FX Firmware
Operation Manual

Feature Set
Versions 2.5/3.5

FX Firmware
Operation Manual
Feature Set, Version 2.5/3.5

Copyright © 1999 Elcotel, Inc.

Elcotel, Incorporated

6428 Parkland Drive, Sarasota, FL 34243

(941) 758-0389 or (800) ELCOTEL

FAX: (941) 739-7500

— NOTICE —

Elcotel, Inc. reserves the right to make any changes

and improvements in the product described in this

document at any time and without prior notice.

POLLQUEST, COT-103, COT-103C, IPT-9120 and IPT-9100

are trademarks of Elcotel, Inc.

All other product names are trademarks of their respective owners.

Second Release

October, 1999

Printed in the USA

TABLE OF CONTENTS

Contents

Introduction

Audience Description

This manual is for persons responsible for installing, configuring, or maintaining Elcotel payphone models running FX 2.5/3.5 and higher firmware.

This manual assumes knowledge of the international public payphone industry.

Applicability

This manual applies to the Elcotel, Inc. payphone models running FX 2.5/3.5 and higher firmware.

Purpose

This manual is intended to provide:

- Reference information related to the configurable features of the payphone firmware .
- Reference information related to payphone maintenance mode commands.

You should refer to this manual as necessary when performing installation, configuration, or maintenance tasks.

Related Publications

FX Firmware Configuration Worksheets, Version 2.5/3.5, P/N 3350333.

This manual may refer to other related product manuals using a generic reference, such as "network management system manual," "firmware operation manuals," or "payphone operation manual." The exact title and part number of these related manuals varies depending on the actual network management system, firmware, or payphone product purchased.

Contacting Elcotel

For further information, or to report a discrepancy in this manual, contact:

Elcotel, Inc., International Department

6428 Parkland Drive, Sarasota, Florida 34243

USA

Office: 941-758-0389

Fax: 941-739-7500

1. REGISTERS AND OPTIONS

The following tables list the feature registers and options.

The Related Opt/Reg column identifies other related options and/or registers. These related options/registers can interact with the subject option/register and may also need to be set.

Note: *Be sure to record your settings in the FX Firmware Configuration Worksheets, Version 2.5/3.5.*

1.1 Registers

Table 1-1 Registers

Register	Description	Related Opt/Reg
305	**Credit Card Over-Usage Limit** The number of times that a credit card can be used in succession before the phone considers the usage fraudulent. When this threshold is reached, the credit card is disallowed. *(After another card is used, the original card is removed from this list, and can be used once again.)* The valid range for this field is 0-99.	
306	**Credit Card Validation Access Number** The telephone number that the phone dials to access an external credit card validation source. **Option 107** must be ON.	107, 119, 307, 344
307	**Credit Card Validation Authorization Number** The authorization number that the phone must dial after gaining access to an external credit card validation source. **Option 107** must be OFF.	107, 119, 306, 344
308	**Calling Card Validation Access Number** The number in this register specifies the access telephone number for reaching a Calling Card Validation Center.	378, 379, 380
309	**Call Home Number** The number in this register is the number the phone must dial to access your network management system. This register will accept phone numbers of up a total of 15 digits or (**P**ause) characters. Register 343 is available if more digits are needed. There must be a value other than zero in register 310 for this to function.	343, 310

Table 1-1 Registers (Continued)

Register	Description	Related Opt/Reg
310	**Number of Call Home Attempts** This two-digit number is the number of times the payphone attempts to call home to the network management system and report alarm status. If the payphone is not successful in these attempts, it waits 24 hours and then tries again. Valid range is 00-99.	
312	**Inactivity Alarm Threshold** This register represents the "number of hours without use" threshold that the phone must reach to trigger **Alarm 708**. Valid range is 00-99.	708
313	**Walk Away Alarm Threshold** The value in this register specifies the threshold number of calls that must be exceeded in order to trigger Alarm 709.	709
315	**Number of Rings Before Answering with Telemetry** This register represents the number of incoming rings that must occur on the line before the payphone answers the call, assuming that the call is coming from your network management system. Valid range is 00-99.	
316	**Base Monetary Unit** This register sets the relative value of the base monetary unit handled by the payphone. The default value of 5 would represent five cents in US currency, for example. Other monetary value settings are multiples of this base unit. Valid range is 00-99.	345, 346, 347, 348, 349, 350, 375, 124
317	**Credit Card Surcharge** This register represents the amount that is added (surcharge) to the first period calling rate on a credit card call. Valid range is 00-995.	
318	**Calling Card Surcharge** This register represents the amount that is added (surcharge) to the first period calling rate on a calling card call. Valid range is 00-995.	
319	**Credit Card Subsequent Period Surcharge (Percentage)** This register represents the % that is added to the subsequent period calling rate on a credit card call. Valid range is 00-99.	

