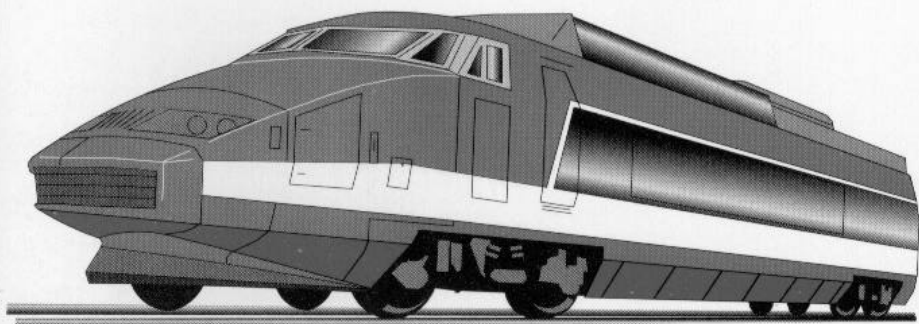


# On-Line *EXPRESS* 144™



Internal Data & Fax Modem for Windows™

**Product Code: M144AI**



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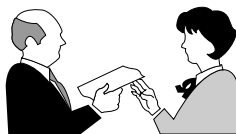
## Before You Begin your Installation

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.***



### *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.

---



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



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



***Technical  
 Support Fax***  
**407-997-0918**



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



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

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.

***On-Line Support!***  
***CompuServe: GO BOCA***  
***Internet:***

***email: support@boca.org***  
***on the World-wide WEB:***  
***http://www.boca.org***



## ***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.

---

# Contents

<b>Section One: <i>EXPRESS</i> Install .....</b>	<b>6</b>
<b>Section Two: Product Overview .....</b>	<b>16</b>
<b>Section Three: Troubleshooting.....</b>	<b>17</b>
<b>Appendix A: Technical Specifications.....</b>	<b>20</b>
<b>Appendix B: Compliance Information .....</b>	<b>22</b>
<b>Appendix C: AT Command Reference .....</b>	<b>25</b>
<b>Basic AT Commands .....</b>	<b>25</b>
<b>Extended AT Commands .....</b>	<b>27</b>
<b>MNP Operation .....</b>	<b>29</b>
<b>AT Commands for V.42/V.42bis .....</b>	<b>29</b>
<b>S-Registers.....</b>	<b>30</b>
<b>Result Codes .....</b>	<b>32</b>
<b>Appendix D: Manual Driver Installation .....</b>	<b>33</b>
<b>Appendix E: Running OLESET .....</b>	<b>34</b>
<b>Appendix F: Servicing Your Boca Product.....</b>	<b>36</b>
<b>Appendix G: Warranty Information .....</b>	<b>38</b>

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**Publication Date:** November, 1995  
Printed in the U.S.A.

M144AI.PM5

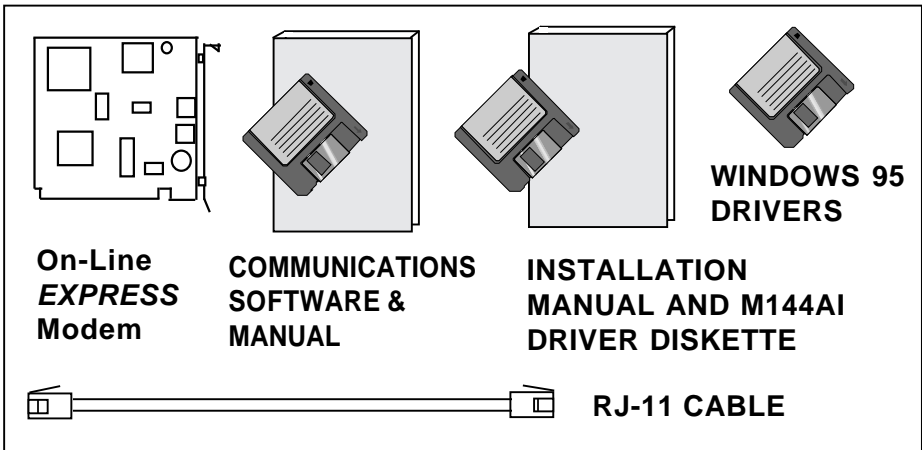
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# *EXPRESS* Install

Congratulations on the purchase of your On-Line *EXPRESS* 14.4 (M144AI) from Boca Research, Inc., a leader in high-tech computer enhancement products. Get started with the streamlined *EXPRESS* Install provided here. The balance of the manual contains a product overview, troubleshooting, technical specifications, and a comprehensive AT command reference.

## Package Contents

Make sure you have received the following items:

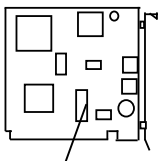


If any items are missing or appear damaged, contact your dealer for assistance. See adjacent page for installation overview; for more detailed installation instructions, refer to pages 9-15.

