

---

**IDEAcomm 3770/SNA**

---

**Installation  
and  
Reference  
Manual**

IDEAssociates, Inc.  
35 Dunham Road  
Billerica, MA 01821  
(617) 663-6878

**IDEAssociates**  
Better ideas for personal computers.

---

## 0.1 IDEAssociates, Inc. Limited Warranty

IDEAssociates, Inc., guarantees this IDEA Product to be in good working order for a period of 1 year from the date of purchase from IDEA or an authorized IDEA dealer. Should this Product fail to be in good working order at any time during this one year warranty period, IDEA will, at its option, repair or replace this product at no additional charge except as set forth below. Repair parts and replacement products will be furnished on an exchange basis and will be either reconditioned or new. All replaced parts and products become the property of IDEAssociates. This limited warranty does not include service to repair damage to the product resulting from accident, disaster, misuse, abuse, or non-IDEA modification of the product.

(continued)

Limited Warranty service may be obtained by delivering the product during the one year warranty period to an authorized IDEA dealer or by sending the product to IDEAssociates. IDEAssociates will not accept products without a Materials Return Authorization (MRA) number issued by its Customer Support Department, with a proof of purchase date. If this product is delivered to IDEA by mail, you agree to insure the product or assume risk of loss or damage in transit, to prepay shipping charges to the warranty service location and to use the original shipping container or equivalent.

ALL EXPRESS AND IMPLIED WARRANTIES FOR THIS PRODUCT INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE LIMITED IN DURATION TO A PERIOD OF 1 YEAR FROM THE DATE OF PURCHASE, AND NO WARRANTIES, WHETHER EXPRESS OR IMPLIED, WILL APPLY AFTER THIS PERIOD. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS MAY NOT APPLY TO YOU.

(continued)

IF THIS PRODUCT IS NOT IN GOOD WORKING ORDER AS WARRANTED ABOVE, YOUR SOLE REMEDY SHALL BE REPAIR OR REPLACEMENT AS PROVIDED ABOVE. IN NO EVENT WILL IDEA BE LIABLE TO YOU FOR ANY DAMAGES, INCLUDING ANY LOST PROFITS, LOST SAVINGS OR OTHER INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF OR INABILITY TO USE SUCH PRODUCT, EVEN IF IDEA OR AN AUTHORIZED IDEA PERSONAL COMPUTER DEALER HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES, OR FOR ANY CLAIM BY ANY OTHER PARTY.

SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR CONSUMER PRODUCTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

## Table of Contents

4.1 IDEAssociates, Inc. Limited Warranty	1
4.1 Copyright	1
4.2 Trademarks	1
4.3 Notice	2
4.4 Warranty and Support Information	3
4.5 List of Figures and Tables	4
4.6 Customer Survey Form	6
Chapter 1 Introduction	9
1.1 Inventory Checklist	9
1.2 Overview	10
1.2.1 Software	11
1.2.2 The IDEA Minicom Card	12
1.2.3 Hardware Requirements	12

1.2.4	Communications Line Requirements	13
1.2.4.1	Hard-wired Connection	14
1.2.5	Remote Host or Terminal Requirements	14
1.3	How to Use This Manual	16
1.3.1	Scope and Audience	16
1.3.2	Frequently Used Terms	18
1.3.3	Notation Conventions	19
1.4	Reference Publications	22
Chapter 2	Hardware Installation	23
2.1	Getting Started	23
2.2	Careful!	24
2.2.1	Serial Number	24
2.3	Hardware	26

2.3.1	Installation Overview	26
2.3.2	Tool Requirements	27
2.3.3	Opening the IBM PC	28
2.3.3.1	Cover Removal	30
2.3.4	Checking IDEA Minicomm Switches	33
2.3.4.1	Sliding Switches and Rocker Switches	34
2.3.5	Inserting the IDEA Minicomm Card	35
2.3.5.1	Slot Cover Removal	35
2.3.5.2	Minicomm Card Insertion	37
2.3.6	Replacing the IBM PC Cover	38
2.3.6.1	Replacing the Cover Screws	39
2.4	Connecting the Modem	40
2.5	Copying the Software	40
2.6	Running Hardware Diagnostics	42

2.6.1 Loopback Test--ALTEST Command	42
2.6.2 Loopback Test Messages	46
Chapter 3 Configuration Program	50
3.1 Obtaining Configuration Information	51
3.2 Running the Configuration Program	54
3.3 Starting the Configuration	55
3.4 Displaying the Current Configuration	55
3.5 Main Menu	57
3.6 3770 ID and Address Menu	59
3.7 3770 Logical Unit Address Menu	61
3.8 3770 Logon Menu	63
3.9 3770 Logon Card Menu	65
3.10 Startup Command File Menu	67
3.11 Carriage Control Menu	70
3.12 Skip Stops Menu	73
3.12.1 Notes on Carriage Control Configuration	76
3.13 No-Translate Files Menu	77
3.14 Diagnostic Support Menu	79
3.15 3770 Communication Line Type Menu	81

3.16 Ending the Configuration	83
Chapter 4 Program Operation	84
4.1 Program Initialization	85
4.1.1 Running the Emulation	86
4.1.2 Establishing the Telephone Data Link	86
4.2 Operational Overview	88
4.3 Command Summary	89
4.4 Concepts and Operations	93
4.4.1 Logging On	93
4.4.2 Transferring Data	94
4.4.3 Logical Devices	95
4.4.4 ASCII/EBCDIC Translation	96
4.4.5 Record Formatting	98
4.4.6 File Transmission Requirements Summary	99
4.4.7 Compression and Compaction	100
4.5 Logging On -- LOGON Command	101
4.6 Logging Off -- LOGOFF Command	102

4.7	Assigning Devices -- ASSIGN Command	103
4.8	Assigning Devices with Receive Chaining -- RC Command	106
4.9	Setting Non-Receive Chaining -- NRC Command	111
4.10	Releasing Assigned Devices -- UNASSIGN Command	112
4.11	Status Inquiry -- STAT Command	115
4.12	Displaying File Content -- TYPE Command	118
4.13	Getting Help -- HELP Command	120
4.14	Terminating Execution -- EXIT Command	123
4.15	Displaying Disk Directory -- DIRECTORY Command	124
4.16	Erasing a File from a Disk -- ERASE Command	126
4.17	Run Time Console Assignment -- CONSOLE Command	127
4.17.1	Operation with Console Files	129
4.18	Waiting for Unassignment -- WAIT Command	133
4.19	Setting Printer Carriage Control -- CCTL Command	136
4.20	RJE Commands	139
4.21	Program Messages	141
4.22	Sample Session	142
4.22.1	Console Activity	142
4.22.2	Explanation of Sample Session	146

Appendix A Messages from IDEAComm 3770/SNA	151
A.1 Numbered Console Messages	151
A.2 CSNA3770 Configuration Messages	164
Appendix B IDEAComm Programming and Cabling Requirements	166
4.1 Functional Description and Programming Information	167
4.2 Cabling Requirements	173
Appendix C NCP Gen Information	176
Appendix D Customer Support Information	178
D.1 Repair Policy	178
D.2 Warranty Card	180
D.3 Limited Warranty	180

## 0.1 Copyright

Copyright 1985 by IDEAssociates, Inc. All rights reserved.

The SNA/3770 software described in the manual is copyrighted by MICRO-INTEGRATION, INC, 1985.

## 0.2 Trademarks

IBM is a registered trademark of International Business Machines.

IDEAcomm 3770/SNA is a trademark of IDEAssociates Incorporated.

IDEA Minicomm is a trademark of IDEAssociates Incorporated.

### 0.3 Notice

IDEAssociates has made every effort to ensure accuracy of this manual. We welcome your comments and corrections. (See the Customer Survey further on in this manual.) However, IDEAssociates specifically disclaims any implied warranties or merchantability of the contents of this manual, and shall not be liable for errors contained in it.

#### 0.4 Warranty and Support Information

IDEAssociates guarantees all Products for one year. Within the one year limited warranty period, IDEA will repair or replace your Product at no additional charge. If the warranty period expires, IDEA will repair a Product on a time and materials basis. Refer to the appendix on customer support for details of the limited warranty.

IDEAssociates has an established network of computer dealers throughout the United States and Europe. To place an order or to locate the nearest dealer, call nationwide at (800) 257-5027.

IDEAssociates supports IDEAcmm 3770/SNA on the IBM PC, XT, AT, and Portable Computers.

## 0.5 List of Figures and Tables

Figure 1-1:	Typical System Configuration.....	15
Figure 2-1:	IDEA Minicomm Card.....	25
Figure 2-2:	Disconnecting the Cables.....	29
Figure 2-3:	Removing the Mounting Screws .....	31
Figure 2-4:	Removing the Cover.....	32
Figure 2-5:	IDEA Minicomm Switches.....	33
Figure 2-6:	Rocker Switches.....	34
Figure 2-7:	Removing the Slot Cover.....	36
Figure 2-8:	Inserting the Minicomm Card.....	37
Figure 2-9:	Replacing the Cover.....	38
Figure 2-10:	Tightening the Cover.....	39
Table 2-11:	Loopback Errors and Possible Causes.....	46
Figure 3-1:	Configuration Main Menu.....	57
Figure 3-2:	3770 ID and Address Menu.....	59
Figure 3-3:	3770 Logical Unit Address Menu.....	61

Figure 3-4:	3770 Logon Menu.....	63
Figure 3-5:	3770 Logon Card Menu.....	65
Figure 3-6:	3770 Startup Command File Menu.....	67
Figure 3-7:	3770 Carriage Control Menu.....	70
Figure 3-8:	3770 Skip Stops Menu.....	73
Figure 3-9:	3770 No-Translate Files Menu.....	77
Figure 3-10:	Diagnostic Support Menu.....	79
Figure 3-11:	Communication Line Type Menu.....	81
Table 4-1:	Emulation Commands.....	90-92
Table 4-2:	File Extensions with No Translation.....	97
Table 4-3:	File Transmission Requirements Summary.....	100

0.6 Customer Survey Form

Product: IDEAcmm 3770/SNA

Send to: Documentation Department, IDEAssociates, 35 Dunham Road,  
Billerica, MA 01821.

1. Were there any errors in the manual? If yes, list page numbers and kind of error:
  
2. Was information: easy to understand\_\_\_\_\_ difficult\_\_\_\_\_ List information that was hard to find:

3. Was information: complete\_\_\_\_\_ incomplete\_\_\_\_\_ .
  
4. What features of the product did you particularly like?
  
5. What features would you like to see added to the product in future revisions?
  
6. Compared to similar manuals, how would you rate the documentation?  
Better than most\_\_\_\_\_ Average\_\_\_\_\_ Worse than most\_\_\_\_\_
  
7. Please use the next page for additional comments.



## Chapter 1

### Introduction

#### 1.1 Inventory Checklist

You should have received the following components:

- o IDEA Minicom card
- o IDEAcmm 3770/SNA software diskette
- o Reference and Installation Manual (this book)

- o Warranty card

## 1.2 Overview

IDEAcomm 3770/SNA is a terminal emulation package that supports IBM Remote Job Entry with SDLC protocol. IDEAcomm 3770/SNA works with the IDEA Minicom Card to permit communications between a PC, XT, AT or Portable Computer and any IBM mainframe that offers 3770 support.

Standard features include:

- o file transfer
- o user configuration
- o hardware diagnostics
- o line trace

- o error checking and correcting
- o carriage control decoding
- o EBCDIC/ASCII translation

Advantages of using the IDEAComm 3770/SNA package include elimination of a separate controller for remote sites, plus the full functionality of a personal computer in the same system that does the 3770/SNA work. With the IDEAComm 3770/SNA and Minicom emulation package, you can increase the functionality of an IBM PC to run any remote entry application where a 3770 device may be used. By combining the 3770 terminal functionality with other PC functions, you reduce the number of remote lines required.

### 1.2.1 Software

The IDEAComm 3770/SNA software operates under PC-DOS 2.0, 2.1, 3.0, and 3.1.

### 1.2.2 The IDEA Minicom Card

IDEAcomm 3770/SNA comes with the IDEA Minicom, a communications card acting as the interface between an IBM PC, XT, AT or Portable Computer and an IBM mainframe to transfer programs and data or text files. Transmitting data at a speed of 9.6 kilobits per second, it permits remote communications over synchronous modems or local communications via multiple types of modem connection. The card's condensed size fits into any short slot of the Portable and XT or the regular expansion slots of the PC and AT.

### 1.2.3 Hardware Requirements

The Emulation package requires the following hardware:

- o an IBM XT, PC, AT, or Portable Computer
- o at least 128K of RAM memory
- o one floppy disk drive

- o boot diskette with DOS 2.0 or higher
  - o the IDEA Minicomm card
- A synchronous modem such as the Bell 201-C or 208-B model is required for remote communications.

An 11 conductor cable with DB-25 connectors on both ends is the interface needed for the modem or modem eliminator.

#### 1.2.4 Communications Line Requirements

Operating at data rates up to 9,600 baud, the IDEAComm 3770/SNA requires one of three communications links:

- o point-to-point (leased) or switched (dial-up) telephone lines with synchronous modems
- o hard-wired connections with short-haul synchronous modems
- o hard-wired connections with synchronous modem eliminator for local communications

#### 1.2.4.1 Hard-wired Connection

The length of the communications path is limited by the characteristics of the modems or modem eliminator used. The specifications of the modems or modem eliminator determine the baud rates and cable lengths that may be used.

