



## TECHNICAL BULLETIN

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### **Intellex/ Network Client 2.0 Modem Installation, Configuration & Troubleshooting Guide**

The following document was developed to assist technicians with the following:

- Identifying which motherboard is in your Intellex
- Installing a Modem into a Intellex 2.X
- Configuring Intellex 2.X for Dial-Up Networking
- Forcing an Intellex Modem to Disconnect
- Network Client via Modem Setup
- Network Client Dial-Up Errata
- Frequently asked questions
- Field guide to troubleshooting

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# Intellex/Network Client

## POTS Modem Installation, Configuration, and Troubleshooting Guide

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## Identifying the model of motherboard.

### Seattle (Intel SE440BX-2)

- Ethernet port is on a PCI card.
- 2 Serial ports on the motherboard.
- 4 PCI and 2 ISA slots
- No audio jacks on the motherboard.
- No DB-15 connector on the motherboard.
- All external connectors on the motherboard are silver and black.
- CPU is a Slot 1 or a Socket 370 with a Slocket adapter, running at 600, 650 or 700 MHz.
- Label on bottom of unit indicates version 2.0

### Easton (Intel D815EEA)

- Ethernet port is built into the motherboard, just above the USB slots, between the keyboard/mouse connectors and the parallel port.
- 1 Serial port on the motherboard.
- 5 PCI and no ISA slots.
- Three audio jacks arranged horizontally on the motherboard.
- One DB-15 connector on the motherboard, just above the audio jacks.
- All external connectors on the motherboard are color-coded.
- CPU is a Socket 370, running at 733 or 866 MHz
- Label inside front drive bay door indicates version 2.1

### Easton II (Intel D815EEA2)

- Ethernet port is built into the motherboard, just above the USB slots, between the audio jacks and the parallel port.
- 1 Serial port on the motherboard.
- 5 PCI and no ISA slots.
- Three audio jacks arranged vertically on the motherboard.
- No DB-15 connector on the motherboard.
- All external connectors on the motherboard are color-coded.
- CPU is a Socket 370, running at 866 or 933 MHz
- Label inside front drive bay door indicates version 2.1

## Procedure for installing a modem into Intellex 2.x

### Hardware Installation

1. Shut down Intellex and disconnect from power source.
2. Open the case.
3. Unscrew and remove the metal blank covering the expansion slot on the far right side (when viewed from the back). Be sure to save the screw, you will need it later.
4. Insert the modem card

For units with the Seattle motherboard:

Insert the modem card into the far right ISA expansion slot. It may require a small amount of pressure to seat the modem properly, but be careful not to use too much force or to accidentally bend or twist the card, slot, or motherboard.

For units with the Easton or Easton II motherboard:

Insert the modem card into the far right PCI expansion slot. It may require a small amount of pressure to seat the modem properly, but be careful not to use too much force or to accidentally bend or twist the card, slot, or motherboard.

5. Secure the modem with the screw you previously removed.
6. Replace the cover.
7. Plug a phone cord into the jack marked with an icon of a phone jack. Do not plug it into the jack marked with a telephone symbol.
8. Plug the other end of the phone cord into a standard analog (POTS) wall jack. *Do not plug it into a digital phone jack! Damage to the modem or Intellex could occur! Digital phone jacks are usually (but not always!) RJ-45. If in doubt, test the jack first with a telephone line tester.*

### BIOS Configuration

9. Reconnect Intellex to its power source, and start it up.
10. Press F2 when the BIOS splash screen appears
11. You will need to make these adjustments to the BIOS:

For Intellex units with the Seattle motherboard:

- a. Enter the BIOS password
- b. Press the Right arrow key to switch to Advanced.
- c. Select "Peripheral Configuration"
- d. Select "Serial Port A" and press the Enter key.
- e. Select "Enabled" and press Enter.
- f. Select "Serial Port B" and press the Enter key.
- g. Select "Enabled" and press Enter.
- h. Press F10, then Enter to save the settings and reboot.

