGREES C
Humidity	0	--	85	% (No Condensation)
DTMF Receiver:				
Level	-35		+3	dB
Level Difference	-6		+6	dB
Frequency	-1.5		+1.5	%
Duration	45			MS
Rotary Receiver:				
Break/make	55/45	60/40	65/35	%
Speed	10		20	PPS
DTMF Sender:				
Level	-5	-4	-3	dB
Twist	2		3	dB
Frequency	-1.5		+1.5	%
Duration	40	Programmable		MS
Rotary Sender:				
Break/Make	59/41	60/40	61/39	%
Break/Make	64/36	65/35	66/34	%
Speed	10	10	20	PPS (Programmable)

Specification	Min.	Typ.	Max.	Units
OFF Hook AC Impedance:				
300-3500 HZ		600		OHMS
DC Resistance:				
On-Hook	10			M OHMS
Off-Hook	200		300	OHMS
Other:				
Insertion Loss			0	dB
Ring Freq.	15		75	HZ
Ring Voltage	25		140	VAC RMS

GENERAL DESCRIPTION

The **AXS** Telephone Control Unit is a **Series Dialer** used for **ROUTING** of telephone calls as required by Long Distance Carriers, Inter-Exchange Carriers, FAX Store and Forward Service Providers, and International Call Back Service Providers. **AXS** can easily be configured for these and other applications with only a few key strokes, either via a PC connected to the Data Port, or via a Touch Tone Phone, locally or remotely. The power and versatility of the AXS is derived from it's built in programming language. If one of the default configurations is unsuited to your application, you can always access the underlying programming language and tailor the operation of the AXS to your particular requirements.

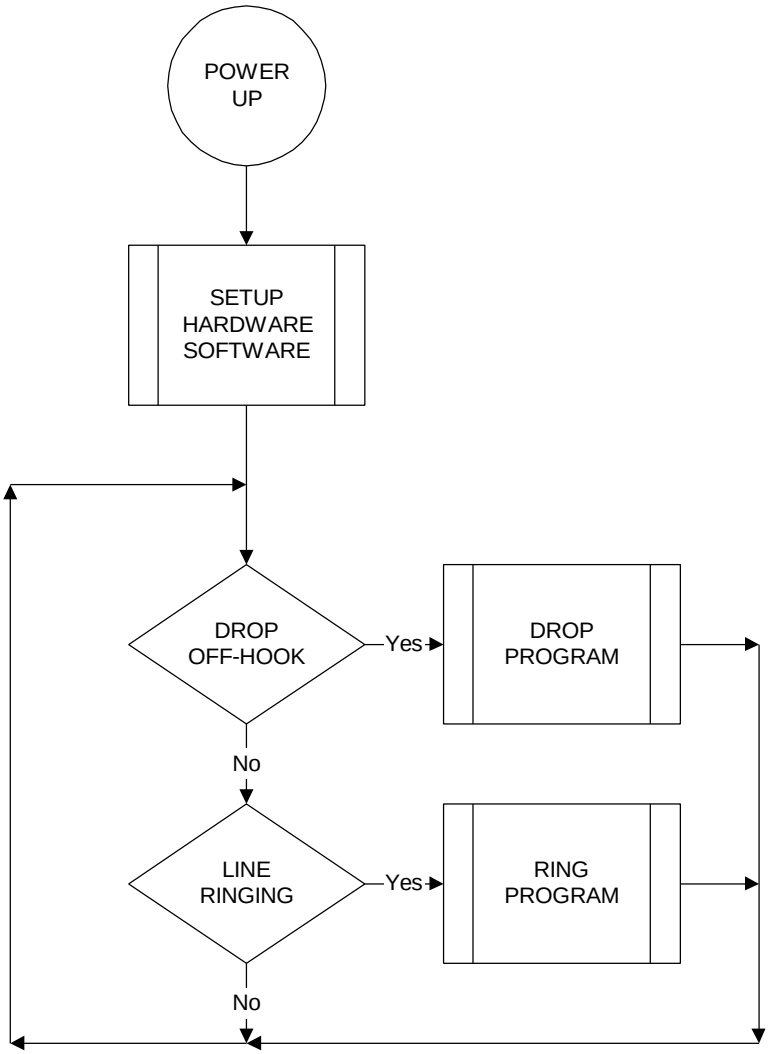
FEATURES

- Microprocessor Controlled
- Fully Programmable
- Non-Volatile Memory
- Real Time Clock
- Series Mode Transparent Store and Forward Dialing
- Least Cost Routing Tables with a capacity of about 12,000 digits
- 20 General Purpose Number Bins, for Local Access Numbers, Auth. Codes, etc.
- 99 Speed Dial Bins
- Verified or Unverified User Codes
- Verified or Unverified Client Codes
- Loop Start Compatability
- DTMF Dialing, (towards Trunk or Drop) with variable speed from 50 to 450 MS.
- DTMF Detection, (From Trunk or Drop)
- Pulse Dialing towards Trunk (10 or 20 PPS)
- Pulse Detection from Drop (10 or 20 PPS)
- Switchable from Tone to Pulse and back within the same Program
- Call Progress Detection (Dial Tone, Busy, Ring Back) with programmable frequency and tolerance
- Programmable Delay from 1 to 9.9 seconds
- Off Keypad Dialing (A, B, C, D)
- Centrex/PBX Compatibility
- Compatible with Telephone Company Features (Call Waiting, 3 way calling, Voice Mail, etc.)
- Remote Programming using DTMF, from a standard touch tone telephone or PC/Modem
- Local Programming using DTMF, from a standard touch tone telephone or PC/Modem
- Local Programming using the RS-232 Data Port.
- SMDR RS-232 Port
- Password Protection
- Programming playback
- Compatible in areas with and without interchangeable Office Codes and Area Codes.
- Programmable Timers (Off Hook, Dial Tone, Release-Reseize, etc.)

OPERATION

GENERAL

AXS contains 24 programs; One executed upon the user (Drop Side) going of hook (DROP PROGRAM); one executed when an incoming telephone call occurs (RING PROGRAM); and one of twenty programs (PARALLEL PROGRAM) launched by either the RING or DROP program as a result of a search table match, or program instruction. There are 2 additional programs which perform specific functions. One is a default extension to extension calling program which is used if PBX compatibility has been activated. The second is a Call Home program which can be used to automatically call to a site for database updating, providing the 'home site' has the ability to automatically set up a data conversation with the calling dialer.



Programming is accomplished either via the RS-232 DATA PORT (if equipped) using a serial terminal, or by DTMF Tones, either locally or remotely generated.

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

TABLES

AXS has 3 search tables. Primary (usually searched when a user dials a phone number), Secondary (Searched after a match in the Primary Table has caused an ACTION to Occur), and Incoming (Searched after detecting an Incoming Telephone Call.)

AXS begins searching its Primary Table once a program (usually the Drop Program) executes a 701 instruction, and the user begins Dialing a phone number. When a match is found, the appropriate ACTION is taken. At this point, the Secondary table is searched for a match. Should a match be found, then the secondary tables ACTION will take precedence. This two table system allows for implementation of the following example:

All Calls to 1416 are to execute Program 2
All 976 calls are to execute Program 20
Primary Table contains 1416 with Action 02 (Launch Program 2)
Secondary table contains 1???976 with Action 20 (Launch Program 20)
Program 20 contains the instruction 97 which will cause AXS to Hang-Up and give Re-Order Tone

When the user dials 1416 a match is found in the Primary table. This match causes program 2 to be executed. In the event however, the next 3 digits are 976, then a match will be made in the secondary table causing Program 20 to be executed, and program 02 to halt. Program 20 will execute the 97 instruction, disconnecting any call in progress, and providing the user with Re-Order Tone.

Primary, Secondary and Incoming Tables all consist of the same 2 components; A phone Number to match (including wild cards) and an Action (See Appendix "C") 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

AXS contains 20 Parallel Programs generally used for controlling the Trunk Side of the unit, a RING Program executed upon an incoming call, and a DROP Program executed when the user goes off hook. Programs consist of Programming Instructions (See Appendix "D") which instruct AXS to do various tasks. The following is an example of a very simple program to dial directory assistance.

```
90      92      50 10 0          10 07 5551212  93      99
 |       |       |                 |              |       |
 |       |       |                 |              |       \  Wait for Hang Up by User
 |       |       |                 |              \  Join Trunk and Drop
 |       |       |                 \  Dial 555-1212 (7 Digits)
 |       |       \  Wait up to 10 seconds for dial tone. If None Detected, continue anyway.
 |       \  Split Drop Side from the Trunk Side
 \  Go Off Hook on the Trunk side
```

Utilizing Instructions from Appendix "D", you can cause AXS to perform virtually any task. You have full control of both outgoing and incoming calls via these Programs.

DROP PROGRAM

This program is used to define how the AXS will interact with the User. The DROP PROGRAM defines what the User will hear (i.e. Call Progress Tones) and what actions to 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.

RING PROGRAM

This program is used to define what actions to take to process an incoming call. The RING PROGRAM may cause a Parallel Program to be launched and run simultaneously with the RING PROGRAM.

PARALLEL PROGRAM

This program is used to define how the AXS 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 either a DROP or RING program, run simultaneously as the program that launched it. There can be up to 20 Parallel Programs.

SPEED DIAL BINS:

AXS contains 99 Speed Dial Bins of up to 20 digits each. Speed Dial Bins are processed in the same manner as any number Dialed by a user. The Primary table is initially searched, followed by the secondary table. Speed Dial Numbers are inserted into the input buffer as if the user had dialed them himself. To access a speed dial number, the user must dial the Speed Dial Access Code (Default of #) followed by the two digit bin number (01 to 99)

Speed Dial Bins can be programmed during program mode, but can also be maintained by the user. For a user to program a speed dial bin they simply place the Drop Telephone in the off-hook condition, dial #*followed by the two digit bin number, followed by the phone number to program in. Termination of the entry is done by entering *# The following is an example of programming into bin 15 the phone number 555-1212.

Go Off-Hook	Hear Dial Tone
Dial #*	Hear a Beep
Dial 15	
Dial 5551212	
Dial *#	Hear a Beep
Hang-Up	

After Dialing the *# and hearing the beep, you can immediately dial another bin number and program another bin.

If CENTREX compatibility is active, then the Speed Dial Bin must also contain the CENTREX Access code to be used (Eg: 9-555-1212).

If you do not wish the user to have access to speed dial, simply assign a speed dial access code of "A", "B", "C", or "D". Since the user cannot dial these digits, they will not be able to access the feature.

GENERAL PURPOSE NUMBER BINS

AXS contains 20 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. Using the BIN system, AXS may be pre-programmed with a common set of RING, DROP, and PARALLEL programs. A technician in the field need only enter the Local Access Number(s) and Authorization Code(s) in the appropriate bins to configure the Dialer for a particular customer.

SYSTEM PARAMETERS

Various overall system setting such as DTMF Dialing rate and Pulse Dialing Rate etc. may be programmed (See Appendix "B") . This allows adaptation for different services and country requirments.

AXS PROGRAMMING

Programming of the AXS dialer can be accomplished in one of two ways, either via a touch tone telephone or the Windows based program, Zoo Keeper® , shipped with the dialer. Both of these programming methods allow you to customize your AXS programs and system parameters so that it can meet the needs of the Network it is working in to. Programming can also be done either locally or remote.

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TOUCH TONE TELEPHONE PROGRAMMING

It is possible to input your database from a touch tone phone after you have entered the programming code referred to as the WAKE-UP code. This is accomplished by dialing your code string on the dial pad. Once you have entered the data string into the dialer, it will return a confirmation or error tone.

P.C PROGRAMMING

It is possible to input the database required to have AXS perform the call routing necessary for your application, check it for accuracy and then Upload it into the dialer via it's RS232 port.

Once you have installed the Zoo Keeper® 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 AXS. Before you begin Uploading you can choose which parts of the database you wish to Upload into the dialer. Zoo Keeper® also provides the interface to do online programming and remote maintenance.

User goes off hook

Drop Program

90 - Off Hook Line Side

92 - Split Line & Drop

75 - Provide Tones to Drop

700 - Record Drop Dialed Digits

User dials Number

00 19053362450

99 - Wait for Hang Up

User Hangs Up

Being executed on Drop Side of dialer

Search Primary Table

Exact Match Found

Callback DID Number

Parallel Program

6405 - Dial No. in Bin 05

572001 - Wait up to 20 seconds for 1 Ringback Tone

97 - Hang up - If it fails

91 - Hang Up

5830 - Wait up to 30 seconds for Callback

97 - Hang up - If it fails

90 - Off Hook Line Side

5910 - Delay 1 second

810102 - Delete first 2 digits

6000 - Dial recorded digits

93 - Join Drop & Line

Call Completed

99 - Wait for Hang Up

Being executed on Line Side of dialer

The following is an example AXS Program, and 3 possible scenarios which use this programming.

EXAMPLE PROGRAM

Primary Table		**Secondary Table**		**Incoming Table**
1416	01	1???976	20	
1800	04			
1905	01			
011	02			

Speed Dial		**Bins**	
01	14163651185 *#	01	3651000 *#
02	19053362450 *#	02	9876543 *#
03	0113347612345 *#	03	4531945 *#
		04	60274965 *#

Program

01	90 50 08 36 60 93 99 *#
02	90 50 08 64 01 50 08 64 02 50 08 60 93 93 99 *#
03	90 50 08 64 03 50 08 64 04 50 08 81 01 03 60 93 99 *#
IN	93 94 20 95 99 *#
DROP	90 92 75 700 99 *#

Scenario #1:

DROP PROGRAM

a) User Picks up his phone (DROP Program is processed)
b) 90 Go Off Hook to Trunk
c) 92 Split Drop from Trunk
d) 75 Provide Drop with Telco Dial Tone
e) 700 Record Drop Dialed Digits; scan PRIMARY TABLE; upon a table match, Launch the appropriate PARALLEL Program; keep recording until an inter-digit time out.
f) User Dials 1416
g) Match Found in Primary table; PARALLEL Program 01 begins execution in parallel with the drop program.
h) User continues Dialing digits until a complete phone number is entered (14163331111)
i) After exceeding the inter-digit time out, then the 700 instruction is complete.
j) 99 Wait for the Drop to hang up.

PARALLEL PROGRAM

(Launched by the DROP Program)

a)	90	Go OFF-HOOK to Trunk
b)	50 08	Wait up to 8 seconds for dial tone from the Trunk. On SUCCESS, SKIP the next instruction.
c)	36	Hang-Up and Re-Start This PROGRAM Again (for a Maximum Number of retries specified by the failure Retries System Parameter (006XX)) This is not executed if dial tone was detected.
d)	60	Dial Drop Recorded Telephone Number (Wait for the 700 Instruction in the DROP program to complete, if required)
e)	93	Join Trunk and Drop
f)	99	Wait for Drop to Hang-Up
g)	*#	End of Program

Scenario #2:

DROP PROGRAM

a)	User Picks up his phone (DROP Program is processed)	
b)	90	Go Off Hook to Trunk
c)	92	Split Drop from Trunk
d)	75	Provide Drop with Telco Dial Tone
e)	700	Record Drop Dialed Digits; scan PRIMARY TABLE; upon a table match, Launch the appropriate PARALLEL Program; keep recording until an inter-digit time out.
f)	User Dials 011	
g)	Match Found in Primary table; PARALLEL Program # 02 begins execution in parallel with the drop program.	
h)	User continues Dialing digits until a complete phone number is entered (0113353754864)	
i)	After exceeding the inter-digit time out, then the 700 instruction is complete.	
j)	99	Wait for the Drop to hang up.

PARALLEL PROGRAM

(Launched by the DROP Program)

a)	90	Go OFF-HOOK to Trunk
b)	50 08	Wait up to 8 seconds for dial tone from the Trunk.
c)	64 01	Dial Digits from BIN # 1 (Local Access Number), to the Trunk
d)	50 08	Wait up to 8 seconds for dial tone from the Trunk.
e)	64 02	Dial Digits from BIN # 02 (Authorization Code), to the Trunk
f)	50 08	Wait up to 8 seconds for dial tone from the Trunk.
g)	81 01 03	Delete First 3 Digits from Drop Dialed Number . (Number NOW is : 3353754864)
h)	60	Dial Drop Recorded Telephone Number (Wait for the 700 instruction in the DROP program to complete, if required)
i)	93	Join Trunk and Drop
j)	99	Wait for Drop to Hang-Up
k)	*#	End of Program

Scenario 3:

RING PROGRAM

a)	Telco Trunk Begins to Ring	
b)	93	Join Trunk and Drop
c)	94 20	Wait for Drop to Answer, or Auto Answer after 20 Rings
d)	95	Watch for Program Mode String
e)	99	Wait for Drop to Hang Up (Or Auto-Answer Time-Out)
f)	*#	End of Program

The DROP program describes what happens when a user goes off hook; what actions to take, etc., and can launch a PARALLEL program. The PARALLEL program once started is executed simultaneously with the drop program. The purpose of the parallel program is to setup and describe the steps to be taken to route this telephone call to the appropriate destination. The same is true for the RING program as well.

ENTERING PROGRAM MODE

To enter program mode from a Touch Tone telephone you must;

- Go Off-Hook on the Drop Side Telephone or
- Answer an incoming call
- Enter the Wake-Up Code*****00*#**

Once Wake-Up Mode has been entered, the dialer will issue 1 beep ("D" DTMF Tone Burst). If the dialer has been configured for a password, AXS will issue a second beep ("A" DTMF Tone Burst). You must now enter the password (1-8 digits). If the password is correct the dialer will issue 1 beep ("D" DTMF Tone Burst) and you have entered Program Mode. If the wrong password is entered, AXS will hang-up and give Re-order Tone. The default program for the dialer is that there is no password required.

Upon successful entry into PROGRAM MODE you may now select any of the PROGRAM MODE Commands listed in Appendix "A". AXS will issue 1 beep ("D" DTMF Tone Burst) after the successful completion of a programming mode command and return to programming mode awaiting the next command. If a mistake occurs while inputting a programming mode command, AXS will issue 2 beeps ("B" DTMF Tone Bursts) and return to programming mode awaiting the next command.