Table 1-1 Registers (Continued)

Register	Description	Related Opt/Reg
320	**Onhook to CO Time Delay (in 500 Milliseconds)** This register represents the number of 500 ms (½ sec) steps that must expire before the payphone goes on-hook towards the Central Office. Valid range is 01-10.	
321	**Call Termination Delay (Minutes)** This register represents the number of minutes that must expire (and answer supervision has not occurred) before the payphone automatically terminates the call attempt. Valid range is 0-9.	
324	**Value of Charging Pulses** The value, in number of units, that the payphone deducts from a debit card per charging pulse.	106, 110
326	**Cashbox Bypass Number** When this register is enabled and the collector enters the # key followed by digits stored in this register, the payphone captures the cashbox from Register 500, clears it, and triggers Alarm 3 to call home to the network management system.	
327	**Dial Tone Lower Frequency Limit** This register represents the lower limit for the dial tone frequency range. This limit is in 64 Hz increments. For example, if 5 is entered for this register, the lower frequency limit is 320 Hz (5 x 64 = 320).	328
328	**Dial Tone Upper Frequency Limit** This register represents the upper limit for the dial tone frequency range. This limit is in 64 Hz increments. For example, if 10 is entered for this register, the upper frequency limit is 640 Hz (10 x 64 = 640).	327
340	**Number of Characters on one LCD Line** This register represents the number of characters the phone displays on one LCD line.	
343	**Overflow from 309** This register holds any overflow characters, up to 15 digits, from register 309, Call Home (your Payphone Network Management System) Number. This register is for numbers exceeding the maximum digit capacity of register 309.	309

Table 1-1 Registers (Continued)

Register	Description	Related Opt/Reg
344	**Merchant ID for External Credit Card Validation** The ID number that the phone must dial after gaining access to an external credit card validation source. *Note: This feature is reserved for future implementation. Contact your Elcotel Sales Engineer for further details.*	107, 119, 306, 307
345	**Coin A Value** This register contains the value of a coin when it passes through coin channel "A". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 255.	316, 357
346	**Coin B Value** This register contains the value of a coin when it passes through coin channel "B". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 255.	316, 358
347	**Coin C Value** This register contains the value of a coin when it passes through coin channel "C". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 255.	316, 359
348	**Coin D Value** This register contains the value of a coin when it passes through coin channel "D". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 255.	316, 360
349	**Coin E Value** This register contains the value of a coin when it passes through coin channel "E". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 255.	316, 361
350	**Coin F Value** This register contains the value of a coin when it passes through coin channel "F". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 255.	316, 362

Table 1-1 Registers (Continued)

Register	Description	Related Opt/Reg
357	**Coin A Size** This register contains the volume weighting of a coin when it passes through coin channel "A". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 10.	345, 369, 370
358	**Coin B Size** This register contains the volume weighting of a coin when it passes through coin channel "B". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 10.	346, 369, 370
359	**Coin C Size** This register contains the volume weighting of a coin when it passes through coin channel "C". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 10.	347, 369, 370
360	**Coin D Size** This register contains the volume weighting of a coin when it passes through coin channel "D". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 10.	348, 369, 370
361	**Coin E Size** This register contains the volume weighting of a coin when it passes through coin channel "E". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 10.	349, 369, 370
362	**Coin F Size** This register contains the volume weighting of a coin when it passes through coin channel "F". Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 10.	350, 369, 370
369	**Full Hopper Volume** This register contains the volume set for the specific hopper used in the payphone, based on the volume weighting for the coins. Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 255.	357, 358, 359, 360, 361, 362

Table 1-1 Registers (Continued)

Register	Description	Related Opt/Reg
370	**Cashbox Trigger Volume** This register represents the threshold that the phone must reach to trigger **Alarm 706**. Valid range is 00-38,000. Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 65535.	706, 357, 358, 359, 360, 361, 362
371	**Cashbox Full Volume** This register contains the volume set for the specific cashbox used in the payphone, based on the volume weighting for the coins. Elcotel will assist you in establishing what value to enter in this register. The valid range for this field is 0 - 65535.	707, 357, 358, 359, 360, 361, 362
372	**Inter-digit Timeout in .25 sec. Units** The value in this register represents the time allowed between dialed digits in .25 second increments.	
373	**Language order** The value in this register represents language order in digits 0-4 with each digit in the range designating a different language.	
374	**Urgent Alarm Retry (minutes)** The value in this register represents the amount the phone will wait before retrying a call home after receiving an urgent alarm.	
375	**Debit Card Multiplier** The value in this register is a multiplier for the value of units stored on the debit card. Enter a value between 1 and 20	316
376	**Block Length for Uploading** The value in this register is used to determine the block length of data that is transferred between your payphone and your network management system. This register uses a multiplier of 4 so that a setting of 64 gives a block length of 256 bytes (4 x 64 = 256.) It is recommended that this value be set to 64 if your payphone is wireless and to 256 if the phone uses a land line.	