For Intellex units with the Easton or Easton II motherboard:

- a. Enter the BIOS password
- b. Press the Right arrow key to switch to Advanced.
- c. Select "Peripheral Configuration"
- d. Select "Serial Port A" and press the Enter key.
- e. Select "Enabled" and press Enter.
- f. Select "Base I/O Address" and press Enter.
- g. Select "2F8" and press Enter.
- h. Select "Interrupt" and press Enter.
- i. Select "IRQ 3" and press Enter.
- j. Select "Serial Port B" and press the Enter key.
- k. Select "Disabled" and press Enter.
- l. Press F10, then Enter to save the settings and reboot.

### **Software Installation**

12. When Windows starts, it should detect the new modem, and ask for the drivers.
13. Have Windows search for the best driver. Do *not* choose to select the drivers from a list.
14. For an ISA modem, insert the driver disk, and be sure that Floppy Disk is selected. The PCI modem will have the drivers on the hard disk already.
15. The modem should be detected as a "U.S. Robotics 56K FAX INT" or a "U.S. Robotics 56K Fax PCI"
16. Go to the Modem Properties Control Panel and click on the Properties button.
17. Click on the Connection tab, and check the box labeled "Disconnect a call if idle for more than [30] mins"
18. Open the Network Control Panel, and make sure that Dial-up Adapter and Client For Microsoft Networks have been installed.

For Dial-up Adapter:

- a. Click the Add button.
- b. Select Adapter and click Add.
- c. Scroll down the list of Manufacturers and highlight Microsoft.
- d. Highlight Dial-Up Adapter under Network Adapters, and click O.K.

For Client for Microsoft Networks:

- a. Click the Add button.
- b. Select Clients and click Add.
- c. From the list of Manufacturers highlight Microsoft.
- d. Highlight Client for Microsoft Networks under Network Clients, and click O.K.

17. If you have installed any network adapters or clients, click O.K. to close the Networking Control Panel, and reboot the system.
18. *Refer to the section Configuring Intellex 2.x for Dial-up Networking for instructions on installing the Dial-Up Server.*

## Configuring Intellex 2.x for Dial-up Networking

### Installing the Dial-Up Server

- a. Click on the Start button, go to Settings, and click on Control Panel.
- b. Double Click on the Add/Remove Software icon.
- c. Click on the Windows Setup tab.
- d. Select Communications, then click on the Details button.
- e. Make sure there is a checkmark next to Dial-Up Networking and Dial-Up Server.
- f. Click OK to close the Communications details window.
- g. Click OK to close the Add/Remove Hardware window.
- h. Windows may prompt to reboot, if so, select OK
- i. When Windows reboots, close the Control Panel if it is still open.

### Configuring the Dial-Up Server

- a. Double Click on the My Computer icon.
- b. Double Click on the Dial-Up Networking icon.
- c. Windows should open a dialog box titled "Welcome to Dial-Up Networking". Click Cancel to exit the wizard. Do NOT run the setup wizard, it is only for outgoing connections.
- d. Open the Connections menu, and select Dial-Up Server.
- e. To enable incoming connections, select "Allow Caller Access". To disable incoming connections, select "No Caller Access"
- f. If a password is desired, click on the Change Password button. A dialog box will appear with places for you to enter the old password (default is left blank), the new password, and verify the new password. Click the OK button when finished.
- g. Click on Server Type, and make sure the "Require Encrypted Password" checkbox is cleared. Click the OK button when finished.
- h. Repeat steps "e" and "g" for each modem or modem channel available.
- i. Click OK to finish configuration. If you have just enabled incoming connections, a Dial-Up Server icon will appear on the System Tray.
- j. Close the Dial-up networking window.

For units that have just been upgraded from 2.0 to 2.1:

- k. Right-click on Network Neighborhood, and select Properties.
- l. Click on the Identification tab.
- m. Enter a new Computer Name, Workgroup, and Computer Description.
- n. Click O.K.
- o. Reboot the machine to apply the changes.

## Procedure for Forcing an Intellex Modem to Disconnect

*Note: Tthe first two of these procedures require that you have physical access to the Intellex. You cannot force a modem disconnect by remote.*

### ***Graceful disconnect:***

1. Exit Intellex software
2. Double-click on Dial-up Server icon in system tray.
3. Click Disconnect User button.
4. Click O.K. button to exit Dial-up Server window.
5. Restart Intellex software.