To Exit Program Mode;

- Enter the Exit Code ***#**

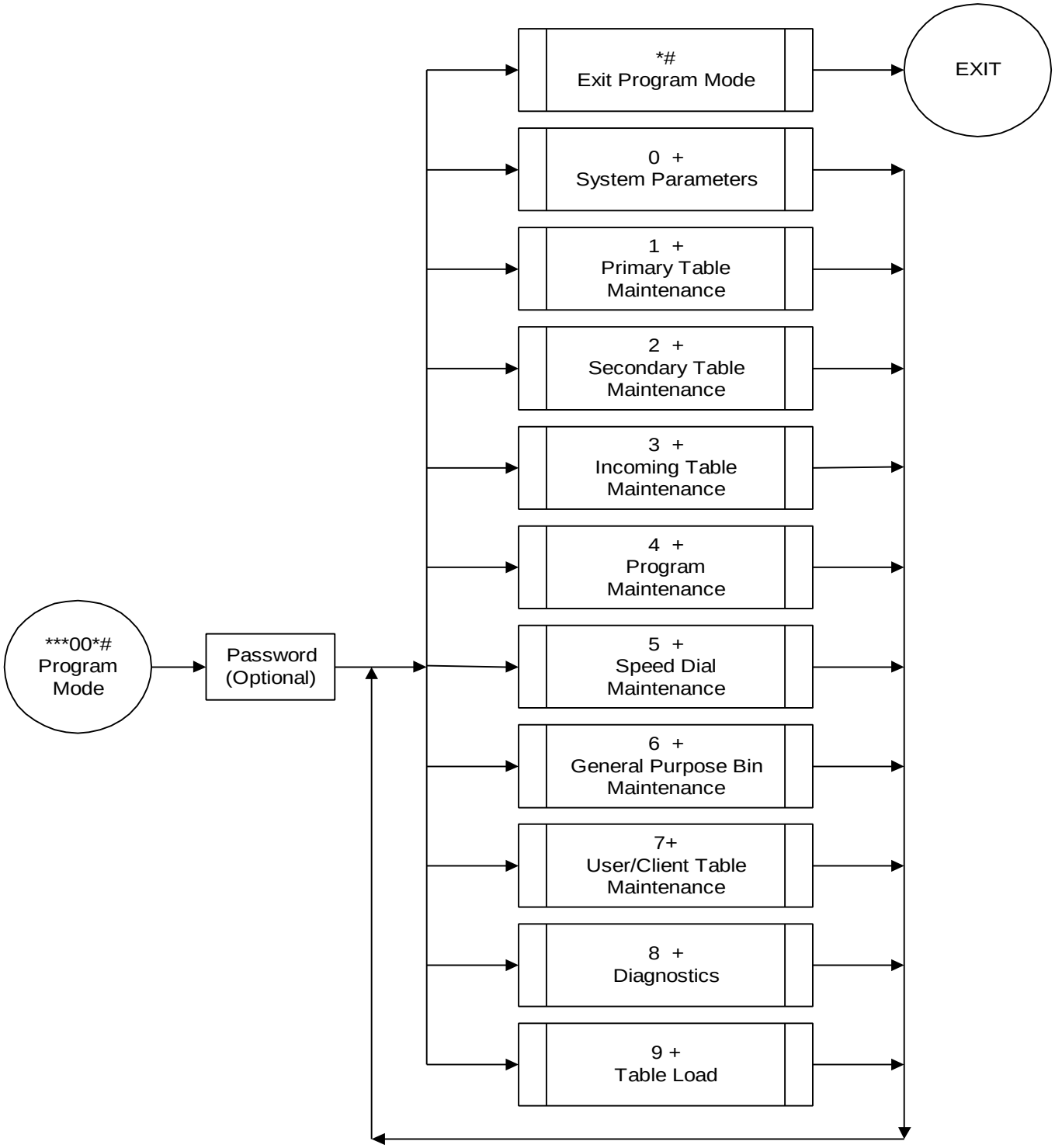
To enter programming mode via the AXS RS232 port using the Zoo Keeper® program

- "Double Click" the Zoo Keeper® icon in your Windows program
- Select "UPLOAD" from the Toolbar at top (The Program Mode screen will appear)
- Enter the **Programming Mode** Access Code *****00*#** or
- Click the '**Connect**' icon

Once the Access Code has been entered the dialer will issue a confirmation and "OK" will appear on the upper half of the transmission window. If the dialer has been configured for a password, AXS will display on the screen "Enter Password". You must now enter the password (1-8 digits). If the password is correct an "OK" will appear on the screen and you have entered Program Mode. If the wrong password is entered an "ERROR" message is displayed on the screen and the AXS exits you from Program Mode. The default program for the dialer is that there is no password required.

Upon successful entry into PROGRAM MODE you may now select any of the PROGRAM MODE Commands . After every successful entry of a Program Mode command "OK" will appear on the screen and AXS returns to program mode awaiting the next command. If a mistake occurs while inputting a command, "ERROR" will appear on the screen and
AXS returns to program mode awaiting the next command.

To Exit Program Mode;
Enter the Exit Code ***#** or
Click the '**Disconnect**' icon



At this point, you may select any of the PROGRAM MODE Commands listed in Appendix “A”. After successful completion of a Programming Mode command, AXS will issue a single beep (“D” DTMF Tone) and AXS will return to programming mode awaiting the next command.

If a failure occurs in entering the PASSWORD, AXS will hang-up and give RE-ORDER tone.

SYSTEM OPTIONS PROGRAMMING

This section contains program code descriptons for:
1) General System Options,
2) Trunkside Options,
3) Dropside Options.

When in programming mode, numerous system wide parameters are accessible.

GENERAL OPTIONS

DIALER ID

Code	000XX
Parameters	XX = ID of 01 to 99
Description	The Dialer ID is used to program a number between 01 and 99 (XX) to identify the Dialer in a multiple Dialer installation. This code is output in the SMDR Record Default = 11

SMDR ON/OFF

Code	001X
Parameters	X = 0 - Off X = 1 - All Calls X = 2 - Outgoing Only
Description	Controls the generation of SMDR Call Records. Default = 0 - Off

DATA PORT BAUD RATE

Code	002X
Parameters	X = 1 - 1200 BPS X = 2 - 2400 BPS X = 3 - 9600 BPS
Description	Selects the baud rate at which both programming information, and SMDR Call Records is transferred via the Serial Data Port Default = 2400 BPS.

IDLE STATE

Code	003X
Parameters	X = 0 - Trunk and Drop Split X = 1 - Trunk and Drop Joined
Description	This parameter selects the default idle state of AXS when the Drop telephone is on hook, no ringing signal is present, and no program is executing. Joined means that the Trunk Side Tip and Ring is physically connected to the Drop Side Tip and Ring. Split means that the Trunk and Drop are not connected, and that the Drop telephone is connected to an internal source for talk battery and Dial Tone. Default = 1 - Trunk and Drop Joined.

PROGRAM MODE TIME-OUT

Code	005XX
Parameters	XX = 01 to 99 Seconds
Description	When in programming mode, not via the local telephone set, but rather from a remote location, inactivity on the line (no DTMF Digits) for more than the specified time period will cause AXS to hang-up the line and disconnect.- “Error” appears on screen, must sign back on. Default = 60 seconds.

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 retires, only the original attempt will be done. Default = 3 retries.

SELECT COUNTRY- NOT AVAILABLE

Code	007XX
Parameters	XX = Country Number 01 = Canada 02 = USA 03 = Switzerland 04 = Spain 05 to 99 = TBD
Description	This command selects the country that the AXS Dialer is installed in. This setting adjusts system parameters according to the Telephone Interface Requirment for Type Approval for the selected country.

SELECT APPLICATION (FACTORY DEFAULT) - NOT AVAILABLE

Code	008XX
Parameters	XX = 00 - 09 = Long Distance Store and Forward Applications X X= 10 - 19 = FAX P.A.D. Store and Forward Applications XX = 20 - 29 = International Call Back Applications XX = 30 - 39 = Intra-Lata Applications
Description	You may select any of a number of pre-set factory defaults that fully setup AXS for particular applications.

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, AXS must be RESET to Factory Default with the POWER ON with HANDSET OFF HOOK method. Default = NONE.

BIN ONLY PROGRAM PASSWORD

Code 010XX
Parameters XX = 1 to 8 digit password
Description Entering a Password prevents unauthorized access to Bin Only Programming Mode. Once a password has been entered, a person attempting to enter Bin Only Programming Mode must enter the valid password before access to the General Purpose Bins programming mode will be allowed. Programming of the entire database is not allowed. If a Password has been forgotten, contact Telcom Research to RESET to the Factory Default.
Default = NONE

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' to have its tables updated for the purpose of least cost routing. The 'home' location must have the ability to automatically answer the incoming call, recognize the calling dialers ID and download an updated database . The dialer uses program 24 for 'calling home'.
Default = 0 Days, 0 Hour

TRUNK SIDE OPTIONS

DIALING TYPE

Code 021X
Parameters X = 1 - DTMF
X = 2 - Rotary
Description AXS can dial using either DTMF Tones or Dial Pulse. This parameter selects the initial method for AXS to dial digits towards the Trunk. You may however switch from DTMF to Pulse, or Pulse to DTMF with Program Instructions 20 and 21 while executing a program.
Default = 1 - DTMF.

PULSE DIALING SPEED

Code 023X
Parameters X = 1 - 10 PPS - 60/40 On/Off Percent
X = 2 - 20 PPS - 60/40 On/Off Percent
X = 3 - 10 PPS - 67/33 On/Off Percent
X = 4 - 20 PPS - 67/33 On/Off Percent
Description AXS can dial towards the Trunk at either 10 or 20 pulses per second, with either a 60/40 or 65/35 percent break/make ratio.
Default = 1 - 10pps.60/40 on/off

PULSE INTER-DIGIT TIME

Code 024XX
Parameters XX = 01 to 99 (X 50 Milliseconds)
Description When pulse Dialing has been selected, this parameter controls the inter-digit time. That is the delay between completion of pulsing out one digit, and beginning to pulse out the next digit. This delay allows compatibility with various phone systems, Central Offices, and Regulatory bodies. Possible times are in the range of 50 MS to 4.95 seconds.
Default = 500 milliseconds.

DTMF DIALING SPEED (ON TIME)

Code	026XX
Parameters	XX = 04 to 99 (X 10 Milliseconds)
Description	DTMF Dialing 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 Dialing speed desired. Default = 60 Milliseconds.

DTMF INTER-DIGIT TIME (OFF TIME)

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

DIAL SHUNT

Code	029XXYY
Parameters	XX = 00 to 99 (X 10 Milliseconds) Predial YY = 00 to 99 (X 10 Milliseconds) Post Dial
Description	Allows the setting of the Pre-dial and Post-Dial shunt. Default = 0000 Milliseconds.

RELEASE/RESEIZE TIME

Code	032XX
Parameters	XX = 01 to 99 (X 50 Milliseconds)
Description	When any instruction is executed that will result in the Trunk Side of AXS 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 AXS 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 = 1000 Milliseconds.

RING DETECT SENSITIVITY

Code	034X
Parameters	X = 0 to 9 (0 is Most Sensitive)
Description	Detection of ringing is governed by this setting. In a very noisy environment, voltage spikes on the phone line might be interpreted as ringing. Decreasing the sensitivity would avoid false detection of noise. Default = 5.

IGNORE RING HIGH FREQUENCY LIMIT

Code	035X
Parameters	X=1 ON (True)
Description	Normally the ring detector of the AXS will recognize ringing in the 17-90Hz range. Setting this parameter to 1 removes the upper frequency limit. Default = 1 on (True)

RING DETECT CADENCE

Code 036X
Parameters X = 1 to 9 seconds
Description This parameter allows adjustment of the time that AXS 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. **Firmware 089 or later only.**
Default = 6

DIAL TONE FREQUENCY

Code 040XXXXYYYYZZ
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
ZZ = Tolerance (Percent)
Description AXS 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%.

RING BACK FREQUENCY

Code 041XXXXYYYYZZ
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
ZZ = Tolerance (Percent)
Description AXS allows you to define all of the parameters required to detect Ring Back. Since Ring Back tone is not uniform around the world, or even around the country, this insures compatibility. For standard Ring Back Tone (480 HZ +440 HZ), set the Low Frequency to 0440; the High Frequency to 0480; and the tolerance to 08
Default = Low - 440 Hz
High - 480 Hz
Tolerance - 8%

BUSY FREQUENCY

Code 042XXXXYYYYZZ
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
ZZ = Tolerance (Percent)
Description AXS allows you to define all of the parameters required to detect Busy Tone. Since Busy tone is not uniform around the world, or even around the country, this insures compatibility. For standard Busy Tone (620 HZ + 480 HZ), set the Low Frequency to 0480; the High Frequency to 0620; and the tolerance to 08
Default = Low - 480 Hz
High - 620 Hz
Tolerance - 8%

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TONE BURST FREQUENCY

Code 043XXXXYYYYZZ
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
ZZ = Tolerance (Percent)
Description AXS allows you to define all of the parameters required to detect a Tone burst. This feature may be used if AXS 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. For complex tones such as a DTMF digit, contact Telcom Research for appropriate settings.
Default = Low - 1450 Hz
High - 1450 Hz
Tolerance -1 2%

GENERATED DIAL TONE

Code 044XXXXYYYY
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
Description AXS can generate a Dial Tone (See instruction 76). This instruction allows you to define the frequency components of this tone.
Default = Low - 350 Hz
High - 440 Hz

GENERATED CALL PROGRESS TONE

Code 045XXXXYYYY
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
Description AXS can generate a Call Progress Tone (See instruction 83). This instruction allows you to define the frequency components of this tone.
Default = Low - 660 Hz
High - 860 Hz

GENERATED BEEP TONE

Code 046XXXXYYYY
Parameters XXXX = Low Frequency (HZ)
YYYY = High Frequency (HZ)
Description AXS can generate a Beep (See instruction 77X and 78). This instruction allows you to define the frequency components of this beep.
Default = Low - 1000 Hz
High - 1000 Hz

TONE CADENCE 1

Code 048XXXXYYYYZZAABBCCDD
Parameters XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)
AA = Cadence A On Time (x 100 ms) BB = Cadence A Off Time (x 100ms)
CC = Cadence B On Time (x 100 ms) DD = Cadence B Off Time (x 100ms)
Description AXS allows you to define two On and Off Times (Cadence) required to detect a tone. This feature may be used to detect telephone network tones, such as Busy Tone or Congestion Tone.
Default = Low - 0480 Hz, High - 0620 Hz, Tolerance -8%
Cadence A On Time – 01 (100 ms)
Cadence A Off Time – 02 (200 ms)
Cadence B On Time – 03 (300 ms)
Cadence B Off Time – 04 (400 ms)

TONE CADENCE 2

Code 049XXXXYYYYZZAABBCCDD
Parameters XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)
AA = Cadence A On Time (x 100 ms) BB = Cadence A Off Time (x 100ms)
CC = Cadence B On Time (x 100 ms) DD = Cadence B Off Time (x 100ms)
Description AXS allows you to define two On and Off Times (Cadence) required to detect a tone. This feature may be used to detect telephone network tones, such as Busy Tone or Congestion Tone.
Default = Low - 0480 Hz, High - 0620 Hz, Tolerance -8%
Cadence A On Time – 01 (100 ms)
Cadence A Off Time – 02 (200 ms)
Cadence B On Time – 03 (300 ms)
Cadence B Off Time – 04 (400 ms)

DROP SIDE OPTIONS

OFF HOOK RECOGNITION

Code 050XX
Parameters XX = 00 to 99 (X 10 Milliseconds)
Description When the Drop Side telephone goes off hook, it must remain off hook and in a stable state for the amount of time specified by this parameter, in order for it to be recognized as an OFF-HOOK condition by AXS.
Default = 60 Milliseconds.

DIGIT REFUSAL TIMER

Code 051XX
Parameters XX = 00 to 99 (X 10 Milliseconds)
Description After the Off Hook timer above has been satisfied, this timer must also be satisfied before either DTMF or Pulse digits will be accepted from the Drop Side Telephone.
Default = 50 Milliseconds.

DIALING TYPE

Code 052X
Parameters X = 0 - DTMF or PULSE
X = 1 - DTMF Only
X = 2 - PULSE ONLY
Description Dialing Type select what type of Dialing that AXS 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 AXS to automatically detect the mode of Dialing 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 dialing the first digit before AXS executes it's next instruction.
Default = 20 Seconds

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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 Dialing, this timer determines how long the user can delay dialing another digit, before AXS executes it's next instruction.
Default = 5 Seconds.

ON HOOK RECOGNITION

Code 055XX
Parameters XX = 00 to 99 (X 20 Milliseconds)
Description When the Drop Side telephone goes on hook, it must remain on hook and in a stable state for the amount of time specified by this parameter, in order for it to be recognized as an ON-HOOK condition by AXS.
Default = 400 Milliseconds.

USER/CLIENT FIRST DIGIT TIME-OUT

Code 056XX
Parameters XX = 02 to 99 seconds
Description When the program requests either a User Code, or Client Code, this timer determines how long the user can wait to dial the first digit, before AXS will execute the next instruction.
Default = 10 Seconds.

SPEED DIAL ACCESS CODE

Code 060X
Parameters X = Single digits Access Code
Description Access to speed dial is done by the user Dialing this Access Code followed by a two digit number in the range of 01 to 99. For example to redial speed dial number 15 (assuming the default code of #), the user would go off hook, and dial #15. By placing an "A,"B","C","D" as the code you can effectivly disable this feature, since normal telephones do not have these digits.
Default = #

FORCE PROGRAM CODE

Code 061XY
Parameters X = Single Digit Override Code
Y = Centrex Compatibility 1=Disable, 0 = Enable
Description After a user goes off hook, if the first digit Dialed is the Override code, then the second digit Dialed is used as the parallel program number to run in the range of 1 to 9, 0=10). When override has been activated by the user and Centrex compatibility is enabled, parameter "Y" determines if Centrex compatibility is disabled for the remainder of this call. For example, a person going off hook and Dialing *5 14165551212 will cause AXS to automatically use program 5 instead of the program that might have been used as a result of a table search. This feature gives the user the ability to force a specific routing for a specific call. By placing an "A,"B","C","D" as the code you can effectively disable this feature, since normal telephones do not have these digits. If Centrex is enabled, and the "Y" parameter is set to "1", then after the *5, the user is not required to enter the Centrex Access Code. However, program 5 must explicitly include a 10XXYY command to dial the Centrex Access Code. You cannot use the "63" command.
Default = *1

END 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 dialed, the digit is discarded.
Default = #

SPEED DIAL PROGRAMMING PREFIX

Code 063XX
Parameters XX=2 Digit Access Code
Description Allows a two digit access code that enables users to program speed dial bins. To disable feature, set to *5,*5 which sets code to A.A.
Default = #*

NEW CALL SCANNING

Code 064XX
Parameters XX= 1 or 2 digits
Description If the digit programmed here is seen while not collecting digits, a call record will be dumped and a new one started. Some callback switches have the ability to allow the user to place a second call simply by dialling a digit.
Default = #

CENTREX/PBX COMPATIBILITY

Code 0650X
Parameters X = Extension Number Length
Description Compatibility with Centrex/PBX systems that require ACCESS CODES can be accomplished using this feature. Entering 06504 means that you are activating Centrex/PBX compatibility, and that extension to extension calls have 4 digits. Entering 06500 means that Centrex/PBX compatibility has been turned off.
Default = 0 - Compatability Off.

