



PC Card

Cellular-Ready Modem

**Product Code:**  
**MV.34 PC**  
**M144PC**



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## Before You Begin your Installation

The product you have purchased is designed to be easily installed into most IBM PC or compatible systems. Many products have large, easy-to-read legends to allow for the easy configuring of the product. This installation manual contains detailed instructions. Most included software has automatic installation programs to place the software correctly onto your computer. However, as all computers are configured differently, you may be required to perform some basic DOS or Windows tasks. If you are not familiar with basic DOS commands such as DIR, CD, or EDIT, you should check your DOS manual, or seek assistance from you local computer dealer to install the product.



### *How to get Technical Assistance*

The dealer that you purchased this product or your computer from is the first place you should go for technical assistance. The dealer is usually the most qualified source of help, and is most familiar with your system and how this product should be installed. Many dealers have customer service and technical support programs, with varying levels of support offered, depending on your needs and computer knowledge. ***Please contact the dealer first whenever a problem occurs.***



**Boca BBS**  
**407-241-1601**



**Standard Free  
Technical Support**  
**407-241-8088**



**Automated  
Fax Retrieval  
System**  
**407-995-9456**



**Priority Service**  
**900-555-4900**  
**(\$2 per minute)**



**On-Line Support!**  
**CompuServe: GO BOCA**  
**Internet:**  
**email: [support@boca.org](mailto:support@boca.org)**  
**on the World-wide WEB:**  
**<http://www.boca.org>**

### ***If your Dealer Can't Assist you***

If you can't get assistance from your dealer, the manufacturer provides varying levels of technical assistance as summarized on the following page.

The Standard Free Technical Support number is for quick answers to specific inquiries on product features and technical questions (call **407-241-8088**; M-F, 8 am to 6:30 pm EST). Direct access to technical support representatives is provided on a limited basis.

If you require immediate attention or in-depth help with the installation of the product, please call our 900-priority support number for service. This number gives you immediate access to senior-level technicians. The number is **900-555-4900**. You will be charged \$2.00 per minute. The charges will appear on your next phone bill.

### *Damaged or Missing Items*

We use many world-class quality assurance programs to ensure the product you purchased is of the highest caliber. Sometimes, however, a component may be missing from the box, or is damaged or corrupt in some way. If this happens, immediately return the entire package to your place of purchase so you may exchange it for a new one. Your dealer should be able to provide you with an exchange far more quickly than by contacting us directly. If for some reason you are unable to return the product directly to its place of purchase, refer to the “Servicing Your Product” and “Warranty” sections in this manual for instructions.

To order cellular phone cables from Boca Research, see Appendix B for available cable types. You may call the Technical Support Automated Fax Retrieval System at 407-995-9456, and select document 8018.

A Cellular Cable Offer form was also included with your package. Please follow the instructions on the form to order cell phone cables.

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# Contents

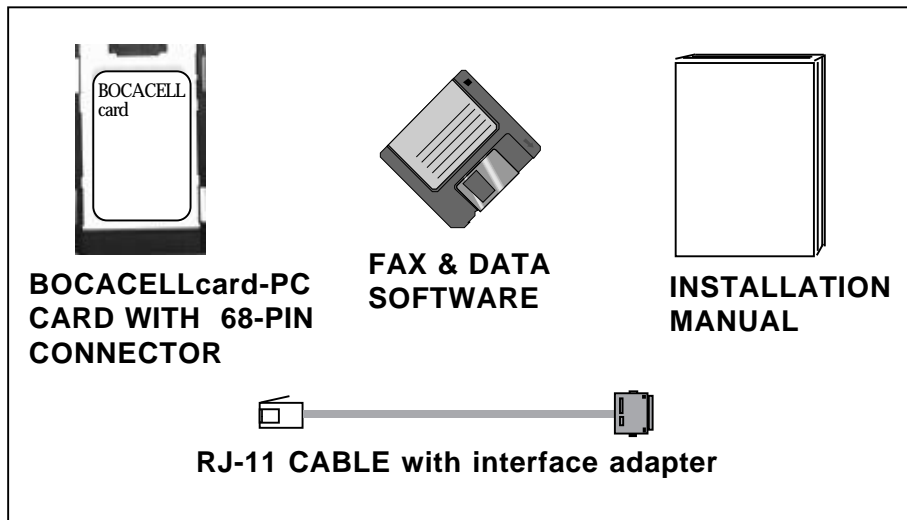
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## Getting Started

Congratulations on the purchase of your BOCACELLcard-PC (MV.34PC or M144PC) by Boca from Boca Research, Inc., a leader in high-tech computer enhancement products. Get started by reviewing the package contents as shown below. Then continue with the *EXPRESS* Installation on pages 8-12 which is intended for more knowledgeable and experienced users. The balance of the manual contains a product overview, detailed installation instructions, troubleshooting, and technical specifications.

### Package Contents

Make sure you have received the following items:




If any items are missing or appear damaged, contact your dealer for assistance.