Table 1-1 Registers (Continued)

Register	Description	Related Opt/Reg
377	**Inferred Answer Supervision Adjustment**	
	The value in this register determines the phone's sensitivity to a human voice. The lower the number, the more sensitive the phone is to human voice. Noise can be mistaken for human voice if the value in this register is low, or too sensitive. Enter a value between 10 and 100. A value of 50 (the default) is recommended as a starting point.	
378	**Card Access #1**	308
	Enter the number the payphone dials to access a specific card authorization platform.	
379	**Card Access #2**	308
	Enter the number the payphone dials to access a specific card authorization platform.	
380	**Card Access #3**	308
	Enter the number the payphone dials to access a specific card authorization platform.	
381	**Scrolling Speed**	125,128
	This is the period of time in increments of 15 milliseconds between each movement of the advertising message displayed in the LCD. The default is 14, or 210 milliseconds (14 X 15 = 210).	

1.2 Options

Table 1-2 Options

Option	Description	Related Opt/Reg
100	**Enable Incoming Calls**	315
	When ON, PCM-5 activates the ringer the number times specified in Register 315 before it answers in modem telemetry mode. When OFF, PCM-5 answers in modem telemetry immediately upon detecting the first incoming ring. To eliminate chirping, set the ringer strap to OFF.	
101	**Enable Pulse Dialing**	
	When ON, PCM 5 pulse dials all digits intended for the local C.O. All subsequent digits, (intended for answering machines, voice mail etc.) are dialed out in DTMF (tone). When OFF, PCM-5 dials all digits in DTMF (tone) mode.	
102	**Allow Free Local Calls When Cashbox is Full**	
	When ON, and the coinbox is full, the payphone allows local calls without charge. This option is used when there is concern that customers will damage the payphone.	
106	**Enable External Tariffing**	107, 110, 324
	When ON, the phone uses external billing pulses rather than internal rates for tariffing. For example, the phone uses call units for debit cards instead of monetary amounts. If a card has 25 units, the phone deducts one unit for each pulse. When OFF, the phone uses monetary amounts. For example, if a card has $25.00, the phone deducts the amount of the call for each time period.	
107	**Enable External Credit Card Validation**	119, 306, 307, 344
	When ON, after passing the internal validation, the payphone calls the card validation service to ensure that credit cards are valid. When OFF, the phone uses only internal algorithms to ensure the validity of credit cards used.	
108	**Enable Voice Band Answer Detection**	
	When ON, answer supervision is based on listening and interpreting sound on the line from the receiving end.	
109	**Enable Reverse Battery Answer Detection**	
	When ON, answer supervision is based on polarity reversal on the line.	

Table 1-2 Options (Continued)

Option	Description	Related Opt/Reg
110	**Enable 12 & 16 kHz Answer Detection** When ON, answer supervision is based on a 12 or 16 kHz pulse on the line. When using external tariffing (**Option 106**), this option should be set ON.	106, 107, 324
111	**Enable 50 Hz Answer Detection** When ON, answer supervision is based on a 50 Hz tone on the line. *NOTE: This feature is reserved for future implementation. Contact your Elcotel Sales Engineer for further details.*	
112	**Enable 600 Hz Answer Detection** When ON, answer supervision is based on a 600 Hz tone on the line. **NOTE**: This feature is reserved for future implementation. Contact your Elcotel Sales Engineer for further details.	
113	**Enable DTMF "A", "B", "C", or "D" Answer Detection** When ON, answer supervision is based on a DTMF A, B, C, or D tone on the line.	
114	**Push to Talk** When ON, the volume control button is enabled as Push to Talk Answer Detection. When OFF, the volume control button is used for volume control.	
116	**Enable Trickle Dialing** When ON, the payphone "trickles" digits of the phone number towards the CO to keep the CO from timing out the call. The payphone stores the digits in a buffer as the customer enters them, until it has collected all digits; it then outdials to the CO. Some COs will terminate the call when it does not receive digits within a certain time limit. In these cases, set this option ON to keep calls from being timed out. *NOTE: This feature is not recommended to be used when the payphone is installed behind a PBX.*	
117	**Enable Coin Operation** When ON, this option allows coins as a method of payment.	