The dialer comes preprogrammed with Program 23 which is used for extension to extension calls when compatability is turned on. It is imperative that the 600X command in the dial string have the same number entered as the X value in the compatability code above.

CENTREX ACCESS CODE

Code 065XYY
Parameters X = Code # (1 to 5)
YY = Access Code (YY may be 1 or 2 Digits)
Description For Centrex/PBX compatibility, AXS can be programmed with up to 5 ACCESS Codes. For example if a PBX system required you to dial 9 to place a local call, and 81 for a US WATS Line, and 82 for a CANADA WATS Line you would enter these codes as follows:

06519
065281
065382

Default = None.

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SET DATE

Code	070DDMMYY
Parameters	DD = Day (01 to 31) MM = Month (01 to 12) YY = Year (00 to 99)
Description	AXS maintains a Real Time Clock for SMDR Records. This option simply sets the current date in the form of YYMMDD. For example to enter June 15 1994 you would enter: 070150694. (Future features may allow different programs to execute at different times of day)

SET TIME

Code	071HHMMSS
Parameters	HH = Hours (00 to 23) MM = Minutes (00 to 59) SS = Seconds (00 to 59)
Description	AXS maintains a Real Time Clock for SMDR Records. 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 AXS perform all of its tasks. With the correct set of programs, AXS can redirect outgoing calls, redirect incoming calls, monitor call traffic or almost any other telecommunications control function. Programs are made up of strings of instructions. This section contains Drop/Ring/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.

SILENCE TO DROP

Code 01
Parameters NONE
Description This instruction removes any audio tones that are being provided to the Drop. These include Dial Tone and Call Progress Tones.

AUTOMATIC BIN CHANGE

Code 08WWXXYYZ
Parameters WW = Number of Digits to Expect
XX = Bin Number to Change
YY = Time to Wait for First Digit
Z = Time to Wait for Subsequent Digits
Description This instruction allows General Purpose Bins to be changed automatically within a program string. This will give service providers the ability to change bins that contain authorization numbers thus increasing the security of their service from fraudulent use. The instruction will change the number contained in the bin but will not provide any error checking to be sure that the received number is the one that the switch sent. However, the bin is changed as soon as the number has been sent so you can have the bin sent back to the switch for verification. **Firmware 088 or later**

DIAL DIGITS

Code 10XXYYYY
Parameters XX = Number of Digits to dial
YY = Digits to Dial
Description When AXS 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 AXS as Dial the 7 Digit number 5551212 using the current Dialing method (See 20 and 21 below).

The following are allowed digits in a 10 instruction:

0 to 9, A, B, C, D and # Dial Digit
*5 DTMF Digit "A" if no "A" can be generated.
*6 DTMF Digit "B" if no "B" can be generated.
*7 DTMF Digit "C" if no "C" can be generated.
*8 DTMF Digit "D" if no "D" can be generated.
** Dial the "*" Digit

SWITCH TO TONE DIALING

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

SWITCH TO PULSE DIALING

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

DTMF BOOST

Code	25X
Parameters	X = 0 Standard DTMF Level X = 1 DTMF High Output Level
Description	This instruction allows the DTMF output level to be increased for purposes of communicating with a remote device. When AXS begins to dial, it will be using the standard DTMF output level, but after Dialing is complete and AXS is attempting to communicate with a REMOTE system, then an increased DTMF level may be required.

CALCULATE CHECKSUM

Code	30
Parameters	None
Description	This program instruction is used to calculate the checksum value. All the digits dialed after the 30 instruction are used in the checksum calculation. It is calculated by summing the values of each character and taking the total modulo 100. The digits 0-9 have the value of 1-10, the * has the value of 11 and the # a value of 12. The digit A has a value of 13, B has a value of 14, C has a value of 15 and D has a value of 0. **Firmware 090 or later only.**

DIAL CHECKSUM TO THE LINE

Code	31
Parameters	NONE
Description	This program instruction is used to dial the checksum value to the line.

AFTER HANGUP GOTO PROGRAM XX

Code	34XX
Parameters	XX = 01-20
Description	If XX is not 00 then Continue After Hang up is activated. When the user hangs up program XX is executed. If XX is 00 then Continue After Hang up is deactivated and no program is executed at hang up. (Version 098)

GOTO PROGRAM XX

Code	35XX
Parameters	NONE
Description	When executing a program it may become necessary to jump to a different program. For example, instruction 3505 is interpreted by AXS as stop execution of the current PARALLEL program and begin execution of program 5.

HANG UP, LOOP BACK AND RESTART PROGRAM

Code 36
Parameters NONE
Description Upon execution of instruction 36, AXS will stop executing the current program, hang-up the Trunk Side Line, and re-execute the same program. This would occur for a maximum of X retries, with X being the Failure Retry count as specified by system parameter 0061XX.

GO TO FUNCTION PROGRAM XX

Code 37XX
Parameters XX = 01 -20
Description When executing a program it may be desirable to jump to a different program to execute a common function such as tone cadence detection. For example, instruction 3705 is interpreted by AXS as jump to and begin execution of program 5. This instruction works in conjunction with the instruction 38X which after execution of the function program sends the call back to the original program. (Version 098)

RETURN TO ORIGINAL PROGRAM

Code 38X
Parameters X = 0 (do not skip next instruction when returned to the original program)
X = 1 (skip next instruction when returned to the original program)
Description After executing the function program entering a 38X instruction will send the call back to the original program at the spot where the 37XX instruction sent the call to the function program. Once returned to the original program the next instruction may be skipped or executed depending on the value programmed for X. (Version 098)

DETECTED TONE DURATION

Code 39XX
Parameters XX = 00 – 99 X 20 ms.
Description This instruction allows the length of the tone to be detected to be programmed from 20 ms. to 2 seconds. The instruction is placed before the detect tone instruction (dial tone, busy tone, tone burst). The detect instruction works as it always has. If you program 3900 or do not insert a 39XX command the default detection timing is used. **Version 095 and later.**

VERIFY USER CODE**

Code 40XX
Parameters XX = Security Level
Description A previously recorded User Code (See Instruction 71XX) can be verified for security. For example the instruction 4005 will cause the User table to be searched for a match of User Code. If a match is found, the match must have a security level of 5 or greater for the instruction to be successful.
If this instruction is successful (A table match with a greater than or equal to security level), then the next instruction is skipped.

VERIFY CLIENT CODE**

Code 41XX
Parameters XX = Security Level
Description A previously recorded Client Code (See Instruction 72XX) can be verified for security. For example the instruction 4005 will cause the Client table to be searched for a match of Client Code. If a match is found, the match must have a security level of 5 or greater for the instruction to be successful.
If this instruction is successful (A table match with a greater than or equal to security level), then the next instruction is skipped.

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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 of user Dialed digits, 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(70X, 71 and 72).

DETECT DIAL TONE ON TRUNK SIDE **

Code 50XX
Parameters XX = Seconds to Wait (01 to 99)
Description Before Dialing 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, while a 36 instruction would hang up and restart the program. If you wish to continue regardless, simply place a 00 instruction (NO-OPERATION) following this instruction.

For example if you wish to dial even if dial tone is not present after 10 seconds you would program 50 10 00. If you want to run a different program (maybe to dial a different destination), you could program 50 10 3515. This would wait 10 seconds for dial tone. If detected, the following instruction is skipped. If dial tone is not detected, the next instruction is executed. (See Instruction 35 above; 3515 would stop execution of the current program and begin execution of program 15)

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's or Computers, AXS 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. For example, a 97 instruction following this instruction would hang up and give re-order tone, while a 36 instruction would hang up and restart the program. If you wish to continue regardless, simply place a 00 instruction (NO-OPERATION) following this instruction.

51 A 20 97 - Wait 20 seconds for an "A" DTMF Tone. If "A" is not detected, then hang-up and give the user re-order tone.

51 A 20 3515 - Wait 20 seconds for an "A" DTMF Tone. If "A" is detected, then skip execution of the 3515. (3515 will cause execution to stop and program 15 to be run.)

NOTE: AXS contains only one DTMF receiver, so if this instruction is in a parallel program you must make sure that an instruction in either the RING or DROP program is not also using the DTMF receiver. Which ever 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's or Computers, AXS 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. 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, while a 36 instruction would hang up and restart the program. If you wish to continue regardless, simply place a 00 instruction (NO-OPERATION) following this instruction. The frequency of the tone must first have been set in the system parameters (See Tone Burst Frequency 043).

The following are a few examples of this command (Assume the Tone Burst Frequency has been set to 1000 HZ:

52 20 97 - Wait 20 seconds for a 1000 HZ Tone. If it is not detected, then hang-up and give the user re-order tone.

52 20 3515 - Wait 20 seconds for a 1000 HZ Tone. If it is detected, then skip execution of the 3515. (3515 will cause execution to stop and program 15 to be run.)

Note: Clever use of this command can allow you to overcome the problem noted in the 51 instruction above. If you need only detect a single DTMF tone on the Trunk Side, set the Tone Burst Frequencies for this digit and use this instruction. Contact Telcom Research for detail on use of this feature.

DETECT BUSY TONE ON TRUNK SIDE **

Code 53XX
Parameters XX = Seconds to Wait (01 to 99)
Description The command operates in the same manner as instruction 52 above.

WAIT FOR HOST **

Code 55XX
Parameters XX = Seconds to Wait (01 to 99)
Description This command is used only in the Call Home Program, 24. This instruction monitors the line for the programming mode code ***00*#.

DETECT TONE CADENCE **

Code 56XYY
Parameters X = 1 (Detect Tone 1 Cadence defined with parameter 048)
X = 2 (Detect Tone 2 Cadence defined with parameter 049)
YY = Seconds to Wait (01 to 99)
Description This instruction will wait to detect Tone Cadence 1 or 2 for YY seconds. If either the ‘A’ or ‘B’ cadence requirements are met, the next instruction is skipped. If the On time is met for ‘A’ then the instruction will only check for the Off time of ‘A’ and ignore the Off time for ‘B’. If either of the ‘A’ or ‘B’ cadence settings in parameters 048 or 049 are 0 then that cadence is not checked (disabled).

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DETECT RING BACK TONE ON TRUNK SIDE**

Code	57XXYY
Parameters	XX = Seconds to Wait (01 to 99) YY = # of Rings to Wait For
Description	The command operates in a manner similar to instruction 52 above, with the additional feature, that you can program using YY the number of rings to wait for.

WAIT FOR CALL BACK**

Code	58XX
Parameters	XX = Seconds to wait for a Call Back
Description	When implementing an International Call Back Dialer with AXS, you must use this instruction in the Parallel Program. Your parallel program should include instructions to dial the Call Back Switch, Wait for 1 Ring, Hang-Up and then execute this instruction. This instruction will cause the Parallel program to HALT for XX seconds waiting for a call back. If a call back does not come within XX seconds then the next instruction is executed. If a call back is received, execution will continue after skipping the next instruction. In this way you can control what is done upon success or failure.

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 TELEPHONE NUMBER TO TRUNK

Code	60XX
Parameters	XX - Maximum Digits to Dial (01 to 99)
Description	This instruction is used in a PARALLEL program usually to dial to a PBX or Computer, the destination telephone number Dialed 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. When the parallel program executes this instruction it will dial any digits that the user has Dialed 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 Dialed by this instruction in which case the number is again assumed to be complete. The XX Maximum Digits is intended to be used to eliminate the inter-digit time. For a program that is responsible for Dialing long distance telephone numbers in North America, the XX should be set to 11. This means that after the user has Dialed 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 this instruction will not continue until an interdigit time out has occured (no maximum digits).

DIAL DROP RECORDED USER CODE TO TRUNK

Code	61
Parameters	None
Description	Dial the user code (recorded with the 71XX instruction) to the trunk side.

DIAL DROP RECORDED CLIENT CODE TO TRUNK

Code	62
Parameters	None
Description	Dial the client code (recorded with the 72XX instruction) to the trunk side.

DIAL DROP RECORDED CENTREX ACCESS CODE

Code 63
Parameters None
Description The 63 command when placed in a parallel program on a system with centrex enabled, will dial the access code Dialed by the user. For instance if the user dials 9 followed by a phone number, AXS will detect that 9 is the Centrex Access Code, and remember it. Once a match has been found in a search table, and a parallel program executes the 63 instruction, this will cause the "9" (that was remembered) to be Dialed.

DIAL DIGITS IN BIN # XX TO TRUNK

Code 64XX
Parameters XX - Bin Number
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 AXS Dialers could be programmed with exactly the same program, and then each individual AXS could have a unique authorization code programmed. For example 6402 will dial the digits contained in bin 2

DIAL RECORDED SPARE CODE 1 TO TRUNK

Code 65
Parameters None
Description Dial the Spare Code 1 (recorded with the 73XX instruction) to the trunk side.

DIAL RECORDED SPARE CODE 2 TO TRUNK

Code 66
Parameters None
Description Dial the Spare Code 2 (recorded with the 74XX instruction) to the trunk side.

DIAL HOOKFLASH ON TRUNK SIDE

Code 68XX
Parameters XX = Flash Length (X 100 Milliseconds)
Description The 68XX instruction will generate a HOOK FLASH towards the TRUNK with a duration of from 100MS to 9.9 Seconds.

DIAL SPEED DIAL

Code 69XX
Parameters XX = Speed Dial Bin Number (01 to 99)
Description This instruction will cause AXS to dial a Speed Dial Bin number in the same manner that it dials a General Purpose Number Bin.

RECORD DROP DIALED 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 or Ring Program.
The input buffer is 250 digits in length, however table searches are limited to the first 15 digits, since search tables have a maximum entry length of 15 digits.

RECORD DIALED DIGITS, SEARCH PRIMARY AND SECONDARY TABLE.

Code 701
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 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 Drop or Ring Program.
The input buffer is 250 digits in length, however search table searched are limited to the first 15 digits, since search tables have a maximum entry length of 15 digits.

RECORD DIALED DIGITS

Code 702
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 to a maximum of 250. This command will continue recording digits until either the user hangs up, or an inter-digit timeout occurs. No table searching is done.

SEARCH PRIMARY TABLE WITH ENTERED DIGITS

Code 703
Parameters NONE
Description This command is used in the Drop or Ring Program. When executed the Primary Table is searched for a match on digits previously entered using either the 700, 701, or 702 commands above. If a match is found, then a parallel program will begin execution in PARALLEL with the Drop or Ring Program.

SEARCH PRIMARY AND SECONDARY TABLE WITH ENTERED DIGITS

Code 704
Parameters NONE
Description This command is used in the Drop or Ring Program. When executed the Primary and Secondary Tables are searched for a match on digits previously entered using either the 700, 701, or 702 commands above. If a match is found, then a parallel program will begin execution in PARALLEL with the Drop or Ring Program.

RECORD INCOMING DIALED DIGITS, SEARCH INCOMING TABLE

Code 705
Parameters NONE
Description This command is used in the Ring Program. When executed it clears out any digits in the input buffer, and begins recording the incoming caller's Dialed digits. This command will continue recording digits until either the user hangs up, or an inter-digit timeout occurs. As the caller dials digits, the Incoming Search table is searched for a match and if a match is found, then a parallel program will begin execution in PARALLEL with the Ring Program.

The input buffer is 250 digits in length, however table searches are limited to the first 15 digits, since search tables have a maximum entry length of 15 digits.

RECORD DIALED USER CODE**

Code 71XX
Parameters XX = Number of Digits to record
00 = Record up to a maximum of 20 digits while waiting for a time out.
01 to 20 = Record 1 to 20 digits
Description This instruction accepts from the user a user code of XX digits in length for playback at a later time (See instruction 61). If the user enters the correct number of digits, the instruction has been successful and will skip the following instruction. If less that the required digits are entered and a timeout occurs, the following instruction is executed. If "XX" is "00" (Zero Zero), then the command will wait for up to 20 digits or a time out .

RECORD DIALED CLIENT CODE**

Code 72XX
Parameters XX = Number of Digits to record
00 = Record up to a maximum of 20 digitswhile waiting for a time out.
01 to 20 = Record 1 to 20 digits
Description This instruction accepts from the user a client code of XX digits in length for playback at a later time (See instruction 62). If the user enters the correct number of digits, the instruction has been successful and will skip the following instruction. If less that the required digits are entered and a timeout occurs, the following instruction is executed. If "XX" is "OO", then the command will wait for up to 20 digits or a time out .

RECORD DIALED SPARE CODE 1**

Code 73XX
Parameters XX = Number of Digits to record
00 = Record up to a maximum of 20 digits while waiting for a time out.
01 to 20 = Record 1 to 20 digits
Description This instruction accepts from the user the Spare Code 1 of XX digits in length for playback at a later time (See instruction 65). If the user enters the correct number of digits, the instruction has been successful and will skip the following instruction. If less than the required digits are entered and a timeout occurs, the following instruction is executed. If "XX" is "OO", then the command will wait for up to 20 digits or a time out .

RECORD DIALED SPARE CODE 2**

Code 74XX
Parameters XX = Number of Digits to record
00 = Record up to a maximum of 20 digits while waiting for a time out.
01 to 20 = Record 1 to 20 digits
Description This instruction accepts from the user the Spare Code 2 of XX digits in length for playback at a later time (See instruction 66). If the user enters the correct number of digits, the instruction has been successful and will skip the following instruction. If less that the required digits are entered and a timeout occurs, the following instruction is executed. If "XX" is "OO", then the command will wait for up to 20 digits or a time out .