## Installation Overview for Windows 3.x Users



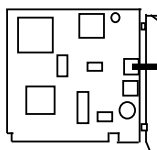
**RUN COMCHECK;  
INSTALL M144AI  
SOFTWARE DRIVER.**



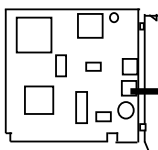
**CHANGE JUMPERS  
(if necessary).**



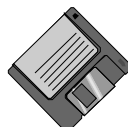
**INSTALL CARD in 8-  
or 16-BIT SLOT.**



**CONNECT SUPPLIED RJ-11  
CABLE BETWEEN LINE JACK  
AND WALL JACK.**



**CONNECT EXISTING PHONE  
CABLE BETWEEN PHONE  
JACK AND PHONE  
(OPTIONAL).**

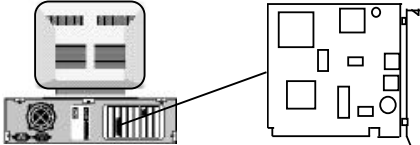


**RUN COMCHECK  
AGAIN TO  
CONTINUE.**

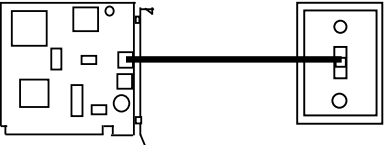
# Installation Overview for Windows 95 Users




**RUN WIN 95  
DRIVERS.**



**INSTALL CARD in 8- or 16-BIT SLOT.**



**CONNECT SUPPLIED  
RJ-11 CABLE  
BETWEEN LINE JACK  
AND WALL JACK.**



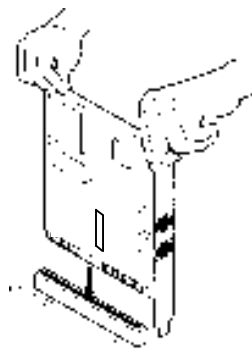
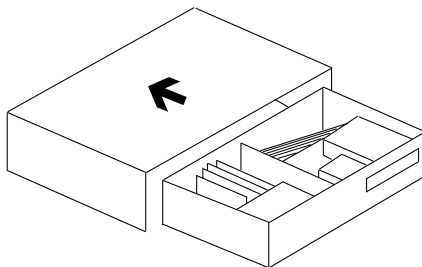
**CONNECT EXISTING PHONE  
CABLE BETWEEN PHONE  
JACK AND PHONE  
(OPTIONAL).**



---

## Installing the On-Line *EXPRESS* Modem

1. Before installing the modem in your computer, Windows 3.x users should run COMCHECK (Windows 95 users go to page 12). Insert the M144AI driver diskette. From the DOS prompt, type: A:\COMCHECK or B:\COMCHECK.
2. Select “I have not yet installed the M144AI”.
3. Remove the modem from its anti-static bag, handling it by its edges and its retaining bracket. Be careful not to touch the edge connector or any components on the card. Set the jumpers on the modem as instructed by COMCHECK.
4. Power off your computer and disconnect any attached devices and power cords.
5. Remove the computer’s cover and locate an available 8- or 16-bit expansion slot. Remove that expansion slot cover and save the screw..
6. Carefully insert the modem into the expansion slot you selected, applying pressure to the upper metal edge until it snaps into place.



7. Secure the modem into place by aligning its metal retaining bracket with the hole in the top edge of the system's rear panel. Fasten the metal bracket with the screw removed in step 5.
8. Replace the system cover, reconnect any detached devices and power cords, and power up your computer.

## Windows 3.x Users

(If you are a Windows 95 user, continue with *Connecting the Phone Line* below)

Run COMCHECK again and this time select "I have installed the M144AI and wish to continue". COMCHECK then starts Microsoft Windows and launches the setup program for you. Follow all on-screen instructions.

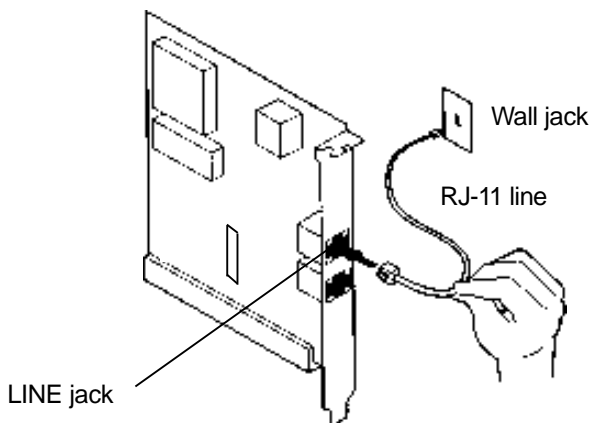
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***NOTE: If you do not have Microsoft Windows installed on your computer, COMCHECK starts the installation program for DOS. If you need to install drivers manually, go to Appendix D. If you need to change configuration settings for DOS, go to Appendix E.***

---

## Connecting the Phone Line

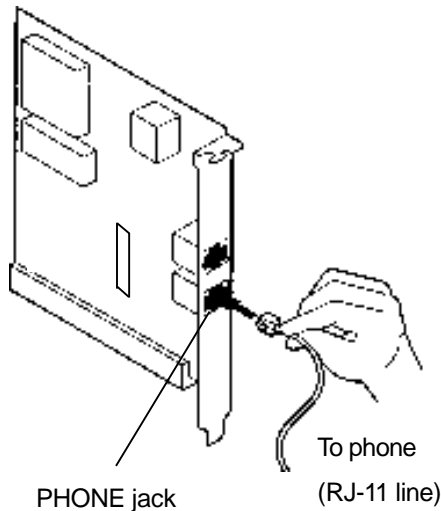
1. If you are in Windows, exit and turn off your computer.
2. Plug either end of the supplied RJ-11 telephone cable into the LINE jack on the modem. The LINE jack is the topmost jack on the modem.