#### 1.2.5 Remote Host or Terminal Requirements

The remote host must be equipped with a modem that is compatible with the modem in use on the local PC. The remote host must also be capable of communicating with an IBM 3770 terminal using SDLC protocol.

Typical configurations are shown below in Figure 1-1.

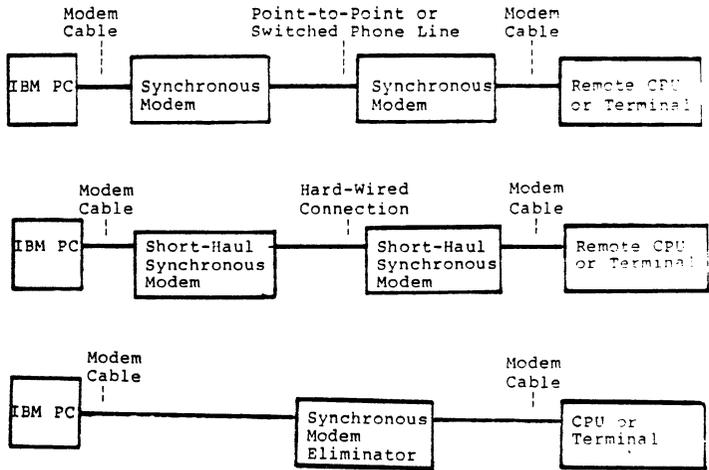


Figure 1-1: Typical System Configurations

## 1.3 How to Use This Manual

### 1.3.1 Scope and Audience

This manual is the basic reference for the IDEAComm 3770/SNA Communications package. It is intended for the systems programmer who sets up emulation between the PC and the IBM host. The manual assumes that:

- o you are familiar with the host computer and that your host can support 3770/SNA.
- o you will learn particular 3770 applications elsewhere.
- o you are familiar with the RJE commands of the IBM host.
- o you know how to set up files of data or commands for IBM's remote entry function.

- o you know the basics of PC DOS, including how to start (boot) the system and how to copy files.
- o you can get from the host computer site the information you need to configure the system as required in Chapter 3 of this manual.

Chapter 1 is an introduction to IDEAComm 3770/SNA.

Chapter 2 covers hardware installation and diagnostics for the system manager or hardware installer.

Chapter 3 covers software configuration for the system manager.

Chapter 4 describes emulation operation for every user who will use IDEAComm 3770/SNA commands.

Appendix A describes error messages from IDEAComm for all users.

Appendix B describes the programmable functions and cabling requirements of the IDEA Minicom card for the system manager or installer.

Appendix C lists the parameters needed by the host systems programmer preparing an NCP gen file.

Appendix D covers IDEAssociates' repair and warranty policies.

### 1.3.2 Frequently Used Terms

**board** -- used interchangeably with **card** to designate an adapter card such as the IDEA Minicomm that attaches to the PC system board.

**console** -- the IBM PC keyboard and screen, or the alternate file designated by the CONSOLE command.

**emulation package** -- IDEAcmm 3770/SNA.

**EOF** -- end of file (Ctrl-Z from the keyboard).

**host** -- the mainframe that receives the remote job entry. The designated host computer for the IDEAcmm 3770/SNA software is an IBM.

logical device -- an input or output device as seen by IDEAComm 3770/SNA, corresponding to a device on the host computer. Such a device is usually assigned to a disk file on the PC.

PC -- any IBM PC, XT, AT, or Portable Computer.

RJE -- Remote Job Entry.

SDLC -- synchronous data link control, a protocol used by IBM.

SNA -- System Network Architecture, an architecture supported by IBM.

### 1.3.3 Notation Conventions

The following conventions are used in this manual:

**UPPERCASE** Information in uppercase must be entered as shown. It may be entered in upper or lowercase, but will display on the screen in uppercase.

**<lowercase>** Fields shown in lowercase and enclosed in angle brackets (<>) contain variable information. You must substitute a

value. Do not enter the angle brackets.

[ ] Square brackets indicate optional fields. The square brackets should not be entered.

| A vertical bar indicates a choice. Choose one of the items separated by the vertical bar. One of the items must be entered, unless the items are also surrounded by square brackets.

... Ellipses indicate that a field may be repeated.

<filespec> A field shown as <filespec> indicates a standard file specification of the following form: disk name:filename.ext

punctuation Punctuation other than brackets, ellipses, braces, and vertical bars should not be entered.

delimiters Commands must be separated from their operands by one or more blanks. Multiple operands are separated from each other by a comma, a comma followed by one or more blanks, or by one or more blanks. Blanks and commas may not appear within operands.

**Ctrl-character** This combination indicates a character that is generated by pressing the Ctrl key and the indicated character together.

b The underlined b stands for a required blank space.

**cr** Carriage return.

In the screen illustrations of this manual, the characters that you must enter appear in bold type. They are shown in lowercase letters, but may generally be entered in upper or lowercase letters. Commands entered at the system prompt must be followed by pressing the carriage return (Enter) key. The first reference to command names in the text also appears in bold type. The names of keys that are referenced in this manual appear as they do on the your IBM PC/XT/AT keyboard. Unless noted, the case of the letters you enter for commands is not critical.

#### 1.4 Reference Publications

For details of the IBM SDLC protocol, refer to the IBM publication:  
GA27-3093 IBM Synchronous Data Link Control General Information

For details of the IBM SNA architecture, refer to:  
SC30-3112 System Network Architecture Format and Protocol  
Reference

For details of the protocol and operations of the IBM 3770, refer  
to:  
GA27-3144 Introduction to the IBM 3770 Data Communication System  
GC30-3028 IBM 3773, 3774, and 3775 Programmable Communication  
Terminals Programmer's Guide  
GC30-3064 IBM 3770 SNA Installation Guide

## Chapter 2

### Hardware Installation

#### 2.1 Getting Started

When you open your IDEA Minicomm package, the first thing you notice will be the amount of packing material we have placed around the IDEA Minicomm card. This ensures that you receive an undamaged card.

Please save your box and inside packaging material. If you need to return the card for repair, this packaging will provide the safest shipping container.

## 2.2 Careful!

During the installation process, please be careful with the IDEA Minicomm card. Dropping the card and similar accidents may result in improper operation.

### 2.2.1 Serial Number

Please turn your IDEA Minicomm card to the circuit side. You will find the serial number along the top edge. Record this number NOW on both your warranty card and on the following line in this manual.

Serial Number \_\_\_\_\_

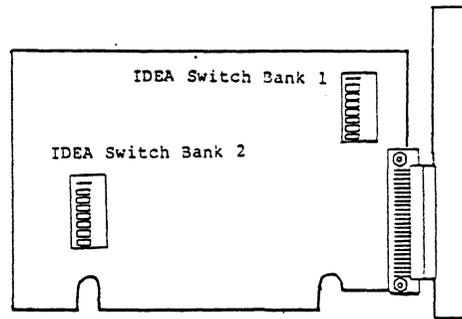


Figure 2-1: IDEA Minicomm Card

## 2.3 Hardware

### 2.3.1 Installation Overview

The IDEA Minicomm card can be installed with the following steps:

1. Opening the IBM PC.
2. Setting IDEA Minicomm card switches.
3. Inserting the IDEA Minicomm card.
4. Replacing the IBM PC Cover.
5. Connecting the modem.
6. Running hardware diagnostics.

Read through the whole installation procedure before proceeding.

### 2.3.2 Tool Requirements

1. A medium size flat blade screwdriver.
2. Pliers or a 1/4 inch socket wrench may be needed to remove the back cover of some models of the IBM PC.

### 2.3.3 Opening the IBM PC

#### Preliminary Steps

Turn off the IBM power switch.

Turn off power to any peripheral devices (printer, monitor, hard disk, etc.)

If you have an AT, unlock it.

Unplug the computer and all peripherals from the wall outlet.

Carefully note where each cable is attached. Disconnect all cables from the back of the IBM.

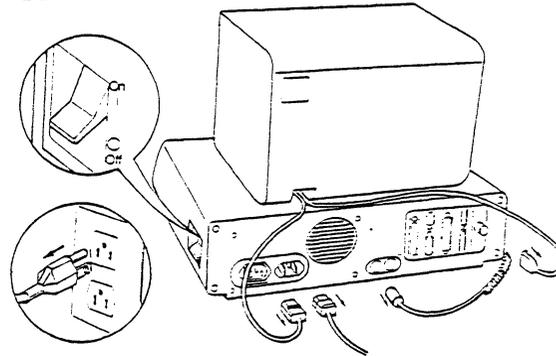


Figure 2-2: Disconnecting the Cables

### 2.3.3.1 Cover Removal

Move your keyboard and all peripheral equipment away from the work area.

Position the PC to allow rear access.

With an AT, you must remove the back panel first. Pull firmly to detach the plastic fasteners.

The cover is attached by two or five screws. With a flat blade screwdriver, remove the cover mounting screws by turning the screwdriver counterclockwise, as shown below.

Certain models may require the use of pliers or a 1/4 inch socket wrench.

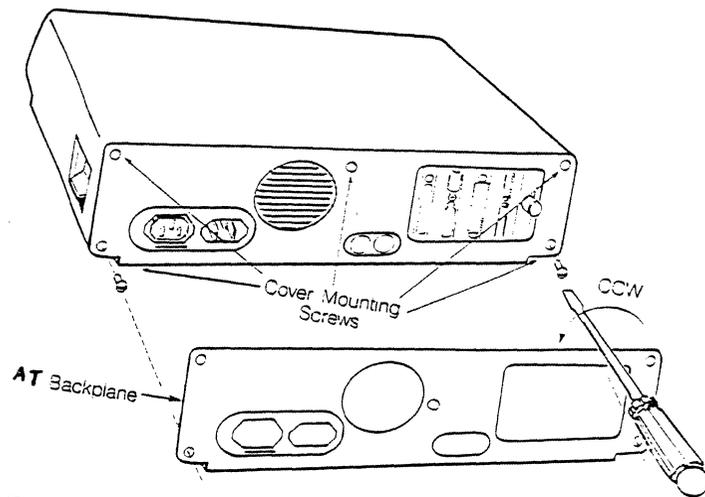


Figure 2-3: Removing the Mounting Screws (CCW)

Carefully slide the cover away from the rear of the unit. When the cover will go no further, tilt it up and remove it from the base. See the sketch below. The AT requires no tilting.

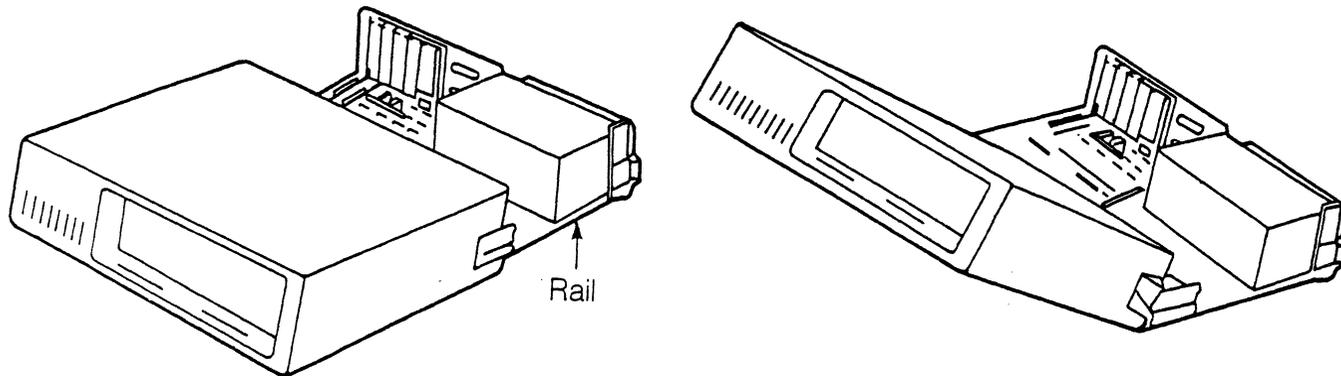


Figure 2-4: Removing the Cover

### 2.3.4 Checking IDEA Minicomm Switches

There are two switch banks on the IDEA Minicomm card. The switches are preset at the factory. Check that the switches are set as shown below (black indicates the setting that is in effect).

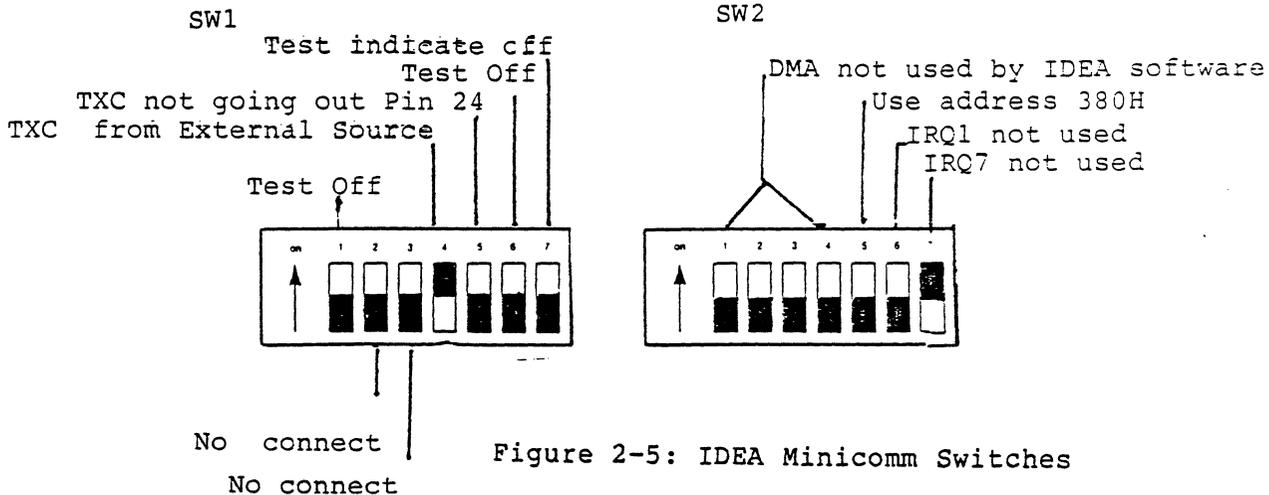


Figure 2-5: IDEA Minicomm Switches

### 2.3.4.1 Sliding Switches and Rocker Switches

If the Minicomm card uses sliding switches, verify that the tab is on the end that should be set. For rocker switches, verify that the switch is depressed on the side that should be in effect. See the figure below.