Table 1-2 Options (Continued)

Option	Description	Related Opt/Reg
118	**Enable Debit Card Operation** When ON, this option allows debit cards as a method of payment.	
119	**Enable Credit Card Operation** When set ON, this option allows credit cards as a method of payment.	107, 306, 307, 344
123	**Enable Elcotel Debit Card Header** When ON, a debit card having an Elcotel card header security code is valid. When OFF, a debit card having an Elcotel card header security code is invalid.	
124	**Display Decimal Point** When ON, the phone includes decimal points when displaying amounts on the LCD (.05). When OFF, the phone displays amounts without decimal points (5).	316
125	**Display Advertising Enabled** This option enables the scrolling display advertising feature.	128,381
126	**Accu-Change Feature** When ON, the phone calculates the best change with each call scenario.	
127	**Tone Select** When ON, the payphone recognizes 12 KHz external billing pulses. When OFF, it recognizes 16 KHz pulses. *Note: This option is effective for a 5502 PCM only.*	
128	**Advertisements On Hook** Option 125 must be ON. When Option 128 is set to OFF, advertising messages are displayed only while the payphone is off-hook. When Option 128 is set to ON, advertising messages are also displayed beginning 10 seconds after the payphone goes on-hook. *Note: For payphones using a PCM5i or 5501i PCM, an alternate power source (such as the External DC Power option) must be used if this feature is enabled. Failure to do so will result in a discharged battery.*	125,381

1.3 Alarms

The following table is a listing of alarms that the payphone can report. The setting range is either "ON" or "OFF." When ON, the alarm will initiate a call home to your network management system when it is triggered. When OFF the alarm will be set when it is triggered but will not initiate a special call home attempt to report. Any time when the network management system is in contact with the payphone, all triggered alarms will be reported regardless of their ON/OFF configuration.

Table 1-3 Alarms

Alarm	Description	Related Opt/Reg
701	**SMDR Buffer Damaged Alarm, Alarm 1** This alarm is triggered when the PCM-5 detects "Checksum" failure in the SMDR data block. This alarm is identified as "A" in Network Reports.	
702	**Handset Alarm, Alarm 2** This alarm is triggered when the handset is removed or damaged. This alarm is identified as "B" in Network Reports.	
703	**Vault Alarm, Alarm 3** This alarm is triggered when the PCM-5 detects an open condition in the vault open door sensor. This alarm is identified as "C" in Network Reports.	326
706	**Cashbox Trigger Alarm, Alarm 4** This alarm indicates that the threshold amount in **Register 370** was exceeded. This alarm is identified as "D" in Network Reports.	370
707	**Cashbox Full Alarm, Alarm 5** This alarm indicates that the volume threshold in **Register 371** was exceeded. Empirical data indicates that volume amounts exceeding this threshold dramatically increase the occurrences of coin jams. This alarm is identified as "E" in Network Reports.	371
708	**Inactivity Alarm, Alarm 6** This alarm is triggered when the PCM-5 detects the "number of hours since the last call" (stored in **Register 312**) threshold has been crossed. This alarm is identified as "F" in Network Reports.	312
709	**Walk Away (Coin Jam) Alarm, Alarm 7** This alarm indicates that the "number of coin call attempts" (a call where a coin was needed but was not deposited) threshold stored in **Register 313** was exceeded. This alarm is identified as "G" in Network Reports.	313

Table 1-3 Alarms (Continued)

Alarm	Description	Related Opt/Reg
710	**Damaged Rates Alarm, Alarm 8**	
	This alarm is triggered when the PCM-5 detects that there has been a "Checksum" failure in the Rates data block. This alarm is identified as "H" in Network Reports.	
712	**Hard Reset Alarm**	
	This alarm is triggered when the PCM-5 has been reset. This alarm is identified as "O" in Network Reports.	
713	**Enter Telemetry Mode Alarm, Alarm 9**	
	This alarm is triggered when the PCM-5 detects that there has been an entry into Local Visual Telemetry. This alarm is identified as "I" in Network Reports.	
715	**SMDR 80% Full Alarm, Alarm 10**	
	This alarm is triggered when the PCM-5 detects that the SMDR buffer is 80% full (the Buffer holds up to 100 SMDRs). This alarm is identified as "J" in Network Reports.	
716	**SMDR 100% Full Alarm,**	
	This alarm is triggered when the PCM-5 detects that the SMDR buffer is 100% full (the Buffer holds up to 100 SMDRs). This alarm is identified as "?" in Network Reports	
718	**Enable Force Call Home Alarm, Alarm 11**	961
	This alarm indicates that a 961 "call home" maintenance command was issued through local visual telemetry. This alarm is identified as "K" in Network Reports. Alarm 718 must be on before the 961 Call Home command will work.	
722	**Cashbox Missing Call Home**	
	This alarm triggers the phone to call home when it detects that the cashbox has been missing for more than 10 minutes. The feature ensures that your technicians replace the cashbox after it has been serviced.	

1.4 Count Registers

The following tables list software event "counters," which are incremented each time a specific event takes place (payment, call, etc.). These counters can be reset to zero (default value) by issuing maintenance Command 962, from Local Visual Telemetry, or by issuing the Clear Call Counters command from the network management system.

The count registers are divided into three basic types:

- call type
- payment method
- coin

1.4.1 CALL TYPE COUNTERS

The following counters increment based on the type of call.