3. If a phone is plugged into a wall jack, unplug the phone cable. Then plug the other end of the supplied modem cable into the telephone wall jack.

4. To continue using the phone, connect the phone cable into the phone jack on the modem board. Power your computer back on.

If you are a Windows 95 user, continue with next page, otherwise, continue with ***Testing the Connection*** on page 15.



## Windows 95 Users: START HERE!

**Follow these simple steps to install your On-Line Express Modem in minutes. (Do NOT run the COMCHECK utility which is provided for Windows 3.1 users).**

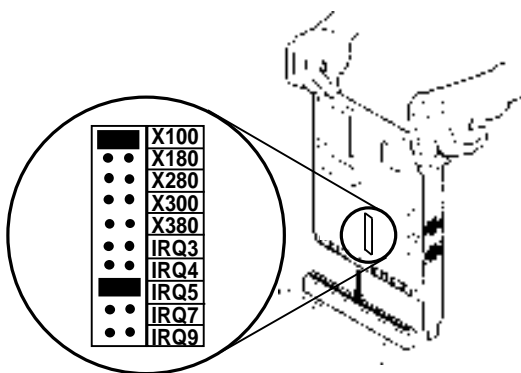
1. Turn on your computer and start Windows 95.
2. Insert the Windows 95 driver diskette in your 3 1/2" disk drive.
3. Double-click **My Computer** and double click on **Control panel**.
4. Double click on **Add New Hardware** to begin the installation, then select **Next**.
5. Select **No** (Do not let the **Hardware Wizard** auto detect) then select **Next**.
6. Scroll down and click on **Ports** (COM & LPT) then click on **Next**, then **Have Disk**.
7. Type in the letter of the drive where you have the disk installed (typically A:) and select **OK**.
8. Select **Next** to confirm you are installing the communications port.

9. Write down the listed Input/Output settings and Interrupt Request (IRQ) settings shown on the screen:

- Input/Output range\_\_\_\_\_ (indicates where to set the top jumper on the modem)
- Input/Output range\_\_\_\_\_ (indicates the COM port you will need in step 16)
- Interrupt Request\_\_\_\_\_ (indicates where to set the bottom jumper on the modem)
- Interrupt Request\_\_\_\_\_ (indicates the IRQ# for the COM port you will need in step 16)

10. To complete the driver installation, select **Next**, then **Finish**, then **Yes** to allow the system to shut down. Turn off the computer and remove the diskette.

11. Remove the modem from its anti-static bag and set the first plastic jumper on the pins that correspond with the first number in the range in step 9a, and the second jumper to the interrupt request number in step 9c.



12. Carefully remove the cover from your computer and locate any unused slot. Remove the metal slot cover plate on the back of the computer and install the On-Line Express modem in the slot.

13. Turn on the computer and double click on **My Computer**, then double click on **Control Panel**.

14. Double click on **Modems**.

a. **If there are no modems installed in your computer**, go continue with c.

b. **If there is a modem installed**, a Modem Properties screen is displayed. Select **Add...**

c. Make sure the option, “Don’t detect my modem; I will select it from a list” is checked.

Select **Next**.

15. Insert the disk back into the 3.5-inch drive, select **Have Disk** and then type the drive letter where you have the disk installed (typically A:) and select **OK**.

16. Select **Next** and then highlight the communication port you noted in step #9b. Here are the corresponding COM ports for the Input/Output addresses you noted in step #9b:

**03F8 - 03FF = COM1; use IRQ 4**      **02F8 - 02FF = COM2; use IRQ 3**  
**03E8 - 03EF = COM3; use IRQ 4**      **02E8 - 02EF = COM4; use IRQ 3**

17. Select **Next**, **Finish**, then **OK**. ***Congratulations! You have now successfully installed your modem.*** Now you are ready to use the Windows 95 communications software or the bundled software package.

## Testing the Connection

1. Check that you have made all connections and with your computer powered on, check for a dial tone on a phone set if one is connected.
2. If you do not have communications software already installed, you may install the software supplied with the On-Line EXPRESS. Refer to the diskettes and manual for installation instructions. After installing and starting your communications software, enter terminal mode.

---

***IMPORTANT: If you are not in terminal mode and you type AT commands at the DOS prompt, a "Bad Command or File Name" message will result.***

---

3. Type in **ATZ** followed by ENTER and the modem will respond with OK after a few seconds.
4. Type **ATH1** followed by ENTER and you should hear a dial tone. To adjust speaker volume, refer to your communications software or use the ATL command.
5. Type **ATH** followed by ENTER to put the modem "on-hook". This confirms that the modem has been successfully installed into your computer. Your modem is now ready for use. Continue now with your communications software and documentation. **Make sure your software is set to the same communications port assigned to your modem by COMCHECK.**

## Section Two: Product Overview

The *On-Line EXPRESS* modem by Boca Research combines high-speed data and fax capability for the Microsoft Windows environment. DOS capability is also provided. The *On-Line EXPRESS*, along with the supplied driver software, is designed to take advantage of your system's processor, thus eliminating the need for a standard on-board UART.