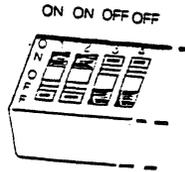


Figure 2-6: Rocker Switches

### 2.3.5 Inserting the IDEA Minicomm Card

#### 2.3.5.1 Slot Cover Removal

There are five to eight expansion slots towards the rear of the PC. IDEAssociates recommends that the IDEA Minicomm card be installed one slot away from the video display card and the disk drive control card if possible.

Use a flat blade screwdriver to remove the screw that holds the system expansion slot cover in place by turning it counterclockwise (marked CCW on the figure below).

**NOTE:** Save the screw for installation of the Minicomm card.

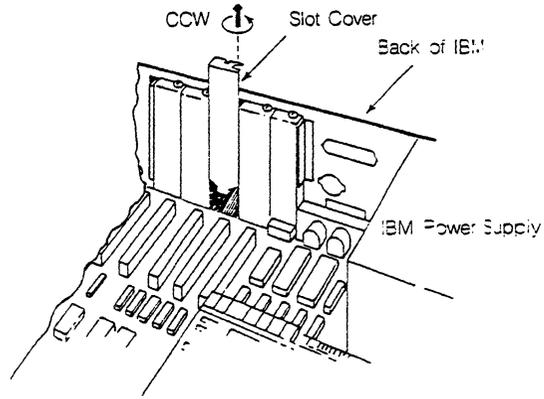


Figure 2-7: Removing the Slot Cover

### 2.3.5.2 Minicommm Card Insertion

Hold the Minicommm card by the two corners. Slide it down and firmly press it into the expansion slot.

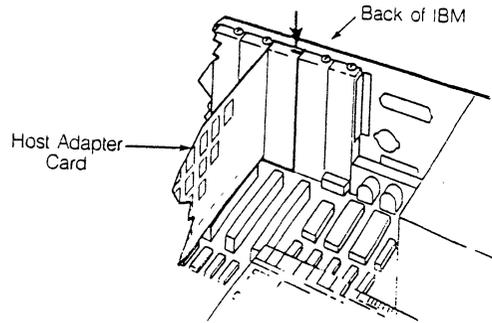


Figure 2-8: Inserting the Minicommm Card

### 2.3.6 Replacing the IBM PC Cover

If you have any other options to install, do so now, before replacing the cover.

Replace the cover by positioning it as shown, and carefully sliding it toward the rear of the computer. The AT requires no tilting.

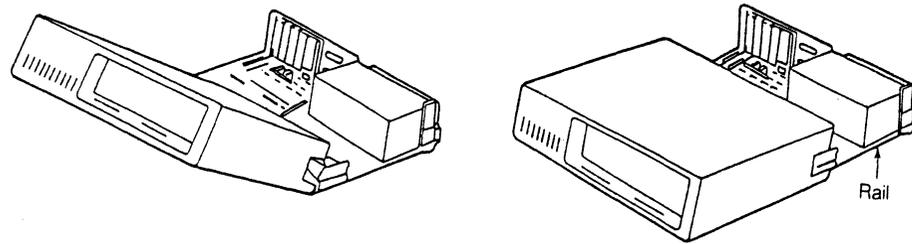


Figure 2-9: Replacing the Cover

### 2.3.6.1 Replacing the Cover Screws

When the cover is all the way to the rear, align the screws with the threaded tabs. To tighten the screws, use a flat blade screwdriver and turn them clockwise.

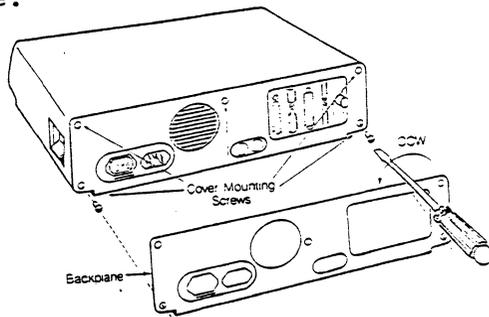


Figure 2-10: Tightening the Cover Screws

You are now ready to recable your system. Please refer to the IBM Guide to Operations, "Set-up," for recabling the keyboard, monitor,

printer, and other peripherals.

#### 2.4 Connecting the Modem

Follow the modem manufacturer's instructions for proper installation.

#### 2.5 Copying the Software

Before you use the diagnostic program or any IDEComm software, make a backup copy of the software. To do this, you need your DOS diskette, a blank formatted diskette, and the IDEComm diskette. Follow the instructions in your DOS manual for the COPY command for the number of diskette drives you have.

You now have two copies of the IDEAcomm software. Put the original away for safekeeping.

For information on formatting blank diskettes, refer to your DOS manual.

## 2.6 Running Hardware Diagnostics

After installing the IDEComm Minicom card and cabling the modem, test the hardware by running the diagnostic program described in this section.

Two powerful diagnostic tools are available to you on IDEComm 3770/SNA: a loopback test with which you can verify the proper operation of the PC, cables, and modem, and a diagnostic dump facility that helps you to diagnose line protocol problems.

### 2.6.1 Loopback Test--ALTEST Command

Analog Loopback can be tested if the modem is equipped with the Analog Loopback feature. This configuration tests the entire local data path, including the modem.

To run the loopback test:

1. Insert the diskette containing the IDEAcmm 3770/SNA files in drive A and attach to drive A.
2. Put the modem into Analog Loopback mode according to the manufacturer's instructions.
3. Enter SNA3770.
4. Enter ALTEST.

This command causes the transmission and simultaneous reception of data blocks by the PC. When an image of the data transmitted is received back by the IDEAcmm 3770/SNA, it is compared with the transmitted data. If the data is the same, the PC and other components in the data path are working correctly. If no data is received back, some portion of the data path is not working. Similarly, if received data does not match transmitted data, some portion of the data path is at fault.

Once started, the test sequence is repeated continuously until you enter any character on the PC keyboard or until an error occurs.

If an error occurs, a descriptive message is written to the PC and the test halts. (See Table 2-11.) If the error indicates a mismatch of transmitted and received data, the last valid received character is displayed in the error message. You must repair equipment that shows errors while running the loopback test before you use it for remote communications.

If a character is entered on the PC and no errors have occurred, the IDEAComm 3770/SNA writes a successful completion message to the PC and terminates the test.

Example:

Assuming the modem is in Analog Loopback, entering:

ALTEST(cr)

causes the message:

```
SNA-001 ANALOG LOOPBACK TEST -  
ENTER ANY CHARACTER TO TERMINATE TEST
```

If the test is successful, no message appears until when, after some period of running the test, you press any character on the PC.

IDEAcomm 3770/SNA issues the message:

SNA-002 ANALOG LOOPBACK TEST COMPLETED

          WITHOUT ERROR  
If, on the other hand, an error occurs, it is reported immediately.

## 2.6.2 Loopback Test Messages

<u>Error Message</u>	<u>Possible Cause</u>
NO DATA PATH ESTABLISHED	The modem cable or modem is defective.  The modem is not in Analog Loopback.  The serial I/O channel is defective.
DATA PATH ERROR	The modem cable or modem is defective.  The serial I/O channel is defective.

Table 2-1: Loopback Errors and Possible Causes

The Diagnose Facility is intended to allow support personnel to examine a record of line activity in the unlikely event that line protocol problems occur.

IDEAcomm contains a circular buffer that logs all communications line activity. This buffer may be formatted and listed on the screen, the line printer, or put into a file by the DIAGNOSE command:

>D <filespec>

<filespec> Specifies the name of a file that is to contain the display. If no drive is specified, the default is the current drive.

If <filespec> is omitted, the diagnostics appear on the screen.

NOTE: The DIAGNOSE command suspends all IDEAcomm activity for the duration of the processing of the command. For this reason, the DIAGNOSE command should be issued only when suspected line protocol problems are encountered.

The DIAGNOSE command produces a hexadecimal display of the line activity that is recorded in the buffer, as shown in the example below. Data transmitted to the line is preceded by the "\*\*\*TRANSMITTED DATA\*\*\*" identifier; data received from the line is preceded by the "\*\*\*RECEIVED DATA\*\*\*" identifier.

The DIAGNOSE command is useful if the IDEComm board has successfully communicated with your modem using ALTEST but still cannot establish a connection with the host computer.

If you have tried to establish a host session and failed, you can look at host activity in the DIAGNOSE buffer:

1. If nothing is in the buffer, one of three states is true: your modem did not communicate with the host, the host modem did not reply, or the two modems are not compatible. Retry once, then consult your system operator.
2. If there is a series of communications and then communication stops, you may have misconfigured your software. Consult your systems operator, who may want a printout of the diagnostics.

Example:

Assuming communication has been established with the host, entering the command:

D(cr)

produces a display similar to the following:

SNA-005 DIAGNOSTIC DUMP

\*\* RECEIVED DATA \*\*\*\*\*

FF BF

\*\* TRANSMITTED DATA \*\*

01 BF D0 1B 2F 1E

.  
. .  
.

SNA-006 DIAGNOSTIC DUMP COMPLETED

If no DIAGNOSTIC data is available the following message is displayed:

SNA-007 NO TRACE DATA PRESENT

Chapter 3  
Configuration Program

This chapter is intended for the System Administrator or other person who installs IDEComm 3770/SNA.

### 3.1 Obtaining Configuration Information

Before you configure IDEAcmm 3770/SNA within your SNA network, you must get certain information from your host Systems Programmer or SNA Network Coordinator. You can use the Configuration Worksheet on the following pages to organize this information.

After you obtain the information, use IDEAcmm 3770/SNA Configuration Program to customize your emulation package.

## Configuration Worksheet

1. What ID does your host computer expect your 3770 to use in the XID (Exchange ID)? The default is 00000.

Enter a 5-digit ID in hexadecimal: \_\_\_\_\_

2. What is the network address of your 3770 on the SNA line you are going to use? Possible values range between 01 and FE hexadecimal. The default is 01.

Enter the network address in hexadecimal: \_\_\_\_\_

3. What is the Logical Unit (LU) address of your 3770 terminal? Possible values range between 01 and 21 hexadecimal. The default is 01.

Enter the terminal LU address in hexadecimal: \_\_\_\_\_

4. What must you enter to log onto your host computer? You can either enter this information in the configuration or enter a LOGON command when you run IDEAComm 3770/SNA. This information might include an application ID, user ID, remote device number, password, or other information. Also be sure to determine the proper format for entering this information. If you are required to enter a password, you should not write the actual password on this page.

Enter logon record:

---

---

---

5. What type of SDLC communication line protocol does your host computer use? Choices are NRZ or NRZI. The default is NRZ.

Enter NRZ or NRZI: \_\_\_\_\_

### 3.2 Running the Configuration Program

After you and your host contact agree on the configuration parameters, install this information by running the Configuration Program. This program provides you with menus that lead you through the configuration process. The first menu, called the Main Menu, allows you to select the options that you want to configure. When you select an option on the Main Menu, subsidiary menus are then displayed to do the configuration you select. The following subsections describe each menu and the options you can enter.

### 3.3 Starting the Configuration

Start the configuration process by typing:

CSNA3770(cr)

The Configuration Program presents the Main Menu.

### 3.4 Displaying the Current Configuration

Using the Main Menu, you can display the entire current emulation configuration by repeatedly pressing the RETURN key. Each time you press the RETURN key the Configuration Program shows you the next menu in sequence, with the currently configured values shown on the

screen. Your job will be to take the information on the Configuration Worksheet and enter it into the proper place in the menus.

The first time you run the Configuration Program, page through the menus using the RETURN key to get a feel for the menus.

### 3.5 Main Menu

```
*****
* MICRO-SNA/3770 Configuration Program Vxx *
* Copyright (C) 198n, Micro-Integration, Inc.*
Select an option:
A - Configure 3770 LU Type, ID, and Address
B - Configure 3770 Logon Card
C - Configure Startup Command File
D - Configure 3770 Carriage Control
E - Configure No-Translate File Extensions
F - Configure Diagnostic Support
G - Configure 3770 Communications Line Types
1 - Exit with no changes
2 - Exit and change configuration
    -->A<--
```

Figure 3-1: Configuration Main Menu

This menu is displayed when you start the Configuration Program and each time you complete a configuration item selected from the Main Menu.

When the Main Menu is first displayed, Option A is preselected for you. If you press RETURN, the menus that configure information about your 3770 device are displayed. When you have been through the menus you come back to the Main Menu with Option B preselected. In this way the Configuration Program leads you through the whole configuration process. (Alternately, you can change option A to another option and go directly to that menu.)