PROVIDE TELCO TONES TO DROP (USUALLY DIAL TONE)

Code 75
Parameters NONE
Description This command is used in the DROP Program usually to provide the user with Dial Tone. The typical scenario is as follows. When the User goes off hook, he is split from the Trunk Line. AXS goes off hook to the Trunk. AXS will have pulled up dial tone and so when the 75 instruction is executed, it actually connects the signal present on the trunk (Dial Tone at this point) to the Drop Set, so the user hears dial tone. Any signal transmitted by the user does not however get to the trunk side. After the user dials the first digit of the phone number the Trunk Signal is disconnected from the Drop Side.

This command allows the user to hear actual Telephone Company dial Tone when Dialing. This is useful for areas were dial tone is not Precise, or where the phone company may provide stutter dial tone to indicate activation of a feature on the Trunk.

AXS GENERATED DIAL TONE TO DROP

Code 76
Parameters NONE
Description This command is used in the DROP Program and causes AXS to generate Precise Dial Tone to the Drop Telephone.

BEEP 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 Dialing.

AXS GENERATED DIAL TONE TO TRUNK SIDE

Code 78
Parameters NONE
Description This command is used in the RING Program and causes AXS to generate Precise Dial Tone to the Trunk after answering an incoming call.

BEEP TO TRUNK

Code 79X
Parameters X - Number of Beeps
Description This command is used in the RING Program and causes AXS to generate BEEPS towards a caller.

DELETE DIGITS FROM DIALED STRING

Code 81XXYY
Parameters XX = Start Position
YY = Number of Digits to Delete
Description Certain applications require the modification of the user Dialed digits. For example AXS may be programmed to redirect all international calls to a local PBX for alternate routing. In this case, the number Dialed by the user might be 011-33-4567890. The PBX may only require the actual phone number, not the 011. The command 810103 will transform 011-33-4567890 into 33-4567890.
As a side effect, in the example, since we are modifying the first 3 digits, the instruction will wait until there are at leat 3 digits in the input buffer recorded from the user.

INSERT DIGITS INTO USERS DIALED STRING

Code 82XXYYZZ
Parameters XX = Start Position
YY = Number of Digits to Insert
ZZ = 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

As a side effect, the instruction will wait until there are at leat XX digits in the input buffer recorded from the user.

CALL PROGRESS TONE TO THE DROP

Code 83
Parameters NONE
Description At times it may be desirable to provide a CALL PROGRESS tone to the user to let him/her know that things are progressing normally. Adding an 83 to your program will do just that.

TEST DAY OF WEEK**

Code 85XY
Parameters X = Start Day
Y = Finish Day 1 = Monday, 7 = Sunday
Description Adding this instruction to a program will cause the program to skip the next instruction if the day of the week is greater than or equal to the start day and less than or equal to the finish day, otherwise the next instruction is executed. **Version 091 and later.**

SET DATE AND TIME**

Code 87
Parameters NONE
Description This instruction will allow for the dialers date and time to updated remotely so as to insure accurate SMDR records as well as routing according to the time of day. The instruction waits for any digit collection to finish and then monitors the trunk for DTMF tones until an interdigit timeout occurs. The equipment that is now connected to the dialer must have the ability to DTMF the date and time in the form of DDMMYYHHMM. Upon receiving this DTMF string the program will skip the next instruction, otherwise the next instruction is executed.

TEST TIME OF DAY**

Code 88 HHMMhhmm
Parameters HHMM = Start Time
hhmm = Stop Time.
Description Adding this instruction to a program will cause the program to skip the next instruction if the time is greater than or equal to the start time and less than or equal to the stop time, otherwise the next instruction is executed.

CONTINUE AFTER HANG UP

Code 89X
Parameters x = 1 dialer programs continue to run after hang up.
x = 0 programs do not continue after hang up.
Description Adding this instruction to a program will allow the program to continue to execute after the drop phone hangs up.

OFF-HOOK TRUNK SIDE

Code 90
Parameters NONE
Description Execution of this command will cause the Trunk Circuit to go to the OFF Hook state and terminate the line. This command is required before any instruction that will send tones etc. to the telephone company.

ON-HOOK TRUNK SIDE

Code 91
Parameters NONE
Description Execution of this command will cause the Trunk Circuit to go to the ON Hook state.

SPLIT TRUNK AND DROP

Code 92
Parameters NONE
Description Execution of this instruction will SPLIT the Trunk and Drop Circuits. The Drop Circuit is provided with a local battery feed of -24V DC.

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.

WAIT FOR ANSWER

Code 9400
Parameters NONE
Description This instruction would be placed in the RING program to instruct AXS to wait for the user to answer the ringing line. If no ringing signal is present for 6 seconds, then the ringing line is assumed to have stopped ringing and the program quits executing.

WAIT FOR ANSWER OR AUTO-ANSWER

Code 94XX
Parameters XX - Number of Rings
Description With 94XX in the RING program, AXS will wait for the user to answer a Ringing line or after XX rings will automatically answer the ringing line and wait for Wake-Up instructions. This command is recommended so that unattended access to AXS for programming is possible.

START SMDR RECORD

Code 95
Parameters NONE
Description Normally an SMDR record is started upon an Search Table Match. If a program does not use the facility of searching tables, then an SMDR record is never started. You can manually start a record by executing instruction 95.

Another reason might be a complex program that even though starts a record at a serch table match, may not connect for several seconds, and so you can manually RE-START the SMDR record closer to the actual connection.

PREVENT SMDR RECORD

Code 96
Parameters NONE
Description If no SMDR record is desired for a particular program (For Example Local Calls), the by placing the 96 command near the end of the parallel program (but before the 99 command) will prevent AXS from generating a record for the call.

HANG-UP AND RE-ORDER

Code 97
Parmeters NONE
Description Execution of instruction 97 will terminate ALL running programs and release the Trunk Line (Go ON-HOOK). If the Drop Telephone is off hook, this instruction will provide the user RE-ORDER tone until they hang up.

HANG-UP AND CLEANUP

Code 98
Parmeters NONE
Description Execution of instruction 98 will terminate ALL running programs and place AXS in the idle state waiting for the user to go off hook or the phone line to ring. This instruction usually is placed at the end of the drop program.

If all programs have stopped running, a 98 instruction will be executed automatically by AXS.

WAIT FOR HANG-UP BY USER OR TIME OUT

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 tje
DROP Telephone before executing the next instruction.

If the instruction is in the RING program, or a PARALLEL program triggered from a RING program, then execution of the 99 instruction waits for a user time out, such as INTER-DIGIT, or INITIAL-DIGIT.

**** REQUIRES FAILURE INSTRUCTION**

PROGRAM MAINTENANCE

Upon entering programming mode, you may select any of a number of features/options to add, edit, or modify. The following is a list of these and how they are used.

SYSTEM PARAMETERS

Code 0XXYY *#
Parameters XX = System Option (See Appendix "B")
YY= Setting
Description Entering a "0" (ZERO) followed by a System Option number and that options parameters, provides the ability to change any of the system options. For example, Pulse Dialing speed is parameter 23, and a 1 sets 10 PPS and a 2 sets 20 PPS. Entering **0 23 1 *#** Sets Pulse Dialing Speed to 10 PPS (*# is equivalent to the ENTER Key). Refer to Appendix "B" for a list of all of the System Parameters.

PRIMARY TABLE MAINTENANCE

Code 1XXAA *#
Parameters XX = Digits to enter into Table
AA = Action (See Appendix "C")
Description Entering a "1" followed by a string of digits, provides maintenance of the Primary Search Table. For example entering **1 1416555 03 *#** will add 1416555 to the Primary Search Table, with an Action Code of 03 (execute Program 3). Entering **1 1416555 00 *#** will remove the entry 1416555 from the Primary Table if it exists.
Wild Card Entries = ?
Each time a new entry is made to a table, the entire table is first searched to ensure the number does not already exist. If it exists, it is replaced with the new entry.

SECONDARY TABLE MAINTENANCE

Code 2XXAA *#
Parameters XX = Digits to enter into Table
AA = Action (See Appendix "C")
Description Entering a "2" followed by a string of digits, provides maintenance of the Secondary Search Table. For example entering **2 1900 20 *#** will add 1900 to the Secondary Search Table, with an Action Code of 20 (Execute Program 20. Entering **2 1900 00 *#** will remove the entry 1900 from the Secondary Table if it exists.
Wild Card Entries = ?
Each time a new entry is made to a table, the entire table is first searched to ensure the number does not already exist. If it exists, it is first deleted, and then replaced with the new entry.

INCOMING TABLE MAINTENANCE

Code 3XXAA *#
Parameters XX = Digits to enter into Table
AA = Action (See Appendix "C")
Description Entering a "3" followed by a string of digits, provides maintenance of the Incoming Search Table. For example entering **3 4000 16 *#** will add 4000 to the Incoming Search Table, with an Action Code of 16 (Execute Program 16). Entering **3 4000 00 *#** will remove the entry 4000 from the Incoming Table if it exists.
Wild Card Entries = ?

Each time a new entry is made to a table, the entire table is first searched to ensure the number does not already exist. If it exists, it is first deleted, and then replaced with the new entry.

PROGRAM MAINTENANCE

Code 4PPXX *#

Parameters PP = Program Number
01 to 20 for Parallel Program
21 for Drop Program
22 for Ring Program
XX = Program STRING (See Appendix "D")

Description All AXS functions are controlled through programs. When the Drop Side telephone goes off hook, the Drop Program begins execution. When an incoming ring is detected, the Ring Program begins execution.

By entering a "4" followed by a 2 digit program number, followed by program instructions (See Appendix "D") you can enter programs. For example to program the Ring Program to simply JOIN the Trunk and DROP side together when the Trunk rings you would do the following: 4 22 93 9400 99 *#

This example can be decoded as follows:

4 22 - Enter instructions into program 22 (Ring Program)
93 - Join Trunk and Drop
9400 - Wait for the Drop to answer the telephone.
99 - Wait for the Drop to hang Up.
*# - ENTER Key terminates the input.

This procedure is repeated to place instructions into the various programs.

SPEED DIAL MAINTENANCE

Code 5SSXX *#

Parameters SS = Speed Dial # (01 to 99)
XX = Speed Dial STRING
*# = Denotes END of SPEED DIAL STRING

Description AXS allows up to 99 speed dial numbers to be entered. These speed dial numbers are triggered by a user dialing the Speed Dial Access Code followed by the two digit bin number. Once triggered, the speed dial number replaces the users Dialed number, and a search of the Primary Table begins again. As a result of this search, a match would be found, and the speed dial number would be dialed as if the user had actually dialed it themselves.

To program the Speed Dial Numbers you enter "5" followed by the two Bin Number (01 to 99), followed by the phone number you wish to program in, followed by *# (ENTER Key).

Eg: **5 01 5551212 *#** will place 555-1212 into speed dial bin 01

The user may maintain his/her own speed dial entries. By going off hook on the drop telephone, and entering #*, you enter speed dial mode. Follow this with a 2 digit bin number, and the desired telephone number, ending with a *# (Enter). At this point a single BEEP ("D" DTMF Tone) will be heard, and the next entry can be entered, or you hang-up to exit speed dial mode.

The following is a example to program Bin 1 and Bin 2:

#*
01 5551212 *#
02 3362459 *#

BIN MAINTENANCE

Code	6BBXX *#
Parameters	BB = Bin Number (01 to 20) XX = Bin Dial STRING
Description	AXS contains storage for 20 General Purpose Numbers. These Number Bins are generally used for storage of Local Access Telephone Numbers, or Authorization Codes. A General purpose Number Bin can be inserted into any of the Programs to cause that program to dial the digits contained in the bin. To program a bin, simply enter "6" followed by the two digit bin number (01 to 20), followed by the digits to be Dialed, followed by *# (Enter Key). Eg: **6 01 5551212 *#** Place 5551212 into bin 01

USER TABLE MAINTENANCE

Code	71XXSS *#
Parameters	XX = User Code (1 to 15 Digits in length) SS = Security Level (01 to 99)
Description	Entering a "71" followed by a string of digits, provides maintenance of the User Code Table. For example entering **71 1234 03 *#** will add 1234 with a security level of 03 to the User Table. Entering **71 1234 00 *#** will remove the User 1234 from the Table if it exists. Each time a new entry is made to a table, the entire table is first searched to ensure the number does not already exist. If it exists, it is first deleted, and then replaced with the new entry.

CLIENT TABLE MAINTENANCE

Code	72XXSS *#
Parameters	XX = Client Code (1 to 15 Digits in length) SS = Security Level (01 to 99)
Description	Entering a "72" followed by a string of digits, provides maintenance of the Client Code Table. For example entering **72 1234 03 *#** will add 1234 with a security level of 03 to the Client Table. Entering **72 1234 00 *#** will remove the Client 1234 from the Table if it exists. Each time a new entry is made to a table, the entire table is first searched to ensure the number does not already exist. If it exists, it is first deleted, and then replaced with the new entry.

DIAGNOSTICS

Code	8XX *#
Parameters	XX - Maintenance Command
Description	AXS can playback all of its programming using DTMF to either the Drop or Trunk Side, which ever is in control of programming mode.

LOAD

Code	9X *#
Parameters	X - Table to Load
Description	AXS can Clear and Load its search tables all in one step. Refer to Load Commands for more detail.

REMOTE RESET

Code	020XX*#
Parameters	X X = 00 to remotely reset the dialer to Factory Default.
Description	Entering 02000*# is the same as performing a Power Up 123 reset. **Version 095 and later.**

DIAGNOSTIC COMMANDS

PLAY/DISPLAY VERSION NUMBER

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

PLAY/DISPLAY PROGRAM

Code	81XX
Parameters	XX = 00 - ALL Programs XX = 01 to 20 - Individual Program XX = 21 for DROP Program XX = 22 for RING Program
Description	Entering "81" followed by a two digit number will cause AXS to play /display the desired program. For example, 8122 will cause AXS to play the Ring Program. This is used for verification of programming.

PLAY/DISPLAY ALL OF THE PRIMARY TABLE

Code	820
Parameters	NONE
Description	Entering "820" will cause AXS to play/display ALL entries in the Primary Search Table. This is used for verification of the Primary Table.

PLAY/DISPLAY PRIMARY TABLE

Code	821XXYY
Parameters	XX = Range with Length >= YY = Range with Length <=
Description	Entering "8210103" will cause AXS to play/display all table entries from 1 to 3 digits in length. Entering "8210404" will cause AXS to play only entries of 4 digits in length. This is used for verification of the Primary Table.

PLAY/DISPLAY ALL OF THE SECONDARY TABLE

Code	822
Parameters	NONE
Description	Entering "822" will cause AXS to play/display, using DTMF, ALL entries in the Secondary Search Table. This is used for verification of the Secondary Table.

PLAY/DISPLAY SECONDARY TABLE

Code	823XXYY
Parameters	XX = Range with Length >= YY = Range with Length <=
Description	Entering "8230103" will cause AXS to play/display all table entries from 1 to 3 digits in length. Entering "8230404" will cause AXS to play/display only entries of 4 digits in length. This is used for verification of the Secondary Table.

PLAY/DISPLAY ALL OF THE INCOMING TABLE

Code	824
Parameters	NONE
Description	Entering "824" will cause AXS to play/display ALL entries in the incoming Search Table. This is used for verification of the Incoming Table.

PLAY/DISPLAY INCOMING TABLE

Code	825XXYY
Parameters	XX = Range with Length >= YY = Range with Length <=
Description	Entering "8250103" will cause AXS to play/display all table entries from 1 to 3 digits in length. Entering "8250404" will cause AXS to play/display only entries of 4 digits in length. This is used for verification of the Incoming Table.

PLAY/DISPLAY ALL OF THE USER TABLE

Code	826
Parameters	NONE
Description	Entering "826" will cause AXS to play/display ALL entries in the User Table. This is used for verification of the Table.

PLAY/DISPLAY USER TABLE

Code	827XXYY
Parameters	XX = Range with Length >= YY = Range with Length <=
Description	Entering "8270405" will cause AXS to play/display all table entries from 4 to 5 digits in length. Entering "8270404" will cause AXS to play/display only entries of 4 digits in length. This is used for verification of the Table.

PLAY/DISPLAY ALL OF THE CLIENT TABLE

Code	828
Parameters	NONE
Description	Entering "828" will cause AXS to play/display ALL entries in the Client Table. This is used for verification of the Table.

PLAY/DISPLAY CLIENT TABLE

Code	829XXYY
Parameters	XX = Range with Length >= YY = Range with Length <=
Description	Entering "8290405" will cause AXS to play/display all table entries from 4 to 5 digits in length. Entering "8290404" will cause AXS to play/display only entries of 4 digits in length. This is used for verification of the Table.

PLAY/DISPLAY SPEED DIAL BIN

Code	83XX
Parameters	XX = 00 - ALL Bins XX = 01 to 99 for individual bin
Description	Entering "83" followed by the two digit bin number will cause AXS to play/display the digits contained in the selected bin. Entering "8300" will cause AXS to play/display ALL of the bins.

PLAY/DISPLAY GENERAL PURPOSE BIN

Code	84XX
Parameters	XX = 00 - ALL Bins XX = 01 to 20 for individual bin
Description	Entering "84" followed by the two digit bin number will cause AXS to play/display the digits contained in the selected bin. Entering "8400" will cause AXS to play/display ALL of the bins.

DISPLAY ALL SYSTEM PARAMETERS TO THE DATA PORT

Code	85
Parameters	NONE
Description	Entering 85 will cause AXS to dump the entire list of SYSTEM Parameters out to the Data Port. This output is ASCII at the baud rate set for the port.

DISPLAY ELECTRONIC SERIAL NUMBER

Code	095
Parameters	NONE **(Version 095 or later)**
Description	Entering 095 will cause AXS to dump the electronic serial number out to the Data Port.

CLEAR PROGRAM

Code	86XX
Parameters	XX = 00 - ALL Programs XX = 01 to 20 for Parallel Program XX = 21 for DROP Program XX = 22 for RING Program
Description	You may clear any or all of the 22 programs. Entering "8600" will erase ALL programs while "8603" for example will erase only program 3. Erasure of a program is not essential since programming over top of it will overwrite the old program, and unless a program is executed by either a match in a search table, or from another program it has no affect.