Table 1-4 Call Type Counters

Register	Description
601	**Total free calls (special service), Call Type 1**
	This counter stores the total number of free calls.
602	**Total local calls, Call Type 2**
	This counter stores the total number of local calls.
603	**Total national calls, Call Type 3**
	This counter stores the total number of calls made within the country.
604	**Total international Calls, Call Type 4**
	This counter stores the total number of International calls.
605	**Total Operator Assisted Calls, Call Type 5**
	This counter stores the total number of operator-assisted calls.

Note: Call Type 0, Restricted, is not shown here because all "Not Allowed" call attempts are not counted.

1.4.2 PAYMENT METHOD COUNTERS

The following counters increment based on the method of payment.

Table 1-5 Payment Method Counters

Register	Description
661	**Total Coin Calls**
	This counter stores the total number of calls made that were paid for using cash.
665	**Total Chip Card 103 Calls**
	This counter stores the total number of calls made that were paid for using a chip card 103.
675	**Total VISA Credit Card Calls**
	This counter stores the total number of calls made that were paid for using a VISA credit card.
676	**Total MasterCard Credit Card Calls**
	This counter stores the total number of calls made that were paid for using a MasterCard credit card.
677	**Total American Express Credit Card Calls**
	This counter stores the total number of calls made that were paid for using an American Express credit card.
678	**Total Discover Credit Card Calls**
	This counter stores the total number of calls made that were paid for using a Discover credit card.

1.4.3 COIN

The following counters are based on the type of coin.

Table 1-6 Coin Counters

Register	Description
500	**Cashbox Total**
	This counter stores the total amount since being reset with command 962, being rest through the network management system, or since the cash box collection feature was used.
501	**Total Amount in Cashbox at Last Collection**
	This counter stores the total amount in the coin box at the time of the last collection. This amount is useful in comparing against counter 500.
520	**Number of Coin A in the Cashbox**
	This counter stores the total number of "A" coins in the cashbox. The exact denomination of coin "A" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
521	**Number of Coin B in the Cashbox**
	This counter stores the total number of "B" coins in the cashbox. The exact denomination of coin "B" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
522	**Number of Coin C in the Cashbox**
	This counter stores the total number of "C" coins in the cashbox. The exact denomination of coin "C" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
523	**Number of Coin D in the Cashbox**
	This counter stores the total number of "D" coins in the cashbox. The exact denomination of coin "D" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
524	**Number of Coin E in the Cashbox**
	This counter stores the total number of "E" coins in the cashbox. The exact denomination of coin "E" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
525	**Number of Coin F in the Cashbox**
	This counter stores the total number of "F" coins in the cashbox. The exact denomination of coin "F" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.

Table 1-6 Coin Counters (Continued)

Register	Description
532	**Number of Coin A at Last Collection** This counter stores the total number of "A" coins recorded at the time of the last collection. The exact denomination of coin "A" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
533	**Number of Coin B at Last Collection** This counter stores the total number of "B" coins recorded at the time of the last collection. The exact denomination of coin "B" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
534	**Number of Coin C at Last Collection** This counter stores the total number of "C" coins recorded at the time of the last collection. The exact denomination of coin "C" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
535	**Number of Coin D at Last Collection** This counter stores the total number of "D" coins recorded at the time of the last collection. The exact denomination of coin "D" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
536	**Number of Coin E at Last Collection** This counter stores the total number of "E" coins recorded at the time of the last collection. The exact denomination of coin "E" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.
537	**Number of Coin F at Last Collection** This counter stores the total number of "F" coins recorded at the time of the last collection. The exact denomination of coin "F" should be listed in your *FX Firmware Configuration Worksheets*, part number 3350348.

2. DIALING PATTERNS

For security reasons, dialing patterns cannot be changed at the payphone. You must change/add to them using your network management system, and then download the configuration file to the phones. Refer to your network management system operation manual for detailed instructions on configuring your payphone.

The following table is provided as an example of how you may want to set up your dialing patterns. In the table, the "?" means the phone accepts any digit 0-9. In other words, the dialing patterns allow users to enter any 5, 6, or 7 digit dialing pattern. The Band numbers correspond to the price bands (see Section 3, *Band Charges*). The Discount letters correspond to the discount tables (see Section 4, *Discount Tables*). You can enter up to 210 dialing patterns through your configuration file.

Note: Be sure to record your settings in the FX Firmware Configuration Worksheets, Version 2.5/3.5.

Table 2-1 Dialing Patterns (Flexible Discounts)

Factory Dialing Pattern	Call Type	Band	Discounts	CCT	Macro	Location/Services
?????	2	2	A	0	2	5 Digit Local
??????	2	2	BDF	0	2	6 Digit Local
???????	2	2	ABC-DEFGH	0	2	7 Digit Local

If you selected the Enhanced Discounts feature, use the following table as an example of how you may want to set up your dialing patterns. Discount letters correspond to the discount tables.