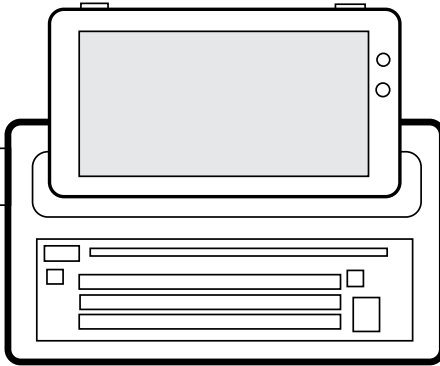
# ***EXPRESS* Cellular Installation**

**STEP 1**

**PC CARD  
SLOT**



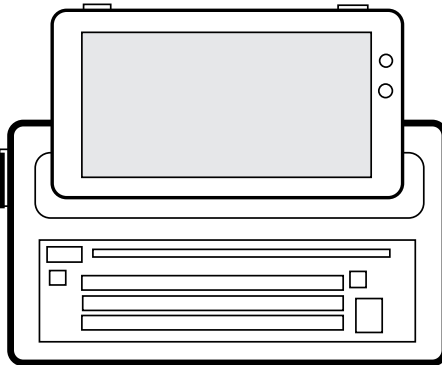
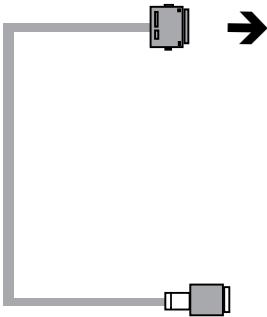
**BOCACELLCARD-  
PC**



**LAPTOP OR NOTEBOOK COMPUTER**

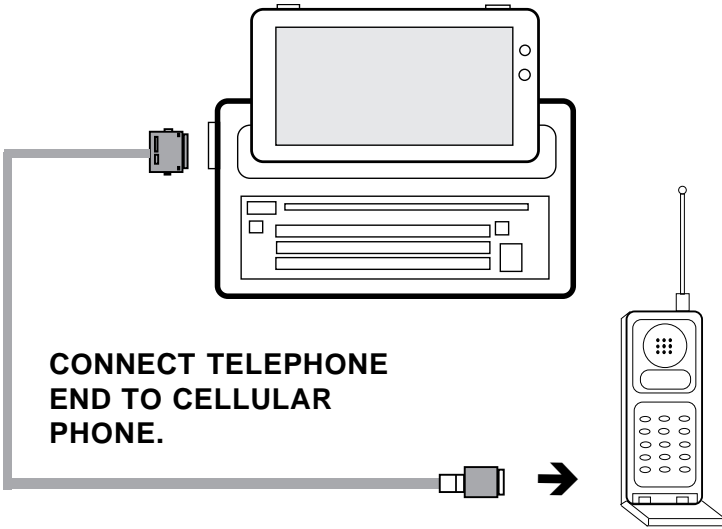
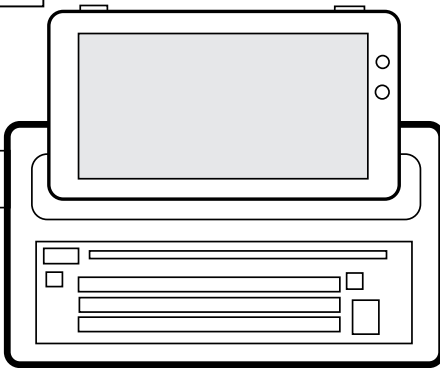
**STEP 2**

**RJ-11 CABLE  
WITH INTERFACE  
ADAPTER**

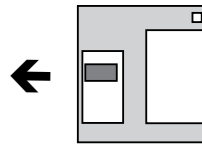


**CONNECT INTERFACE  
ADAPTER TO CONNECTOR  
ON MODEM CARD.**



**STEP 3****STEP 4**

**GO TO PAGE 12,  
*EXPRESS*  
SOFTWARE  
INSTALLATION.**



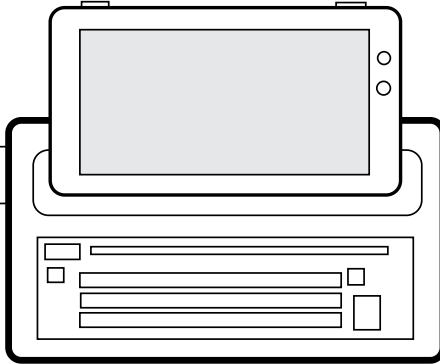
# ***EXPRESS* Land Line Installation**

**START  
HERE**

**PC CARD  
SLOT**

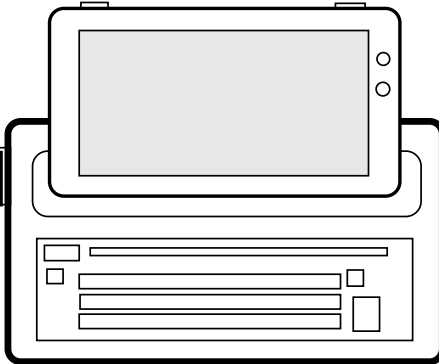
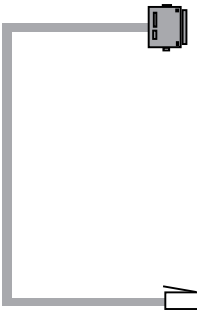