CLEAR TABLE

Code	87X
Parameters	X = 0 - Primary Table X = 1 - Secondary Table X = 2 - Incoming Table X = 3 - User Table X = 4 - Client Table
Description	You may clear out any or all of the 3 Tables (Primary, Secondary, Incoming). Entering "870" will erase ALL of the Primary Table; "871" will erase ALL of the Secondary Table, and "872" will erase ALL of the Incoming Table. (See also Clear and Load below (90, 91, 92)

CLEAR SPEED DIAL BIN

Code	88XX
Parameters	XX = 01 to 99 for Bin Number, 00 for ALL
Description	You may clear any or all of the Speed Dial Numbers. By entering 8800 you will erase ALL bins, while 8803 will erase only bin 3

CLEAR GENERAL PURPOSE BIN

Code	89XX
Parameters	XX = 01 to 20 for Bin Number, 00 for ALL
Description	You may clear any or all of the General Purpose Number Bins. By entering 8900 you will erase ALL bins, while 8905 will erase only bin 5

DISABLE DIALER

Code	8*X
Parameters	X = 0 to enable the Dialer X = 1 to disable the Dialer
Description	You may enable or disable the Dialer with this command. If you disable the Dialer it becomes completely inactive, except it will still respond to the programming command ***00*#. When reinabled all previous programming will be restored.

CALL PROGRESS FEATURE

Code 8#X
Parameters X = # to disable Call Progress Feature
X = * to enable Call Progress Feature
Description You may enable or disable Call Progress feature with this command.
When this feature is enabled each program instruction is displayed on the terminal screen as it is executed by the dialer. This is very useful when attempting to find out at which point a program may be failing.
This feature has been enhanced and gives a programmer the ability to determine the timing of the tone cadence from a local dialer.
Once the program executes the 56XYY instruction, the timing of the tone seen by the dialer will be displayed on the computer screen. It is in the following format;
1 – XXX –Y (1 = On time, XXX = On time, Y = 1 for tone A, 2 for Tone B, 3 for neither)
2 – AAA – B (2 = Off time, AAA = On time, B = 1 for tone A, 2 for Tone B, 3 for neither)
If the On time matches the settings of cadence 'A' then the Off time that must be matched is that of cadence 'A', the Off time of cadence 'B' will be ignored.

DATA CONFIRMATION MODE

Code 099X
Parameters X = 0 = Off
X = 1 = On
Description This mode gives a programmer the ability to retrieve the system parameters from a remote dialer. Each parameter must be retrieved individually. The procedure to use this feature is as follows;

1) Enter programming mode on a remote dialer as would normally be done.
2) Once in program mode of the remote dialer enter 0991, then press the Enter key. This will put the remote dialer into Data Confirmation Mode.
3) Now enter the System Parameter you wish to see. For example, if you wish to check the DTMF On Time, you enter 026 and the remote dialer will output the value that is set. Do not press the enter key after the parameter code has been entered.
4) To return to normal program mode, enter 0990, then press the Enter key.

If you do not take the dialer out of Data Confirmation Mode and sign off the remote dialer, it will automatically be returned to normal mode.

LOAD COMMANDS

CLEAR AND LOAD PRIMARY TABLE

Code 90
Parameters NONE
Description When loading a completely new search table it is not efficient to first use the Clear Primary Table (870) command followed by table maintenance commands, 1X. Table maintenance commands are designed for adding or deleting a few entries, to keep a table up to date. Each time a new entry is made to a table, the entire table is first searched to ensure the number does not already exist. If it exists, it is first deleted, and then replaced with the new entry. This process will slow down loading of a completely new table, as each entry must go through this process.
The 90 Command, Clear and load Primary table, should be used instead. This command clears the table, and accepts table entries without checking for duplicates, as it is assumed that the table being loaded will have been verified for accuracy first. The command syntax to enter three entries to the table is as follows:

```
90 *#
1416 02 *#
1519 02 *#
1705 02 *#
*#
```

CLEAR AND LOAD SECONDARY TABLE

Code 91
Parameters NONE
Description See Clear and Load Primary Table.

CLEAR AND LOAD INCOMING TABLE

Code 92
Parameters NONE
Description See Clear and Load Primary Table.

CLEAR AND LOAD USER TABLE

Code 93
Parameters NONE
Description See Clear and Primary Table.

CLEAR AND LOAD CLIENT TABLE

Code 94
Parameters NONE
Description See Clear and Load Primary Table.

ACTION CODES

Each Search Table Entry, has associated with it an Action Code. The following is a listing of acceptable action codes.

DELETE ENTRY

Code 00
Description When in table maintenance, entering 00 as an action code will delete the entry. For example if an entry in the primary table of 1416 exists, and you wish to delete it, simply enter **1 1416 00 *#**.

LAUNCH PROGRAM

Code 01 to 20
Description An entry with an action code of 01 to 20 will upon a match execute the parallel program of that number. For example an entry 1416 05 in the primary table, would match if the user Dialed 1416, and then would immediately begin execution of parallel program 5.

PLAY CURRENT SETTING

Code ##
Description When in Table Maintenance (See 1X, 2X or 3X), an action code of ## will cause that individual table entry to be played (DTMF). For example the entry 1 1416 ## *# will cause a search of the primary table, looking for 1416, when found, the action code for 1416 will be played. If no match is found, then no response will be sent.

REMOTE DIALER PROGRAMMING

Using the RS232 Data Port of a local AXS dialer and the Zoo Keeper® program, remote dialers can be programmed. Once in PROGRAMMER MODE the data port will provide ASCII to DTMF and DTMF to ASCII conversion so that all programming can be done directly from a PC.

1. Click the **Upload** icon on the toolbar or Upload from the main menu of Zoo Keeper®. The Upload interface screen will appear.
2. 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, then '**Configure**'. The '**Settings**' dialogue box appears which displays the different items that need to be set. They are the Com Port, Baud Rate, Number of Data Bits, Parity, Number of Stop Bits and Flow Control. Each item has a drop down list that can be used to make the proper selection. Click 'OK'.
3. Click '**Port**' , '**Save Configuration**' to retain the settings.
4. Select the connection type as 'Remote Manual'.
5. Place a telephone call to the remote dialer using the telephone connected to the AXS™ dialer that is being used to do the programming.
6. When the remote end answers, either automatically or by someone, 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 dialer. '**PRO-MODE**' appears in the green Transmission LED window.
8. 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.
9. Click the down arrow of the box in the upper part of this option box. This action will display a Drop Down List of diagnostic codes that can be selected. Click the code you wish to use. It will be highlighted and entered into the text box.
10. If the code selected contains variables then you must enter the required variable in the box labeled '**Parameters**'.
11. Click the '**Check**' button.
12. The diagnostic command being sent to the dialer is displayed in the bottom Transmission Window.
13. The response from the dialer is displayed in the upper Transmission Window.

The second way to use the Transmission Windows is as follows:

1. Move the cursor to the bottom Transmission Window, click the left mouse button.
2. Type the desired diagnostic code.
3. The response appears in the upper Transmission Window.
4. When finished click the '**Disconnect**' icon from the toolbar or 'Connection', 'Disconnect' from the main menu. 'LEAVING PROGRAMMING MODE' appears in the upper portion of the window.

The following are a list of commands to enter and exit PROGRAMMER MODE of a local AXS, if a Communications Program other than Zoo Keeper® is being used:

Pmh1 : Go OFF-HOOK

Sending Pmh1 to AXS via the data port, will cause AXS to go off hook towards the TELCO and SPLIT the Telephone Side from the Trunk Side. Upon completion of this command AXS will respond with an OK .

Once OFF-HOOK, AXS enters a mode in which all valid DTMF digits received on the DATA PORT are converted to DTMF (or PULSE depending on the P3 or P4 commands below) and echoed out to the TELCO. All NON-DTMF Digits (Such as these PM commands) are not echoed.

All DTMF digits detected on the TELCO line are converted to ASCII and echoed back out the PC via the DATA PORT.

P0 : Go ON-HOOK

Sending P0 to AXS via the data port will cause AXS to go on hook towards the TELCO and JOIN the Telephone Side and Trunk Side. Upon completion of this command AXS will respond with an OK. This command is only recognized when in Pmh1 Mode and causes AXS to exit Pmh1 mode.

P2 : Detect Dial Tone

Sending P2xx to AXS via the data port will cause AXS to wait up to xx seconds for dial tone on the Trunk Side. Upon success, AXS will respond with OK. Upon failure, AXS will respond with ?! This command is only recognized when in Pmh1 Mode.

P3 : Switch to Pulse Dialing

Sending P3 to AXS via the data port will cause AXS to transmit any further digits towards the TELCO as Pulse. Upon completion, of this command, AXS will respond with OK. This command is only recognized when in Pmh1 Mode.

P4 : Dial Tone Digits (DTMF)

Sending P4 to AXS via the data port will cause AXS to transmit any further digits towards the TELCO using DTMF. Upon completion, of this command, AXS will respond with OK. This command is only recognized when in Pmh1 Mode.

P5 : Wait for Silence after FAX Tone

Sending P5 to AXS via the data port will cause AXS to detect a FAX tone from the answering FAX Machine, then to wait for Silence. This is used to make sure you have silence when attempting to access a AXS unit remotely.

EXAMPLE

A typical PC program to program a remote Dialer automatically would do the following:

PC Sends to AXS	AXS Sends to PC	AXS Sends to TELCO	Remote AXS towards PC
Pmh1	OK (After OFF-HOOK)		
P2	OK (After Detecting)		
P4	OK		
5551212		5551212	
WAIT 20 SECONDS			
***00*#		***00*#	
WAIT 5 SECONDS			
***00*#		***00*#	
	D		D

At this point we have contacted the remote Dialer and can begin programming it, as if we were directly connected.

P0	OK (After ON-HOOK)

A typical PC program to program a remote Dialer after a manual voice call would do the following:

Technican uses the telephone connected to AXS to call the Dialer. After the user answers the call and is instructed that programming is to be done, the technician would hit a key on the PC to begin execution of the following

PC Sends to AXS	AXS Sends to PC	AXS Sends to TELCO	Remote AXS towards PC
Pmh1	OK (After OFF-HOOK)		
P4	OK		
***00*#		***00*#	
	D		D

At this point we have contacted the remote Dialer and can begin programming it, as if we were directly connected.

P0	OK (After ON-HOOK)

UPLOADING

Programming of a dialer can be accomplished by developing a database of system parameters and programs using the Zoo Keeper ® program and then uploading this program into the dialer(s) via the RS232 port. Several databases can be developed for different applications and/or countries and then recalled and downloaded into dialers when required. Once the program has been installed into the dialer any minor changes required, such as the Callback telephone number in the Bin being used to call to the switch, can be done quickly. The following is the steps to take to Upload a program to a local dialer.

Uploading a Program to a local dialer:

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 communications port it will use. Click '**Port**' on the menu at the top, then '**Configure**'. The '**Settings**' dialogue box appears which displays the different items that need to be set. They are the Com Port, Baud Rate, Number of Data Bits, Parity, Number of Stop Bits and Flow Control. Each item has a drop down list that can be used to make the proper selection. Click 'OK'.
4. Click '**Port**', '**Save Configuration**' to retain the settings.
5. Select the connection type as 'Local'.
6. 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.
7. Click the '**Connect**' icon from the toolbar or 'Connection', 'Connect' from the main menu.
8. 'Programming Mode OK' appears in the upper half of the transmission window when you have entered programming mode.
9. 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 window beside the Upload button as they are being sent. As each parameter is sent an 'OK' or 'ERROR' appears in the Receive Window to indicate the status.
10. When all the selected parameters have been sent 'TX - Done' is displayed by the Transmission LED.
11. Click the '**Disconnect**' icon from the toolbar or 'Connection', 'Disconnect' from the main menu.

REMOTE UPLOADING

Uploading a program to a Remote Dialer using the Auto-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 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, then '**Configure**'. The '**Settings**' dialogue box appears which displays the different items that need to be set. They are the Com Port, Baud Rate, Number of Data Bits, Parity, Number of Stop Bits and Flow Control. Each item has a drop down list that can be used to make the proper selection. Click 'OK'.

4. Click '**Port**', '**Save Configuration**' to retain the settings.
5. Select the connection type as 'Remote Auto-dial'.
6. 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.
7. 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**' appears in the green Transmission LED window.
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', '**PRO_MODE**' appears in the Transmission LED 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 by the Transmission LED as they are being sent. As each parameter 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.

Uploading a program to a Remote Dialer – Manual Dial:

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 communications port it will use. Click '**Port**' on the menu at the top, then '**Configure**'. The '**Settings**' dialogue box appears which displays the different items that need to be set. They are the Com Port, Baud Rate, Number of Data Bits, Parity, Number of Stop Bits and Flow Control. Each item has a drop down list that can be used to make the proper selection. Click 'OK'.
4. Click '**Port**' , '**Save Configuration**' to retain the settings.
5. Select the connection type as 'Remote Manual'.
6. 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.
7. Place a telephone call to the remote dialer using the telephone connected to the AXS™ dialer that is being used to do the programming.
8. When the remote end answers, either automatically or by someone, click the '**Connect**' icon from the toolbar or 'Connection', 'Connect' from the main menu.
9. 'Programmer Mode OK' appears in the upper half of the transmission window when you have entered programmer mode on the local dialer. '**PRO-MODE**' appears in the green Transmission LED window.
10. 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.
11. 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 by the Transmission LED as they are being sent. As each parameter is sent a 'D' or 'BB' appears in the Receive Window to indicate the status.
12. When all the selected parameters have been sent 'TX - Done' is displayed.
13. Click the '**Disconnect**' icon from the toolbar or 'Connection', 'Disconnect' from the main menu.

GENERAL PURPOSE BIN ONLY PROGRAMMING

General Purpose Bin Only Programming is available on the AXS from a DTMF phone. This will allow programming access only to the General Purpose Bins, that are used to store the DID numbers, Local Node Numbers and / or Pin Numbers for Callback or Fax Store and Forward. The entire program can not be accessed through this code. The code is ****0*#.
A system parameter has been added in junction with the above that will allow you to program a Bin Only Programming Password. The Password is independent of any programming access code that you may have programmed into the system.

To Use the Bin Only Programming Feature

1) Go Off-Hook on the telephone connected to the dialer.
2) Enter the Bin Only Programming Code ****0*#
3) Dialer will return 'D' tone as confirmation of entry into programming mode.
4) If required enter the Bin Only Programming Password.
5) Dialer will return a 'D' tone as confirmation of the entry of the correct password.
6) Enter the Bin Number and number you wish to program followed by *#.
7) Dialer will return a 'D' tone as confirmation of the entry.
8) Repeat step 5 to enter other Bin numbers or Hang up to exit Program Mode.

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APPENDIX "A"
PROGRAM MODE COMMANDS

Code	Description	Parameters
0XXYY *#	System Parameter Setting	XX = Parameter Number (Appendix "B") YY = Setting

Eg**: 0 23 1 *#** Set Pulse Dialing Speed to 10 PPS

1XXAA *#	Primary Table Maintenance:	XX = Digits to enter into Table AA = Action (See Appendix "C")

Eg: **1 1416555 03 *#** Add 1416555 to the primary search table, and on a match go execute program 03

2XXAA *#	Secondary Table Maintenance:	XX = Digits to enter into Table AA = Action (See Appendix "C")

Eg: **2 1900 20 *#** Add 1900 to the secondary search table, and on a match execute program 20.

3XXAA *#	Incoming Table Maintenance:	XX = Digits to enter into Table AA = Action (See Appendix "C")
4PPXX *#	Program Maintenance	PP = Program Number 01 to 20 for Parallel Program 21 for Drop Program 22 for Ring Program XX = Program STRING (See Appendix "D")

Eg: **4 01 90 92 75 700 99 *#** Places a short program into program 01

5SSXX *#	Speed Dial Maintenance	SS = Speed Dial # (01 to 99) XX = Speed Dial STRING *# = Denotes END of SPEED DIAL STRING

Eg: **5 01 5551212 *#** Place 5551212 into speed dial bin 01

6BBXX *#	Bin Maintenance	BB = Bin Number (01 to 20) XX = Bin Dial STRING

Eg: **6 01 5551212 *#** Place 5551212 into bin 01

71XXSS *#	Verified User Code Table Maintenance	XX = User Code to enter SS = Security Level (00 to 99)
72XXSS *#	Verified Client Code Table Maintenance	XX = Client Code SS = Security Level (00 to 99)
80	Play Version Number	

81XX	Play Program	XX	= 00 - ALL Programs
		XX	= 01 to 20 - Individual Program
		XX	= 21 for DROP Program
		XX	= 22 for RING Program
820	Play Primary Table (ALL)		
821XXYY	Play Primary Table (Range)	XX	= Range with Length >=
		YY	= Range with Length <=

Eg: **821 0104 *#** will play all primary table entries with a length of from 1 to 4 digits in length.

822	Play Secondary Table (ALL)		
823XXYY	Play Secondary Table (Range)	XX	= Range with Length >=
		YY	= Range with Length <=

Eg: **823 0104 *#** will play all secondary table entries with a length of from 1 to 4 digits in length.

824	Play Incoming Table (ALL)		
825XXYY	Play Incoming Table (Range)	XX	= Range with Length >=
		YY	= Range with Length <=

Eg: **824 0104 *#** will play all incoming table entries with a length of from 1 to 4 digits in length.

826	Play User Code Table (ALL)		
827XXYY	Play User Code Table (Range)	XX	= Range with Length >=
		YY	= Range with Length <=

Eg: **827 0405 *#** will play all User Code entries with a length of from 4 to 5 digits in length.

828	Play Client Code Table (ALL)		
829XXYY	Play Client Code Table (Range)	XX	= Range with Length >=
		YY	= Range with Length <=

Eg: **829 0405 *#** will play all Client Code entries with a length of from 4 to 5 digits in length.

