

**Firmware Release: DD8818-33-37 (IPP433.001)****Release Date: 08/31/95****Previous Version: DD8817**

This new release of firmware includes the features and enhancements listed on the following pages of this bulletin.

**GENERAL FEATURES & ENHANCEMENTS****Battery Charge Routine**

If the ni-cad battery in the phone falls below a set voltage level, the chassis assembly attempts to charge the battery immediately after it fails. The phone will not report in to the computer unless there are two battery failures prior to the charging routine taking place. If two additional failures take place before a successful attempt to fire the relay, the phone will report in to the computer with a "LB" flag.

If there is a coin in the hopper when the user hangs up, the phone will make four attempts, using the ni-cad battery, to charge the relay capacitor to a specified level. The energy stored in the capacitor is then used to clear the coin from the escrow relay. The phone will only call in to the computer to report a low battery flag "LB" if the ni-cad battery charging routine failed 4 consecutive times. After the first two charging failures, the chassis assembly uses the line current through the battery charging routine to recharge the battery. If the battery fails two more times, the "LB" flag is set in the phone and reported to the computer two minutes later.

**Keypad Operation 10XXX 0+**

On 10XXX 0+ calls, the keypad opens immediately after the number has been sent out to the line. Previous versions of the firmware enabled a delay by default.

**Keypad Programming**

Area code, and office code information may no longer be configured using entries from the payphone keypad.

**Dial Inactivity**

If the "Dial Inactivity" flag becomes set in the phone, this flag will be reset after one successfully completed call instead of after ten successfully completed calls, as was previously done.

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**POLLING**

The time required to complete routine polling functions has been reduced by as much as twenty five percent.

## COST BAND ASSIGNMENTS

Destination numbers can be directed to specific cost bands for processing. This is accomplished as follows:

- a. Select the following keys beginning from the main screen of the ExpressNet® or ExpressNet III® program: [2] **Call Costing Records Menu**
- b. Use the arrow keys to highlight the record to be modified and then press [ENTER].
- c. Use the arrow keys to highlight the "DA/DD" record type and then press [ENTER].
- d. Press [6] **Edit Restricted Phone Numbers**.
- e. Beginning from the first available position on the list, enter the destination number that should be rerouted to a specific cost band.
  - If the destination number begins with a digit 2 - 9, it must be preceded with a "\*" (example: \*234-5678). If the destination number begins with a 0 or 1 as the first digit, a "\*" is not required as a preceding digit (example: 1-813-234-5678).
  - Wild cards may be used to define the destination number. The following is a listing of valid wild card characters.

*	Identifies that the first digit of the destination number does not begin with a 1 or a 0.
<b>B</b> <b>X</b>	"B" = A match of any digit 0 - 9. -- "X" = allow for keypad entry delay for "X" number of seconds (see chart below).
<b>D</b>	"D" = A match of any digit 2- 9 (do not use in the first position of a destination number string).
<b>E</b>	"E" = A match of 1 or 0 for any position. (When used in the first position of the destination number string, and the first dialed digit is a 2 - 9, the phone checks the second position of the destination number for a match.)
<b>#</b>	"#" = Any digit in the position with the "#" is considered a match. (Note: Do not use "#" in the first position of a destination number string.)

- f. Following the last digit in the destination number, enter "\*1," followed by the code for the amount of "keypad delay" to be implemented (see chart below) The keypad delay is the amount of time that the user has between each digit being pressed on the keypad.

1 = 1 second	6 = 6 seconds	B = 11 seconds
2 = 2 seconds	7 = 7 seconds	C = 12 seconds
3 = 3 seconds	8 = 8 seconds	D = 13 seconds
4 = 4 seconds	9 = 9 seconds	E = 14 seconds
5 = 5 seconds	A = 10 seconds	F = 15 seconds

g. After the "keypad delay" entry, enter the two character code (from the "Entry" column in Chart 1 below) to indicate which cost band should be used to process the call.