### ***Non-graceful disconnect:***

1. Unplug telephone cord from the wall jack.
2. Plug telephone cord back into the same wall jack.

### ***Timed disconnect:***

1. Open the Modem Properties Control Panel and click on the Properties button.
2. Click on the Connection tab, and check the box labeled "Disconnect a call if idle for more than [ ] mins". Change the number in the box to "10".
3. Click O.K. to save the changes and then close the Modem Properties Control Panel.

The graceful disconnect will allow a user to immediately redial and reconnect to the Intellex, however it will momentarily disrupt recording. The non-graceful disconnect will not affect recording, but may render the modem temporarily unable to receive incoming calls. The timed disconnect will automatically disconnect the modem after 10 minutes of inactivity. This will prevent people from dialing in and hogging the connection, and will also force the modem to drop the line after a non-graceful disconnect.

## Network Client via modem Setup

# Windows 98

1. Make sure you have Dialup Networking and a modem installed on your computer.
  - a. Click the Start button, go to Settings, and click on Control Panel
  - b. Double Click on the Modems icon
  - c. A modem should be listed. If it is not, contact your PC vendor for instructions on how to install the modem drivers.
  - d. Click on the Diagnostic tab.
  - e. Select the COM port that corresponds to your modem.
  - f. Click on the More Info button.
  - g. A window with diagnostic information should appear. If you get a window stating that the port could not be opened or that the port is busy, please contact your PC vendor for support.
  - h. Click OK to exit the More Info window.
  - i. Click OK to exit the Modem Properties control panel.
    - j. Double Click on the Add/Remove Programs icon.
    - k. Click on the Windows Setup tab.
    - l. Click on Communications, then click on the Details button.
    - m. Make sure that Dial-Up Networking has a check mark next to it. If it does not, click inside to box to add one.
    - n. Click OK to close the Communications window.
    - o. Click OK to close the Add/Remove Programs Properties window.
    - p. If you have had to install Dial-Up Networking, you will be prompted to reboot your computer. Please do so at this time, then proceed with the next step. If Dial-Up Networking was already installed, you may proceed with the next step without rebooting.
    - q. Close the Control Panel window if it is still open.
2. Double Click on the My Computer icon.
3. Double Click on the Dial-Up Networking icon.
4. You may be prompted to enter your area code and dialing parameters. Please enter them now.
5. Double Click on the Make New Connection icon.
6. Enter a name for the computer you are dialing (To make it easier to distinguish between multiple dial-ups.) Also select a device to use if you have more than one modem installed. Then click on the Next button.
7. Enter the Area code, Telephone number, and Country or region code for the Intellex you wish to dial-up. Then click on the Next button.
8. You should now get a message stating that you have successfully created a new Dial-up Networking connection. Click the Finish button to finish.
9. Repeat steps 5-8 for any additional Intellex units you wish to dial.
10. Double-click on the appropriate connection icon to dial-up that Intellex.
11. Enter a username and password if required, and verify the phone number you are dialing.
12. Click Connect to connect to the remote Intellex unit.