**BOCACELLCARD-  
PC**

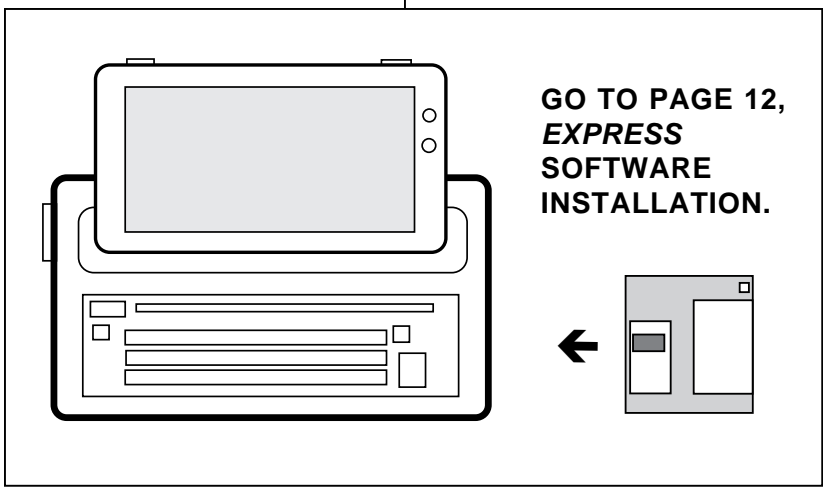
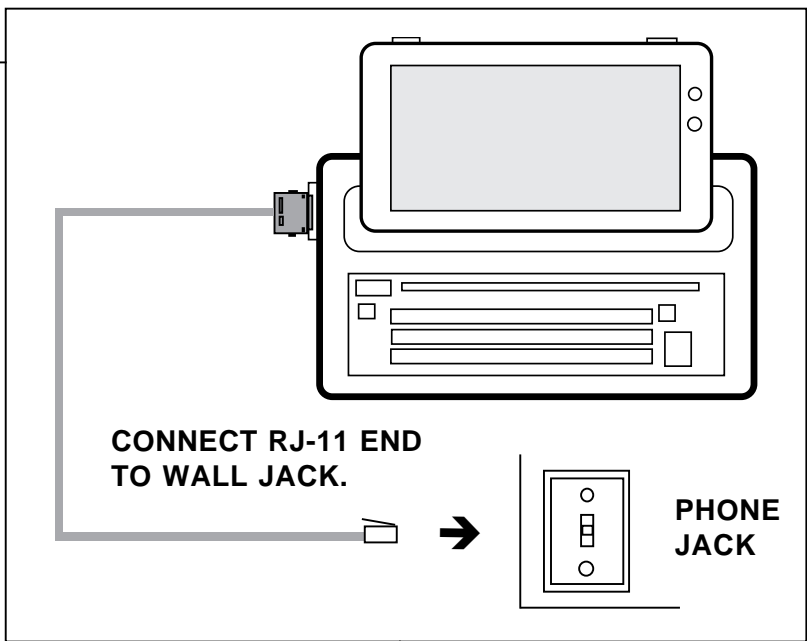


**LAPTOP OR NOTEBOOK COMPUTER**

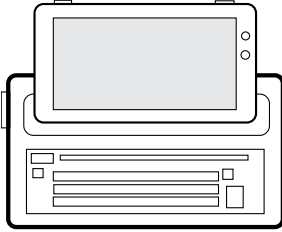
**RJ-11 CABLE  
WITH INTERFACE  
ADAPTER**



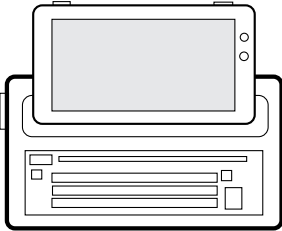
**CONNECT INTERFACE  
ADAPTER TO CONNECTOR  
ON MODEM CARD.**



# ***EXPRESS* Software Installation**



**BOOT YOUR  
SYSTEM AND MAKE  
SURE WINDOWS IS  
STARTED.**



**INSERT THE  
COMMUNICATIONS  
SOFTWARE DISKETTE  
IN THE A:\DRIVE.**

**TYPE A:\SETUP, PRESS  
ENTER, AND FOLLOW  
ALL ON-SCREEN  
INSTRUCTIONS.**

## Section One: Product Overview

The emergence of worldwide cellular telephone networks now offers possibilities of wireless communication from remote locations, as well as a typical wireline connection via the standard telephone network. Your BOCACELLcard-PC incorporates the latest in technology for high speed and error free data transmission, using the TX-CEL™ technology. TX-CEL™ is supported by cellular carriers that have brought dedicated modem pools on-line to increase throughput and improve channel quality.

Your local carrier can tell you about DATA service that may be available in your area. Even without this service, data transmission is improved significantly with the BOCACELLcard-PC.

The BOCACELLcard-PC extends the capabilities of personal computers by communicating with other computers via the circuit-switched cellular network or PSTN. You can now extend your communications capability beyond landline connections to wherever cellular service is available, communicating “wirelessly” using data, or FAX in both send and receive modes.

This manual explains how to use the BOCACELLcard-PC when connected to the cellular network through a cellular phone. It provides an introduction to the issues dealing with transmitting data over cellular.

## Section Two: Installation

### 2.1 Introduction

This section is a guide for connecting and operating the BOCACELLcard-PC. This section covers the following: Super Client Drive Installation, Setting the Default Cellphone, Installing the Cellphone Cable, and Initializing the modem.

#### 2.1.1 Super Client Driver Installation

The following two files are found in the \ENABLER subdirectory on the included driver diskette. If needed, they are required for both cellular and land-line connection.

APEXDFM.EXE	Super Client driver
APEXDFM.SYS	Used as an enabler only (it should not be used with any existing socket services)

APEXDFM.EXE is a super client driver used to set up the operational environment for different PCMCIA modem products. APEXDFM.EXE is implemented as a TSR (terminate-and-stay-resident program) if any card and socket services are loaded in your CONFIG.SYS file.

**If card and socket services are present on your system, and the modem is configured by card and socket services with an acceptable COM and IRQ settings, the enabler is not necessary.**

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**If card and socket services are NOT present,** APEXDFM.EXE can be used as either an “enabler” (sets up the modem, but does not stay in memory), or a TSR. The program can be run from either a DOS prompt, or placed in your AUTOEXEC.BAT file to be loaded whenever your system is started. You can specify configuration parameters via command line, otherwise APEXDFM uses its default parameters. The following list of options may be used to modify the driver command line:

**Example: C:\APEXDFM -KA -P2 -MD000 -B**

where:

-KA = slot A

-P32 = COM2

-MD000 = base memory address D000

-B = beep

-K [a,b,c,d]: select socket a or socket b (default is a).