<b>Band - Entry</b>	<b>Band - Entry</b>	<b>Band - Entry</b>
1 ..... *1	37 ..... 25	73 ..... 49
2 ..... *2	38 ..... 26	74 ..... 40
3 ..... *3	39 ..... 27	75 ..... 4B
4 ..... *4	40 ..... 28	76 ..... 4C
5 ..... *5	41 ..... 29	77 ..... 4D
6 ..... *6	42 ..... 20	78 ..... 4E
7 ..... *7	43 ..... 2B	79 ..... 4#
8 ..... *8	44 ..... 2C	80 ..... 5*
9 ..... *9	45 ..... 2D	81 ..... 51
10 ..... *0	46 ..... 2E	82 ..... 52
11 ..... *B	47 ..... 2#	83 ..... 53
12 ..... *C	48 ..... 3*	84 ..... 54
13 ..... *D	49 ..... 31	85 ..... 55
14 ..... *E	50 ..... 32	86 ..... 56
15 ..... *#	51 ..... 33	87 ..... 57
16 ..... 1*	52 ..... 34	88 ..... 58
17 ..... 11	53 ..... 35	89 ..... 59
18 ..... 12	54 ..... 36	90 ..... 50
19 ..... 13	55 ..... 37	91 ..... 5B
20 ..... 14	56 ..... 38	92 ..... 5C
21 ..... 15	57 ..... 39	93 ..... 5D

	39	5D
22 .....16	58 ..... 30	94 ..... 5E
23 .....17	59 ..... 3B	95 ..... 5#
24 .....18	60 ..... 3C	96 ..... 6*
25 .....19	61 ..... 3D	97 ..... 61
26 .....10	62 ..... 3E	98 ..... 62
27 .....1B	63 ..... 3#	99 ..... 63
28 .....1C	64 ..... 4*	100 ..... 64
29 .....1D	65 ..... 41	101 ..... 65
30 .....1E	66 ..... 42	102 ..... 66
31 .....1*	67 ..... 43	103 ..... 67
32 .....2*	68 ..... 44	104 ..... 68
33 .....21	69 ..... 45	105 ..... 69
34 .....22	70 ..... 46	106 .....60
35 .....23	71 ..... 47	107 .....6B
36 .....24	72 ..... 48	

CHART 1

### Destination Number/Cost Band Assignment - Examples:

- An entry of \*9761234\*12\*8 causes the phone to use cost band 8 to process the number 9761234 provided that no additional digits are dialed within two seconds after the seventh digit is dialed.
- An entry of E813644# # # # \*1\*22 causes the phone to use cost band 34 to process (1/0) 813644XXXX numbers.
- An entry of 18009258881\*1\*60 causes the phone to use cost band 106 to process the number 18009258881.

### CREDIT CARD DATE FORMAT REQUIREMENTS FOR AT&T

To accommodate AT&T's new service of carrying and validating commercial credit card

traffic, a call routing option has been added to the phone's capability. The phone can now be programmed to send the account number immediately followed by the month and year. This is accomplished by entering a value of "4" in position 16 of the routing switch format. If necessary, use the information below to configure call routing options (switch format position 16).

Position 16 of the call routing switch format is used for card calls. The value entered for position 16 determines what data from the magnetic stripe of the card is sent to the switch. Use the table below to determine the appropriate value for this position in the switch format.

Digit	Description
*	Send no card number
1	Send account only. On 8555 AT&T and Bell calling cards, send 10-digit account and 4 digit pin number. All other cards, send data between the beginning sentinel and the field separator. (Essentially, this option sends the data/numbers which you see on the front of the card.)
2	Send all of card data, including the beginning and ending sentinels.
3	Send account and expiration date. On 8555 AT&T and Bell calling cards, send 10 digit account and 4-digit PIN number. All others, send data beginning after the beginning sentinel and ending after the expiration date.
4	Send account number and expiration date. The date is sent in the following format: MMY. On 85/66 AT&T and Bell calling cards, send the 10-digit account number and 4-digit PIN number. All others, send data beginning after the sentinel and ending after the expiration date. The field separator is not sent.

## RESTRICTED PHONE NUMBERS

The phone may now be set up to deny destination number patterns that are 7-digit, 1+7-digit, 0+7-digit, 10-digit, 1+10-digit, and/or 0+10-digits in length.

Follow the instructions outlined below to set up this option for your needs.

- a. Select the following keys beginning from the main screen of the ExpressNet® or ExpressNet III® program: [2] **Call Costing Records Menu**
- b. Use the arrow keys to highlight the record to be modified and press [ENTER].
- c. Use the arrow keys to highlight the record type DA/DD and press [ENTER].
- d. Press [6] **Edit Restricted Phone Numbers**.
- e. Beginning from the first available position on the list, enter the letter "C" followed by the destination number pattern to be denied. Below are some examples of legal entries.