# Windows NT 4.0

1. Make sure you have Dialup Networking and a modem installed on your computer.
  - a. Click the Start button, go to Settings, and click on Control Panel
  - b. Double Click on the Modems icon
  - c. A modem should be listed. If it is not, contact your PC vendor for instructions on how to install the modem drivers.
  - d. Click OK to exit the Modem Properties control panel
  - e. Double Click on the Network icon.
  - f. Click on the Services tab.
  - g. Remote Access Service should be listed. If it is not, click on the Add button, select Remote Access Service, then click O.K. You may be prompted for the Windows NT disks. You will then be prompted to Add a RAS Capable Device. Select your modem from the list if it is not already selected and click OK. Then click the Configure button. Make sure that either Dial Out Only or Dial Out And Receive Calls is selected, then click OK. Then click Continue. Leave the settings on this page alone and click OK to finish.
  - h. Click the Close button. You may be prompted to reboot your computer. If so, please do so now.
  - i. Close the Control Panel if necessary
2. Double click on the My Computer icon.
3. Double Click on the Dial-Up Networking icon.
4. You may get a message "The phone book is empty. Press OK to add an entry". Press O.K. If you do not get this message, click on the New button.
5. Enter a name for the computer you are dialing (To make it easier to distinguish between multiple dial-ups.) Then click on the Next button.
6. Check the "I am calling the Internet" and "Send my plain text password if that's the only way to connect" boxes, then click on the Next button.
7. Type in the phone number of the Intellex you will be dialing, then click the Next button.
8. Click Finish to save your dial-up connection.
9. Repeat steps 4-8 to add additional Intellex dial-ups.
10. To dial an Intellex, select the appropriate Phonebook Entry from the drop down box, confirm the phone number, and click the Dial button. You will then be prompted for a Username, password, and domain. Enter a username and password if required, but leave the domain empty. Click on OK to connect to the remote Intellex unit.

# Windows 2000

1. Make sure you have Dialup Networking and a modem installed on your computer.
  - a. Click the Start button, go to Settings, and click on Control Panel
  - b. Double Click on the Phone And Modem Options icon
  - c. Click on the Modems tab.
  - d. A modem should be listed. If it is not, contact your PC vendor for instructions on how to install the modem drivers.
  - e. Click on the Properties button to bring up the properties window for that modem.
  - f. Click on the Diagnostics tab.
  - g. Click on the Query Modem button. You should receive a message stating that the computer is communicating with the modem. When it finishes, Command and Response data should appear in the Properties window. If you get an error message, or a message stating that the port is not responding or is busy, please contact your PC vendor for support.
  - h. Click OK to exit the Properties window
  - i. Click OK to exit Phone And Modem Options.
2. Double click on Network and Dial-up Connections.
3. Double click on Make New Connection.
4. Click the Next button.
5. Select Dial-up to Private Network and click Next.
6. Put a checkmark next to the device or devices you wish to use to make the connection, and clear the checkmarks from any devices you do not wish to use, the click Next.
7. Enter the phone number of the Intellex you wish to connect to, the click Next.
8. Select whether you wish to create this connection just for yourself, or for all users of that machine, then click Next.
9. Enter the name you want to use for this connection (To make it easier to distinguish between multiple dial-ups) You can check the "Add a shortcut to my desktop" if you wish. Then click the Finish button.
10. Right-click on the newly created connection, and select Properties. Click on the Security tab, then click on the Settings button.
11. Clear the checkboxes for Shiva Password Authentication Protocol (SPAP), Challenge Handshake Authentication Protocol (CHAP), Microsoft CHAP (MS-CHAP) and Microsoft CHAP Version 2 (MS-CHAP v2). Make sure that Unencrypted Password (PAP) is checked.
12. Click OK to exit the Advanced Security Settings. A dialog box may appear warning that data encryption will not occur with the current protocol settings. This is not a problem, as Network Client connects over a regular telephone line, which is relatively secure. Click the Yes button.
13. Click the OK button to exit the Properties window.
14. Repeat steps 2-13 for each Intellex you wish to connect to.
15. Double click on the appropriate icon for the Intellex you wish to connect to. Enter a username and password if required, and verify the phone number you are dialing. Click on the Dial button to connect to the remote Intellex unit.

## **Network Client Dial-up Errata**

### **IP Addresses**

Windows assigns separate IP addresses for each network card. Windows considers the modem to be a network card, and will assign an IP address to it when it connects. Each network card must have a separate IP address, thus an Intellex with a NIC and a modem will have **two** different IP addresses!

Windows 98 Dial-up Server always assigns 192.168.55.1 to its own modem, and 192.168.55.2 to the dial-up client modem. Therefore, if you set Network Client to search for 192.168.55.1, it will always find the Intellex you are dialing into, even if you do not know its LAN IP address.