Table 2-2 Dialing Patterns (Enhanced Discounts)

Factory Dialing Pattern	Call Type	Band	Discounts	CCT	Macro	Location/Services
?????	2	2	A	0	2	5 Digit Local
??????	2	2	BDF	0	2	6 Digit Local
???????	2	2	A-Z	0	2	7 Digit Local

3. BAND CHARGES

For security reasons, price bands cannot be changed at the payphone. You must change/add to them using your network management system, and then download the configuration file to the phones. Refer to your network management system operation manual for detailed instructions on configuring your payphone.

The firmware can support up to 40 different price bands. Each price band has an initial rate (price) and period (minutes and seconds) for the call in progress, and an additional rate and period for the remainder of the call. These price bands are assigned to call types through the preset dialing patterns. With the Flexible Discounts feature, the normal band charges are specified as shown in the following figure and discounts are specified as percentages of the band charges used for the call.   Refer to Section 4, *Discount Tables* for information on the flexible discount tables.

Note: *Be sure to record your settings in the FX Firmware Configuration Worksheets, Version 2.5/3.5.*

Band

Initial   Additional

Price $ $

Minutes

Seconds

Figure 3-1 Flexible Discount Band Charges

With the Enhanced Discounts feature, normal band charges and up to five discount charges are specified in the Band Charges table structure as shown in the following figure. With Enhanced Discounts, the discount tables simply specify the times to apply the specified discount charges. Refer to Section 4, *Discount Tables* for information on the enhanced discount tables.

B and N o [   ]

	Normal			First			Second			Third	

	Initial	Additional		Initial	Additional		Initial	Additional		Initial	Additional
Price	$	$	Price	$	$	Price	$	$	Price	$	$
Minutes			Minutes			Minutes			Minutes		
Seconds			Seconds			Seconds			Seconds		

	Fourth			Fifth	

	Initial	Additional		Initial	Additional
Price	$	$	Price	$	$
Minutes			Minutes		
Seconds			Seconds		

Figure 3-2 Flexible Discount Band Charges

4. DISCOUNT TABLES

For security reasons, discount tables cannot be changed at the payphone. You must make changes to them using your network management system, and then download the configuration file to the phones. Refer to your network management system operation manual for detailed instructions on configuring your payphone.

There are eight discount tables available for your use. Each tab is setup with five time periods. Discounts can be from 0% to 100% in one percent intervals. The From and To time periods can be incremented by 15 minute intervals, using the 24 hour clock. The table can be applied to specific days of the week, all days of the week, weekends and holidays, or strictly holidays.

Note: Be sure to record your settings in the FX Firmware Configuration Worksheets, Version 2.5/3.5.

Discounts Tab

	Discount	From	To	Applies
#1	___ %	__ : __	__ : __	☐ **Sunday**
#2	___ %	__ : __	__ : __	☐ **Monday**
				☐ **Tuesday**
#3	___ %	__ : __	__ : __	☐ **Wednesday**
#4	___ %	__ : __	__ : __	☐ **Thursday**
#5	___ %	__ : __	__ : __	☐ **Friday**
				☐ **Saturday**

If you selected the Enhanced Discounts feature, you have up to 32 discount tables for your use. Each discount table supports up to five time periods. Enhanced discounts are entered as rates, not as percentages.

	Rate Type	Start	End	Applies
1	0 Normal	:	:	☐ Sunday
2	1 First	:	:	☐ Monday
				☐ Tuesday
3	2 Second	:	:	☐ Wednesday
4	3 Third	:	:	☐ Thursday
				☐ Friday
5	4 Fourth	:	:	☐ Saturday
				☐ Holiday

5. MAINTENANCE COMMANDS

Maintenance commands are like registers which, when issued by entering the command number during local visual telemetry mode, cause actions to take place in the payphone.

Table 3-1 Maintenance Commands

Command	Description
961	**Force Payphone To Call Home**
	The payphone will call the network management system (dialing pattern stored in register 309) to transfer the status of its alarms and counters, and to perform any commands previously arranged in the network management system load functions. Alarm 718 must be ON.
962	**Reset All Counters**
	The payphone will reset all alarms, counters and the SMDR buffer.
964	**Load Rates, Registers/Features (RAM Reload)**
	The payphone will transfer the information from the EEPROM into the RAM. This command is usually issued only when it is suspected that the RAM is corrupted and needs to be refreshed.
965	**Fire Coin Return Relay**
	The payphone will fire the coin return relay. This command is usually issued to manually check the operation of the coin return.
966	**Fire Coin Collect Relay**
	The payphone will fire the coin collect relay. This command is usually issued to manually check the operation of the coin collect.
969	**Burn RAM To EEPROM**
	The payphone will take the information from RAM and permanently record it into the EEPROM.

6. CLOCK / CALENDAR

The commands listed in the following table are for manually changing the internal Clock/Calendar of the PCM and are issued in the same manner as changing a feature. There are no default settings for these commands.