-P [1..4]: select COM1 to COM4 (default is COM2)

-I [3,4]: select interrupt number (default is IRQ3)

-M [c8-df]: select base memory address (default is D000)

-B: beep for successful operation (default is no beep)

-T: TSR and monitor card events (default is no TSR when no card service found; when card services found, APEXDFM is always a TSR).

-N: omit check CIS, use default register offset 0200h (default is CIS)

-D: debug mode (default is no debug messages displayed)

-H: display help information

APEXDFM.SYS can be used in place of APEXDFM.EXE and can be inserted in your CONFIG.SYS. It features the same options, but requires a “/” instead of “-”.

### 2.1.2 Setting the Default Cellphone Type

After installing and verifying that your modem is operational, you must set the cellphone type in the modem firmware.

The default value is # '1,' Motorola MicroTac Series & Micro Digital Lite. If you are using another phone and would like to change this default value, follow the instructions below.

Enter the terminal mode of your communications software and issue the command **AT\*AL** to list the currently supported cellphone drivers in the modem. By issuing the command **AT\*ACn** and using the value of 'n' in the chart below or from the list you displayed from the command above, you can change your default cellphone type. This value will be saved in a register, and need not be entered again unless the cellphone changes.

Command:     **AT\*ACn**  
                  (where 'n' is the value in the chart below)

Value of 'n'	Cellphone family
1	Motorola MicroTAC & Micro Digital Lite (DEFAULT)
2	OKI 900, 910, AT&T 3710, 3730
3	OKI 1145, 1150, AT&T 3760
4	NEC P110, P120, P180, AT&T 3610 International Only
5	NEC P200, P201 ,P300, P301
6	Ericsson/GE CT-700

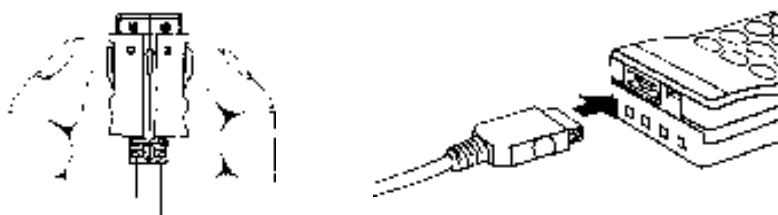
If your cellular phone is not listed, consult the README.TXT file for instructions on updating drivers for your modem.



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### 2.1.3 Installing the Cellphone Cable

The cellular telephone connects to the modem with a cable designed specifically for each cellular phone model number listed in the previous section. The “modem” end of the cable, which is the same for all cables (see below), is released and inserted by compressing spring clips when connecting and disconnecting.



#### *BOCACELLcard-PC Data/FAX modem cellphone specific cable*

The “cellphone” end of the cable is specific for the particular cellphone you have selected.

### 2.1.4 Initializing the BOCACELLcard-PC

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**NOTE: With a standard Landline cable attached or no cable at all, the modem is initialized for Landline operation (default). When the modem detects the cellphone cable attached to the modem, the modem is initialized by the currently selected cellphone driver.**

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During initialization, the modem senses whether the cellphone cable is attached. If there is a cellphone attached, the following happens:

1. The currently defaulted cellphone driver is activated.
2. User profile '2', which has been tailored for cellular data, is activated.

Thus, switching cables determines whether the modem will auto-configure for Cellular or Public Switched Telephone Network (PSTN) (Landline) operation. If the modem does not sense a cellphone cable, at any time, the cellphone driver is unloaded, and either User Profile '0', '1' or '2' (depending on the &Yn setting), is activated. The modem is then configured for Landline use as defined in the Modem Command Reference Guide.

## 2.2 Operation

### 2.2.1 Installing the BOCACELLcard-PC in the Computer

For proper connection between the modem and the cellphone, follow the procedure outlined below:

1. Insert the modem in the computer and confirm that the system recognizes it.
2. Attach the cable to both the modem and the cellphone and power on the computer with the modem installed.
3. Position the cellphone properly as shown here.



4. During operation the cellphone should be positioned upright, for the best reception and transmission. Power on the cellphone. Issue a test command as follows. AT+I3 identifies modem type, revision number and cellular phone driver, currently loaded.

A sample message returned from the AT+I3 command would be:

```
DATA FAX MODEM V.32bis REV 1.6-4-B 1/31/95  
CELLULAR DRIVER: MOTOROLA MICROTAC, MICRODIGITAL LITE  
Rev 1.5-0 V1.600-CP39F
```

### 2.2.2 User Profile for Cellular Operation

The BOCACELLcard-PC provides non-volatile memory for permanent storage of custom configurations. Three different configurations may be stored as profile 0, 1 and profile 2. The default profile for cellular operation is profile '2' which is a copy of the factory profile '2'. This profile is loaded when a cellphone cable is detected by the modem during initialization.

You may display the active profile and user profiles '0' and '1' by issuing the AT+V command. If the modem is in cellular mode, the active profile will be user profile '2'.

## **2.3 Optimizing the Cellphone for Data/FAX Operation**

To maximize performance of your modem, you may need to change some settings in your cellphone. Check with your cellphone manual to see if the following functions are available for change:

- Continuous DTMF Tones set ON
- Microphone Volume set to high
- Minute Minder set to OFF to not generate a Beep every minute of use

## **2.4 Loading the Cellular Configuration**

### **2.4.1 Loading the Active Profile**

If a cellphone cable is not detected upon power-up of the modem, the cellular modem will automatically load the standard default profile (profile 0) or the value of the &Yn command last saved. Alternatively, upon detecting a cellphone cable, the modem automatically will load a customized factory profile (profile '2') for cellular operation.