83XX	Play Speed Dial Bin	XX	= 00 - ALL Bins
		XX	= 01 to 99 for individual bin
84XX	Play General Purpose Bin	XX	= 00 - ALL Bins
		XX	= 01 to 20 for individual bin
85	Play ALL System Parameter to the Data Port		
095	Play Electronic Serial Number		
86XX	Clear Program	XX	= 00 - ALL Programs
		XX	= 01 to 20 for Parallel Program
		XX	= 21 for DROP Program
		XX	= 22 for RING Program

87X	Clear Table	X	= 0 - Primary Table
		X	= 1 - Secondary Table
		X	= 2 - Incoming Table
		X	= 3 - User Table
		X	= 4 - Client Table
88XX	Clear Speed Dial Bin	XX	= 01 to 99 for Bin Number
		XX	= 00 for ALL Bins
89XX	Clear General Purpose Bin	XX	= 01 to 20 for Bin Number
		XX	= 00 for ALL Bins
8*X	Enable or Disable Dialer	X	= 0 Enable Dialer
		XX	= 1 Disable Dialer
8#X	Enable or Disable Call Progress	X	= # Disable Call Porgress
		X	= * Enable Call Porgress
90	Clear and Load Primary Table		
91	Clear and Load Secondary Table		
92	Clear and Load Incoming Table		
93	Clear and Load User Table		
94	Clear and Load Client Table		

APPENDIX "B"
SYSTEM PARAMETERS

GENERAL OPTIONS

Code	Description	Parameters
000XX	Dialer ID	XX = 01 to 99
001X	SMDR On/Off	X = 0 - OFF X = 1 - All Calls X = 2 - Outgoing Only
002X	Data Port Baud Rate	X = 1 - 1200 BPS X = 2 - 2400 BPS X = 3 - 9600 BPS
003X	Idle State	X = 0 - Trunk and Drop Split X = 1 - Trunk and Drop Joined
005XX	Program Mode Time-Out	XX = 01 to 99 Seconds
006XX	Failure - Retries	XX = 01 to 10 Retries
008XX	Reset to Factory Default Application	XX = Application Number
009XX	Password	XX = 1 to 8 digit password
010XX	Bin Only Program Password	XX = 1-8 digits
015XXYY	Automatic Call Home	XX = 00-99 (days) YY = 00-23 (hours)

APPENDIX "B"
SYSTEM PARAMETERS

TRUNK SIDE OPTIONS

Code	Description	Parameters
021X	Dialing Type	X = 1 - DTMF X = 2 - Rotary
023X	Pulse Dialing Speed	X = 1 - 10 PPS 60/40 X = 2 - 20 PPS 60/40 X = 3 - 10 PPS 67/33 X = 4 - 20 PPS 67/33
024XX	Pulse Inter-Digit Time	XX = 01 to 99 (X 50 Milliseconds)
026XX	DTMF Dialing Speed (On Time)	XX = 01 to 99 (X 10 Milliseconds)
027XX	DTMF Inter-Digit Time	XX = 01 to 99 (X 10 Milliseconds)
029XXYY	Dial Shunt	XX = Predial ms. YY = Postdial ms.
032XX	Release/Reseize Time	XX = 01 to 99 (X 50 Milliseconds)
034X	Ring Detect Sensitivity	X = 0 to 9 (0 is Most Sensitive)
035X	Ignore Ring High	X = 0-1
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)
041XXXXYYYYZZ	Ring Back Frequency	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)
042XXXXYYYYZZ	Busy Tone Frequency	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)
043XXXXYYYYZZ	Tone Burst Frequency	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ) ZZ = Tolerance (Percent)
044XXXXYYYY	AXS Dial Tone Output Frequency	XXXX = low frequency Hz YYYY = high frequency Hz
045XXXXYYYY	Generated Call Progress Tone	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ)
046XXXXYYYY	Generated Beep Tone	XXXX = Low Frequency (HZ) YYYY = High Frequency (HZ)

048XXXXYYYYZZAABBCCDD
Set Tone 1 Cadence

XXXX = 0100-2499 (low frequency Hz)
YYYY = 0100-2499 (high frequency Hz)
ZZ = 05-75 (tolerance percentage)
AA = Cadence A On Time (x 100 ms)
BB = Cadence A Off Time (x 100ms)
CC = Cadence B On Time (x 100 ms)
DD = Cadence B Off Time (x 100ms)

049XXXXYYYYZZAABBCCDD
Set Tone 2 Cadence

XXXX = 0100-2499 (low frequency Hz)
YYYY = 0100-2499 (high frequency Hz)
ZZ = 05-75 (tolerance percentage)
AA = Cadence A On Time (x 100 ms)
BB = Cadence A Off Time (x 100ms)
CC = Cadence B On Time (x 100 ms)
DD = Cadence B Off Time (x 100ms)

APPENDIX "B"
SYSTEM PARAMETERS

DROP SIDE OPTIONS

Code	Description	Parameters
050XX	Off Hook Recognition	XX = 00 to 99 (X 10 Milliseconds)
051XX	Digit Refusal Timer	XX = 00 to 99 (X 10 Milliseconds)
052X	Dialing 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)
055XX	On Hook Recognition	XX = 00 to 99 (X 20 Milliseconds)
056XX	User/Client Time Out - First Digit	XX = 02to 99 Seconds
060X	Speed Dial Access Code	X = Single digit Access Code (Default is #)
061XY	Force Program Code	X = Single digit Override Code (Default is *) Y = Enable/Disable Centrex (Default is 1)
062X	Set End Destination Number Digit	X = single digit access code
063XX	Set User Speed Dial Prog. Prefix	XX = two digit access code
064XX	Set New Call Scan Digit	XX = one or two digit access code

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06500	Disable Centrex/PBX Compatibility	
0650X	Enable Centrex/PBX Compatibility	X = Extension Number Length
065XYY	Centrex Access Code	X = Code # (1 to 5) YY = Access Code (YY may be 1 or 2 Digits)
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)
099X	Data Confirmation Mode	X = 0-1

APPENDIX "C"
ACTION CODES

00	Delete Entry	- Used while programming
01 to 20	Launch Program 01 to 20	
##	Play current Setting	- Used while programming

APPENDIX "D"
PROGRAM INSTRUCTIONS
RING / DROP / PARALLEL

Code	Description	Parameters
00	No-Operation	
08WWXXYYZ	Automatic Bin Change	WW = Number of Digits toExpect XX = Bin Number to Change YY = Time to Wait for First Digit Z = Time to Wait for Subsequent Digits
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 # Dial Digit

*5	DTMF Digit A (Used if NO A,B,C or D can be generated)
*6	DTMF Digit B " "
*7	DTMF Digit C " "
*8	DTMF Digit D " "
**	Dial "*" Digit

20	Switch to Tone Dialing on Trunk Side	
21	Switch to Pulse Dialing on Trunk Side	
25X	DTMF Boost	X = 0 - Normal DTMF Outout X = 1 - Boosted Outout
30	Calculate Checksum	
31	Dial Checksum to Line	
34XX	Go to Program XX After Hang up	
35XX	Go to Program XX	
36	Hang Up Trunk Side, Loop Back and Restart Program - For a Maximum # of Retries.	
37XX	Go To Function Program XX	
38X	Return to Original Program	X = 0 or 1
39XX	Detected Tone Duration	XX = 01 to 99 (X 20 milliseconds)
40XX	Verify User Code	XX = Security Level
41XX	Verify Client Code	XX = Security Level
45	Wait for User	
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)
53XX	Detect Busy Tone on Trunk Side	XX = Seconds to Wait (01 to 99)
55XX	Wait for Host	XX = Seconds to Wait (01 to 99)
56XYY	Detect Tone Cadence	X = 1 for Tone 1, 2 for Tone 2 YY = Seconds to Wait (01 to 99)
57XXYY	Detect Ring Back Tone on Trunk Side	XX = Seconds to Wait (01 to 99) YY = # of Rings to Wait For
58XX	Wait for Call Back	XX = Seconds to Wait (01 to 99)
59XX	Delay	XX = 01 to 99 (X 100 Milliseconds)
60XX	Dial Drop Recorded Telephone Number to Trunk. continue to the next instruction, only after receiving an interdigit timeout from the Drop, or after Dialing XX Digits.	
61	Dial Recorded User Code to Trunk	
62	Dial Recorded Client Code to Trunk	
63	Dial Recorded Centrex Access Code Digit(s) to the Trunk.	
64XX	Dial Digits in Bin # XX to Trunk	
65	Dial Recorded Spare Code 1 to Trunk	
66	Dial Recorded Spare Code 2 to Trunk	
68XX	Dial HOOK FLASH On Trunk Side	XX = Flash Length (X 100 Milliseconds)
69XX	Dial Speed Dial Bin	XX = Bin Number (01 to 99)
700	Record Dialed Telephone Number - Searches Primary Table for a match	
701	Record Dialed Telephone Number - Search Primary and Secondary table	
702	Record - NO Search	
703	Search primary table only	
704	Search primary + secondary	
71XX	Record Dialed User Code (XX Digits Long)	
72XX	Record Dialed Client Code (XX Digits Long)	
73	Record spare code 1	

74	Record spare code 2	
75	Provide Telco Tones to Drop (Usually Dial Tone)	
76	Provide Internal Dial Tone to Drop	
77X	Provide X Beeps to Drop Side	
78	Provide Dial Tone to Trunk Side	
79X	Provide X Beeps to Trunk Side	
81XXYY	Delete Digits from Users Dialed String	XX = Start Position YY = Number of Digits to Delete
82XXYYZZ	Insert Digits into Users Dialed String	XX = Start Position YY = Number of Digits to Insert ZZ = Digit(s) to Insert
83	Provide Call Progress Tone to the Drop	
87	Set Time and Date Remote	
88HHMMhhmm	Test time of Day	HH = Start Hour MM = Start Minutes hh = Finish Hour mm = Finish Minutes
891	Continue after hang up	
90	Go OFF-HOOK Trunk Side	
91	Hang-Up Trunk Side	
92	Split Trunk and Drop	
93	Join Trunk and Drop	
9400	Wait for User to Answer an incoming Telephone Call	
94XX	Wait for User to Answer an incoming Call, or Auto-Answer after XX Rings	
95	Start SMDR Record.	
96	Prevent SMDR Record	
97	Hang-Up and Re-Order	
98	Hang-Up and Clean-Up	
99	Wait for Hang-Up by User (Or an Auto-Answer Time Out)	

DROP PROGRAM PROGRAMMING FORM

	Action to Take	Code
		421
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
24		
25		

Program Codes

00 - no operation
01 -Telco dial tone to drop
10xxyy - dial number string
20 -switch to DTMF dialing
21 -switch to pulse dialing
25x - DTMF Boost
35xx -go to program xx
36 -restart program
40xx -verify user code
41xx -verify client code
45 -wait for user
50xx -detect dial tone
51xyy -detect DTMF (trunk)
52xx -detect tone burst (trunk)
53xx -detect busy tone (trunk)
57xxyy -detect ringback (trunk)
58xx -wait for callback
59xx -delay
60xx -dial recorded number
61- dial recorded user code
62 -dial recorded client code
63 -dial recorded Centrex code
64xx -dial digits in bin
65 -dial spare code 1
66 -dial spare code 2
68xx -dial hook flash (trunk)
69xx - dial speed dial number
70x - record destination number
71xx - record user code
72xx - record client code
73 - record spare code 1
74 - record spare code 2
75 - provide Telco tones to Drop
76 - internal dial tone to Drop
77x - beeps to drop
78 -provide dial tone to trunk
79x - beeps to trunk
81xxyy - delete digits
82xxyyzz - insert digits
83 - progress tone to Drop
88xxyyzz - test time of day
89 - continue after hang up
90 - off hook trunk side
91 - hang up trunk side
92 - split trunk and Drop
93 - join trunk and Drop
9400 - wait for user to answer
94xx -wait or auto answer
95 - start SMDR record
96 - prevent SMDR record
97 - hang up and reorder tone
98 - hang up and clean up
99 - wait for hang up

Programming Instructions

1. Determine the program string required for the application
2. Enter action to be taken and appropriate program code starting at line 1 into table
3. Enter program codes into dialer from top to bottom

RING PROGRAM PROGRAMMING FORM

	Action to Take	Code
		422
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
24		
25		

Program Codes

00 - no operation
01 -Telco dial tone to drop
10xxyy - dial number string
20 -switch to DTMF dialing
21 -switch to pulse dialing
25x - DTMF Boost
35xx -go to program xx
36 -restart program
40xx -verify user code
41xx -verify client code
45 -wait for user
50xx -detect dial tone
51xyy -detect DTMF (trunk)
52xx -detect tone burst (trunk)
53xx -detect busy tone (trunk)
57xxyy -detect ringback (trunk)
58xx -wait for callback
59xx -delay
60xx -dial recorded number
61- dial recorded user code
62 -dial recorded client code
63 -dial recorded Centrex code
64xx -dial digits in bin
65 -dial spare code 1
66 -dial spare code 2
68xx -dial hook flash (trunk)
69xx - dial speed dial number
70x - record destination number
71xx - record user code
72xx - record client code
73 - record spare code 1
74 - record spare code 2
75 - provide Telco tones to Drop
76 - internal dial tone to Drop
77x - beeps to drop
78 -provide dial tone to trunk
79x - beeps to trunk
81xxyy - delete digits
82xxyyzz - insert digits
83 - progress tone to Drop
8xxyyzz - test time of day
89 - continue after hang up
90 - off hook trunk side
91 - hang up trunk side
92 - split trunk and Drop
93 - join trunk and Drop
9400 - wait for user to answer
94xx -wait or auto answer
95 - start SMDR record
96 - prevent SMDR record
97 - hang up and reorder tone
98 - hang up and clean up
99 - wait for hang up

Programming Instructions

(1) Determine the program string required for the application
(2) Enter action to be taken and appropriate program code starting at line 1 into table
(3) Enter program codes into dialer from top to bottom

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PARALLEL PROGRAM PROGRAMMING FORM

	Action to Take	Code 401-420
		4_ _
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
24		
25		

Program Codes

00 - no operation
01 -Telco dial tone to drop
10xxyy - dial number string
20 -switch to DTMF dialing
21 -switch to pulse dialing
25x - DTMF Boost
35xx -go to program xx
36 -restart program
40xx -verify user code
41xx -verify client code
45 -wait for user
50xx -detect dial tone
51xyy -detect DTMF (trunk)
52xx -detect tone burst (trunk)
53xx -detect busy tone (trunk)
57xxyy -detect ringback (trunk)
58xx -wait for callback
59xx -delay
60xx -dial recorded number
61- dial recorded user code
62 -dial recorded client code
63 -dial recorded Centrex code
64xx -dial digits in bin
65 -dial spare code 1
66 -dial spare code 2
68xx -dial hook flash (trunk)
69xx - dial speed dial number
70x - record destination number
71xx - record user code
72xx - record client code
73 - record spare code 1
74 - record spare code 2
75 - provide Telco tones to Drop
76 - internal dial tone to Drop
77x - beeps to drop
78 -provide dial tone to trunk
79x - beeps to trunk
81xxyy - delete digits
82xxyyzz - insert digits
83 - progress tone to Drop
88xxyyzz - test time of day
89 - continue after hang up
90 - off hook trunk side
91 - hang up trunk side
92 - split trunk and Drop
93 - join trunk and Drop
400 - wait for user to answer
94xx -wait or auto answer
95 - start SMDR record
96 - prevent SMDR record
97 - hang up and reorder tone
98 - hang up and clean up
99 - wait for hang up

Programming Instructions

(1) Determine the program string required for the application
(2) Enter action to be taken and appropriate program code starting at line 1 into table
(3) Enter program codes into dialer from top to bottom

SEARCH TABLE CODING FORM

Primary Search Table

	Table Entry	Prog
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Secondary Search Table

	Table Entry	Prog
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		

Programming Instructions

1) Enter the numbers including any wildcards that you wish to match to launch a program in the 'Table Entry' column of the Primary Search Table.
2) Enter the program number you wish to launch upon a match in the 'Prog' column.
3) The Secondary Search Table allows the entry of numbers that have been matched in the Primary Table but require a different program to be launched as a result of a more specific match. An example is you wish to have a program launch upon a match with 1416 in the Primary Table and a different program launch if 1416976 is dialed. The 1417976 entry would be made into the Secondary Table. The dialer will only check the Secondary Table once a match has occurred in the Primary Table.
4) Search Table entries are arranged in the tables first by digit length and then equal digit length entries are arranged chronologically. Therefore, entries containing wildcards should be made after all other entries have been made.

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APPENDIX "E"
DTMF / DATA PORT DIFFERENCES

Equivalent Codes:

Description	DTMF Version	Data Port Version	Applies
Enter	*#	Enter (HEX 0D)	Universal
Don't Care	*0	?	Search Tables
Any Digit except 0 or 1	*1	!	Search Tables
0 or 1	*2	$	Search Tables 10XXYY Dail String Bin Maintenance Detect DTMF Digit Force Program Prefix
DTMF DIGIT "A"	A, or *5	A	"
DTMF DIGIT "B"	B, or *6	B	"
DTMF DIGIT "C"	C, or *7	C	"
DTMF DIGIT "D"	D, or *8	D	"
DTMF DIGIT "*"	**	**	"

Programming Examples:

The following is an example of a simple programming session.

Description	DTMF Version	Data Port Version
Enter Wake-Up Mode	***00*#	***00<ENTER>
Enter Password	98765	98765
Change SMDR Baud Rate to 1200	0 02 1 *#	0 02 1 <ENTER>
Add 1416 selecting Program 2, to Primary Table	1 1416 02 *#	1 1416 02 <ENTER>
Restrict ALL 976 Calls	2 *0*0*0 976 20 *#	2 ??? 976 20 <ENTER>
Change Password to 12345	0 09 12345 *#	0 09 12345 <ENTER>

INTERNATIONAL CALL BACK APPLICATION NOTE

To configure AXS for International Call Back, AXS integrated Programming Language is used to control interaction with both the USER and the CALL BACK SWITCH. The following is an example of Unanswered Call Back. Your APPLICATION may be the same, or quite different. At Telcom Research we work with you to set up programs that will function correctly with your equipment.

Once set-up and tested, these program(s) can be stored as one of the FACTORY DEFAULT APPLICATIONS eliminating the need in future to program the AXS from scratch. When your APPLICATION has been installed in this manner, your installers simply need to activate the correct APPLICATION, enter your SWITCH Access Number and finally enter your Search Table. If your system requires multiple APPLICATIONS we can store up to 99 as FACTORY DEFAULTS. Also if your requirements change, you are not locked in to how your dialer works, since you have the flexibility to change its programming and thus its interaction with both the user and your switch.