The Main Menu options are discussed in detail on the following pages.

If you select Option 1 and press RETURN, the Configuration Program ends without saving any changes you have made. You can use this option to exit the Configuration Program if you change your mind, even though you have entered changes in sub-menus.

If you select Option 2 and press RETURN, the Configuration Program makes your configuration changes permanent.

### 3.6 3770 ID and Address Menu

#### 3770 ID and Address

Select an ID for XID                      Enter five-digit hex ID-->00000<--

Select an SNA network address: Enter hex number 01-FE -->01<--

Press <TAB> to select next address field

Press <ESC> to return to main menu with no change

Press <RETURN> to go on to next screen and accept change

Figure 3-2: ID and Address Menu

When you select Option A on the Main Menu, the Configuration Program displays the 3770 ID and Address Menu. This menu allows you to enter information that you obtained from your host system coordinator about

the XID and SNA network address of the 3770 you are emulating.

The current values for each entry are displayed. Press RETURN to accept the displayed values, change the values, or press ESC to cancel any changes you made and return to the Main Menu.

The entries you make are from the Configuration Worksheet, questions 1 and 2.

If your host system contact has indicated that the host system does not care about one or the other of these items, you can accept the value displayed and press TAB to skip over it.

You go forward from one field to another by using the TAB key.

After you make your selection and press RETURN, you get the 3770 Logical Unit Address Menu.

### 3.7 3770 Logical Unit Address Menu

3770 Logical Unit Address

Select a 3770 LU Address:

Enter hex number 01-21      -->01<--

Press <ESC> to return to main menu with no change

Press <RETURN> to return to main menu and accept change

Figure 3-3: Logical Unit Address Menu

After you have configured the 3770 ID and address, you will see the 3770 Logical Unit Address Menu.

The current LU address is shown. Press RETURN to accept the displayed value, change the value, or press ESC to cancel any change you made and return to the Main Menu.

The value you need to enter is from the Configuration Worksheet, question 3. If your host contact person has told you this entry makes no difference, leave it set to 01.

After you press the RETURN key to accept the value or the ESC key to cancel any changes, you return to the Main Menu. The next option, Configure 3770 Logon Card, is already entered on the menu.selected. Press RETURN to display the 3770 Logon Card Menu.

### 3.8 3770 Logon Menu

3770 Logon

Do you want the Emulator to automatically send  
a logon card to the remote when the session is  
activated?

Enter Y or N --> <--

Press <ESC> to return to main menu with no change

Press <RETURN> to go on to next screen and accept change

Figure 3-4: Logon Menu

This menu is displayed when you select Option B, Configure 3770 Logon Card, on the Main Menu.

If you specify "Y", IDEAComm 3770/SNA (the Emulator) logs onto the host (remote) system for you automatically at program startup by sending the logon card that you configure in the 3770 Logon Card Menu. The 3770 Logon Card Menu is displayed after you enter "Y" and press RETURN.

If you specify "N", when IDEAComm 3770/SNA begins executing it prompts you to log onto the host system manually. After you enter "N" and press RETURN, you return to the Main Menu.

NOTE: if you specify "Y" and configure a logon card, and then change the option to "N", this does not erase your logon card. If you later change to "Y" again, the previous logon card will still exist.

### 3.9 3770 Logon Card Menu

3770 Logon Card

```
      1      2      3      ...      8  
- - - - | - - - - | - - - - | - - - - ... |  
-----|-----|-----|-----|-----|  
-----|-----|-----|-----|-----|
```

Press <ESC> to return to main menu with no change  
Press <RETURN> to return to main menu and accept change

Figure 3-5: Logon Card Menu

This menu is displayed if you specify "Y" on the 3770 Logon Menu. The currently configured logon card is shown.

If you wish to have IDEAComm 3770/SNA log onto the host system for you automatically at program startup, enter the required logon information on this menu. The logon information is found in question 4 on the Configuration Worksheet.

When IDEAComm3770/SNA begins executing, it transmits the logon card exactly as it appears on the menu. You must format the information as required by your host computer. You may need to include a specific application ID, user ID, password, or other data.

If you leave the logon card blank, the Configuration Program changes the automatic logon option to "N" and IDEAComm 3770/SNA prompts you to log on manually.

### 3.10 Startup Command File Menu

Startup Command File

Enter filename -->                      <--

Press <ESC> to return to main menu with no change

Press <RETURN> to return to main menu and accept change

Figure 3-6: Startup Command File Menu

This menu appears when you select Option C on the Main Menu. It allows you to specify the name of a command file to be executed automatically at startup time. IBM calls this the READFILE.

To specify a startup command file, enter the filename on the menu and press RETURN. If no startup file is desired, enter a space in the first position of the filename and press RETURN. After pressing RETURN, you return to the Main Menu. Pressing ESC returns you to the Main Menu without changing the previous value.

Only the characters before the first space on filename line are used as the filename. Do not leave a space before the first letter of the filename. If a new, shorter filename is typed over an old filename, the last characters of the old name are not automatically deleted. If you type a new filename that is shorter than the previous filename, you must type at least one space immediately following the new filename.

Examples:

If the menu shows the filename:

```
-->A:STARTUP1.FIL<--
```

and you type X<sub>b</sub> the menu shows:

-->X STARTUP1.FIL<--

When you press RETURN, the new startup filename will be X.

If the menu shows the filename:

-->A:STARTUP1.FIL<--

and you enter only **B** (cr), the new startup file will be  
B:STARTUP1.FIL.

### 3.11 Carriage Control Menu

Carriage Control

Enter filename --> <--

Press <ESC> to return to main menu with no change

Press <RETURN> to go on to next screen

Figure 3-7: Carriage Control Menu

The Carriage Control Menu is displayed when you select Option D on the Main Menu. This menu and the Skip Stops Menu allow you to create files to be used with the CCTL command for printer carriage control.

Type the name of the file you wish to create or edit and press RETURN. If you do not specify a drive, the currently logged drive is

assumed.

If the file you specify does not exist, the program creates a new file with that name. If you specify the name of an existing file, the program displays the message:

File "<filespec>" already exists - modify?  
(Y/N --> <--)

If you wish to edit this file, type "Y" and press RETURN. If you entered the wrong filename, type "N" and press RETURN, and the program asks you again to enter a filename. If you reply "Y" but the file is not a carriage control file created previously by the Configuration Program, you will see the following message:

"<filespec>" is not a valid  
carriage control file.

Press <RETURN> to continue --> <--

After you press RETURN, the program asks you again for a filename.

After you specify the carriage control file to be created or modified, the program asks for the number of lines per page. The number you enter depends on the length of the printer forms for which this file will be used:

Enter number of lines on form (1-255-> <-)

If you are editing an existing carriage control file, the currently defined lines per page is displayed. If you are creating a new file, the Configuration Program displays the default value of 66 lines per page. You may enter a different value if you wish. The maximum number of lines per page is 255. When you press RETURN, the Configuration Program displays the Skip Stops Menu.

Pressing the ESC key returns you to the Main Menu without creating or changing any file. The ESC key is valid only while the following message is displayed at the bottom of the menu:

**Press <ESC> to return to main menu with no change**

Please see also the subsection Notes on Carriage Control Configuration below.

### 3.12 Skip Stops Menu

Skip Stops for A:FILE.001 for 132 Lines

Line	Skip Stops	Line	Skip Stops
1	1,2,3,4,5,6,7,8,9,10	3	2
.	.	.	.
.	.	.	.
81	11	126	12

Enter line number to define --> <--  
Press <ESC> to return to main menu

Figure 3-8: Skip Stops Menu

This menu is displayed after you specify the number of lines per page on the Carriage Control Menu.

The heading at the top of the menu shows the name of the file being edited and the number of lines per page on the forms being defined.

The currently defined lines and skip stops will be listed on the menu. If you are creating a new file, the menu will show skip stop 1 for line 1.

Valid skip stops are 1 through 12. Valid line numbers are 1 through the number of lines per page shown in the menu heading. If skip stops are defined for more than 38 different lines, only the first 38 are displayed on the menu.

Enter the number of the line for which you wish to define skip stops and press RETURN. The program will not allow you to enter a line number greater than the number of lines per page.

After you enter a valid line number and press RETURN, the message at the bottom of the menu changes to:

Enter skip stop(s for line nnn --> <--

Press <RETURN>.)

Type the skip stop numbers you wish to define for this line, separated by commas, and press RETURN.

If you entered a line number for which skip stops are already defined, the current skip stops are displayed between the arrows in the message, and you can type the new skip stop numbers over the old. The program takes all characters up to the first blank, whether the characters were put there by the program or typed by you.

To eliminate all skip stops for a line, type a space in the first position between the arrows and press RETURN. The line number will be deleted from the list of lines shown on the menu.

After you press RETURN, the list of lines and skip stops is updated according to the line you added, changed, or deleted, and the following message appears again:

Enter line number to define --> <--

When you are through defining skip stops, press ESC to save your changes and return to the Main Menu.

Every carriage control file must have at least one channel 1 (top of form) skip stop. The program will not allow you to return to the Main Menu if there is no skip stop 1 defined.

### 3.12.1 Notes on Carriage Control Configuration

If you decrease the number of lines per page for an existing file, any skip stops defined on lines beyond the new end of form are deactivated. These skip stops are no longer displayed on the Skip Stops Menu or recognized by the CCTL command. However, if at a later time you increase the lines per page to a large enough value, these previously defined skip stops will be reactivated.

#### Caution

The Carriage Control Menu and Skip Stops Menu operate on files other than the IDEAComm 3770/SNA configuration file. Therefore, your changes become permanent when you return to the Main Menu from the Skip Stops Menu. If you choose Option 1 on the Main Menu to exit the Configuration Program with no changes, this does NOT undo changes to carriage control files which you have created or edited.

### 3.13 No-Translate Files Menu

#### No-Translate Files

Enter extensions of files that are NOT to be translated:

-->.ABS<--  
-->.CMD<--  
-->.COM<--  
-->.ERL<--  
-->.IRL<--  
-->.LIB<--  
-->.LNK<--  
-->.LOC<--  
-->.OBJ<--  
-->.REL<--

Press <TAB> to select next field

Press <ESC> to return to main menu with no change

Press <RETURN> to return to main menu and accept change

Figure 3-9: Translate/No Translate Menu

This menu is displayed when you select Option E on the Main Menu. This menu gives a list of filename extensions of files that are not to be translated between ASCII and EBCDIC by default.

To add a filename extension to the list, use the TAB key to move the cursor to a blank field, and then type the extension you wish to add. To delete an entry from the list, use the TAB key to move the cursor to the appropriate field and type over it with spaces. To change an entry in the table, use the TAB key to move the cursor to the appropriate field and type the new extension.

Up to ten filename extensions can be specified as no-translate. The first character of each extension must be a dot (.).

After you are through editing the list of filename extensions, press RETURN to record your changes and return to the Main Menu. Pressing ESC returns you to the Main Menu without changing the previous list.

### 3.14 Diagnostic Support Menu

Diagnostic Support

Select an option:

- A - Include all transmitted/received characters in DIAGNOSE
- B - Exclude control (non-data) characters from DIAGNOSE
- C - Disable DIAGNOSE

--> <--

Press <ESC> to return to main menu with no change

Press <RETURN> to return to main menu and accept change

Figure 3-10: Diagnostic Support Menu

The Diagnostic Support Menu is displayed when you select Option F on the Main Menu. This menu lets you specify what characters are to be included in the diagnostic dump produced by the DIAGNOSE command. This command is discussed in Chapter 2.

The option you should select depends on what type of problems you are trying to diagnose. If you choose Option A, all bytes that pass over the communication line are displayed in the diagnostic dump.

If you select Option B, only the actual data characters appear in the dump. SDLC protocol characters are not displayed.

If you select Option C, communication line activity is not recorded by IDEAcmm 3770/SNA. You may wish to select this option for security purposes -- for example, to prevent the recording of passwords or confidential data.

### 3.15 3770 Communication Line Type Menu

3770 Communication Line Type

Select a line type option:

A - NRZ operation

B - NRZI operation

-->A<--

Press <ESC> to return to main menu with no change

Press <RETURN> to return to main menu and accept change

Figure 3-11: Communication Line Type Menu

This menu is displayed when you select the Configure 3770 Communication Line Type option on the Main Menu, if available.

Enter the option from question 5 on the Configuration Worksheet.

The menu shows the current option. You can press RETURN to accept the option shown, change options, or press ESC to cancel any change you made and return to the Main Menu.

See Appendix A for messages displayed by the configuration program.

### 3.16 Ending the Configuration

After you complete the configuration process, you again see the Main Menu, with Option A selected for you. If you keep pressing RETURN, the Configuration Program cycles you through all the menus so that you can check the configuration. When you are satisfied that you have set the configuration correctly, select Option 2 on the Main Menu and press RETURN to make your configuration permanent. If you decide you do not want the new configuration and would like to stay with the old values, enter Option 1 and press RETURN to stop the Configuration Program without making any changes.

After the configuration is complete, you are ready to communicate with the host computer.

## Chapter 4

### Program Operation

Before operating the IDEAcomm 3770/SNA program, you may need to run the configuration program described in Chapter 3.

#### 4.1 Program Initialization

To operate IDEAComm 3770/SNA, you need a DOS boot diskette with SNA3770 files on it. Otherwise, you can boot with DOS, then insert the SNA3770 diskette in drive A and attach to A.