### 2.4.2 Special Dialing Commands

No special commands are needed to place or answer calls with the cellular modem. Let your communications software set the modem to an answer mode. The same AT commands (or communications software routines) employed for Landline communications may be used. The Modem Command Reference Guide you received with the modem contains complete information about modem functions and commands.

### 2.4.3 Cellular Antenna

Initial connection processing and speed/protocol negotiation are the most delicate stages of the communications session. Improper antenna placement can produce a weak or poor-quality cellular signal that can hinder the success of the connection process.

While a weak signal may indicate poor quality, the cellular telephone signal strength indicator is not a direct quality indicator. Excessive noise and/or general difficulty in connecting or obtaining a protocol connection with the host modem may indicate cellular signal quality that is inadequate for data communications.

## 2.4.4 Special Considerations

Cellular data transfer while moving (e.g. while walking or traveling in a moving vehicle) adds complexity to the cellular communications process. In some circumstances, success rates may be lower than for stationary cellular data transfer. Do not attempt to transfer data while moving before mastering stationery transmission. **Never use your cellular communications system while operating a moving vehicle.**

## 2.5 The Cellular Network

### 2.5.1 Carrier Coverage

The coverage from the 'A' side or 'B' side carrier could be considerably different in different locations. It is suggested that the phone being used for data or FAX operation support both carriers and can be switched as needed.

### 2.5.2 Hand-offs

Cellular systems are designed so that a phone call can be initiated while driving in one cell and continued no matter how many cells are driven through. The transfer to a new cell, known as a hand-off, is designed to be transparent. You may hear only a slight "click" on the line as a hand-off takes place. During a cellular data transmission, such a "click" could cause problems. Hand-offs can occur even in a static situation without any apparent reason. A large truck passing by can cause the system to connect you with another cell within the same site.

### 2.5.3 Location

As with any wireless transmission, the location of both the transmitter and the receiver will condition the reception. Multipath or signal images may hinder the performance of a connection. Moving just a few feet one way or another may make a significant difference.

### 2.5.4 Signal Strength Meter on Cellphone

The meter on the cellphone only indicates the signal strength being received at the cellphone. This does give you a relative idea of how strong the signal is from the cellsite but does not indicate whether your cellphone's signal is strong enough to transmit to that site. In other words, your cellphone can hear the station but the station may not hear your phone. Typical cell sites transmit at 40db with high gain directional antenna, while hand-held cellphones use .6db with omni-directional antenna.

### 2.5.5 Shielding

Many factors contribute to the ability to transmit successfully from any one site. As referred to above, the location, your signal strength and the path to the cellsite can be compromised by many issues. The signal might be shielded by the steel and concrete in your building, by reflective foil put on windows to protect against the sun, and by Electro-Magnetic Interference from other electronic equipment. Power generators and power lines also can make transmission difficult.

### **2.5.6 Power**

Battery condition on both the notebook and the cellphone can affect the performance of the operation. This of course is true for the notebook by itself. Maintain and condition all of the batteries in the system.

### **2.5.7 Fast Busy**

A fast busy is the tone heard on a cellular phone when the nearest cellsite has reached its capacity of active cells. This implies that the cellsite is busy, not the number dialed.

## **2.6 Preparing for a Data/FAX session**

Carry a cellphone activated with numbers from both carriers in a service area. A dual NAM phone will provide coverage and better performance if you can change carriers on the fly. Make sure you know how to program the phone to change easily from the 'A' side carrier to the 'B' side.

Make sure all of the batteries you carry are fully charged and that you have a charged spare. Feel comfortable with the applications you are going to use. Have all phones numbers installed before you start.

Be aware of the location and environment you are in before starting a session. If you notice you are deep inside a concrete and steel building, try and move to a different area, either to an outside wall or outside altogether. If the windows are coated with a reflective material, try to move.



**Remember to turn the cellphone on *last* after the notebook and the modem have been powered up.** Generally, the cellphone needs to detect the modem rather than the modem needing to detect the cellphone.

Try to control the cellphone functions from the notebook applications such as hanging up if the connection gets locked.

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**NOTE: Included with your BOCACELLcard-PC is a comprehensive modem AT command reference, which has either been printed, or placed on the driver diskette in text file format (.TXT). You may use the DOS edit command to view or print this text file.**

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## Section Three: Troubleshooting

The BOCACELLcard-PC has been designed for trouble-free operation and optimum performance. This section provides instructions and suggestions to help ensure smooth operation under a variety of operating conditions.

### Error Conditions

If the cursor freezes after you enter one or more AT commands:

The modem and computer are not communicating with each other.

Exit your application and reboot the system. You can verify that the enabler and/or card & socket services acknowledge the modem when you hear the customary two beeps during bootup or when inserting the modem.

If you do not get a response to any command:

- The power is off to one or more devices.
- Make sure that the cellular telephone and computer are turned on.
  
- The cable is not seated properly on one or both ends.
- Check all of the cable connections.

For the following four (4) possible conditions occurring upon responding to an incoming call through your cellular telephone:

1. The modem fails to detect all rings,
2. All rings are not indicated on your terminal display,
3. The cellular telephone continues to ring while carrier tones are heard from your modem or computer speaker,
4. The modem carrier tones sound, but the modem fails to connect.