Your COM ports are assigned via the driver software. This innovative solution offers a low-cost communications alternative without compromising performance. The modem supports V.32bis which provides high-speed data transmission with V.42bis (error control) and MNP5 (data compression).

For additional information on features, supported protocols, and technical specifications, see Appendix A.



## Section Three: Troubleshooting

This section lists common problems that may be encountered and their possible solutions.

<b>SYMPTOM</b>	<b>POSSIBLE REMEDY</b>
<b>No dial tone.</b>	<ul style="list-style-type: none"><li>• Verify that you have cables plugged in correctly as instructed in Section Two.</li><li>• Connect a telephone set directly to the wall jack and check for a dial tone. If no dial tone is heard, the telephone line is not working. Contact the telephone company.</li><li>• Review software installation.</li></ul>
<b>Modem will not connect to another modem.</b>	<ul style="list-style-type: none"><li>• Check the connections between the modem and the computer, and the modem and the telephone line.</li><li>• Make sure the telephone jack is operational as described above.</li><li>• The telephone line may be in use at a different extension.</li><li>• Perhaps the number you have called does not reach a modem, or the remote modem may not be set up to respond.</li></ul>
<b>No response when you type in AT commands</b>	<ul style="list-style-type: none"><li>• There may be a conflicting port address. Re-configure the modem's I/O port address.</li></ul>

<b>SYMPTOM</b>	<b>POSSIBLE REMEDY</b>
<p><b>No response when you type in AT commands (contd)</b></p>	<ul style="list-style-type: none"> <li>• Verify that the communication software is set to the same communications port where your modem was assigned. Check IRQ settings on the modem.</li> <li>• Try typing AT&amp;F to reset the modem to its factory defaults.</li> </ul>
<p><b>AT commands not visible.</b></p>	<ul style="list-style-type: none"> <li>• Make sure the echo command is set to ON. Change to echo with the ATE command.</li> </ul>
<p><b>After data connection is established, data is displayed as garbled characters.</b></p>	<ul style="list-style-type: none"> <li>• Make sure the local (yours) and remote modem configurations are compatible.</li> <li>• Verify that both modems are operating with the same settings, speed, data, parity, and stop bits.</li> <li>• The software may not be set for correct terminal emulation. Configure software to correct type. ANSI terminal emulation is most commonly used.</li> <li>• Power down your system and re-run your communications software. Check software settings.</li> <li>• Exit the communications program and restart it.</li> </ul>
<p><b>The modem does not answer an incoming call.</b></p>	<ul style="list-style-type: none"> <li>• You may not have enabled auto-answer. Use your software to enable this function.</li> </ul>

<b>SYMPTOM</b>	<b>POSSIBLE REMEDY</b>
<b>The modem does not answer an incoming call (contd)</b>	<ul style="list-style-type: none"><li>• If you have an answering machine, it may be answering before the modem can. Turn the answering machine off, or, use the software to set auto-answer to respond in fewer rings than the answering machine.</li></ul>
<b>Modem disconnects while on-line.</b>	<ul style="list-style-type: none"><li>• Check for any loose connections.</li><li>• Re-try the connection by dialing the number several times. You may be experiencing line interference.</li><li>• An incoming call may have broken the connection if a call-waiting feature was enabled. Disable call-waiting and try again.</li></ul>
<b>I am having trouble getting my init string to work.</b>	<ul style="list-style-type: none"><li>• Init strings are primarily personal preferences. Use the most basic one that can get the job done.</li></ul>
<b>Connection Errors.</b>	<ul style="list-style-type: none"><li>• Try connecting at a lower speed (e.g., 9600 or 2400bps).</li><li>• Noisy/poor line conditions may prohibit connection. Have your phone company test your lines.</li><li>• Verify that the modem at the other end is up to date and compliant with current CCITT and Bell standards.</li></ul>

## Appendix A: Technical Specifications

**Modem Data Rate:** 14.4K, 12K, 9600, 7200, 4800, 2400, 1200, or 300bps.

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

**Protocol Compatibility:**

- Data protocols:  
CCITT/ITU-TSS: V.32bis: 14400, 12000, 7200  
CCITT/ITU-TSS: V.32: 9600, 4800  
CCITT/ITU-TSS: V.22bis: 2400  
CCITT/ITU-TSS: V.21: 300  
CCITT/ITU-TSS: V.23: 600/75, 1200/75  
Bell 212A: 1200  
Bell 103: 300
- Fax protocols:  
CCITT/ITU-TSS: V.17: 14400, 12000, 9600, 7200  
CCITT/ITU-TSS: V.29 9600, 7200  
CCITT/ITU-TSS: V.27ter 4800, 2400  
CCITT/ITU-TSS: V.21 Channel 2: 300
- V.42 error control (LAPM and MNP)
- V.42bis and MNP Class 5 data compression
- V.42 Appendix III
- V.32bis Auto rate fallback

**Diagnostics:**

- Local/remote digital and analog loopback.
- Automatic power-on self-test.