Table 4-1 Clock Calendar Commands

Command	Description
977	**Read/Set HOURS / MINUTES**
	When this command is issued the payphone displays the hours and minutes in a 24 hour format. Valid range is 0001-2400.
978	**Read/Set MONTH / DAY**
	When this command is issued the payphone displays the month and day. Valid range is 01-12.
979	**Read/Set YEAR**
	When this command is issued the payphone displays the last two digits of the year. Valid range is 00-99.
980	**Read/Set DAY OF WEEK**
	When this command is issued the payphone displays the day of the week. Valid options are 1 (Sunday), 2 (Monday), 3 (Tuesday), 4 (Wednesday), 5 (Thursday), 6 (Friday), and 7 (Saturday).

7. LOW LEVEL COMMANDS

The commands listed in the following table are used for creating dialing macros. Refer to your
network management system operation manual for information about creating dialing macros.

Table 5-1 Low-Level Commands

Command	Description
12	Turn keypad off
13	Turn keypad on
14	Turn microphone off
15	Turn microphone on
16	Splash back - dial direct
17	Reroute call to secondary service
18	Say "Please dial again.", then hang up
23	Remove leading 1 from destination number
25	Wait, then say "One moment please."
28	Initiate dialing sequence (total redial)
29	Look for 2.5 seconds of progress tone
30	Initiate dialing sequence (continue from trickled digits)
31	Wait for progress tone
32	Initiate a call home. This is a two-part command (32 XX), where XX is time in seconds to wait for an answer.
33	Free call, open microphone and earpiece now
34	Revenue call, wait for answer detect
35	Maximum number of digits to allow before terminating the call. This is a two-part command (35 XX), where XX is the number of digits.
36	Time before interdigit counter is reset. This is a two-part command (36 XX), where XX is the number of 250ms increments.
37	Wait for XX seconds. This is a two-part command (37 XX), where XX is time in seconds.
38	1 second wait
40	Turn on earpiece
44	Wait for DTMF "#"

Table 5-1 Low-Level Commands

Command	Description
45	Wait for DTMF "XX" (1234567890*#ABCD). This is a two-part command (45 XX), where XX corresponds to the DTMF character as follows: DTMF 1=01 DTMF 9=09 DTMF 2=02 DTMF 0=10 DTMF 3=03 DTMF *=11 DTMF 4=04 DTMF #=12 DTMF 5=05 DTMF A=13 DTMF 6=06 DTMF B=14 DTMF 7=07 DTMF C=15 DTMF 8=08 DTMF D=16
46	Set up 35 second timer until reroute
47	Dial fast - 75 ms on, 75 ms off
48	Dial slowly - 100 ms on, 100 ms off
49	Turn off earpiece
52	Wait for a second polarity reversal or a wink before call termination
55	Start a count up timer on the LCD for non-revenue calls
56	Provide identification (cuckoo) tones. This is a two-part command (56 XX), where XX is time in seconds. This should be an even number from 2 to 18. Cuckoo tones occur at two-second intervals. Therfore, a value of "04" results in two cuckoo tones, for example.
64	Send DTMF "#"
65	Send DTMF "XX". This is a two-part command (65 XX), where XX corresponds to the DTMF character to be sent as follows: DTMF 1=01 DTMF 9=09 DTMF 2=02 DTMF 0=10 DTMF 3=03 DTMF *=11 DTMF 4=04 DTMF #=12 DTMF 5=05 DTMF A=13 DTMF 6=06 DTMF B=14 DTMF 7=07 DTMF C=15 DTMF 8=08 DTMF D=16
70	User dialed destination number
71	Commercial credit card VDC access number (Register 306)
72	Commercial credit card VDC authorization number (Register 307)
73	Calling card VDC access number (Register 308)
74	Network management system call home number (Register 309)
78	Card Access #1
79	Card Access #2

Table 5-1 Low-Level Commands

Command	Description
80	Card Access #3
81	Dial Service Desk
85	Send Card Number
87	Send out ANI in a Macro (Register 300)
88	Temporary RAM work buffer 1
89	Temporary RAM work buffer 2
95	Call home overflow digits

Glossary

Answer detect The ability to determine when a call is answered. The payphone can be programmed to use answer detect to determine when to collect or refund coins. Answer detect is also referred to as "answer supervision."

Answer supervision The ability to determine when a call is answered. The payphone can be programmed to use answer supervision to determine when to collect or refund coins. Answer supervision is also referred to as "answer detect."

"Burn RAM to EEPROM" command An instruction which copies selected files or data currently in RAM to an Electrically Erasable Programmable Read Only Memory chip.

Call completion The moment when the payphone determines that coins should be collected. Call completion occurs a specified amount of time (call completion timer) after answer detect.

Call home Call from a payphone to the network management system.

Call termination The moment when either the called party or the caller hangs up or the purchased time expires and the call is terminated.