Proceed as follows:

1. Abort the attempted call and reset the modem.
2. Ensure that the cellphone is powered on AFTER the modem and computer. If in doubt, turn the cellphone off and then back on again.
3. Make sure your software has set the auto-answer mode on with the command `ATS0=1`.
4. You may have to adjust the maximum transmit speed by using the `%B (V.32bis)` or `+MS (V.34 only)` commands.

Two cellular connection error codes differ from those encountered with Landline error codes:

**NO DIALTONE and NO CARRIER**

Each of these error result codes is discussed below:

**NO DIALTONE:** The modem is unable to communicate with the cellular telephone. This may be caused by one of the following: The cable is not seated properly. Check all of the cable connections. The modem is not detecting the presence of the cellular cable. Check or re-seat all cable connections. Cycle power to the cellphone. The incorrect cellular driver is active. Check by using the AT+I3 command.

**NO CARRIER OUT OF SERVICE AREA:** The modem is unable to process commands. The cause may be one of the following:

1. If you abort a call after dialing and before a connect is received
2. Antenna not properly installed.

## Appendix A: Technical Specifications

**Modem Data Rate:** MV.34PC: 28.8K, 26.4K, 24K, 21.6K, 19.2K, 16.8K 14.4K, 12K, 9600, 7200, 4800, 2400, 1200, or 300bps

M144PC: 14.4K, 12K, 9600, 7200, 4800, 2400, 1200, or 300bps

**Fax Data Rate:** 14.4K, 12K, 9600, 7200, 4800, 2400bps

**Compatibility:** **Modem Modulation Protocols**

**CCITT/ITU-TSS:** V.34 (28.8Kbps; MV.34PC)  
V.32bis, V.32, V.22bis (2400bps), V.22 (1200bps)

**Bell:** Bell 212A (1200bps), Bell 103 (300bps)

**Fax Modulation Protocols CCITT/ITU-TSS:**

V.17 (14.4Kbps) transmit/receive

V.29 (9600/7200bps) transmit/receive

V.27 ter (4800/2400bps) transmit/receive

V.21 channel 2 (300bps) transmit/receive

EIA-578 Service Class 1 commands

**V.42/MNP2-4 and V.42bis/MNP5 support**

**Diagnostics:** • Automatic power-on self-test.

**Physical and Electrical Characteristics:**• Size: 2.13"x3.37"x.197"

- Weight: 1.12oz.
- Switchless configuration for COM1 through COM4
- PCMCIA-compliant (version 2.0)/68-pin, Type II, release 2.0
- PCMCIA design intended for notebook or laptop computers running MS-DOS.

**Operating Temperature Requirements:**

Dry Bulb Temperature : 10-40° C (50-104° F)

Relative Humidity: 8-80%

Storage: 1-60° C (33.8-140° F)

## Appendix B: Cellular Phone Cable Option

The BOCACELLcard-PC was developed as a transparent means of transmitting data over cellular with a variety of cellular phones. The only items that change from phone to phone are the interface cable and the driver. All phone-specific coding is embedded within the modem's firmware. At this time the following cellular phone brands and models are supported; call our Technical Support to order any of the following optional cellular cables.

<b>Cellular Phone Model Numbers</b>	<b>Boca cable P/N</b>
Ericsson AH200, AH300 Ericsson Digital DH300, DH3000 GE CT500, CT700	XCER-C1
NEC P110, P120, P180 AT&T 3610	XCNEC1X
NEC P200, P201, P300, P301	XCNEC23
NEC P400, P401, P600, P601	XCNEC46
OKI 900, 910 AT&T 3710, 3730	XCOKI9X
OKI 1145, 1150 AT&T 3760	XCOKI11
Mitsubishi 3500, 4000 Diamond Tel 20X, 22X Series	XCMITSU
Fujitsu PCX	XCFUJIT
Motorola MicroTAC & Micro Digital Lite	XCMMTDL

## Appendix C: Elements of the Cellular Telephone System

The cellular telephone network is an excellent wireless extension of the Landline telephone system. Two cellular service providers offer cellular service in each of the Cellular Geographic Coverage Areas (CGSA) available nationwide. Unique conditions within these service areas affect the process of cellular data communications. This section describes the dynamics of the cellular telephone network.

### Cells

A Cellular Geographic Coverage Area (CGSA) consists of many low-power transceivers called cells. Each individual cell accommodates a fixed number of frequencies or channels (similar to circuits in the Landline telephone system). A computerized central Mobile Telephone Switching Office (MTSO) controls the cells in a service area.

Small metropolitan areas of 50,000 to 100,000 people typically have only a few cells. Large cities with over a million people may have more than 100 cells. As the number of users within a service area grows, the cellular service provider splits existing cells into smaller cells, each handling a certain number of assigned frequencies. In this way, the number of subscribers can continue to grow with the addition of new cells.

## Cell-Site Hand-off

Near the center of the geographic area covered by a cell is a cellular tower and the location of the cell transceiver (cell site). Typically, the cellular tower and equipment in a cell provide the signal for calls within that cell. As the distance between the signal tower increases, signal strength diminishes and calls tend to become “noisy.”

Before the signal is completely lost, the MTSO hands the call off to another cell. During a hand-off, the Mobile Telephone Switching Office (MTSO) instructs a neighboring cell to begin transmitting on newly assigned frequencies, advises the original cell site to stop transmitting, and tells the cellular telephone to change its frequencies to those used by the new cell. During this period of MTSO instructions, the cellular telephone call breaks momentarily (0.2 to 1.2 seconds).

Hand-offs frequently happen during vehicular movement. Additionally, the MTSO also commonly hands off stationary calls when there is heavy traffic moving in and out of a cell. This is called a directed hand-off. Stationary cellular telephone users may experience multiple directed hand-offs within any given minute if they are located near a busy freeway or other congested area.