**Dimensions:** 4 1/4" x 4 1/8"

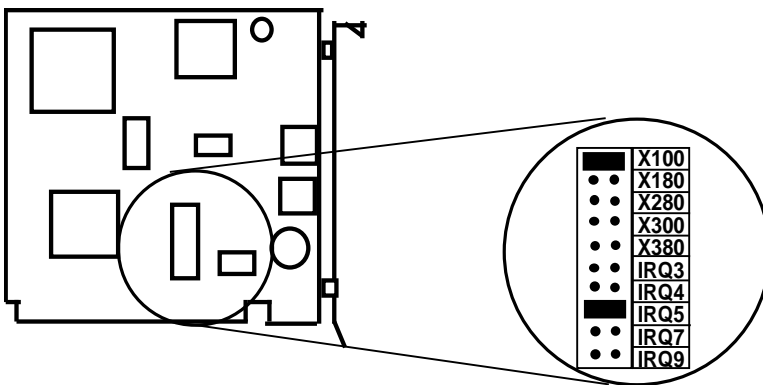
**Operating Temperature Requirements:**

Dry Bulb Temperature: 10-40° C (50-104° F)  
Relative Humidity: 8-80%  
Storage: 1-60° C (33.8-140° F)

## Communication Settings

The On-Line *EXPRESS* Modem can be configured as I/O hexadecimal port address X100, X180, X280, X300, or X380 and IRQ 3, 4, 5, 7, or 9. The default setting for the modem is I/O port address X100, using IRQ5. The modem also has software-assignable COM ports (using COM1, COM2, COM3, or COM4) and IRQs (IRQ3, 4, 5, 7, or 9).

**NOTE: The modem cannot share the same interrupt with any other device.**



**The default setting for the On-Line EXPRESS modem is X100/IRQ5.**

## Appendix B: Compliance Information

### FCC Statement:

“This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received including interference that may cause undesired operation.

### **THIS UNIT COMPLIES WITH FCC PART 68 AS OF DATE OF MANUFACTURE.**

This equipment has been tested and found to comply with the limits for a **Class B** digital device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed in accordance with the instructions, may cause harmful interference to radio communications. 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 or relocate the receiving antennae.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Note: This unit was tested with shielded cables on the peripheral devices. Shielded cables must be used with the unit to insure compliance.

Note: The manufacturer is not responsible for any radio or TV interference caused by unauthorized modifications to this equipment. Such modifications could void the user’s authority to operate the equipment.”

### ***Notification to the Telephone Company***

Notification to the telephone company is no longer required prior to connecting the registered equipment but upon request from the telephone company the user shall tell the telephone company which line

---

the equipment is connected to as well as the registration number and the ringer equivalence of the registered protective circuitry. In most, but not all areas, the sum of all RENs should be 5.0 or less. The FCC Registration number and Ringer Equivalence number are printed on the main chip in the center of the internal modem board, or on the underside of the external modem.

### ***Malfunction of the Equipment***

In the event that the MODEM should fail to operate properly, the customer shall disconnect the equipment from the telephone line to determine if it is the customer's equipment which is not working properly, or if the problem is with the MODEM, the user shall discontinue use until it is repaired. In the event service is needed the user should contact the vendor from whom you purchased the MODEM.

### ***Telephone Connection Requirements***

Except for telephone company-provided ringers, all connections to the telephone network shall be made through standard plugs and standard telephone company-provided jacks, or equivalent, in such a manner as to allow for easy and immediate disconnection of the terminal equipment. Standard jacks shall also be arranged that, if the plug connected thereto is withdrawn, no interference to the operation of the equipment at the customer's premises which remains connected to the telephone network, shall occur by reason of such withdrawal.

### ***Incidence of Harm***

Should terminal equipment or protective circuitry cause harm to the telephone network, the telephone company shall, where practical, notify the customer that temporary discontinuance of service may be required; however, where prior notices are not practical, the telephone company may temporarily discontinue service if such action is deemed reasonable in the circumstances. In the case of such temporary discontinuance, the telephone company shall promptly notify customers and will be given the right to bring a complaint to the FCC if they feel the disconnection is not warranted.

### ***Changes in Telephone Company Equipment or Facilities***

The telephone company may make changes in its communications facilities, equipment, operations, or procedures, where such action is reasonably required and proper in its business. Should any such changes render the customer's terminal equipment incompatible with the telephone company facilities, the customer shall

be given adequate notice to make modifications to maintain uninterrupted service.

## *General*

The FCC prohibits customer-provided terminal equipment be connected to party lines or to be used in conjunction with coin telephone service.

## *Installation*

The MODEM is equipped with a USOC RJ-11 standard miniature modular jack and is designed to plug directly into a modular jack.

## **DOC Compliance Statement (Canada)**

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

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. In some cases, the company's inside wiring associated with a single line individual service may be extended by means of 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 malfunction, may give the telecommunications company cause to request the user to disconnect the equipment.