### **Simultaneous Ethernet and Modem Connections**

On the Network Client, when you make a modem connection, Ethernet communications may be disrupted, and some Intellex units that were visible over a LAN may disappear from the Network Client list. This is only temporary; the units will reappear when the modem connection is closed. This also does not appear to affect Intellexes on a LAN that are being searched for by machine name, only units that are being searched for by IP address. This problem does not affect the Intellex itself; it is able to use both the modem and LAN simultaneously. Only Network Client is affected.

### **Instrument Naming Conventions**

Network Client is able to search for Intellexes by IP address (i.e. 192.168.0.1), machine name (i.e. INTELLEX1), or by fully qualified domain name (FQDN, i.e. intellex1.sensormatic.com). Machine name is preferable on a LAN, and is required if using DHCP or for LAN connected Intellexes if one is using mixed LAN and modem connections. IP address is required for WAN and modem connections. FQDN is preferred for Internet connections, although IP address will work also. The address is limited to 32 characters, including dots.

## Frequently Asked Questions

This FAQ covers issues specific to Intellex and Network Client. General modem diagnostics are not covered here. See *A Field Guide to Troubleshooting Intellex 2.1* for information on general diagnostics. Also see *Network Client Dial-up Errata* for more information on the interaction of Network Client, Intellex, and Dial-up Networking.

**Q:** Can I use a modem with Intellex 1.x?

**A:** No. Intellex 1.x is neither hardware nor software compatible with a modem.

**Q:** Can I use a modem with the Intellex software version 2.0x?

**A:** No. The Intellex 2.0x software is not compatible with modems. Upgrading to the 2.1 version of the software will allow you to use a modem.

**Q:** Can I use Network Client with Windows 95?

**A:** Extensive testing has shown that Network Client does not behave reliably under Windows 95, therefore it is not recommended, nor is it supported by Sensormatic. It is recommended that any Windows 95 machines be upgraded to Windows 98 before installing Network Client. If this is not possible, Network Client can be installed under Windows 95; the procedure should be the same as for Windows 98.

**Q:** How do I install my Brand X modem?

**A:** Sensormatic does not support any modems other than those with a Sensormatic part number. Use of a non-Sensormatic modem may cause degraded performance, unpredictable operation, or system failures, and may violate the warranty.

**Q:** Can I use a PCI modem on the Seattle motherboard?

**A:** No. Drivers are not provided with the PCI modem, since they are preinstalled on Intellexes with the Easton and Easton II motherboards. In addition, there are only 4 PCI slots, and on most units, all 4 slots are occupied.

**Q:** Can I use an ISA modem on the Easton or Easton II motherboard?

**A:** No. The Easton and Easton II motherboards do not have an ISA slot, therefore, there is no place to put an ISA modem.

**Q:** Can I use a USB or Firewire modem?

**A:** Sensormatic does not offer or support USB or Firewire telephone modems. Attempting to use one of these modems may degrade system performance, or cause unpredictable results.

**Q:** Can I use an external serial modem?

**A:** Sensormatic does not offer or support an external serial modem with Intellex. In addition, the Intellex units with the Easton and Easton II motherboards have only a single serial port, which is normally configured for use with a TouchTracker. Attempting to connect an external modem to this serial port may cause unpredictable results.

**Q:** Can I access other Intellexes on a network through a single Intellex with a modem?

**A:** No. You can only access the one unit through the internal modem. However, Sensormatic has tested the Netgear RM356 Modem Router with Intellex and Network Client, and this device allows a single dial-up connection to access multiple Intellexes simultaneously. Since this is a third party unit, Sensormatic does not officially support it, and can provide no warranty or technical support for it.

**Q:** Windows is asking for a driver. Where do I find one?

**A:** For the ISA modem, the driver is on the floppy that was provided with the modem. For the PCI modem, the drivers are already on the 2.1 system drive.

**Q:** After upgrading my 2.0 unit to 2.1 and adding a modem, I am having problems with my COM ports. How do I fix this?

**A:** Restart the system and go into the BIOS. Under the Advanced menu, select Peripheral Configuration and change Serial Port A and B from "Auto" to "Enabled". Press F10 to save the settings and reboot.