Because hand-offs are brief, voice users are often unaware of the momentary signal loss. But data communications can suffer during a hand-off to the extent that information loss can occur during the signal dropout period.



## Noise

Modems need an acceptably high signal-to-noise ratio to operate successfully. Under weak signal conditions, the modem is more likely to detect ambient system noise and to either interpret the noise as data (resulting in data corruption) or to drop the connection entirely.

## System Coverage

Cellular service is currently available in most metropolitan areas throughout the United States. Information regarding coverage planned for smaller urban and rural areas may be obtained from cellular service providers.

Within current cellular service areas, coverage is ideally provided by a system of contiguous cells which assure a seamless area of quality coverage. As any cellular service area grows, cell-site management becomes complex. In some service areas, complicated geography and traffic patterns degrade signal quality (create system holes) to the extent that calls either cannot be initiated or drop out in progress. If data transmission in progress is terminated as a result of signal drop-out, re-transmission of the entire file may be required.

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**WARNING: As can be seen from the above discussion, various factors can create occasional noise and coverage holes in the cellular environment. As a result, the total accuracy of data transferred on the cellular telephone network cannot be guaranteed.**

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## Improving Cellular Performance

Under most circumstances, the best performance will be obtained when the cellular telephone signal-strength indicator displays the highest value. To achieve the best performance, ensure that the maximum power is supplied to the cellular telephone and use a high quality antenna. A high-gain antenna may improve signal reception under some conditions (e.g. fringe area).

Cellular service providers can provide additional information regarding the quality and/or special antenna requirements for different cellular conditions.

## Dialing Procedures Using Cellular Service

Dialing procedures are much the same for cellular and Landline telephones.

**To call a local number from the “home” cellular service area:**

Simply dial the number, using no area code.

**To call a local number while “roaming” (outside the home subscription area):**

Dial the number preceded by the area code. (Preceding the number by 1 is not necessary). For example, a New York resident on a business trip in Chicago can call a local Chicago number such as 555-1234 by dialing 708-555-1234.

**To dial a long distance phone number from an area outside a home cellular service area:**

Use 1+ dialing only if permitted by the service provider in the “roaming” area.

Use 0+ dialing with a credit card number exactly as on the Landline system.

## Appendix D: FCC Compliance

### Telephone Company Requirements

The following regulations apply to modems used within the United States and Canada.

#### FCC Regulations

The FCC has established rules that permit this device to be directly connected to the telephone network, using a standardized jack. Do not use this equipment on a party line or coin line.

Malfunctioning equipment may cause damage to the telephone network. If this device is not functioning properly, disconnect it until the problem has been determined and the device has been repaired. Otherwise, the telephone company may disconnect service temporarily.

If you encounter any problems with your telephone after installing any new device, disconnect it from the telephone line to see if the device is the source of the problem.

The telephone company may make changes to its technical operations and procedures. If such changes affect the compatibility or use of this device, the telephone company is required to provide adequate notice of the changes.

### Phone Company Requests

If the telephone company requests information about the equipment connected to their lines, inform them of:

1. The telephone number to which the device is connected.
2. The ringer equivalence number (REN), which is found on the FCC sticker attached to the device. The REN determines how many devices may be connected to the same telephone line. If too many devices are

attached, they may not ring properly. In most areas, the sum of the ringer equivalence numbers of all devices connected to the same line should not exceed five.

3. The USOC telephone jack required (RJ11, RJ41, or RJ45).
4. The FCC registration number, which is found on the FCC sticker attached to the device.

## Interference

**WARNING: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient the receiving antenna.
- Relocate the receiving antenna and/or equipment away from the modem.

- Relocate the modem away from the receiving antenna and/or equipment.
- Plug the modem into a different outlet so that the modem and the receiving equipment are on different electrical circuits.

If none of these actions resolves the problem, consult your distributor or an experienced radio/television technician for additional suggestions.

## FCC Rules and Regulations - Part 68

This equipment complies with Part 68 of the FCC Rules. On the back of the card is a label that contains, among other information, the FCC Registration Number and Ringer Equivalency Number (REN) for this equipment. You must, upon request, provide this information to your telephone company.

The REN is useful to determine the quantity of devices you may connect to your telephone line and still have all those devices ring when your telephone number is called. In most but not all areas, the sum of the RENs of all devices connected to one line should not exceed five (5.0). To be certain of the number of devices you may connect to your line, as determined by the REN, you should contact your local telephone company to determine the maximum REN for your calling area.

If your telephone equipment causes harm to the telephone network, the telephone company may discontinue your service temporarily. If possible, they will notify you in advance. But if advance notice is not practical, you will be notified as soon as possible. You will be informed of your right to file a complaint with the FCC.

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

If you experience trouble with this telephone equipment, please contact telephone company, for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been corrected or until you are sure that the equipment is not malfunctioning.

There are no user serviceable parts contained in this equipment.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

## Shielded Cables

This product has been tested and found to comply with the FCC limits for a Class B computing device. The testing was done with the use of shielded cables. The use of any cable other than the shielded type will allow your system to emit more radio frequency interference than the FCC limits, thereby increasing the likelihood of interference. Therefore, in order to comply with the FCC regulations, it is necessary that you use good quality shielded cables with your installation.

## Canadian Requirements

The Industry 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 their local telecommunications company permits connecting it to their facilities. The equipment also must be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with single line, individual service may be extended by means of a 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 or alterations made by the user 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.

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**CAUTION: Users should not attempt to make such connections themselves, but should contact electric inspection authorities or electricians, as appropriate.**

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To prevent overloading, a Load Number (LN) has been assigned to each terminal device to denote the percentage of the total load to be connected to a telephone loop which is used by the device. The termination on a loop may consist of any combination of devices subject only to the requirement that the total number of devices not exceed one hundred.