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

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

The Load Number (LN) assigned to each terminal device denotes the percentage of the total load to be connected to a telephone loop which is used by the device to prevent overloading. The termination on a loop may consist of any combination of devices subject only to the requirement that the total of the load numbers of all the devices does not exceed 100. The Load number appears on the bracket of the On-Line EXPRESS Modem.



## Appendix C: Command Reference

### BASIC AT COMMANDS (default values are highlighted)

Command	Description
AT	Attention characters
ATA	Answer command
A/	Re-Execute last command

#### Dial Modifiers

Dial	Options	Description
ATD	none	Dial. (ATD followed by phone number)
ATDP	none	Pulse (rotary) dial. 10 pulses per second.
ATDT	none	Touch tone dial (DTMF).
ATDW	1-255sec	Wait for dial-tone. Default is 50 seconds.
ATD,	0-255sec	Pause. Default is 2 seconds.
ATD@	none	Wait for quiet answer.
ATD!	none	Initiate hook flash.
ATD;	none	Return to command state after dialing.

Command	Description
---------	-------------

#### Command Character Echo

ATE0	Disables echoing of the commands to the screen.
ATE1	<b>Enables echoing of the commands to the screen. (default)</b>

#### Switch Hook Control

ATH0	Instructs modem to go on-hook.
ATH1	Instructs modem to go off-hook.

#### Identification

ATI0	Displays the product identification code.
ATI1	Displays the checksum.

#### Speaker volume

ATL0,1	<b>Low volume.</b>
ATL2	<b>Medium volume. (default)</b>
ATL3	High volume.

## Speaker control

- ATM0 Disables the modem speaker.  
ATM1 **Turns speaker on until carrier has been detected. (default)**  
ATM2 Instructs the modem speaker to stay on all of the time.

## Return to on line state mode

- ATO Instructs the modem to exit on-line command mode and return to data mode.

## Mode responses

- ATQ0 **Enables result codes to be issued to the screen. (default)**  
ATQ1 Disables result codes to be issued to the screen.

## Read/Write S-register

- ATSn? Displays the value of S-register n.  
ATSN=x Sets the value of S-register n to x.

## Enable Tone Dialing

- ATT Configures the modem for touch-tone dialing. This is the modem's default setting.

## Result code format

- ATV0 Numeric format.  
ATV1 **Verbal format. (default)**

## Extended result codes

Controls the format of the extended results codes, as well as the operation of the Dial Tone and Busy Tone detection.

AT	Ext. Result Code	Dial Tone Detect	Busy Tone Detect
X0	Disable	Disable	Disable
X1	Enable	Disable	Disable
X2	Enable	Enable	Disable
X3	Enable	Disable	Enable
X4	<b>Enable</b>	<b>Enable</b>	<b>Enable (default)</b>

### Extended Result Codes

- Disabled:** Displays only the basic result coded OK, CONNECT, RING, NO CARRIER, ERROR.
- Enabled:** Displays the basic result coded, along with the Connect message and the modem's data rate, and an indication of the modem's error control and data compression operation.

### Dial Tone Detect

- Disabled:** The modem dials a call regardless of whether it detects a dial tone. The period of time the modem waits before dialing is specified.
- Enabled:** The modem dials only upon detection of a dial tone, and disconnects if a dial tone is not detected within 10 seconds.

### Busy Tone Detect

- Disabled:** The modem ignores any busy tones it receives.
- Enabled:** The modem monitors for busy tones.

### Reset and recall stored profile

**ATZ0** Loads saved configuration to active profile. If the modem is connected to the line, it is disconnected.

**+++** Escape characters. The escape characters are known as +++. They will switch from on-line mode to command mode while preserving the connection with the on line modem.

## Extended AT Commands

Command	Description
---------	-------------

### Line Signal Detect (aka Carrier Detect)

<b>AT&amp;C0</b>	Forces DCD signal to be on at all times.
<b>AT&amp;C1</b>	<b>Standard RS-232. Line Signal Detect turns on when remote modem's carrier signal is detected, and when signal is not detected. (default)</b>

## Data terminal ready (DTR) signal.

Signal from the computer to the modem indicating computer is connected and ready for operation.

- AT&D0** Ignore. Modem ignores the true status of the DTR and treats it as always on. This should only be used if your computer does not provide DTR to the modem (default).
- AT&D1** If the DTR signal is not detected while in on-line data mode, the modem enters command mode and remains connected.
- AT&D2** If the DTR signal is not detected while in on-line data mode, the modem disconnects.

## Load Factory Settings.

Forces all of the modem's factory-set configuration options to become active.

- AT&F0** Loads factory settings.

## Test and diagnostics

- AT&T0** Abort. Stops any test in progress.
- AT&T1** Local Analog Loop. This test verifies modem operation, as well as the connection between the modem and the computer. To work properly, the modem must be off-line.
- AT&T6** Remote Digital Loopback Test. This test verifies the integrity of the local modem, the communications link, and the remote modem. Any data entered at the local DTE is sent to and returned from the remote modem. To work properly, the modems must be on-line with error control disabled.

## View the Current Configuration Options

- AT&V0**

## Store user profile.

- AT&W0** Saves the current configuration of modem options to memory.