DOS must be running when you run IDEAComm 3770/SNA. Consult the IBM manual to determine how to start (boot) DOS.

NOTE: IDEAComm 3770/SNA contains multiple overlay files. Therefore, the diskette containing IDEAComm 3770/SNA must remain in the PC while you run IDEAComm 3770/SNA.

#### 4.1.1 Running the Emulation

To start IDEAcmm 3770/SNA, enter:

**SNA3770(cr)**

IDEAcmm 3770/SNA responds with:

MICRO-SNA/3770, Vnn.nn.nn, **SERIAL xx-nnnnn**  
COPYRIGHT (C) 198n, MICRO-INTEGRATION, INC.  
Copyright (C) 198n, IDEAssociates, Inc.  
IDEAcmm 3770/SNA is then initialized and ready.

#### 4.1.2 Establishing the Telephone Data Link

If you have connected your PC to the host using a dedicated telephone line (point-to-point), no telephone connection normally needs to be established.

If you have connected your PC to a switched (dial-up) line:

1. Press the TALK button on the telephone and lift the receiver.
2. Dial the number of the host.
3. When the host answers with a high-pitched tone, press the DATA button on the telephone and hang up. The PC is connected with the host. If the modem is equipped with a Modem Ready (MR) light, this light is lit to show communications are established.

If the host number is busy, try again later or use an alternate number, if available.

If the host number does not answer, you must call a person at the host location and ask to have the line activated.

## 4.2 Operational Overview

IDEAcomm 3770/SNA is designed to allow the sharing of processing between a PC and a host processor. To allow this sharing, two types of files can be transferred between machines:

1. Text or character-coded files, such as Job Control Language (JCL), source, and listing files. These files contain only valid ASCII characters when held on the PC and contain EBCDIC characters when held on an IBM mainframe.
2. Binary coded files, such as object, link, library, and executable module files. These files contain data that cannot be represented by a valid ASCII or EBCDIC character.

IDEAcomm 3770/SNA provides the ability to transfer both types of files between machines. It performs the ASCII/EBCDIC code translation, record padding, and line protocol handling needed to ensure that a

file on one machine does not logically change when transferred to another machine.

### 4.3 Command Summary

Emulation Commands have the syntax:

<operation>b<operand>[,<operand>]...

<operation> Specifies the command to be executed.

<operand> Specifies the operand(s) required by the command. Operands may not contain imbedded commas.

A summary of the emulation commands, abbreviations, and uses is given in Table 4-1.

<u>Command</u>	<u>Abbreviation</u>	<u>Use</u>
ALTEST	--	Performs a loopback test. See Chapter 2.
ASSIGN	A	Assigns a logical device to a physical device or file.
CCTL	--	Sets printer carriage control tables.
CONSOLE	C	Assigns command input to a file.
DIAGNOSE	D	Dumps a history of recent communications line activity to the console or a file. See Chapter 2.
DIRECTORY	DIR	Creates a console display of the directory of a disk.
ERASE	ERA	Deletes (erases) one file at a time from a disk.
EXIT	--	Terminates emulation.

HELP	H	Displays the contents of HELP file SNA3770.HLP on the console.
LOGOFF	--	Sends a logoff record to the host.
LOGON	--	Sends a logon record to the host.
NRC	--	Sets Non-Receive Chaining for files received from the host for a logical device.
RC	--	Assigns a logical device and sets Receive Chaining for files received from the host for that device.
STAT	--	Creates a console display of the current emulation status and transmission statistics.
TYPE	T	Displays the contents of the specified file on the console.
UNASSIGN	UA	Unassigns (frees) a logical device.
WAIT	W	Waits for one of the logical devices to become

unassigned before processing additional  
commands.

\$

--

Designates an RJE command. Any command  
beginning with a "\$" is transmitted to the  
host instead of being executed by IDEAComm  
3770/SNA.

Table 4-1: Emulation Commands

## 4.4 Concepts and Operations

### 4.4.1 Logging On

Before data can be sent to or received from the host over a switched (dial-up) telephone connection, you must log onto the host even though you are already in IDEAComm 3770/SNA. You can do this either by specifying a logon record in the configuration as described in Chapter 3 or by using the LOGON command:

```
LOGON <logon information>
```

The LOGON command is described later in this chapter.

If you specified automatic logon in the configuration, the logon record from the configuration is sent to the host when the session is activated. (To the systems programmer that means, when a successful ACTLU command is received from the host.) The session should become

activated automatically after you start IDEAcmm 3770/SNA and establish a data link. The message:

SNA-053 SESSION ACTIVE

appears on your console when your session has been successfully established with the host. If this message does not appear, contact a support person at the host system.

If your session has been activated but your logon was not successful, a message from the host system is also displayed. If only message SNA-053 appears, logon has been successful and you are ready to transfer data.

#### 4.4.2 Transferring Data

Data is transferred between logical devices on the PC and the host computer. You use the ASSIGN command to assign each logical device to a PC file:

ASSIGN <device>:<filespec>

You can also assign the logical printer to the PC printer.

The ASSIGN command is described in detail later in this chapter.

#### 4.4.3 Logical Devices

The logical devices supported by IDEAcomm 3770/SNA are:

CONSOLE      The PC keyboard and display.

DISK          A PC file that will contain data from the  
                 host destined for disk.

PRINTER      A PC device or file that will contain data  
                 from the host destined for disk.

PUNCH        A PC file that will contain data from the  
                 host destined for the card punch.

READER       A PC file that contains data destined for the  
                 host card reader.

IDEAcomm 3770/SNA obtains data to be transmitted to the host from its

logical reader (RD1) device. Data received from the host is written to IDEAcmm's logical printer (PR1), punch (PU1), or disk (DSK) device.

#### 4.4.4 ASCII/EBCDIC Translation

As previously noted, data can be either binary data, requiring no code translation, or character-coded data, usually requiring translation between ASCII and EBCDIC. IDEAcmm 3770/SNA provides automatic translation for some files, based on the file extension, with override by the console command.

IDEAcmm 3770/SNA is originally configured so that files named with the following extensions or no extension are transferred with no ASCII/EBCDIC translation unless you specify translation is to take place:

.ABS	.IRL	.LOC
.CMD	.LIB	.OBJ
.COM	.LNK	.REL
.ERL		

Table 4-2: File Extensions with No Translation

Filenames with other extensions are translated unless the translation is overridden by your specific command.

You can modify the list of the filename extensions for files that are not to be translated. See Chapter 3, Configuration Program, for details of how to change the no-translate extensions.

Translation occurs on a file-by-file basis, so that each of a series of files transmitted as one transmission has an individual translate or no translate attribute. This handling simplifies mixing binary data, which is not to be translated, with character data such as Job Control Language (JCL), which is to be translated.

When transmitting and translating, ASCII forms control characters in files, such as (TAB), (FF), etc., are translated to their EBCDIC

equivalents and are sent as part of the data record containing the character, unless the forms control character is also a record delimiter. (See the IBM publication GC30-3064, IBM 3770 SNA Installation Guide, for a list of record delimiters.)

#### 4.4.5 Record Formatting

Character-coded data is maintained in the PC as a string of ASCII records. The IBM 3770 communication terminal, on the other hand, uses individual card image and print line image EBCDIC records. When transmitting character-coded files, IDEAComm 3770/SNA formats file records into card images, translates the records to EBCDIC, and transmits them to the line. This reformatting is performed for all files that are translated from ASCII to EBCDIC and is not performed for files that are not translated. Translated character-coded data received from the host is expanded and placed into a file or written to the printer as a series of ASCII records.

Binary non-translated files are maintained in the PC as a series of binary records. When transmitting binary files, IDEAComm 3770/SNA obtains an 80-byte card image from a file and transmits it to the line with no reformatting. Non-translated data from the host is placed

into a file as a series of binary records with no record delimiters inserted by IDEAComm 3770/SNA.

Records longer than 80 bytes are divided into 80-byte records before being transmitted by IDEAComm 3770/SNA. Reader records shorter than 80 bytes are sent as short records.

#### 4.4.6 File Transmission Requirements Summary

Table 4-3 summarizes the file types that are commonly transferred by IDEAComm 3770/SNA and shows each file type's translation attribute.

<u>File Type</u>	<u>Translated?</u>
JCL	Yes
SOURCE	Yes
LIST	Yes
OBJECT	No
RELOCATABLE	No

Table 4-3: File Transmission Requirements

#### 4.4.7 Compression and Compaction

Compression and compaction refer to means of reducing the number of bytes transmitted by deleting extra blank spaces in the data stream. IDEAComm 3770/SNA receives compressed records from the host. It does not receive compacted records, and does not send compressed or compacted records.

#### 4.5 Logging On -- LOGON Command

If you did not specify automatic logon in the configuration, after you establish a data link with the host and the session becomes active IDEAComm 3770/SNA prompts you to log on by displaying the message:

```
SNA-029 NO LOGON CONFIGURED - ENTER LOGON
```

You should then log on by entering the LOGON command:

```
LOGON <logon information>
```

<logon information> Is whatever information may be required by your host computer, terminated by a carriage return.

Example: LOGON APPLID(<application>) DATA(RMT07,, <password>)(cr)

#### 4.6 Logging Off -- LOGOFF Command

When you are finished communicating with the host, log off by entering the LOGOFF command:

LOGOFF

IDEAcomm 3770/SNA sends a logoff record to the host and displays a console message when logoff is complete.

#### 4.7 Assigning Devices -- ASSIGN Command

The ASSIGN command establishes the relationship between each logical device and a PC physical device or file. The ASSIGN command has the syntax:

A <device>:<filespec>[{{TSL|NTSL}}]

<device> Specifies one of IDEAcmm's logical devices:

- RD1 - reader
- PR1 - printer
- PUL - punch
- DSK - diskette

<filespec> Specifies the name of the file to be assigned to the logical device. If no drive is specified, the current drive is assumed.

TSL Specifies that the file data will be ASCII-EBCDIC translated, regardless of the filename extension specified.

NTSL Specifies that the file data will not be ASCII-EBCDIC translated, regardless of the filename extension specified.

If both TSL and NTSL are omitted, translation depends on the filename extension.

The logical device specified is assigned to <filespec> and ASCII-EBCDIC translation depends on the filename extension or translation override specified.

The PR1 device can be assigned to a physical printer attached to the PC by entering LST: instead of <filespec> in the ASSIGN command.

Up to eight files may be specified in one ASSIGN command for RD1. All files specified in the same command are transferred as one data set.

If you issue an ASSIGN command for RD1: before you log on, IDEAComm 3770/SNA waits until logon is completed before processing the ASSIGN command. You can use this feature in conjunction with the automatic

logon and automatic startup command file features described elsewhere in this manual. However, if manual logon is required, do not issue an ASSIGN RD1: command before logging on.

Examples:

To assign the logical reader to a file on the current drive named JOB.JCL, enter:

A RD1:JOB.JCL(cr)

To assign the reader to transmit a sequence of three files on drive A containing ASCII Job Control records and binary data, enter:

**A RD1:A:FILE1.JCL,A:FILE2.BIN{NTSL},A:FILE3.JCL(cr)**

To assign the logical printer to a physical printer attached to the PC, enter:

A PR1:LST:(cr)

#### 4.8 Assigning Devices with Receive Chaining -- RC Command

The RC command is used to set Receive Chaining for a logical device.

RC <device>:<filespec>

<device>: Specifies one of IDEAcomm's logical receiving devices:

PR1 - printer  
PU1 - punch  
DSK - disk

<filespec> Specifies the name of the file to be assigned to the logical device. If no drive is specified, the current drive is assumed.

The logical device specified is assigned to <filespec> with Receive Chaining.

Receive Chaining lets you receive a series of files with one command.

The files must all have the same base filename with sequentially numbered filename extensions. If you specify a filename with a numeric extension, the extensions transferred will start at that number plus one. If you specify a numeric extension with fewer than three digits, the extensions will be padded to three characters with leading zeros. If no extension or an extension containing any non-numeric characters is specified, the extension numbers will start at .001.

Examples:

Suppose the host has three files to transmit to your terminal's logical printer device.

1. If you enter the command:

```
RC PR1:PRNTFILE(cr)
```

this data will be transferred into the files PRNTFILE.001, PRNTFILE.002, and PRNTFILE.003. After the transmission from the host is completed, the printer will be assigned to the file

PRNTFILE.004. PRNTFILE.004 will not contain any data yet.

2. Entering the command:

RC PR1:PRNTFILE.DAT(cr)

produces the same result.

3. If you enter the command:

RC PR1:PRNTFILE.007(cr)

you will receive the data into the files PRNTFILE.008, PRNTFILE.009,  
and PRNTFILE.010. The printer will then be assigned to  
PRNTFILE.011.

4. Entering the command:

RC PR1:PRNTFILE.7(cr)

would produce the same result.

Files received with Receive Chaining are ASCII/EBCDIC translated unless the numbered extensions are configured as no-translate.

Example:

Suppose you enter the command:

```
RC DSK:DSKDATA.OB.OBJ
```

and receive the files DSKDATA.001 and DSKDATA.002. To receive these files without translation, you must configure the extensions .001 and .002 as no-translate (see Chapter 3). It would not matter whether .OBJ is configured as no-translate.

Non-Receive Chaining is in effect at IDEAcmm 3770/SNA startup.

Receive Chaining is always in effect for data received to the physical printer. This means that PR1 does not automatically become unassigned at end-of-file when it is assigned to the physical printer. There is of course no filename extension in this case.