## Canadian EMI Limits

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Industry Canada Department.



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## Appendix E: Warranty Information

### Limited Warranty

Boca Research, Inc. (BRI) warrants to the original buyer of this BRI product that the hardware is free of defects in materials and workmanship for a period of five (5) years from the date of purchase from BRI or an authorized dealer ("the Warranty Period"). Should the product fail to be in working order at any time during the five-year period, BRI, will at its option, repair or replace this product as described below, provided that in BRI's sole determination the part or product has not been abused, misused, repaired, or modified.

All products will be serviced and returned via ground at no charge to customers DURING the first year of service.

All returns for limited warranty service require a Return Merchandise Authorization (RMA). All customers are required to demonstrate proof of purchase when requesting an RMA. The period of warranty commences on the date of purchase. A dated copy of the sales slip must be included with the returned merchandise.

Products which require Limited Warranty service during the warranty period should be delivered to BRI at the address in the Appendix (Servicing Your Boca Product) with proof of purchase, copy of canceled check (if any), and the Return Merchandise Authorization (RMA) number provided by BRI Technical Support. Refer to the Appendix in this manual. Replacement parts or complete products will be furnished on an exchange basis only. Replaced parts and/or products become the property of BRI.

If the returned product is sent by mail, the purchaser agrees to prepay shipping charges, insure the product or assume the risk of loss or damage which may occur in transit, and to use a shipping container equivalent to the original packaging. BRI does not make any warranties in respect to the product, either expressed or implied, including no implied warranties of merchantability or fitness for a particular purpose, except as expressly provided in this agreement. If any labor, repair, or parts replacement is required because of accident, negligence, misuse, theft, vandalism, fire, water or other peril; or because of conditions outside of specifications, including, but not limited to, electrical power, temperature, humidity or dust; or by moving, repair relocation, or alteration not performed by BRI, or by any other cause other than normal use, the warranty and maintenance obligations provided herein shall not apply.

**BRI SHALL NOT BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES OR FOR LOSS, DAMAGE, OR EXPENSE DIRECTLY OR INDIRECTLY ARISING FROM CUSTOMER'S USE OF OR INABILITY TO USE THE EQUIPMENT EITHER SEPARATELY OR IN COMBINATION WITH OTHER EQUIPMENT, OR FOR PERSONAL INJURY OR LOSS OR DESTRUCTION OF OTHER PROPERTY, OR FROM ANY OTHER CAUSE.**

This warranty shall not be applicable to the extent that any provision of this warranty is prohibited by any Federal, state, or municipal law which cannot be preempted. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

## Appendix F: Servicing Your Boca Product

If your BOCACELLcard-PC requires service, first contact the authorized dealer from whom you purchased the product. If the dealer is unable to assist you, and you must contact Boca Research, Inc., please follow the instructions below.

Our electronic BBS is available 24 hours a day at (407) 241-1601 and will support data transmission speeds up to 28.8Kbps with settings of N, 8, 1. Once your modem is functional, the BBS may be helpful (especially during off hours) if you have a question about product settings, or if you wish to download special software or utilities.

If the Troubleshooting section (section Four) did not resolve your problem, you may call our technical support staff for assistance. If you haven't referred to the Troubleshooting section, do so now.

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**NOTE: CALLING TECHNICAL SUPPORT WITHOUT COMPLETE AND ACCURATE INFORMATION CONCERNING YOUR PROBLEM MAY BE BOTH TIME-CONSUMING AND FRUSTRATING FOR YOU.**

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1. When calling Boca Research Technical Support, have the following information available:

- **Board or external unit name and part number**
- **Computer manufacturer**
- **Computer Model**
- **Peripherals in system**
- **Operating system and version**

If you suspect a problem with a specific program or software package, make note of the name, version or release number, and manufacturer of the software.

2. Call our Technical Support Department between the hours of 8:00 a.m. and 6:30 p.m. EST Monday through Friday at (407) 241-8088. A technician will be available to discuss the problem(s) you are experiencing.

**If factory service is required, you will be given a Return Merchandise Authorization (RMA) number. Please place this number on the outside of the package when you return the item(s) for service and reference it on any correspondence included in the package. Boca Research, Inc. will return any product which is not accompanied by an RMA number.**

3. Refer to the Warranty Statement if the product is covered under the five-year Boca Research, Inc. Limited Warranty.
4. Certain parts will not be covered under the Boca Research, Inc. Limited Warranty. Dealer installed parts are warranted by the dealer. Parts which you have installed yourself are covered only by the supplier's warranties. In these cases, Boca Research, Inc. can identify which parts are defective, but will not replace such parts until specific written authorization is received from you. The cost of parts and labor involved in making such repairs will be billed to you C.O.D.
5. When sending the BOCACELLCARD-PC to Boca Research, Inc. for repairs, please be sure to include:
  - the BOCACELLCARD-PC (card only)
  - copy of the original invoice
  - your return street address (for UPS purposes)
  - phone number
  - the RMA number mentioned above

Package the product securely in a container equivalent to the original packaging, and insure the package to protect against loss or damage during transit. Shipping charges must be prepaid; C.O.D. shipments will not be accepted. Please use the address below for all correspondence:

**Boca Research, Inc.**  
**RMA Department - RMA # \_\_\_\_\_**  
**1601 Clint Moore Road**  
**Boca Raton, FL 33487-2841**

6. If the repairs performed on your product were covered by the warranty, Boca Research, Inc. will return it prepaid via UPS.

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