Call type Category of a call according to processing requirements. Calls are typed according to programmed logic which considers the pattern of the digits dialed, the nature of the target number, the method of payment, and so on.

Central office The central office (CO) is the place where telephone calls originate.

Clearing The process of erasing "counts" accumulated by counters, or the "flags" (warning notes) about alarms posted in network management system screens.

CO Abbreviation for Central Office.

Dialing pattern The order and sequence of digits dialed by a telephone user and used by the telephone equipment to route the call.

Default A value which is in effect initially and/or in the absence of a user-specified value.

Disable To turn OFF a payphone option.

Discount period The period of time during which less than the full price of a call may be charged.

Downloading The process of sending data or complete files from the network management system to the payphone or from the Elcotel Web Site (www.elcotel.com) to the network management system.

DTMF Abbreviation for Dual Tone Multi-Frequency signals, which are analog signals created by telco equipment, a keypad or "TCU" (touch call unit), or a pocket dialer.

Enable To turn ON a payphone option.

EEPROM Acronym for Electrically Erasable Programmable Read-Only Memory. This memory chip is similar to an EPROM except that this memory chip can be erased and reloaded after receiving an electronic signal, either through voice telemetry or by using the network management system in modem telemetry.

EPROM Acronym for Erasable Programmable Read-Only Memory. This memory chip can be erased and reprogrammed, but only by a special process in a factory setting. Once programmed, it is non-volatile; that is, loss of power does not cause loss of data.

Frequency The number of repetitions per unit of time of a complete waveform, as of an electric current. Frequency is measured in Hertz.

Handset The hand-held unit that contains the payphone receiver and microphone.

Hertz (Hz) A unit of frequency equal to one cycle per second.

Hookswitch A switch that is actuated by the removal of the handset from its hanger. An "off-hook" status signals the TCU terminal board to open the line, returning dial tone to the receiver. "On-hook" status signals the TCU to close the line.

LCD Liquid Crystal Display.

Loop The local path between the Central Office and the payphone. An electrical current path comprised of one conductor from the CO to the telephone and another conductor from the telephone back to the CO forms the loop. The loop conductors are called "tip" and "ring."

Modem A device that converts digital signals, as from a computer, to analog wave signals for the purpose of transmission over telephone communication channels. The modem MOdulates the signal at one end, then DEModulates at the other end of the transmission. Modem telemetry enables the network management system-to payphone communication linkage.

Modem telemetry The transmission of modulated digital data (in analog form) over a communication channel. The process requires a modem at each end of the communication channel. Modem telemetry is the method the network management system operator uses to create a communications link with the payphone and vice versa.

Off-hook The condition when the handset is removed from the cradle.

Option A program switch (identified by a three-digit number) that enables or disables a payphone feature depending whether the option is set ON or OFF, respectively.

Owner bypass code A code used by the owner-operator to access the visual telemetry mode, allowing a person to program and/or test the payphone.

Polarity Related to the direction of the current in the telco circuit. Some payphone equipment is polarity sensitive; that is, the Tip and Ring must be correctly identified and wired for the equipment to function.

POLLQUEST   A family of Elcotel payphone network management programs, which can be used by an owner-operator to control and maintain communications with phones. These programs can be run from an IBM-compatible computer with a variety of available modems. An earlier version of POLLQUEST ran on DOS, and was called IPNM (International Payphone Network Manager).

Pulse dialing Also known as rotary dialing, the dialing mechanism breaks the current loop, and the number of pulses per second that this occurs is equivalent to the digit dialed. This is one method of sending the number to the CO.

RAM Acronym for Random Access Memory, the working memory or temporary storage area in PCs and smart payphones. Data stored in RAM, without battery backup, is lost if power is removed.

RAM Reload command Causes the backup data stored in the EEPROM chip to be loaded into Random Access Memory for use by the payphone operating system.

Register A place in computer memory for storing a value that is used by a payphone feature. A unique three-digit number identifies each register.

Remote Usually refers to a location away from the main computer in a network. Remote systems are connected to the main computer by communication channels. Remote terminals are located at a distance from the main computer. Remote data from a phone in the network can be imported to the PC by using the network management system. However, with smart payphones, activity performed through the keypad at the payphone site is referred to as local, for example, local voice telemetry.

Reverse Battery Answer Supervision (RBAS) A form of answer supervision by which the polarity of the tip and ring changes when an answer is detected (the call is completed).

SMDR Abbreviation for Station Message Detail Records, which are call data detailing the number dialed, date, time, duration of the call, price, credit card information, and so on. SMDR are stored and uploaded for viewing and evaluation. SMDR are sometimes called "Call Detail Records" (CDR).

Telco The operating TELephone COmpany.

Uploading The process of transferring data or complete files from a payphone to the network management system.

Voice detection The ability of the payphone to identify the end of ringback and the beginning of voice answer.

Index