- An entry of "C8136445558" blocks the following destination numbers:  
**6445558, 16445558, 8136445558, 18136445558, 08136445558**
- An entry of "C###6445558" blocks the following destination numbers:  
**6445558, 16445558, 06445558, NPA6445558, 1NPA6445558, 0NPA6445558**

## VOICE ANNOUNCEMENTS

New voice messages have been added to the phone to assist payphone service personnel in analyzing the status of the payphone. These messages are sounded in the payphone receiver in response to the service person entering a reporting command at the payphone keypad. Listed below are definitions of the voice message reporting commands that the phone recognizes.

### \*#61 (ANI Verification)

This reporting command is entered by taking the handset off hook and the pressing the following keys on the keypad: \*#61. This causes the phone to sound a voice prompt in the handset indicating the telephone number that the phone is initialized to.

### \*#62 Firmware Version

This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: \*#62. If the phone's operating program is stored in EPROM, a voice prompt sounds the firmware revision number followed by the message "Number One". If the phone's operating program is in E2 ROM, a voice prompt sounds the firmware revision number followed by the message "Number Two".

Shown below is an example of a voice message that can be sounded when using this reporting command.

**Example:** A voice announcement of "Dollar, Dollar, 431700.861 Number 2" is translated as:

- Dollar, Dollar = DD Operating System
- 431700 = Firmware Version 431700
- (slight pause) 861 = Version 861
- Number Two = Operating system is a download file stored in E2 ROM in the phone.

### \*#63 Communication Errors

This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: \*#63. The phone sounds a voice message indicating various communication errors that the phone may have encountered during the last attempt to communicate with the computer. A list of possible error messages are listed below.

ERROR 00	Successful Communication
ERROR 04	Call dropped due to "no carrier" or "no answer"
ERROR 09	Invalid security code. (Security code in the phone does not match the code in the computer.)

### \*#64 Alarms or Reporting Flags Currently Set in Phone's Memory

This reporting command is entered by taking the handset off hook and pressing the following keys on the keypad: \*#64. This command causes the phone to sound a voice code in the handset indicating any flags that are currently set in the phone. A complete listing of numeric voice codes is shown below.

NUMERIC CODE	FLAG CODE	DESCRIPTION
00	E\$	<b>Cash Box Emptied (*#1):</b> The cash box of the phone has been emptied. The repair person reported this information to the computer by entering the reporting command *#1 at the payphone keypad or by activating the vault alarm switch.
01	ST	<b>Status Check (*#2):</b> A repair person entered the reporting command *#2 (General Reporting Status) at the phone keypad. This command causes the phone to call the computer and report the details of calls that have been made on the phone since the last time the phone communicated with the computer. The phone also verifies that the costing/options information stored in the phone is up to date and if necessary requests a download of costing/options information from the computer.
02	PR	<b>Phone Repair (*#3):</b> A repair person entered the reporting command *#3 (Program Update) at the payphone keypad. This reporting command causes the phone to call in to the computer and request a download of costing/options information to program or reprogram the phone.
03	PC	<b>Peg Count:</b> Number of calls made is equal to the number specified in the field labeled "Peg Count/Inactivity" in the Options & Registers record used by the phone.
04	\$V	<b>Cash Box Volume Reached:</b> Volume of coins in cash box reached the percentage (%) full programmed for the phone to report. See the field labeled "cash box volume" in the Options & Registers record used by the phone. Coin box should be emptied at this time.
05	RE	<b>Ram Error:</b> An error was detected in RAM used for storing costing/options information. To correct this situation, poll the phone. If this flag does not reset, reinitialize the phone. If the flag still does not reset, replace the chassis assembly.
06	RJ	<b>Relay Jam:</b> The coin relay is not operating properly. Possible causes are a stuck coin, faulty trigger switch, faulty coin relay, or faulty circuitry on the chassis assembly. To correct this situation, check