Note that with Receive Chaining, you still get the message:

SNA-028 device UNASSIGNED

to let you know when end-of-file is received. However, the device is automatically re-assigned to the next file in sequence.

#### 4.9 Setting Non-Receive Chaining -- NRC Command

The NRC command:

NRC <device>:

is used to set Non-Receive Chaining for a logical device.

<device>: Specifies one of IDEAComm's logical receiving devices:

PR1 - printer

PU1 - punch

DSK - disk

With Non-Receive Chaining, when an end-of-file is received from the host for a logical device assigned to a disk file, the device becomes unassigned. You must enter a separate assignment command to specify a filename for each file received from the host.

Example:

To set Non-Receive Chaining for the logical disk device, enter:

NRC DSK:(cr)

Now you must enter a separate assign command for each file received from the host for the logical disk. If DSK: is currently assigned, it remains assigned until end-of-file is received from the host.

Non-Receive Chaining is in effect at IDEAcomm 3770/SNA startup.

4.10 Releasing Assigned Devices -- UNASSIGN Command

You can release the logical devices from their current assignments by using the UNASSIGN command. The UNASSIGN command frees a device so that the assignment of the device can be changed.

The logical reader is automatically unassigned when end-of-file is reached on a disk file. The logical printer, punch, or disk is automatically unassigned if the host sends an end-of-file sequence when the device is assigned to a disk file.

The UNASSIGN command has the syntax:

UA <device>:

<device> Specifies one of IDEAComm's logical devices:

- RD1 - reader
- PR1 - printer
- PU1 - punch
- DSK - diskette

If you unassign the logical reader before end-of-file is reached, the remaining part of the file is not sent to the host.

If a device with Receive Chaining in effect is unassigned (either automatically or with an UNASSIGN command), the device is automatically re-assigned to the next sequentially numbered file.

Example:

To free the logical printer device to allow it to be reassigned,  
enter:

UA PR1:(cr)

#### 4.11 Status Inquiry -- STAT Command

The Status Inquiry command can be used to obtain the current emulation status. Entering the command:

STAT

produces a console display showing:

- o Whether the user's session is active on the host computer.
- o Current printer carriage control (standard, filename, or set by host).
- o Current reader, printer, punch, and disk assignments and options.
- o Transmitted or received record counts for each logical device for the entire current emulation.

Example:

Entering the command:

STAT(cr)

generates a display similar to the following:

```
SNA-027 MICRO-SNA/3770 SYSTEM STATUS
SESSION STATUS: ACTIVE
PRINTER CARRIAGE CONTROL: STD
CURRENT DEVICES ASSIGNED:
    READER - RDRFILE.TXT      TSL
    PRINTER - LST:           TSL  RC
    PUNCH - UA
    DISK - B:BINDATA.COM     NTSL  NRC
RECORDS RECEIVED FROM HOST:
    PRINTER RECORDS - 1715
    PUNCH RECORDS - 0
    DISK RECORDS - 71
    CONSOLE RECORDS - 53
RECORDS TRANSMITTED TO HOST:
    READER RECORDS - 108
```

CONSOLE RECORDS - 22

\*\*\*END OF SYSTEM STATUS\*\*\*

UA for a device means the device is currently unassigned.

#### 4.12 Displaying File Content -- TYPE Command

This command is similar to the DOS TYPE command. The contents of a file are displayed on the console, one page (screen) at a time. Lines greater than 80 characters (including carriage return/line feed) are segmented and continued on the next line. Upper and lowercase characters are supported. Horizontal tabs are expanded. Form feeds (OCH) are translated to carriage control/line feed (ODH,0AH). No other translation is performed on the data.

If the file is longer than one page, the last line on the screen gives you the option of cancelling the display by pressing the D key or continuing to the next page by pressing any other key. When the last page is displayed, a message is displayed indicating that the TYPE command has been completed.

The TYPE command has the syntax:

T <filespec>

<filespec> Specifies the file to be displayed. If no drive is specified, the current drive is assumed.

Examples:

T JOBXYZ.001(cr)

displays the contents of a file on the current drive named JOBXYZ.001.

T B:JOBWED.ASM(cr)

displays the contents of a file on diskdrive B named JOBWED.ASM.

#### 4.13 Getting Help -- HELP Command

You can use the HELP command to get help in running IDEAComm 3770/SNA.

The HELP command has the syntax:

H

When you enter the HELP command, the HELP file (SNA3770.HLP) is displayed on your console.

The file is displayed one page (screen) at a time. If the file is longer than one page, the last line on the screen gives you the option of cancelling the display by pressing the D key or continuing to the next page by pressing any other key. When the last page is displayed, a message indicates that the HELP display has been completed.

The help file supplied with IDEAComm 3770/SNA contains a description of the commands. You can change the contents of this file to display any information you need, such as telephone numbers of your host computer.

If you wish to customize the HELP file, the following considerations apply.

The file must be named SNA3770.HLP and must reside on the same disk device as the other IDEAComm 3770/SNA files.

Lines longer than 80 characters are segmented and continued on the next line. Maximum size of any line is 255 bytes including carriage return and line feed. All logical lines must be delimited by carriage return and line feed (ODH, OAH). Upper and lowercase ASCII characters are supported. The horizontal tab (09H) is supported and expanded at intervals of 8 characters.

The file is displayed one full screen at a time, less one line to allow for this message at the bottom of the screen. You may want to format your file so that the breaks between screens occur at reasonable places.

If you do not want a HELP file, you can delete it. The HELP command displays a "File Not Found" message if SNA3770.HLP is not found on the same disk as IDEAComm 3770/SNA.

#### 4.14 Terminating Execution -- EXIT Command

Emulation can be terminated through use of the command:

EXIT

IDEAcomm 3770/SNA returns control to DOS.

#### WARNING

Do not terminate IDEAcomm 3770/SNA in any way except through use of the EXIT command. If you do, the assigned files are not closed and the file data will be lost. In addition, multiple line errors may be reported at the host computer.

#### 4.15 Displaying Disk Directory -- DIRECTORY Command

You can display the directory of a disk with the DIRECTORY command:

DIR [<d:>]

<d:> Specifies the drive containing the disk directory to be displayed. If <d:> is omitted, the currently attached drive is assumed.

Examples:

To display the directory of the current disk, enter the command:

DIR(cr)

To display the directory of the B disk, enter:

DIR B:(cr)

#### 4.16 Erasing a File from a Disk -- ERASE Command

You can delete a file from a disk through use of the ERASE command:

ERA <filespec>

<filespec> Specifies the name of the file to be erased. If no drive is specified, the current drive is assumed.

Example:

To erase (delete) a file named BAD.FIL from disk B, enter:

ERA B:BAD.FIL(cr)

#### 4.17 Run Time Console Assignment -- CONSOLE Command

A console input assignment facility allows you to create command files for operations done frequently. The CONSOLE command:

```
C <filespec>[,<filespec>...]
```

assigns the console input device to a file.

<filespec> Specifies the name of the file to be assigned as console input. If no drive is specified, the current drive is assumed.

Up to eight files can be specified in one CONSOLE command. When end-of-file is reached on a file, the console is assigned to the next file specified in the command. When end-of-file is reached on the last file, console input is reassigned to the console.

You can also configure IDEAComm 3770/SNA to execute a CONSOLE command automatically at startup by providing the filename of the command file in the configuration. See Chapter 3, Configuration Program, for details.

A console file can consist of any number of commands listed in this chapter and can be created using any available ASCII text file editor. Each command must be terminated by a carriage return. Parameter substitution is not available with console files.

See "Operation with Console Files" for a complete discussion of emulation operation when console input is assigned to a file.

Example:

The CONSOLE command:

```
C A:EMULCON1.SRC,B:EMULCON2.SRC(cr)
```

assigns console input to the file EMULCON1.SRC on drive A. IDEAComm 3770/SNA executes the commands contained in this file. At end-of-file on EMULCON1.SRC, console input is assigned to the file EMULCON2.SRC on drive B. At end-of-file on EMULCON2.SRC, console input is again

assigned to the PC keyboard.

#### 4.17.1 Operation with Console Files

When the console command input is assigned to a file by the CONSOLE command, special processing considerations are in effect.

Nesting of CONSOLE commands, (having a CONSOLE command within a console file) causes the console input to switch to the new file specified. At end-of-file on the new file, however, console assignment reverts to the console device, or to the next file specified in the original CONSOLE command typed on the console. Console assignment does not return to the previous console file. Therefore, if a CONSOLE command is used in a console file, it should be the last command in the file.

An EXIT command in a console file terminates emulation, provided an EXIT command is valid at that time (that is, if no devices are assigned).

Entering Ctrl-E on the keyboard switches console input from a console file assignment to the keyboard. Similarly, a Ctrl-E in the assigned

file switches console input from the file to the console. The console input assignment reverts to the file when a second Ctrl-E is entered on the console.

Pressing the ESCAPE or ESC key switches console input from a console file back to the console and aborts the CONSOLE command. After pressing ESCAPE, you cannot resume processing the console file where you left off, as you can do after entering Ctrl-E.

If IDEAComm 3770/SNA reads an ASSIGN command for a device before a previous ASSIGN command has been completed, the following message is displayed:

```
SNA-023 COMMAND REJECTED - DEVICE ALREADY ASSIGNED
```

You can use the WAIT command, described later in this chapter, to separate ASSIGN commands in console files.

To summarize, when the console is assigned to a file:

- o End-of-file reverts console control to the console device.

- o A CONSOLE command can appear in a console input file, but console control does not automatically revert to the file containing the command.
- o Ctrl-E switches console control back and forth between the file and the console.
- o ESCAPE or ESC aborts the CONSOLE command and switches control to the console.

Example:

If you create a command file named COMMAND.FIL containing the commands:

```
A PR1:LST:  
A PU1:PUNCH.FIL  
A RD1:FILE1.JCL,FILE2.TXT
```

and you issue the console assignment command:

```
C COMMAND.FIL(cr)  
then IDEAComm 3770/SNA reads the printer and punch ASSIGN commands and
```

sets the print device to the physical printer and the punch device to PUNCH.FIL. It then sends the files FILE1.JCL and FILE2.TXT.

#### 4.18 Waiting for Unassignment -- WAIT Command

The WAIT command halts command input until a specified logical device becomes unassigned or until end-of-file for that device. This command has the syntax:

W <device>:

<device> Specifies one of IDEAComm's logical devices:

- RD1 - reader
- PR1 - printer
- PU1 - punch
- DSK - diskette

The usual use of this command is to delay the processing of commands in a console file until one command has been completed. (See "Operation with Console Files.") When the WAIT command is read from a console file, no further commands are read from the file until

end-of-file or unassignment for the specified device.

If you type the WAIT command on the console, the keyboard is locked until end-of-file or unassignment for the specified device.

If you enter a WAIT command for a device with Receive Chaining in effect, the WAIT command is completed when end-of-file is received for the current file.

You can cancel a WAIT command by pressing the ESCAPE or ESC key.

Examples:

Suppose you want to receive two files from the host to the logical disk device, without using Receive Chaining. You could create a console file containing the commands:

```
A DSK:B:SOMEDATA
```

```
W DSK:
```

```
A DSK:A:MOREDATA
```

The WAIT command keeps IDEAcmm 3770/SNA from reading the next ASSIGN command until end-of-file is received for the file B:SOMEDATA and DSK becomes unassigned. Otherwise, when IDEAcmm 3770/SNA reads the

second ASSIGN command for DSK, it displays the error message:

```
SNA-023 COMMAND REJECTED - DEVICE ALREADY ASSIGNED
```

Suppose you want to send two jobs to the host for processing and receive the output from the jobs to the logical printer files PRDATA.001 and PRDATA.002, respectively. You could create a console file containing the commands:

```
RC PR1:PRDATA  
A RD1:JOB1,JOB2
```

With these commands, however, JOB1 and JOB2 would be transmitted to the host in the same data set. JOB2 could conceivably be completed before JOB1, in which case PRDATA.001 would contain the output from JOB2 instead of JOB1. Therefore you would not know which of the PRDATA files contained the output from which job. Using a WAIT command would prevent this from happening by not letting JOB2 be sent until after the output from JOB1 has been received to PRDATA.001:

```
RC PR1:PRDATA  
A RD1:JOB1  
W PR1:  
A RD1:JOB2
```

#### 4.19 Setting Printer Carriage Control -- CCTL Command

Printer-destined data received from the host can contain "channel select" or "channel skip" characters. The printer carriage control information specifies the number of lines per page and tells the printer which line on the page to advance to when a channel skip is received for a given channel number.

You can change the carriage control specifications by entering the CCTL command:

```
CCTL <filespec>|STD
```

<filespec> Specifies the name of the file from which carriage control information is to be obtained. If no drive is specified, the current drive is assumed.

STD Specifies that the standard carriage control information is to be used: 66 lines per page, channel 1 (top of form) = line 1.

You can create files containing carriage control information by using the Configuration Program, as described in Chapter 3.

Standard carriage control information is in effect at emulation startup.

If you enter a CCTL command while printer data is being received, the remainder of the current file is received with the old carriage control settings in effect. After end-of-file is received, IDEAComm 3770/SNA acknowledges the CCTL command with a console message and the new specifications then take effect.

IDEAComm 3770/SNA also supports carriage control specified by the host system. If a Set Vertical Format (SVF) command is received from the host, this overrides whatever carriage control was in effect.

You can use the STAT command to display the current carriage control setting (STD, HOST, or <filespec>).

Examples:

Entering the command:

CCTL A:CTLFILE(cr)

sets carriage control according to the information in the file CTLFILE on drive A.