AXS programs begin execution with either the DROP program which is executed when the USER picks up the telephone or the RING program when the AXS sees an incoming call. The Drop program defines AXS interaction with the USER. One of the instructions in the DROP program is responsible for recording USER Dialed Digits and matching them against Search Table Entries. When a match is found, the match will determine what PARALLEL Program to execute. This PARALLEL Program runs simultaneously with the DROP Program and controls AXS interaction with both the TELCO and your SWITCH.

The following APPLICATION example configures AXS for International Call Back from United Kingdom which has an international prefix of “010”. The Call Back Switch is in the United States at 1-212-555-9999.

RING Program
93 9410 95 99

93	Join the TELCO line to the phone, FAX or PBX.
9410	Wait 10 rings for the call to be answered otherwise AXS will answer the call at the end of the 10th ring.
95	Start SMDR Record.
99	Wait for USER to hang up.

DROP Program
90 92 75 700 99

90	Place AXS in the OFF-HOOK State towards the Trunk.
92	Split the Drop (USER) from the TRUNK
75	Provide TELCO Dial Tone to the Drop (USER). This instruction provides a ONE-WAY audio path to allow dial tone from the Trunk to be heard by the USER.
700	Record USER Dialed Digits (Destination Phone Number) and Search the Primary Table for a Match. The Primary Search Table contains a Table of digits (including wild cards) that are matched against the digits being Dialed. Upon a match, the program assigned to the matching table entry is executed and run simultaneously with the DROP Program.
99	Wait for the USER to hang up. This instruction waits for the USER to terminate the call.

Unanswered Call Back Program 17
To NON North American Destinations
6405 572001 97 91 5830 97 90 59-20 810103 820103 011 6000 93 95 99

64-05	Dial General Purpose Bin Number 5 (Containing your SWITCH Access Phone Number). The Dial Bin instruction (64) can dial any of the 20 General Purpose Number Bins (01 to 20). These bins usually contain Access Numbers or Authorization Codes.
57-20-01	Wait for a maximum of 20 seconds for 1 Ring Back Tone. Upon success the following instruction is skipped. If no Ring Back tone is heard within 20 Seconds, then the following instruction is executed.
97	Hang-up and give Re-Order Tone to the user. As stated above this is only executed if the 57 instruction above has failed.
91	Hang Up the Trunk side of the telephone line. Since we have successfully detected a ring back, we must hang up in preparation for the call back.
58-30	Wait for a maximum of 30 seconds for an incoming call. This instruction waits for the call back. If an incoming call is detected within the 30 second time period, then the following instruction is skipped. If however no incoming call occurs within the 30 seconds, then the following instruction is executed.
97	Hang-up and give Re-Order Tone to the user. As stated above this is only executed if the 58 instruction above has failed.
90	Place AXS in the off hook state towards the trunk.
59-20	Delay 2 seconds.
81-01-03	Delete first 3 digits.
820103011	Insert 011. (Do not use for North American Calls. This is only for destinations outside North America)
60-00	Dial the User Dialed Digits. This instruction will dial towards the calling Switch, the digits Dialed by the user (Destination Phone Number).
93	Join the Trunk and Drop. This instruction will cause AXS to connect the Users Telephone Directly to the Trunk, and in effect disconnect itself from the call, allowing the user direct control of the line.
95	Start an SMDR Record. AXS contains a Data Port, and with this instruction, you have activated the SMDR Feature. When the user hangs up the phone, this instruction will cause AXS to send an SMDR record out the Data Port with detail on time of call, duration, number Dialed, etc.
99	This instruction causes AXS to simply wait for the user to hang up the telephone at the end of the phone call. Once this occurs, then AXS will reset itself and be ready to process the next call.

As you can see, this program fully controls AXS interaction with both the TELCO and your CALL BACK SWITCH. Simply by changing this program you can easily change how AXS works, to suit the needs of your SWITCH.

Unanswered Call Back Program 18
To North American Destinations
6405 572001 97 91 5830 97 90 59-20 810103 6000 93 95 99

64-05	Dial General Purpose Bin Number 5 (Containing your SWITCH Access Phone Number). The al Bin instruction (64) can dial any of the 20 General Purpose Number Bins (01 to 20). These bins usually contain Access Numbers or Authorization Codes.
57-20-01	Wait for a maximum of 20 seconds for 1 Ring Back Tone. Upon success the following instruction is skipped. If no Ring Back tone is heard within 20 Seconds, then the following instruction is executed.
97	Hang-up and give Re-Order Tone to the user. As stated above this is only executed if the 57 instruction above has failed.
91	Hang Up the Trunk side of the telephone line. Since we have successfully detected a ring back, we must hang up in preparation for the call back.
58-30	Wait for a maximum of 30 seconds for an incoming call. This instruction waits for the call back. If an incoming call is detected within the 30 second time period, then the following instruction is skipped. If however no incoming call occurs within the 30 seconds, then the following instruction is executed.
97	Hang-up and give Re-Order Tone to the user. As stated above this is only executed if the 58 instruction above has failed.
90	Place AXS in the off hook state towards the trunk.
59-20	Delay 2 seconds.
81-01-03	Delete first 3 digits.
60-00	Dial the User Dialed Digits. This instruction will dial towards the calling Switch, the digits Dialed by the user (Destination Phone Number).
93	Join the Trunk and Drop. This instruction will cause AXS to connect the Users Telephone Directly to the Trunk, and in effect disconnect itself from the call, allowing the user direct control of the line.
95	Start an SMDR Record. AXS contains a Data Port, and with this instruction, you have activated the SMDR Feature. When the user hangs up the phone, this instruction will cause AXS to send an SMDR record out the Data Port with detail on time of call, duration, number Dialed, etc.
99	This instruction causes AXS to simply wait for the user to hang up the telephone at the end of the phone call. Once this occurs, then AXS will reset itself and be ready to process the next call.

As you can see, this program fully controls AXS interaction with both the TELCO and your CALL BACK SWITCH. By changing this program you can easily change how AXS works, to suit the needs of your SWITCH.

Default PTT Program
6000 93 95 99

60-00 Dial the User Dialed Digits. This instruction will dial towards the PTT, the digits Dialed by the user (Destination Phone Number).

93 Join the Trunk and Drop. This instruction will cause AXS to connect the Users Telephone Directly to the Trunk, and in effect disconnect itself from the call, allowing the user direct control of the line.

95 Start an SMDR Record. AXS contains a Data Port, and with this instruction, you have activated the SMDR Feature. When the user hangs up the phone, this instruction will cause AXS to send an SMDR record out the Data Port with detail on time of call, duration, number Dialed, etc.

99 This instruction causes AXS to simply wait for the user to hang up the telephone at the end of the phone call. Once this occurs, then AXS will reset itself and be ready to process the next call.

As you can see, the Default PTT Program in effect simply takes the digits Dialed by the user and re-dials them out to the PTT.

Table Entries

0101-18 All calls to countries in the North American Numbering Plan (country code 1) will cause program 18 (Unanswered Call Back to North American destinations) to be executed.

01033-01 Any Call with the first 3 digits of 010 (United Kingdoms International Prefix) followed by 33 (Calls to France) will cause program 01 (Default PTT) to be executed.

01049-01 Any Call with the First 3 digits of 010 (United Kingdoms International Prefix) followed by 49 (Calls to Germany) will cause program 01 (Default PTT) to be executed.

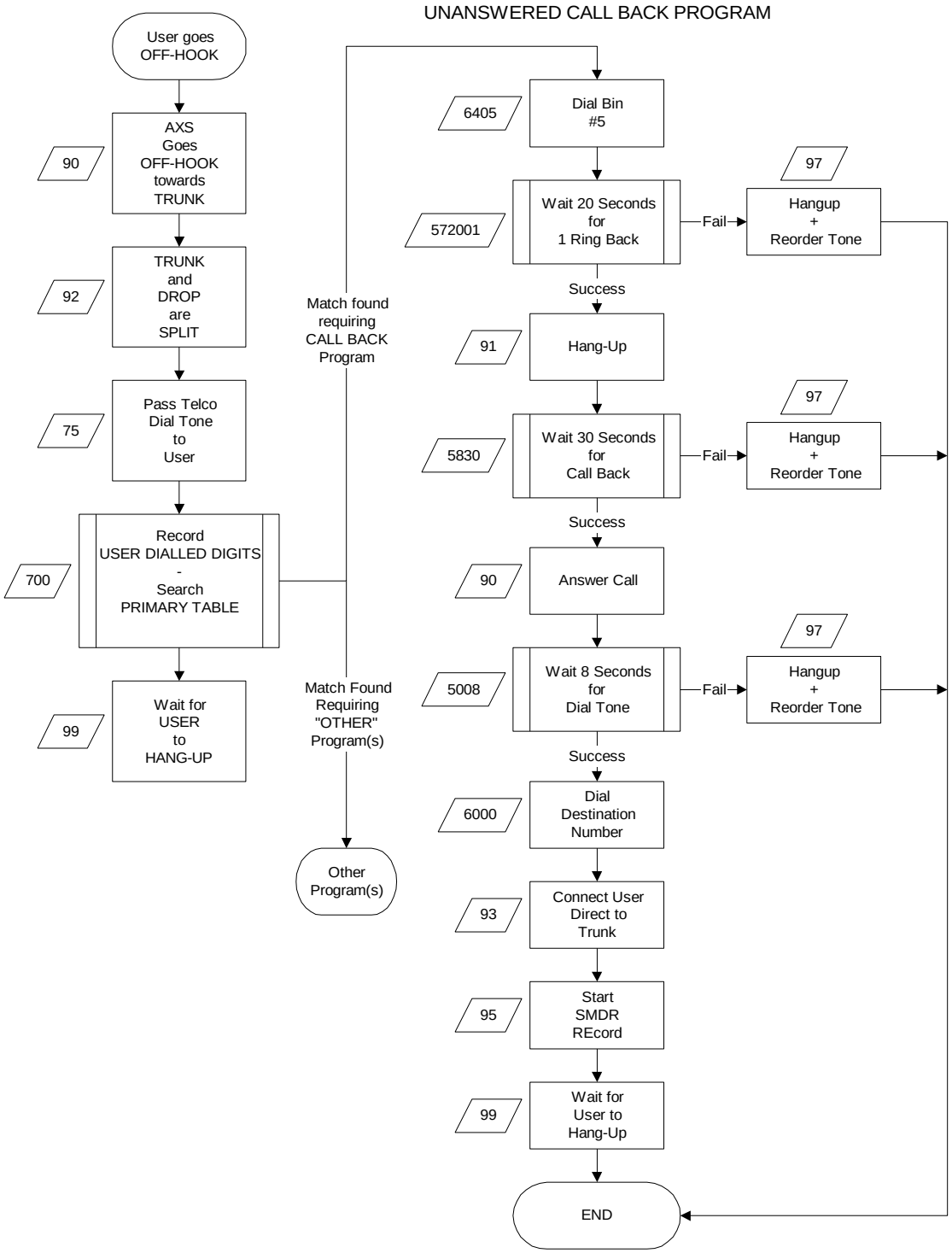
010???-17 Any Call with the first 3 digits of 010 (United Kingdoms International Prefix) followed by 3 more digits will cause program 17 (Unanswered Call Back to Non North American Destinations) to be executed.

??????-01 Any Call containing at least 6 digits that do not match one of the previous entries will match this entry and execute program 01 (Default PTT)

To summarize:

These 5 Table entries will instruct AXS to route North American calls to Unanswered Call Back (Program 18) and all other international calls to Unanswered Call Back Program (Program 17) except for calls to France and Germany which will be routed directly via the PTT. All other calls will be routed directly via the PTT. Tables can contain in excess of 10,000 digits if required, and there are 20 different programs that can be loaded, not just the three (01, 17 and 18) that we have used in this example. Using the tables and other programs, you can route calls to various countries through various long distance services.

The following Flow Chart displays in a more GRAPHICAL form how the example CALL BACK Application functions:



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Implementing
this
APPLICATION NOTE

The following are the Steps to implementing this APPLICATION:

- Reset AXS (See Hardware Installation Manual - Initial Power Up)
- Place the USER Telephone OFF-HOOK
- Enter Programming Mode by DIALING: ***00 *#
- Enter the Ring Program by DIALING: 422 93 9410 95 99 *#
- Enter DROP Program by DIALING: 421 90 92 75 700 99 *#
- Enter Default PTT PARALLEL Program by DIALING: 401 6000 93 95 99 *#
- Enter Unanswered Call Back PARALLEL Program by DIALING:
  417 6405 572001 97 91 5830 97 90 59-20 810103 820103 011 6000 93 95 99 *#
  418 6405 572001 97 91 5830 97 90 59-20 810103 6000 93 95 99 *#
- Enter your SWITCH Phone Number in Bin #5 by DIALING:
  605 0101413 827 3375*#
- Clear TABLE and Add Entries by DIALING:
  - 90 *#
  - 0101 18 *# (calls to country code 1 go to Program 18)
  - 01033 01 *# (calls to France go to Program 1)
  - 01049 01 *# (calls to Germany go to Program 1)
  - 010*0*0*0 17 *# (calls to country codes other than 1 go to Program 17)
  - *0*0*0*0*0*0 01 *# (all other calls go to the PTT)
  - *#
- Exit Programming Mode by hanging up.

Note: *0 = ? = Match any digit

This example is of course ONLY an EXAMPLE. If you need assistance in programming AXS for your application, just give us a call.

FAX P.A.D. APPLICATION NOTE

To configure AXS for FAX P.A.D., AXS integrated Programming Language is used to control interaction with both the USER and the FAX P.A.D. COMPUTER. The following is an example application, your APPLICATION may be the same, or quite different. At Telcom Research we work with you to set up programs that will function correctly with your system.

Once set-up and tested, these program(s) can be stored as one of the FACTORY DEFAULT APPLICATIONS eliminating the need in future to program the AXS from scratch. When your APPLICATION has been installed in this manner, your installers simply need to activate the correct APPLICATION, enter your NODE COMPUTER Access Number and finally enter your Search Table. If your system requires multiple APPLICATIONS we can store up to 99 as FACTORY DEFAULTS. Also if your requirements change, you are not locked in to how your Dialer works, since you have the flexibility to change its programming and thus its interaction with both the user and your switch.

AXS programs begin execution with either the DROP program, which is executed when the FAX goes off -hook or the RING program, when the AXS sees an incoming call. The Drop program defines AXS interaction with the FAX. One of the instructions in the DROP program is responsible for recording FAX Dialed Digits and matching them against Search Table Entries. When a match is found, the match will determine what PARALLEL Program to execute. This PARALLEL Program runs simultaneously with the DROP Program and controls AXS interaction with both the TELCO and your SWITCH.

The following APPLICATION example configures AXS for FAX P.A.D. Service from Hong Kong which has an international prefix of “005”. The local NODE is at 555-9999.

RING Program
93 9410 95 99

93	Join the TELCO line to the phone, FAX or PBX.
9410	Wait 10 rings for the call to be answered otherwise AXS will answer the call at the end of the 10th ring.
95	Start SMDR Record.
99	Wait for USER to hang up.

DROP Program
90 92 75 700 99

90	Place AXS in the OFF-HOOK State towards the Trunk.
92	Split the Drop (FAX) from the TRUNK
75	Provide TELCO Dial Tone to the Drop (FAX). This instruction provides a ONE-WAY audio path to allow dial tone from the Trunk to be heard by the FAX.

700 Record FAX Dialed Digits (Destination Phone Number) and Search the Primary Table for a Match. The Primary Search Table contains a Table of digits (including wild cards) that are matched against the digits being Dialed. Upon a match, the program assigned to the matching table entry is executed and run simultaneously with the DROP Program. AXS has the ability to record up to 250 digits Dialed by the FAX machine in one call. If your FAX P.A.D. service supports multiple destination numbers, AXS can handle the task.

99 Wait for the FAX to hang up. This instruction waits for the FAX to terminate the call.

FAX P.A.D. Program
6405 5030 97 6000 93 95 99

64-05 Dial General Purpose Bin Number 5 (Containing your Local NODE Access Phone Number). The Dial Bin instruction (64) can dial any of the 20 General Purpose Number Bins (01 to 20). These bins usually contain Access Numbers or Authorization Codes.

50-30 Wait for a maximum of 30 seconds for Dial Tone. this will cause AXS to wait for up to 30 seconds for a connection to the NODE. When the NODE answers the call, it provides DIAL TONE to AXS to signify to AXS that it can now transmit the destination phone number(s). If this instruction is successful (Detects Dial Tone within 30 seconds) then the following instruction is skipped. If however this instruction fails (No Dial Tone Detected within 30 seconds) then the following instruction is executed.

97 Hang-up and give Re-Order Tone to the FAX. As stated above this is only executed if the 50 instruction above has failed.

60-00 Dial the FAX Dialed Digits. This instruction will dial towards the NODE, the digits Dialed by the FAX (Destination Phone Number(s)).

93 Join the Trunk and Drop. This instruction will cause AXS to connect the FAX Machine Directly to the Trunk, and in effect disconnect itself from the call, allowing the FAX direct control of the line.

95 Start an SMDR Record. AXS contains a Data Port, and with this instruction, you have activated the SMDR Feature. When the FAX hangs up the phone, this instruction will cause AXS to send an SMDR record out the Data Port with detail on time of call, duration, number Dialed, etc.

99 This instruction causes AXS to simply wait for the FAX to hang up at the end of the phone call. Once this occurs, then AXS will reset itself and be ready to process the next call.

As you can see, this program fully controls AXS interaction with both the TELCO and your FAX P.A.D. NODE. Simply by changing this program you can easily change how AXS works, to suit the needs of your SWITCH.

Default PTT Program
6000 93 95 99

60-00 Dial the User Dialed Digits. This instruction will dial towards the PTT, the digits Dialed by the FAX (Destination Phone Number).

93 Join the Trunk and Drop. This instruction will cause AXS to connect the FAX Directly to the Trunk, and in effect disconnect itself from the call, allowing the user direct control of the line.

95 Start an SMDR Record. AXS contains a Data Port, and with this instruction, you have activated the SMDR Feature. When the FAX hangs up, this instruction will cause AXS to send an SMDR record out the Data Port with detail on time of call, duration, number Dialed, etc.