		for stuck coins, stuck relay, or faulty relay connections, and perform a relay diagnostic test.
07	LR	<b>Loop Reversed:</b> The tip and ring wires connected to the phone are reversed. Swap tip and ring and perform the "Loop Polarity" diagnostic test.
10	VE	<b>Coin Box Volume Error:</b> An error was detected in the coin box volume percentage reported to the computer. To correct this situation, have the technician empty the coin box and use the *#1 reporting command [Cash Box Emptied] if a vault door alarm switch is not present. If this flag does not reset, replace the chassis assembly.
11	\$E	<b>Coin Total Error:</b> An error was detected in the non-resettable coin totalizer in the phone. To correct this situation, poll the phone. If this flag does not reset, reinitialize the phone. If the flag still does not reset, replace the chassis assembly.
12	TE	<b>Resettable Coin Totalizer Error:</b> Error was detected in the "amount to date" reported to the computer. To correct this situation, poll the phone. If flag does not reset, reinitialize the phone. If flag still doesn't reset, replace the chassis assembly.
13	BE	<b>Box Amount Error:</b> Error was detected in the "coin box amount" totalizer. The "coin box amount" reported to the computer may not be accurate. To correct this situation, have technician empty the coin box and use the *#1 reporting command [Cash Box Emptied]. If this flag does not reset, reinitialize the phone. If the flag still does not reset, replace the chassis assembly.
14	OE	<b>Overcharge Memory Error:</b> The amount deposited was more than amount charged. To correct this situation, poll phone. If this flag does not reset, reinitialize the phone. If the flag still does not reset, replace the chassis assembly.
15	AE	<b>Accounting RAM Error:</b> An error was detected in the RAM used for call accounting. The information received from the phone may not be accurate. To correct this situation, poll the phone. If this flag does not reset, reinitialize the phone. If the flag still does not reset, the chassis assembly must be repaired.
16	CL	<b>Billing CDR Limit Reached:</b> The number of Store & Forward calls made on the phone is equal to the number of calls specified in the field labeled "Number of Billable CDR Records before Reporting"

		in the Options & Registers record used by the phone.
17	CF	<b>Billing CDR Full:</b> There have been 52 Store & Forward calls made on the phone and the call detail records for these calls have not yet been transferred to the computer. The Store & Forward records must be reported to the computer and the Store & Forward call counter must be reset before the phone will allow any further Store & Forward calls.
21	\$F	<b>Coin Box Full:</b> The volume of coins in the coin box has reached 100 percent. The coin box must be emptied to reduce the possibility of coins becoming jammed.
23	DE	<b>Inactivity:</b> The payphone did not see coins deposited in 10 consecutive attempts to process a call. This flag is automatically reset once a coin call is completed.
25	TR	<b>Time Report:</b> The payphone has reported in to the computer during the "Remote Reporting Time." specified in the Options & Registers record used by the phone.
26	NE	<b>Audit CDR Error:</b> An error was detected in the data of the non Store & Forward call detail records (CDR) received from the phone. The records received from the phone may not be accurate. To correct this situation, poll the phone. If this flag does not reset, reinitialize the phone. If the flag still does not reset, the chassis assembly must be repaired.
27	CE	<b>Billing CDR Error:</b> An error was detected in the Store & Forward call detail records (CDR) stored in the phone. The information transferred to the computer may not be accurate. To correct this situation, poll the phone. If this flag does not reset, reinitialize the phone. If the flag still does not reset, the chassis assembly must be repaired.
30	LB	<b>Low Battery:</b> The chassis assembly detected that the voltage of the ni-cad battery is low and that the battery is in the process of being charged. To correct this situation, if this flag reoccurs, replace the battery and test the incoming line for proper current and voltage.
34	HO	<b>Handset Off Hook:</b> The handset was left off hook with no activity for approximately 15 minutes. To correct this situation, If this flag gets reported while the handset is on hook, check the hookswitch for proper operation.
36	LA	<b>Lower Alarm:</b> The lower housing (coin box) door was