Entering:

CCTL STD(cr)

sets standard carriage control.

## 4.20 RJE Commands

IDEAcomm 3770/SNA supports an RJE console, using the PC as system console. This means that you can enter any HASP, CDC Intercomm, or JES command supported by the host on your PC and receive the response from the host back to the PC.

Any command string that you enter beginning with the RJE command identifier character "\$" is treated as an RJE command. IDEAcomm 3770/SNA does not execute this command but sends it to the host.

### Example:

To display the status of a host JES system's input and output queues, enter:

```
$DQ(cr)
```

The command \$DQ is sent to the host and the display of queue status returned by the host is displayed on the console.

This RJE command feature is particularly useful in displaying and changing the status of jobs submitted to the host for processing.

#### 4.21 Program Messages

IDEAcomm 3770/SNA issues messages that inform you of the current execution status. All messages have the form:

SNA-nnn message text

nnn           Is a unique message identifier that provides easy reference to the message explanation.

message       Is a short message briefly describing the action required, condition found, or program status.

IDEAcomm 3770/SNA messages are documented in detail in Appendix A.

Any messages without the SNA-nnn prefix are not issued directly by IDEAcomm 3770/SNA. Such messages are issued by DOS while IDEAcomm 3770/SNA is running. Consult your DOS manual for explanations.

## 4.22 Sample Session

### 4.22.1 Console Activity

The following sample session shows the keyboard activity necessary to receive whatever data files the host has for the 3770 terminal, then send a job to the host to be processed and receive back a printer listing and disk file output of the job. IDEAComm 3770/SNA messages are shown in uppercase.

Keyboard entries are shown in underscored lowercase, even though commands can be entered in upper or lowercase. Line numbers are shown for reference purposes only and do not actually appear on the console. An explanation of each line number entry follows the sample session.

0001 B>  
0002 B>sna3770  
0003 MICRO-SNA/3770, Vxx, SERIAL xx-nnnnn  
0004 COPYRIGHT (C) 198n, MICRO-INTEGRATION, INC.  
0005 COPYRIGHT (C) 1198n, IDEASSOCIATES, INC.  
0006 SNA-029 NO LOGON CONFIGURED - ENTER LOGON  
0007 logon userid=xyzcorp,password=mysecret  
0008 SNA-053 SESSION ACTIVE  
0009 SNA-019 PLEASE ASSIGN DSK  
0010 rc dsk:remdata  
0011 SNA-028 DSK UNASSIGNED  
0012 SNA-028 DSK UNASSIGNED  
0013 nrc dsk:  
0014 ua dsk:  
0015 a dsk:prog.exe  
0016 a prl:lst:  
0017 cctl bigpaper.ctl  
0018 SNA-044 PR1 CHANNEL TABLE LOADED  
0019 a rdl:before.jcl,prog.src,after.jcl  
0020 stat  
0021 SNA-027 MICRO-SNA/3770 SYSTEM STATUS  
0022 SESSION STATUS: ACTIVE  
0023 PRINTER CARRIAGE CONTROL: BIGPAPER.CTL

0024 CURRENT DEVICES ASSIGNED:  
0025 READER - PROG.SRC TSL  
0026 PRINTER - LST: TSL RC  
0027 PUNCH - UA  
0028 DISK - PROG.EXE NTSL NRC  
0029 RECORDS RECEIVED FROM HOST:  
0030 PRINTER RECORDS - 0  
0031 PUNCH RECORDS - 0  
0032 DISK RECORDS - 308  
0033 CONSOLE RECORDS - 0  
0034 RECORDS TRANSMITTED TO HOST:  
0035 READER RECORDS - 91  
0036 CONSOLE RECORDS - 1  
0037 \*\*\*END OF SYSTEM STATUS\*\*\*  
0038 SNA-028 RD1 UNASSIGNED  
0039 stat  
0040 SNA-027 MICRO-SNA/3770 SYSTEM STATUS  
0041 SESSION STATUS: ACTIVE  
0042 PRINTER CARRIAGE CONTROL: BIGPAPER.CTL  
0043 CURRENT DEVICES ASSIGNED:  
0044 READER - UA  
0045 PRINTER - LST: TSL RC  
0046 PUNCH - UA

0047       DISK       - PROG.EXE       NTSL NRC  
0048 RECORDS RECEIVED FROM HOST:  
0049       PRINTER RECORDS - 212  
0050       PUNCH     RECORDS - 0  
0051       DISK       RECORDS - 308  
0052       CONSOLE RECORDS - 0  
0053 RECORDS TRANSMITTED TO HOST:  
0054       READER    RECORDS - 236  
0055       CONSOLE RECORDS - 1  
0056 \*\*\*END OF SYSTEM STATUS\*\*\*  
0057 SNA-028 DSK UNASSIGNED  
0058 ua prl:  
0059 logoff  
0060 SNA-054 SESSION INACTIVE  
0061 exit  
0062 SNA-099 EXITED MICRO-SNA/3770  
0063 B>

#### 4.22.2 Explanation of Sample Session

<u>Line</u>	<u>Explanation</u>
0001	The DOS prompt is displayed, showing that DOS is running and ready to receive a command.
0002	The startup command is entered.
0003-0005	The startup message is displayed.
0006	This message indicates that no automatic logon was specified in the IDEAComm 3770/SNA configuration. A LOGON command must be entered to log on to the host system. If automatic logon had been configured, IDEAComm 3770/SNA would have logged on to the host using the logon information in the configuration.
0007	A LOGON command is entered with the format and information required by the particular host system to which the emulation is connected.

- 0008 The host has accepted the logon, and activated the user's session. The PC is now in communication with the host.
- 0009 The host has data to send to the 3770 logical disk device. IDEAComm 3770/SNA prompts the user to specify a file to receive this disk data.
- 0010 It is not known how many files the host will send. The RC command sets Receive Chaining, so that one command will be sufficient for any number of files the host transmits. It assigns the logical disk device to a series of files named REMDATA.nnn. The first disk file received from the host will be named REMDATA.001, the second disk file received will be named REMDATA.002, etc.
- 0011-0012 The logical disk device is unassigned each time end-of-file is received from the host. Because of Receive Chaining, it is reassigned automatically to the next file in sequence. The console message was displayed twice, indicating that two files were received.
- 0013 The NRC command sets Non-Receive Chaining for the logical disk device. Now a separate assignment command is required for each

disk file received from the host.

- 0014 The UNASSIGN command unassigns the logical disk device so that it may be assigned to a different file for other data.
- 0015 The logical disk is assigned to the file PROG.EXE.
- 0016 The logical printer is assigned to the physical printer (system list device).
- 0017 The CCTL command sets printer carriage control according to the carriage control file BIGPAPER.CTL.
- 0018 Carriage control has been set as specified in the preceding command.
- 0019 This ASSIGN command assigns the logical reader to transmit a series of three files to the host. The files are the source code for a program to be compiled and the job control instructions that must come before and after the program.
- 0020 A STAT command is entered to display the current system status.

- 0021-0037 The system status is displayed. The reader, printer and punch devices are assigned as the previous commands specified. Note that the file BEFORE.JCL has already been transmitted and the file PROG.SRC is currently being transmitted. The record counts show that 91 records have been transmitted so far, and that 308 records were received into the REMDATA files.
- 0038 All three reader files have been transmitted to the host, and the logical reader has been unassigned.
- 0039 A STAT command is entered to display the current system status.
- 0040-0056 The system status is displayed. The printer record count shows that the PC is receiving data.
- 0057 The logical disk device has been unassigned upon receipt of end-of-file from the host. Receive Chaining is not in effect, so the device remains unassigned.
- 0058 An UNASSIGN command is entered to unassign the logical printer. Because PR1 was assigned to the physical printer, it was not automatically unassigned at end-of-file.

0059 A LOGOFF command is entered to log off from the host system.

0060 The host system has accepted the logoff and deactivated the user's session.

0061 An EXIT command is entered to terminate emulation.

0062 The EXIT message is displayed.

0063 The DOS command prompt is displayed.

## Appendix A

### Messages from IDEComm 3770/SNA

#### A.1 Numbered Console Messages

SNA-001 ANALOG LOOPBACK TEST -

ENTER ANY CHARACTER TO TERMINATE TEST  
IDEComm 3770/SNA is running the Loopback Test in response to an ALTEST command you entered. The test will continue until you enter any character or until an error occurs. If no error is reported, enter any character to terminate the test.

SNA-002 ANALOG LOOPBACK TEST COMPLETED WITHOUT ERROR

The Loopback Test has completed successfully. IDEAComm 3770/SNA is operational. Take the modem out of Analog Loopback.

SNA-003 ANALOG LOOPBACK TEST FAILED -  
NO DATA PATH ESTABLISHED

The Loopback Test did not receive the data transmitted. The communication line is not operational.

SNA-004 ANALOG LOOPBACK TEST FAILED -  
DATA PATH ERROR HAS OCCURRED  
LAST RECEIVED CHARACTER = nn

IDEAComm 3770/SNA did not receive the same data transmitted in the Analog Loopback Test. The nn in the message text indicates the last valid hex value received.

SNA-005 DIAGNOSTIC DUMP

This message precedes the diagnostic dump produced by the DIAGNOSE command you entered and identifies the data as a diagnostic dump.

SNA-006 DIAGNOSTIC DUMP COMPLETED

The DIAGNOSE command has completed execution.

SNA-007 NO TRACE DATA PRESENT

No trace data is available for the DIAGNOSE command to format.

SNA-008 FILE "<filespec>" ALREADY EXISTS - DELETE? (Y/N)

The filename you specified for an output operation already exists. Enter "Y" to delete the file and continue command execution. Enter "N" to abort command execution. The file remains unchanged.

SNA-009 DISK OR DIRECTORY FULL - OUTPUT ABORTED

The output operation caused the disk or directory to fill. Command execution is aborted.

SNA-010 TYPE/HELP COMMAND COMPLETED

The TYPE or HELP command has completed execution.

SNA-011 FILE "<filespec>" NOT FOUND

The file you specified for input was not found. Check the spelling, or check the disk directory with the DIRECTORY command.

SNA-012 I/O ERROR HAS OCCURRED - STATUS nn

An unrecoverable I/O error has occurred. Command execution is aborted. The nn is the error value returned by DOS.

SNA-014 CONSOLE COMMAND ABORTED

In response to pressing the ESC key, IDEAComm 3770/SNA has aborted execution of a CONSOLE command. The console assignment has switched back to the system console.

SNA-015 INVALID CHARACTER IN CONSOLE FILE - CONSOLE COMMAND ABORTED

While processing a CONSOLE command, IDEAComm 3770/SNA has found a character other than a valid ASCII graphics character in a console file. The CONSOLE command execution has been ended and the console assignment has switched back to the system console. Remove the invalid character or recreate the file, and enter the CONSOLE command again.

SNA-016 COMMAND QUEUE FULL

You have already typed 8 filenames in a CONSOLE or ASSIGN RD1: command, and you have tried to continue typing. You are limited to 8 filenames in any one command. Press RETURN to accept the filenames you have already specified. After these files are processed, enter another command for any additional files.

SNA-017 FILE "<filespec>" CURRENTLY OPEN AS A DEVICE FILE

The filename specified in the command you have just entered is already assigned to a logical device. Specify a different filename.

SNA-019 PLEASE ASSIGN device

The host has requested permission to send data to the logical device specified in the message, but the device is not assigned. Enter an ASSIGN command for the logical device.

SNA-023 COMMAND REJECTED - DEVICE ALREADY ASSIGNED

You have entered an ASSIGN command for a logical device (RD1, PR1, PU1, or DSK) that is already assigned. You can wait for the device to become unassigned at end-of-file, or you can enter an UNASSIGN command for the device.

SNA-024 COMMAND REJECTED - TRANSMISSION IN PROGRESS

You cannot enter a LOGON, LOGOFF, or RJE command while IDEAComm 3770/SNA is transmitting data to the host. Either wait for the transmission to be completed or abort the transmission by entering an UNASSIGN command, then reenter the command that produced the error message.

SNA-025 COMMAND REJECTED - SESSION NOT ACTIVE

The command you entered is not valid at this time. Some commands are not valid until you log onto the host. The LOGON command is not valid

until a session has been activated by the host. Wait for message SNA-029 to appear before entering the LOGON command.

SNA-026 COMMAND REJECTED - DEVICE(S) CURRENTLY ASSIGNED

You cannot LOGOFF or EXIT while any logical device (DSK, PR1, PU1, or RD1) is assigned to a disk file. You can wait for the device to become unassigned automatically at end-of-file, or you can terminate data transmission and unassign the device immediately by entering the UNASSIGN command. Use the STAT command to see which devices are assigned.

SNA-027 MICRO-SNA/3770 SYSTEM STATUS

SESSION STATUS: INACTIVE|ACTIVE

PRINTER CARRIAGE CONTROL: STD|HOST|<filespec>

CURRENT DEVICES ASSIGNED:

READER	- <filespec>	TSL NTSL		
PRINTER	- <filespec>	TSL NTSL	RC NRC	
PUNCH	- <filespec>	TSL NTSL	RC NRC	
DISK	- <filespec>	TSL NTSL	RC NRC	

RECORDS RECEIVED FROM HOST:

PRINTER RECORDS - nnnn

PUNCH RECORDS - nnnn

DISK RECORDS - nnnn  
CONSOLE RECORDS - nnnn  
RECORDS TRANSMITTED TO HOST:  
READER RECORDS - nnnn  
CONSOLE RECORDS - nnnn

\*\*\*END OF SYSTEM STATUS\*\*\*

This message lists the current logical device assignments and shows receive and transmit statistics.