## MNP Operation

The On-Line *EXPRESS* Modem supports all of the preceding classes. The following AT Commands apply to the MNP protocol. Default values are highlighted.

Error Correction Operating Mode. Determines the type of error control used by the modem when sending or receiving data.

AT\N0	Buffer mode (no error control)
AT\N1	Direct mode (no error control or data buffering)
AT\N2	MNP or Disconnect mode. This mode attempts to connect using MNP2-4 error control procedures. If this fails, the modem disconnects. Also known as MNP Reliable Mode.
AT\N3	<b>V.42, MNP, or Buffer mode. The modem attempts to connect in V.42 error control mode. If this fails, the modem attempts to connect in MNP mode. If this fails, the modem connects in Buffer mode and continues operation. Also known as V.42/MNP Auto Reliable mode. (DEFAULT)</b>
AT\N4	V.42 or Disconnect mode. The modem attempts to connect in V.42 error control mode using longer timeout values for a reliable connection. If this fails, the call will be disconnected. This is also known as V.42 Reliable mode. To be used for cellular calls and noisy lines.

### Local Flow Control Selection

AT\Q	Local Flow Control
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## AT Commands for V.42/V.42bis

The following AT commands apply to the V.42/V.42bis protocol:

Compression Control. Determines whether or not modem will use data compression.

AT%C0	V.42bis/MNP5 disabled. No data compression.
AT%C1	<b>V.42bis/MNP enabled. Data compression for both sending and receiving data (default).</b>

## S-Registers

This section defines the purpose of the modem registers, and sequentially lists the registers and describes their functions. These registers affect various operating characteristics and allow you to obtain information about the modem, as well as test the modem. Each register has a factory-set value, which you can read or change to fit your needs.

### Reading a Register Value

To read the current value of a register, type: AT Sn? [ENTER], where n is a register number.

AT Sn? Sn? [ENTER] from the command mode.

To read the register values of S0 and S1, type AT S0? S1? [ENTER].

The modem will display the first register value, a carriage return, the next register value, a carriage return, and OK or 0.

### Changing a Register Value

To change a register value, use the Sn command (ATSn=v), where n is a register number and v is the new value you want to assign to the register. Type:

AT S0=3 [ENTER] to have the modem automatically answer on the third ring.

The following table lists the modem's registers and their functions.

<b>Reg.</b>	<b>Range</b>	<b>Units</b>	<b>Default</b>	<b>Definition</b>
S0	0-255	rings	0	Auto-answer
S2	0-127	ASCII	43	Escape character value.
S3	0-127	ASCII	13	Carriage return character.
S4	0-127	ASCII	10	Line feed character.
S5	0-127	ASCII	8	Backspace character.
S6	2-255	seconds	2	Wait time for Blind Dialing.
S7	1-255	seconds	45	No answer time out.
S8	0-255	seconds	2	Pause time for dial delay.
S10	1-254	seconds	20	Lost Carrier to Hang Up Delay. (10ths of a second)

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<b>Reg.</b>	<b>Range</b>	<b>Units</b>	<b>Default</b>	<b>Definition</b>
S11	x-x	milliseconds	95	DTMF Dialing Speed.
S12	0-255	seconds	50	Escape code guard time. (20 millisecond increments)
S37	0-21		0	Modem to Modem speed
Bits 0-4:				
0	=	Attempt auto mode connection		
3	=	Attempt to connect at 300bps		
5	=	Attempt to connect at 1200bps		
6	=	Attempt to connect at 2400bps		
7	=	Attempt to connect at 4800bps		
8	=	Attempt to connect at 7200bps		
9	=	Attempt to connect at 9600bps		
10	=	Attempt to connect at 12Kbps		
11	=	Attempt to connect at 14.4Kbps		
12	=	Attempt to connect at 16.8Kbps		
13	=	Attempt to connect at 19.2Kbps		

## Result Codes

<b>Result Code</b>	<b>Numeric Value</b>	<b>Description</b>
OK	0	Modem successfully executed a command line.
CONNECT	1	Modem connected to line.
RING	2	Ring signal detected.
NO CARRIER	3	Modem lost carrier signal, or does not detect carrier signal, or does not detect answer tone.
ERROR	4	Invalid command.
CONNECT 1200	5	Modem established a connection 1200bps.
NO DIALTONE	6	No dial tone detected.
BUSY	7	Busy signal detected.
NO ANSWER	8	No "quiet" answer
CONNECT 75	9	Connection at 75bps
CONNECT 300	10	Connection at 300bps.
CONNECT 600	11	Connection at 600bps.
CONNECT 2400	12	Connection at 2400bps.
CONNECT 4800	13	Connection at 4800bps.
CONNECT 7200	14	Connection at 7200bps.
CONNECT 9600	15	Connection at 9600bps.
CONNECT 12000	16	Connection at 12000 bps.
CONNECT 14400	17	Connection at 14400 bps.