**Q:** When I dial into my Intellex, the modem never answers. The phone line is connected and the modem drivers are installed properly.

**A:** Make sure that Dial-up Server is installed and has been configured to accept incoming calls. See *Configuring Intellex 2.x for Dial-up Networking* for instructions.

**Q:** When I dial into my Intellex, the modem answers, but I get disconnected almost immediately.

**A:** Install the Dial-up Adapter. See *Procedure for installing a Modem into Intellex 2.0x* for instructions.

**Q:** When I dial into my Intellex using a Windows 2000 machine, the modem answers and attempts to authenticate, but is not successful.

**A:** Disable "Require Encrypted Password" in Dial-up Server on the Intellex.

**Q:** When I dial into my Intellex using a Windows 2000 machine, I keep receiving a password dialog box. I haven't set a password on the Intellex, and nothing I enter seems to work.

**A:** Windows 2000 includes password encryption schemes that Windows 98 does not understand. For each Intellex dial-up connection on the Network Client machine, disable all security protocols except for Unencrypted Password (PAP). This will ensure that Windows 2000 uses a compatible protocol.

**Q:** Windows now prompts for a password during boot.

**A:** In the Network Control Panel, change Primary Network Logon to "Windows Logon". In the Client for Microsoft Networks properties, clear the check box for Log on to Windows NT domain and make sure the domain box is empty. The password for Windows must also be blank. If a login password has been entered, use the Password Control Panel to change it to blank.

**Q:** The modem never hangs up after the Network Client machine disconnects.

**A:** Enable idle disconnect on the Intellex. Go to the Modem Properties Control Panel and click on the Properties button. Click on the Connection tab, and check the box labeled "Disconnect a call if idle for more than [ ] mins". Change the number in the box to "10". This will force the modem to hang up 10 minutes after it gets disconnected. (Note, the modem will disconnect after 10 minutes of no activity, even if the Network Client machine is still connected. Since almost all Network Client operations will result in modem traffic, this should be extremely rare. If this is a problem, however, the timeout period can be increased.)

**Q:** What IP address should I use when dialing up an Intellex?

**A:** 192.168.55.1 Do NOT use the NIC's IP address or the computer name when connecting by modem, as these do not always work correctly over a dial-up connection.

**Q:** Can I configure Intellex to use callbacks?

**A:** No. Windows 98 Dial-Up Server does not support callbacks.

**Q:** Does Intellex support Wake On Modem Ring?

**A:** Yes! If the Intellex is powered off, and is connected to power and a phone line, you can wake it simply by dialing into the usual telephone number. Please note that it takes the Intellex longer to boot than Windows dial-up client will wait, so you will not be able to connect immediately, but you should be able to connect within about 2-3 minutes of the first call.

**Q:** Can I use some sort of remote control program to access Windows functions that Network Client cannot, such as Shutdown or the Device Manager?

**A:** Sensormatic has tested Microsoft NetMeeting's Remote Desktop Sharing with Intellex and Dial-Up Networking. However, as this is third party software and is not included with the Intellex, Sensormatic does not officially support it, and no warranty or technical support is available for it. In addition, it opens possible security holes by allowing users access to critical system functions and files, which could be misused to render the Intellex inoperable. It is **highly** recommended that you do not install NetMeeting unless you *absolutely* require it. Again, Sensormatic does not support NetMeeting, and no warranty or technical support is provided for it or for any failures that may result from its use. **Use at your own risk!**

**Q:** Does Intellex support ISDN, DSL, or cable modems?

**A:** Yes, but that is beyond the scope of this document.

**Q:** Does Intellex support multiple modems or 'shotgun' modems?

**A:** No. You should only install one modem per Intellex.

**Q:** Should I install a telephone line surge protector?

**A:** Yes, especially in areas prone to lightning. While a surge protector will do little to protect against a direct hit by a lightning bolt, it will shield the Intellex from surges caused by strikes farther away.