99 This instruction causes AXS to simply wait for the FAX to hang up at the end of the phone call. Once this occurs, then AXS will reset itself and be ready to process the next call.

As you can see, the Default PTT Program in effect simply takes the digits Dialed by the FAX and re-dials them out to the PTT.

Table Entries

00533-01 Any Call with the first 3 digits of 005 (Hong Kong's International Prefix) followed by 33 (Calls to France) will cause program 01 (Default PTT) to be executed.

00544-01 Any Call with the First 3 digits of 005 (Hong Kong's International Prefix) followed by 44 (Calls to UK) will cause program 01 (Default PTT) to be executed.

005???-17 Any Call with the first 3 digits of 005 (Hong Kong's International Prefix) followed by 3 more digits will cause program 17 (FAX P.A.D.) to be executed.

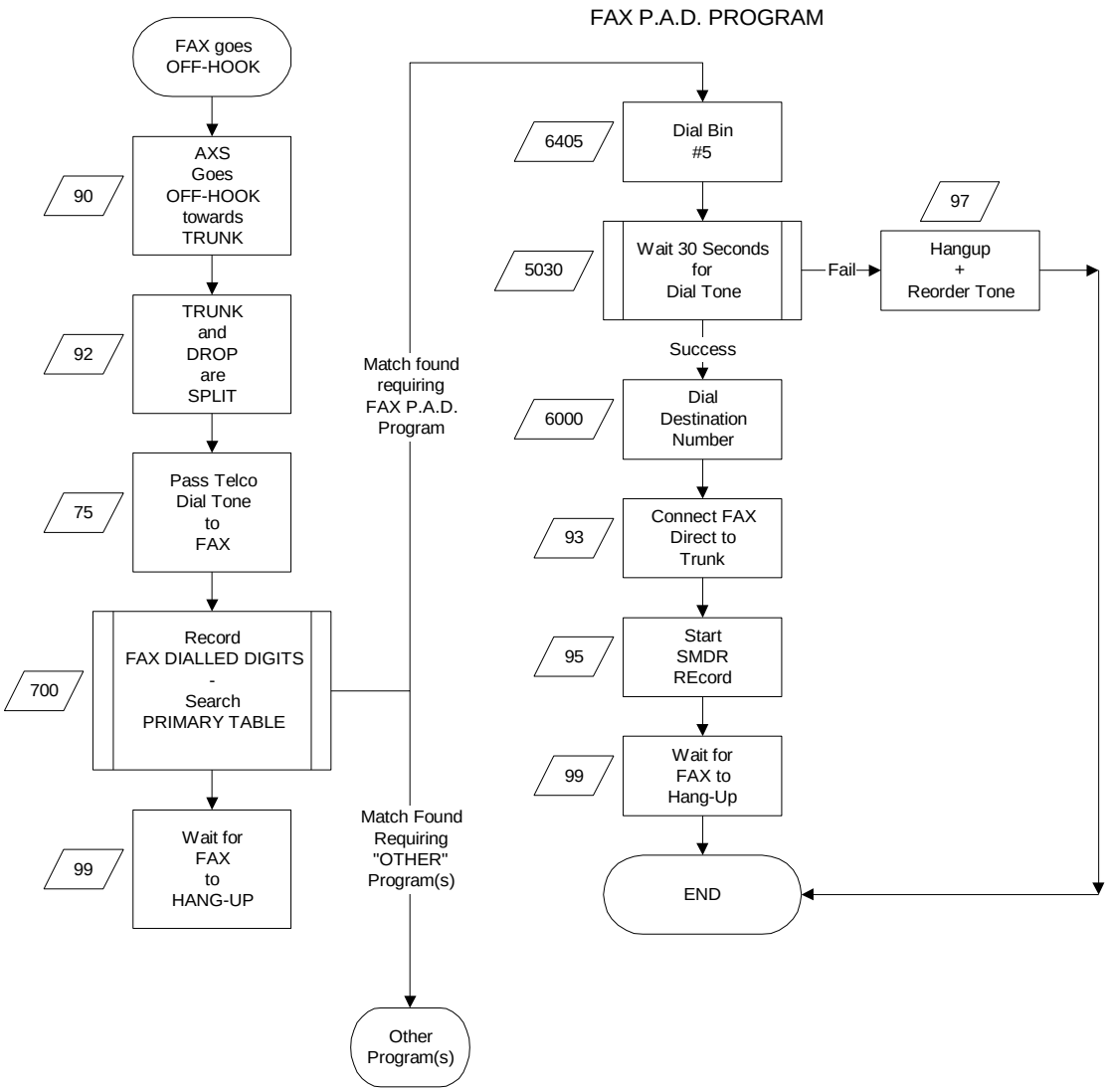
??????-01 Any Call containing at least 6 digits that do not match one of the previous entries will match this entry and execute program 01 (Default PTT)

To summarize:

These 4 Table entries will instruct AXS to route ALL international FAX calls (Starting with 005) to your FAX P.A.D. NODE (Program 17) except for calls to France and the UK which will be routed directly via the PTT. All other calls will be routed directly via the PTT.

Tables can contain in excess of 10,000 digits if required, and there are 20 different programs that can be loaded, not just the two (01 and 17) that we have used in this example. Using the tables and other programs, you can route FAX calls to various countries through various long distance services.

The following Flow Chart displays in a more GRAPHICAL Form how the example FAX P.A.D. Application functions:



Implementing
this
APPLICATION NOTE

The following are the Steps to implementing this APPLICATION:

- Reset AXS (See Hardware Installation Manual - Initial Power Up)
- Place the USER Telephone OFF-HOOK
- Enter Programming Mode by DIALING : ***00 *#
- Enter the Ring Program by DIALING: 422 93 9410 95 99 *#
- Enter DROP Program by DIALING : 421 90 92 75 700 99 *#
- Enter Default PTT PARALLEL Program by DIALING : 401 6000 93 95 99 *#
- Enter the FAX P.A.D. PARALLEL Program by DIALING :
  417 6405 5030 97 6000 93 95 99 *#
- Enter your LOCAL NODE Phone Number in Bin #5 by DIALING :
  605 555-9999 *#
- Clear TABLE and Add Entries by DIALING :
  - 90 *#
  - 00533 01 *#
  - 00544 01 *#
  - 005*0*0*0 17 *# (Note: *0 = ? = Don't Care)
  - *0*0*0*0*0*0 01 *# (Note: *0 = ? = Don't Care)
  - *#
- Exit Programming Mode by hanging up.

Once this APPLICATION has been stored as a Factory Default, the steps are:

- Reset AXS (See Hardware Installation Manual - Initial Power Up)
- Place the USER Telephone OFF-HOOK
- Enter Programming Mode by DIALING : ***00 *#
- Select your Application by DIALING : 008XX *# (Note: XX is the APPLICATION #)
- Enter your FAX P.A.D. Phone Number in Bin #5 by DIALING :
  605 555-9999 *#
- Clear TABLE and Add Entries by DIALING :
  - 90 *#
  - 00533 01 *#
  - 00544 01 *#
  - 005*0*0*0 17 *# (Note: *0 = ? = Don't Care)
  - *0*0*0*0*0*0 01 *# (Note: *0 = ? = Don't Care)
  - *#
- Exit Programming Mode by hanging up.

This example is of course ONLY an EXAMPLE. If you need assistance in programming AXS for your application, just give us a call.

GLOSSARY

COUNTRY CODE -
the unique number that is dialed after the international prefix that indicates which country the user wishes to place a call to (North America is 1, France is 33)

DROP -
the person placing or receiving a telephone call (user)

DROP PROGRAM -
the set of instructions that are executed by the dialer when a user picks up the telephone handset to make a call

INTERNATIONAL PREFIX -
the number that a user must dial to indicate to the local telephone company that they wish to make an International call. Each country has a specific code for this. (in North America the prefix is 011)

OFF-HOOK State -
telephone receiver is picked up or speakerphone is turned on

ON - HOOK State -
telephone receiver is on telephone or speakerphone is turned off

PARALLEL PROGRAM -
the set of instructions that are executed by the dialer on the telco line, as a result of a search table match

PROGRAM MODE -
by dialing an access code, referred to as the Wake-Up Code, the dialer can be put into a state that enables a technician or programmer to modify the programs, tables or system parameters. While in Program Mode the dialer can not process any telephone calls.

PROGRAMMER MODE -
by dialing an access code from a communications program a dialer connected to a PC will be put into a state that enables a technician or programmer to program a remote dialer using the local dialers RS-232 data port. This port provides ASCII to DTMF and DTMF to ASCII conversion so that commands typed on the PC keyboard will be converted to DTMF tones to program the remote dialer and information from the remote dialer will converted to ASCII and displayed on the PC screen. Programmer Mode allows this conversion to take place and allows the flow of information to the remote dialer.

RING PROGRAM -
the set of instructions that are executed by the dialer when an incoming call is detected

SEARCH TABLES -
when a user dials a telephone number a table of digits to match is searched (Primary and Secondary Table). The digit entry in the search table contains the number of the parallel program that the dialer should execute to place the call. The dialer contains a table for incoming call processing, (Incoming Table), should it be required.

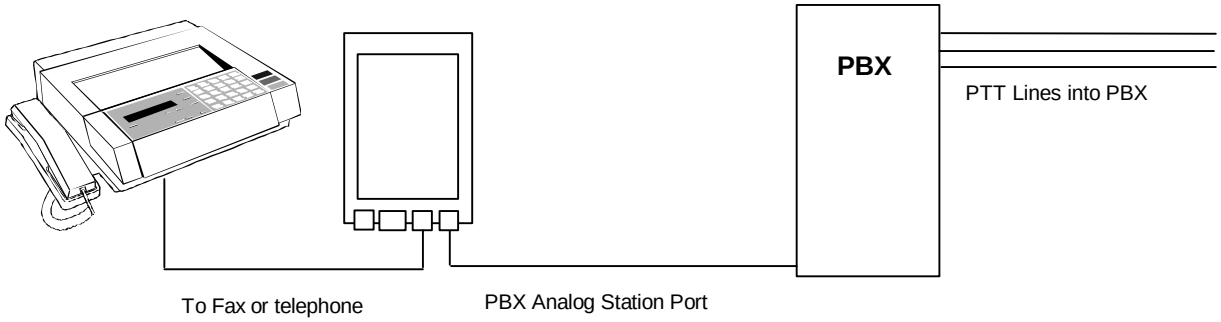
SMDR -
Station Message Detail Recording - the call record produced by the dialer showing time of day, call duration, number dialed and program used. This feature is activated by a 95 instruction and output through the dialers RS-232 data port.

TRUNK -
telephone line provided by the local telephone company.

TECHNICAL APPLICATION NOTES

Program Notes for **PBX/Centrex**

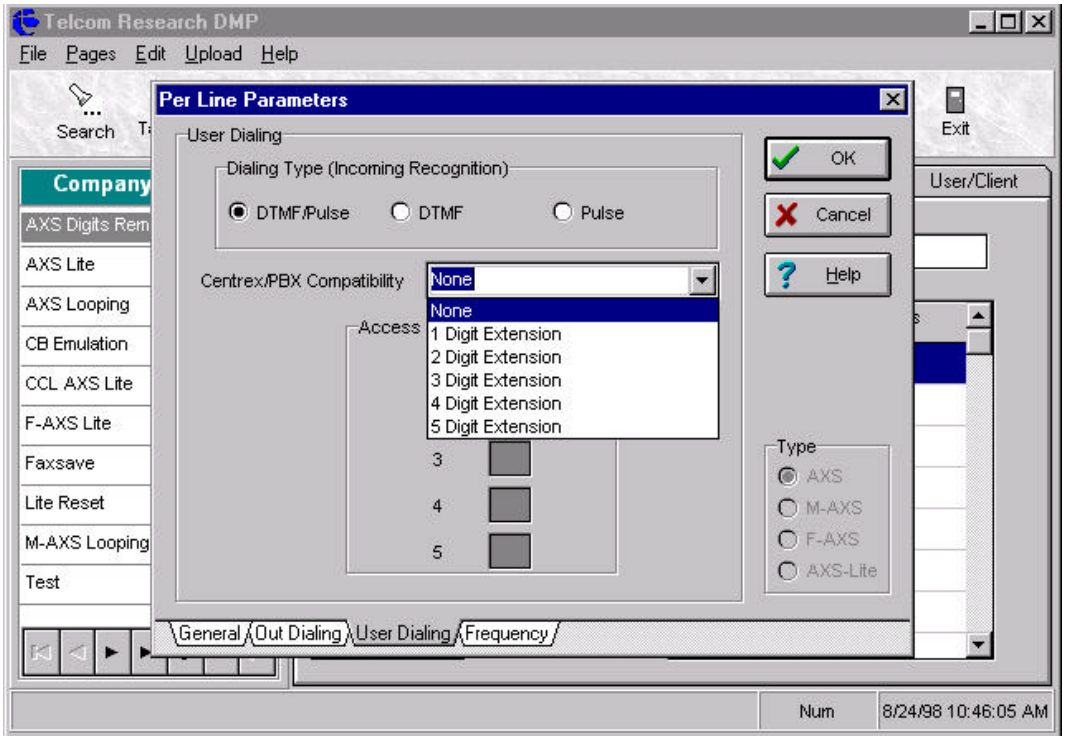
When the dialer is installed between a Fax or phone and a PBX there are some program changes that are required.



Normally when calls are placed using a PBX, an outside line access code is dialed, a second dial tone is received and then the destination number is dialed. When the dialer is installed the user wants to do the same thing and therefore, the routing should not be done until the destination number is dialed, which is after the outside line has been accessed. The dialer should record the outside line access code and then start to collect digits to search the tables to determine the route to use to place the call.

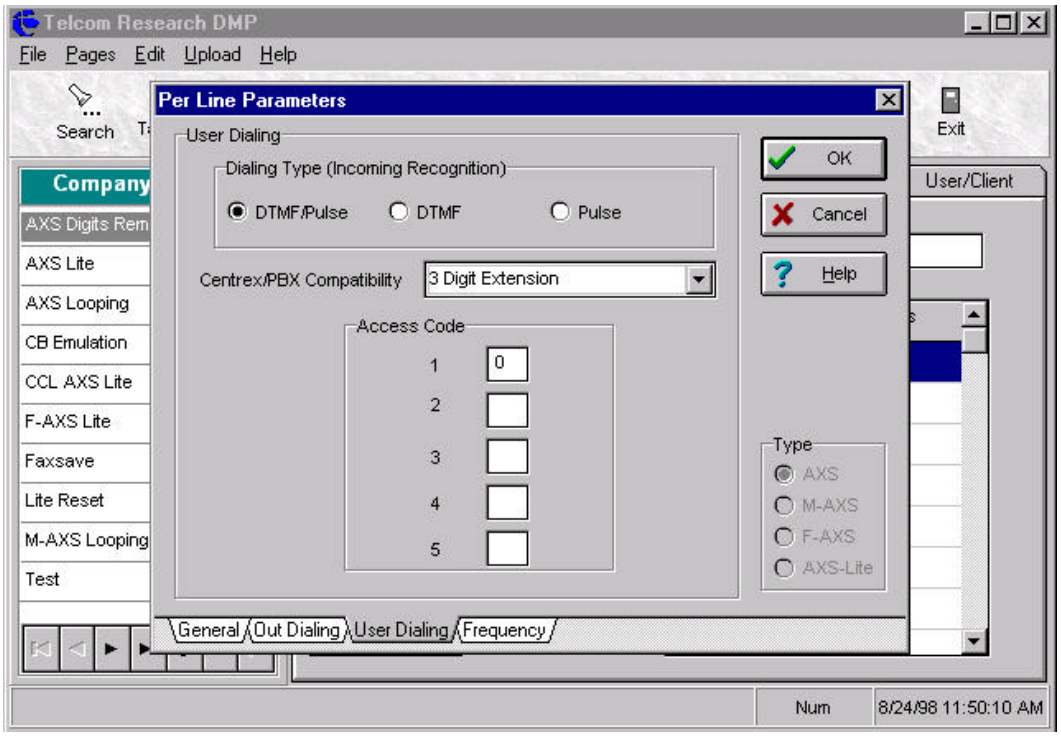
CENTREX/PBX COMPATIBILITY

To keep the installation of the dialer transparent to the user, the dialer must be instructed that it is working in conjunction with a PBX. The parameter setting that does this is **0650X**, **Centrex/PBX Compatibility**. The value for X is the number of digits in the internal extension numbers. This parameter can be found by clicking Port Profiles, Parameters, User Dialing in Zoo Keeper. Using the drop down menu you would select the proper number of digits in the internal extension numbers. To disable this feature when the dialer is not installed with a PBX, the value must be programmed as 0, which is the default value.



PBX Access Codes

Once the Centrex/PBX Compatibility has been set to a value other than 0 the program fields in the Access Code box become available. This is the area that you instruct the dialer as to what the outside line access code is. The parameter settings that allow this is **0651A**, **0652B, 0653C, 0654D, 0655E, PBX Access Code**. The value for A, B, C, D and E is the one or two digit access codes. The dialer can be programmed with up to 5 different access codes. These parameters can be found by clicking Port Profiles, Parameters, User Dialing in Zoo Keeper If there is only one access code it would be entered into one of the boxes and the rest would remain empty.



Program Strings

Once the above changes have been made the dialer monitors the line, when the handset is picked up, to see if the first digit dialed is one of the programmed access codes. If it is, the digit dialed is recorded and dial tone is returned to user. The dialer now records the dialed digits and searches the routing tables to determine which program string is to be run. Upon an exact match in the search table, the correct program string is executed. However, before a call can be placed the recorded access code must be dialed. The program instruction **63** dials the recorded access code and must be inserted at the beginning of any program strings that are placing outgoing calls. A second additional instruction, such as a delay, should also be added right after the 63 to allow the dial tone to be present on the line before any dialing to the PTT is done.

Program string – Direct Line
6405 5040 97 5920 20 6000 1001# 5007 97 5920 6402 6403 6404 93 99
Program string – PBX Line
63 5910 6405 5040 97 5920 20 6000 1001# 5007 97 5920 6402 6403 6404 93 99

If the first dialed digit is not one of the access codes, it is then assumed that the call is an internal extension to extension call and it is sent to program 23 the default Extension to Extension program. The tables are not searched. The default program 23 is 6000 93 99.