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## Appendix D: Manual Driver Installation

### Manual Driver Installation for Windows 3.x

Power on the computer and start Windows as you normally would and install the modem support driver software. **This software is required for modem operation. Then:**

1. Insert the M144AI diskette.
2. From the Program Manager Main Menu, select **File**, then **Run**.
3. Type **A:\SETUP (or B:\SETUP)**.
4. Setup will ask for the directory where you want to install the files. The default is C:\M144AI.
5. Next, Setup asks how you if you want to support DOS applications. Follow all on-screen instructions.
6. Setup will restart your computer

### Manual Driver Installation for DOS

1. Power on the computer.
2. From the DOS prompt, type: **A:\INSTALL or B:\INSTALL**.
3. Install copies files to your hard disk. To configure the modem, use the command OLESET. You will need to set up the OLEDOS program to the same settings selected when you ran COMCHECK.
4. After configuring the modem with OLEDOS, you must restart your computer.

To change modem configuration, refer to Appendix E: Running OLESET where you can change settings in Windows or DOS.

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***NOTE: You must change your communications software to use the COM port assigned to the modem with OLESET.***

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## Appendix E: Running OLESET

### Running OLESET

**NOTE: it is not necessary to run OLESET unless you wish to view/modify the settings of your modem.**

To start OLESET:

**If you have Windows**, double-click on the “OLESET” icon in the M144AI program group.

**If you have DOS**, from the DOS prompt, change to the directory where you installed the drivers and utilities (e.g., CD\M144AI). Then type OLESET [ENTER].

1. **COM PORT.** Refers to the Com Port which your DOS software will communicate with the modem.
2. **IRQ.** Refers to the IRQ chosen for the M144AI Modem. Therefore be sure not to choose an IRQ that is the same as the one used by the software application. (To be safe, avoid using IRQ 3 or IRQ 4 for this option.) An error message will occur when the OLESET driver loads if it cannot find the M144AI on this IRQ. If you change this IRQ setting, you must power off your computer, remove the M144AI, and physically change the jumper setting on the M144AI to match this setting.
3. **I/O ADDRESS.** Refers to the I/O Address for the M144AI Modem. An error message will occur when the OLESET driver loads if it cannot find the M144AI on this I/O address. If you change this I/O address setting, you must power off your computer, remove the M144AI, and physically change the jumper setting on the M144AI to match this setting.

After you set any of the above options, you can also select ‘SAVE and Exit’ to add the correct line to your autoexec.bat file.

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**FOR DOS ONLY:**

**NOTE: The OLESET program checks for the presence of HIMEM.SYS and EMM386.EXE. Following installation, these drivers will be added to your CONFIG.SYS if they are not already there.**

The following statements are added to your CONFIG.SYS file:

```
DEVICE=C:\DOS\HIMEM.SYS  
DEVICE=C:\DOS\EMM386.EXE RAM
```

The following statement is added to your AUTOEXEC.BAT file:

```
C:\M144AI\OLEDOS P2 R400 I3 B180.
```

If you wish to change any of these parameters, run OLESET.

**AFTER CHANGING SETTINGS, YOU MUST REBOOT YOUR COMPUTER.**

## Appendix F: Servicing Your Boca Product

If your modem requires service, first contact the authorized dealer from whom you purchased the modem. 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 Three) 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 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.

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**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 modem to Boca Research, Inc. for repairs, please be sure to include:
  - the M144AI modem (board only)
  - a 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 modem were covered by the warranty, Boca Research, Inc. will return it prepaid via UPS.

## Appendix G: 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 its authorized dealer. Should the product fail to be in good working order at any time during the five-year period, BRI, will at its option, repair or replace this product as described below. This warranty does not cover defects resulting from misuse, abuse, negligence, accident, repairs, or alterations made by either the customer or another party. Boca Research reserves full rights to determine whether a defective product falls into this category.

The entire risk as to the quality and performance of the product rests with the customer. Any written or oral information or advice given by Boca Research dealers, distributors, agents, or employees will in no way increase the scope of this warranty. This warranty applies only to the product described in this manual and not to any other value-added software which may be included.

All customers are required to demonstrate proof of purchase when requesting a Return Merchandise Authorization (RMA). The period of service commences on the date of purchase. A 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 and the Return Merchandise Authorization (RMA) number provided by BRI Technical Support. Refer to the Appendix in your 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. ALL EXPRESS AND IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS OF PURPOSE FOR THE PRODUCT ARE LIMITED IN DURATION TO THE ABOVE FIVE-YEAR PERIODS.

UNDER NO CIRCUMSTANCES (WHETHER BASED IN CONTRACT OR TORT) SHALL BOCA RESEARCH BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL, INDIRECT, SPECIAL, OR PUNITIVE DAMAGES OF ANY KIND, OR FOR LOSS OF REVENUE, LOSS OF BUSINESS, OR OTHER FINANCIAL LOSS AS A RESULT OF THE SALE, INSTALLATION, MAINTENANCE, USE, PERFORMANCE, FAILURE, OR DISRUPTION OF ITS PRODUCTS.

Boca Research reserves the right to make periodic changes or enhancements to any Boca Research product without prior notification, but has no obligation to modify or update products once sold.

This warranty gives you specific legal rights, and you have other rights which may vary from state to state. This warranty is valid only in the United States.





**Manual Part No. 9443  
Rev. 4.0**