**Q:** Can I use an Intellex analog modem with a digital phone line?

**A:** Several third-party manufacturers offer digital to analog converters for using an analog modem over a digital phone line. Since these are third-party products, Sensormatic does not officially support them, and no warranty or technical support is available. The digital-analog conversion usually results in some signal degradation, so it is always preferable to use a genuine analog line if possible. *Do not plug an Intellex analog modem directly into a digital phone line! Digital lines use much higher voltages than analog lines, and could cause considerable damage to the modem and/or Intellex. Damage caused by connecting an Intellex analog modem to a digital phone line is not covered by the warranty! Digital phone lines usually use an RJ-45 jack, but not always. If you are in doubt, test the line first with a telephone line tester.*

**Q:** What is the maximum speed that the Intellex modem supports?

**A:** The maximum speed of the Intellex modem over optimal quality telephone lines is 31.2Kbps. The actual maximum speed a specific Intellex can achieve is dependant on line quality. The more line noise, the slower the connection will be.

**Q:** I'm getting poor connection speeds. Is there a way I can improve my speed?

**A:** Digital to analog converters, telephone extension cables, jack splitters, low quality cables, and excessively long cables can add line noise that will slow the connection speed. Running telephone cables too close to electrical lines can also contribute to line noise. If you have eliminated these possibilities, and line noise is still a problem, contact the local telephone company to have them test the lines. They may be able to install filters or take other steps to clean up the lines. Remember that the phone company will usually provide free repairs for any and all wiring up to the point where it enters the building. Internal wiring repairs are usually subject to fees. Replacing old POTS cables with UTP or STP cable such as CAT3 or 5 may help improve signal quality.

**Q:** Can I run a telephone line through the unused wire pairs in a CAT5 networking cable?

**A:** It is possible, but not recommended, as the two signals are quite different and may interfere with each other because of the extreme close proximity of the wires. The telephone may disrupt network communications, and network communications may introduce line noise. Separate cables are advisable whenever possible.

**Q:** I am running new cable to connect the modem, what would be the best choice?

**A:** Most telephone engineers recommend installing CAT5 cable for all new cable plants. This allows for future expansion, and has much better signal quality than POTS. Be sure to use plenum grade if required by local building and/or fire codes. Unshielded cable should be adequate for most applications, although shielded cable may be required for unusual circumstances. When in doubt, the local telephone company may be able to provide assistance.

**Q:** What modem standards does Intellex support?

**A:** V.32bis, V.80, V.34+, V.42bis, x2, and V.90

**Q:** Does Intellex support the new V.92, V.PCM, or V.44 modem standards?

**A:** Not at present, however, a firmware upgrade may be made available in the future. Very few modems currently support V.92 or V.44. Both the Intellex and Network Client will have to have compatible modems installed to benefit from these new standards.

## Excerpt from A Field Guide to Troubleshooting Intellex 2.1

### Cannot dial-up Intellex unit from a remote host (modem).

- Does the Intellex actually have a modem?
- Check that the remote host is dialing the correct number.
- Check that the phone cord is plugged into the 'line' jack, and not the 'phone' jack on the modem.
- Check that the other end of the phone cord is plugged into a standard wall jack and not a digital phone jack (DSL, ISDN, PBX, etc).
- Check that the phone cord is in good condition and has not been nicked, cut, severely bent, or otherwise damaged.
- Check that the Dial-Up Server is enabled.
- Check that 'Allow caller access' has been selected for the Dial-up Server.
- Double-check the Password for caller access.
- Check that the Server Type is set to Default, and that the "Enable software compression" box has been checked and the Require Encrypted Password" box has been cleared.
- If the Network Client machine is running Windows 2000, disable all security protocols except Unencrypted Password (PAP) for all dial-up connections to an Intellex.
- Check that the Dial-up Adapter is installed in the Networking Control Panel.
- Check that the correct drivers installed for the modem. (should be U.S. Robotics 56K Fax PCI)
- Check that the computer can communicate with the modem. (Modem Control Panel -> Properties)
- Check the jack with a line tester to make sure it is wired properly.
- Use Phone Dialer to dial out to a known good phone number (a cell phone works well for this)
- Use a known good phone line to dial the number for the Intellex and listen for the modem to answer.
- Replace the phone cord.
- Ask the local telephone company to test the phone line.