		removed or the inside vault switch was activated.
37	HG	<b>Handset Gone:</b> There is improper resistance of the handset receiver. The handset may be missing or have defective/incorrect wiring. To correct this situation, check wiring or replace the handset or chassis assembly.
40	NF	<b>Audit CDR Full:</b> The number of non-card CDR records stored in the phone is at the maximum (500). This information should be transferred to the computer.
44	BG	<b>Bad Ground:</b> The phone made four unsuccessful attempts to detect a collect or refund signal from the central office. Check the phone ground wiring and central office card for proper operation. This flag is reset after the phone successfully detects a collect or refund signal from the central office.
45	CR	<b>Clock Reset:</b> The date and time in the phone has been reset due to a power-on reset condition.
46	EE	<b>EEPROM Error:</b> The program stored in EEPROM within the payphone is corrupted. To correct this situation, poll the phone. If this flag does not reset, reinitialize the phone. If the flag still does not reset, replace the chassis assembly.
47	TG	<b>Trouble Gone:</b> A previously reported relay jam condition has cleared itself.
50	OC	<b>Opto-Coupler:</b> A collect/refund hardware failure occurred in the phone. If this conditions continues to reoccur, replace the chassis assembly.
51	BR	<b>Box Removed:</b> The coin box was removed from the phone during a time that is other than during the active coin box removal window. Specify if this flag should automatically be reported to the computer if it becomes set in the phone.
52	RR	<b>Relay Refund:</b> There is a problem with the escrow relay's refund function. This flag will be set if the phone makes three consecutive unsuccessful attempts to refund coins.
53	RC	<b>Relay Collect:</b> There is a problem with the escrow relay's collect function. This flag will become set if the phone makes three consecutive unsuccessful attempts to collect coins.
55	BM	<b>Box Missing:</b> The coin box has been missing from the phone for at least 15 minutes. If this flag is set while the coin box is present, check the vault alarm switch for proper operation.
56	DI	<b>Dial Inactive:</b> The handset came off hook "X" number

		of times without the call ever getting to the cut-through point (phone dialed out and the transmitter/receiver turned on.). The value of "X" is to be specified in the field labeled "Peg Coin/Inactivity."
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### **\*#65 Remote Reporting Number**

This reporting command is entered by taking the handset off hook and then pressing the following keys on the keypad: \*#65. This command causes the phone to sound the telephone number that the phone will dial to reach the computer.

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## **COIN LINE FEATURES**

### **Local Call Overtime Charges**

The phone may now be set up to either allow free call time or terminate a call if a local call continues past a preset number of overtime periods.

Follow the steps outlined below to configure this option.

- a. Select the following keys beginning from the main screen of the ExpressNet® or ExpressNet III® program: [2] **Call Costing Records Menu**
- b. Use the arrow keys to highlight the record to be modified and then press [ENTER].
- c. Use the arrow keys to highlight the record type (DA/DD or CA/CD) and press [ENTER].
- d. Press [2] **Edit Cost Bands**.
- e. In the local call cost band(s) to be enabled for this feature, ensure that the following fields are set with the proper values: "Init Rate," "Ovt Rate," "Init Time," "Ovt Time,"

**Note:** In order for a cost band to be considered a "local call" cost band, the discount table assigned to the cost band must be set to either "local calls" or "none."

- f. After all necessary changes are made to the cost band settings, press [F2] and press [ESC]. Then answer "Yes" to the prompt: "Do you wish to save before exiting?"
- g. Press [3] **Edit Options & Registers**.
- h. Use the arrow keys to highlight the record to be modified and then press [ENTER].
- i. Use the [TAB] key to select the "Special Purpose Options" category.
- j. Use the arrow keys to highlight the option labeled "Limited Local Overtime."
- k. Specify the number of overtime periods that the phone should continue to prompt the user to deposit additional money.
- l. Use the arrow keys to highlight the option labeled "Free/Restrict After

Limited Overtime."

m. Set this option to "Free" or "Res" based on the information shown below.

<b>Free</b>	After using the preset number of overtime periods, additional call time is free.
<b>Res</b>	After using the preset number of overtime periods, the call is terminated.

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## NON COIN (B1) LINE FEATURES

### **Answer Detection (this feature is available in all versions of DD firmware)**

An enhanced version of answer detection has been added to the phone's capability. This new firmware method of answer detection may be used in place of the standard hardware circuit board that connects to the chassis assembly.

Follow the instructions outlined below to set up the phone for this new method of answer detection.

- a. Select the following keys beginning from the main screen: [3] **Edit Options & Registers**
- b. Use the arrow keys to highlight the record to be modified and then press [ENTER].
- c. Use the [TAB] key to select the "Central Office Options" category.
- d. Use the arrow keys to highlight the option labeled "Select Answer Recognition".
- e. Press [SPACE] to select "Type 1" (firmware) or "Type 2" (hardware).

Use the information below to determine the appropriate setting for this option.

<b>Type1</b>	Phone uses the new enhanced version of answer detection available in the firmware or EEPROM file when downloaded.
<b>Type2</b>	Phone uses standard hardware answer detection.

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