SNA-028 device UNASSIGNED

End-of-file has been read or received for the indicated logical device. The logical device has been unassigned. If Receive Chaining is in effect for the device, the device has been reassigned to the next sequentially numbered file.

Note: This message is NOT displayed when you enter an UNASSIGN command.

SNA-029 NO LOGON CONFIGURED - ENTER LOGON

No logon record was specified in the configuration. To enable communications, you must log onto the host by entering a LOGON

command.

SNA-034 INVALID COMMAND IN CONSOLE FILE - ABORT? (Y/N)

While processing a CONSOLE command, IDEAComm 3770/SNA encountered an invalid command in the console file from which it was taking command input. Reply "Y" if you wish to abort the CONSOLE command execution and switch back to the system console. Reply "N" if you wish to ignore the invalid command and continue processing the console file.

SNA-035 SYSTEM CONSOLE ACTIVE

In response to a Ctrl-E entered on the system console or read from the console command file, control has switched from the console file to the system console. You can enter IDEAComm 3770/SNA commands on the system console. Enter a second Ctrl-E to resume processing the console file.

SNA-036 CONSOLE FILE ACTIVE

In response to a Ctrl-E entered on the system console, IDEAComm 3770/SNA has resumed processing commands from the previously assigned console file.

SNA-037 EXIT COMMAND READ OR CONSOLE FILE EOF - SYSTEM CONSOLE ACTIVE

An EXIT command or end-of-file has been encountered in a console file. The command input has been reassigned to the system console.

SNA-038 WAITING FOR device EOF

In response to a WAIT command, IDEAComm 3770/SNA is waiting for end-of-file on the specified device before accepting any more commands. If the WAIT command was read from a console file, processing of the console file is suspended. If the WAIT command was entered on the keyboard, the keyboard is locked.

SNA-039 WAIT COMMAND COMPLETED

End-of-file has occurred for the device specified in a WAIT command. The WAIT command has been completed and normal command processing has resumed.

SNA-040 FILE ERASED/DELETED

The file specified in an ERASE command has been deleted from disk.

SNA-041 COMMAND REJECTED - FILE OPEN AS DEVICE

You cannot erase a file while it is assigned to a logical device. If you wish to erase the file, you can enter an UNASSIGN command for the device to which it is assigned, then reenter the ERASE command.

SNA-044 PR1 CHANNEL TABLE LOADED

A CCTL command has been successfully executed. The printer carriage control table has been loaded from the standard table or a disk file, as specified in the CCTL command.

SNA-045 INVALID PR1 CHANNEL SKIP FILE "<filespec>"

The file specified in a CCTL command does not contain valid carriage control information or is not formatted correctly. Make sure you entered the correct filename. Carriage control files used with the CCTL command must be created by the Carriage Control Menu of the Configuration Program.

SNA-046 INVALID PR1 CARRIAGE CONTROL

Data received from the host for the logical printer contained a channel select for a channel number not found in the carriage control channel table. The printer has advanced one line. Determine which channels are used by the host program, and use the Configuration Program and CCTL command to set the carriage control properly.

#### SNA-047 DIRECTORY DISPLAY

This message precedes the disk directory listing produced by the DIR command.

#### SNA-048 nn FILENAMES DISPLAYED

The DIR command has displayed a directory of nn files.

#### SNA-051 INVALID CHARACTER IN RD1 - TRANSMISSION ABORTED

IDEAcomm 3770/SNA has found a character other than a valid ASCII character in a file being transmitted to the host with ASCII/EBCDIC translation. The data transmission has been ended. If the file is a binary file, transmit the file using the NTSL option. Otherwise, remove the invalid character or recreate the file, and transmit the file again.

SNA-053 SESSION ACTIVE

The host system has activated your session. The host has acknowledged your logon, as specified in the configuration or entered via a LOGON command. If no other message was displayed, your logon has been successful and you are ready to communicate with the host. If your logon was unsuccessful, an error message from the host system will also appear on the screen.

SNA-054 SESSION INACTIVE

The host system has accepted your logoff and deactivated your session.

SNA-097 SNA3770.XXX OPEN ERROR

The file SNA3770.XXX, which is part of the 3770/SNA program, could not be opened. The file may not be present on your disk, or the disk may have a bad sector.

SNA-098 SNA3770C OPEN ERROR

The configuration file SNA3770C could not be opened. The file may not be present on your disk, or the disk may have a bad sector.

SNA-099 EXITED MICRO-SNA/3770

IDEAcomm 3770/SNA has terminated operation in response to an EXIT command you entered.

## A.2 CSNA3770 Configuration Messages

The Configuration Program is provided with a set of messages to assist you during the configuration process. When applicable, these messages appear near the bottom of the configuration menus. A list of the messages and a description of each follows.

ERROR CLOSING CONFIGURATION FILE ERROR OPENING CONFIGURATION FILE

DOS detected an I/O error while the Configuration Program was attempting to access the configuration file SNA3770C. If the error

occurred while opening the file, the file may not be present on the current disk.

#### INVALID ADDRESS

The address you specified exceeds the allowable limits.

#### INVALID CHARACTER

The character you entered is not within the range of characters allowable for the current option. For example, you may have entered a letter where a number is required.

#### INVALID OPTION

What you entered is not in the list of allowable options given in the menu.

#### NO CHANNEL 1 SKIP STOP

You have tried to exit from the Skip Stops Menu without at least one skip stop 1 defined. Every carriage control file must have at least one channel 1 skip stop.

## Appendix B

### IDEAcomm Programming and Cabling Requirements

This appendix is for programmers who wish to use the IDEA Minicomm card for applications not discussed in this manual.

#### 4.1 Functional Description and Programming Information

The Idea Minicom card is compatible with the IBM PC bus. It supports one channel of asynchronous, byte synchronous, or bit synchronous RS232 communications. The card uses the Zilog 8530 SCC for serial interface.

The 8530 supports asynchronous communications with a built-in baud rate generator and can do IBM bisync and both NRZ and NRZI SDLC and HDLC protocols. It has other advanced functions, such as internal loopback and flexible clocking. One channel of the 8530 is used for communications, while the facilities of the other channel are used for control and status. Limiting the communications function to one channel cuts card cost and simplifies installation. It also allows the single channel DB-25 connector to plug directly into the card, eliminating the need for the special cables and connectors that would be required for a two channel card in a PC bus slot.

The card can be programmed to operate in polled, interrupt, or DMA mode. The card I/O base address can be switch selected to one of two addresses, 380H or 390H. For DMA operation, either DMA channel 1 or channel 3 can be switch selected. For interrupt operation, interrupt level 2 or 7 can be switch selected. In addition, Transmit Clock can be switched as an input on DB-25 pin 15 and/or an output on DB-25 pin 24. RE232 leads TEST, RATE SEL, and SEL STANDBY are programmable as outputs and readable as inputs while DATA SET READY, RING INDICATOR, and TEST INDICATE are available as inputs. RING INDICATOR and DATA SET READY can be programmed to cause interrupts on transitions. Output bits are provided to enable and disable interrupts and DMA. These bits are also readable.

One other input bit is of significance. The Transmit Clock is presented as a readable input and can be programmed to generate interrupts. This allows the timing of a single SDLC or HDLC flag character out of the SCC at end of frame, regardless of baud rate. The card contains two 7-position DIP switches, labelled SW-1 and SW-2 respectively. SW-1 controls the RS-232 connection options, while SW-2 controls interrupt and DMA options.

These switches are defined as follows:

SW-1 RS232 Options:

Pos	1	2	3	4	5	6	7
ON	TEST Out Pin 18	NC	NC	TXC IN Pin 15	TXC Out Pin 24	TEST looped back on TI	TEST INDICATE in Pin25

SW-2 Interrupt and DMA Options:

Pos	1	2	3	4	5	6	7
	Use DACK3	Use DACK1	Use DRQ3	Use DRQ1	Use Addr 390H	Use IRQ2	Use IRQ7

The card has four read/write registers, addressed from the base address of the card (380H or 390H, depending on SW-2 position 5).

These registers are defined as:

Base + 0 - 8530 Channel B Data  
+ 1 - 8530 Channel B Command/Status  
+ 2 - 8530 Channel A Command/Status.  
Read CTSA for  
DSRB and DCDA for RIB.  
+ 3 - Minicomm Control Port

The registers and their function are described in the 8530 documentation. Note that the Channel B DATA SET READY and RING INDICATOR are brought in on Channel A CLEAR TO SEND and DATA CARRIER DETECT.

The Minicomm Control Port is read/write. The write register bits have the meaning:

Base + 3 Output:

Bit

	7	6	5	4	3	2	1	0
If 1	NC	NC	Enable TXC Ints	Enable DMA	Enable 8530 Ints	TEST ON	SEL STBY ON	RATE SEL ON

Except for Bits 6 and 7, the read register bits echo the write register bits. Note that bits 0, 1, and 2 are inverted from the write register.

The bits in the read register have the meaning:

Bit

	7	6	5	4	3	2	1	0
If 1	TEST	TXC	TXC Ints	DMA	8530 Ints	TEST	SEL STBY	RATE
	IND	1/0	Enables	Enabled	Enabled	OFF	OFF	SEL OFF

The control port write register is initialized to all zeros on hardware reset.

The clock for the 8530 internal baud rate generator is 4.00 MHz. See the 8530 documentation for complete programming information.

## 4.2 Cabling Requirements

A standard RS-232-C 11-pin modem cable is required for connecting the microcomputer system to the modem. This cable must be equipped with male DB-25 type connectors on both ends, with the following pins connected:

<u>PIN</u>	<u>FUNCTION</u>	<u>DIRECTION</u>	<u>COMMENTS</u>
1	AA	Protective Ground	
2	BA	TxD	Out
3	BB	RxD	In
4	CA	Request to Send	Out
5	CB	Clear to Send	In
6	CC	Data Set Ready	In
7	AB	Signal Ground	
8	CF	Carrier Detect	In
9		NC	
10		NC	
11		Select Standby	Out
12		NC	
13		NC	
14		NC	
15	DB	TxClock	In
16		NC	
17	DD	RxClock	In
18		Test	Out
19			SW1 position 1 in OFF disables

20	CD	Data Terminal Rdy	Out	
21				
22	CE	Ring Indicate	In	
23	CH	Rate Select	Out	
24	DA	Transmit Clock	Out	SW1 position 7 in OFF disables
25		Test Indicate	In	SW1 position 7 in OFF disables

Test out can be shorted to Test Indicate in with SW1 position 6 in ON position.

## Appendix C

### NCP Gen Information

This information is needed by the systems programmer who prepares the host IBM mainframe to connect with the PC using 3770 emulation. It is used with leased line connections.

Most NCP parameters are supplied in the configuration program described in Chapter 3 and can be changed using that program. See the Configuration Worksheet in Chapter 3 for:

- XID Address
- network address
- logical unit address

logon file  
line protocol  
carriage control

Default parameters for translation of files from ASCII to EBCDIC are also described in Chapter 3.

IDEAcomm 3770/SNA can receive compressed records from the host. It cannot receive compacted records, and does not send either compressed or compacted records.

## Appendix D

### Customer Support Information

#### D.1 Repair Policy

If your product is still under the original one year limited warranty, IDEA will repair or replace it at no charge. If the product is out of the warranty period, IDEA will repair it and charge you on a time and materials basis.

If you are having problems with your IDEA product, take the following steps:

1. Call your dealer for assistance.
2. If your dealer is not able to provide a solution, call the IDEA Technical Support Department at (800) 257-5027. Be sure that you have the serial numbers from your software diskette and from your Minicom card. If the Technical Support representative determines that your product requires factory service, you will be given a Materials Return Authorization (MRA) number by Technical Support. IDEA will not accept returned products without an MRA number.
3. Box the product in the original shipping container or other secure package. Write your return number on the top of the box. For all warranty repairs, enclose a copy of the original purchase receipt as proof of date of purchase.
4. Ship by the most economical means to:

IDEAssociates, Inc.  
35 Dunham Road  
Billerica, MA 01821

Once your product has been repaired, IDEA will return it to you by UPS or the most economical carrier at IDEA's expense.

## D.2 Warranty Card

Please complete and promptly return the enclosed warranty card. The warranty card should be filed by the party who installs the IDEA product.

## D.3 Limited Warranty

For IDEAssociates' Limited Warranty, see the first page of this manual.

## Index

3770 SNA--functionality 11  
3770 SNA--introduction 10  
8530 programming 167  
address selection for Minicom card 168  
ALTEST command 42  
ASSIGN command 94, 103  
board defined 18  
cabling requirements 173  
card defined 18  
carriage control menu 70  
carriage control-- setting 136  
CCTL command 136  
chaining files 106  
channel control 73  
channels of 8530 167  
command summary 89

communication line type menu 81  
communications links required 13  
compaction 100  
compression 100  
configuration worksheet 52  
connecting the modem 40  
CONSOLE command 127  
console defined 18  
conversion between ASCII and EBCDIC 77  
deleting files 126  
devices-- assigning 94, 103  
devices-- releasing 112  
DIAGNOSE command 79  
diagnostic support menu 79  
diagnostics 42  
diagnostics hardware--DIAGNOSE dump 47  
DIR command 124  
displaying directories 124  
displaying files 118  
DMA options of 8530 168  
ERASE command 126  
error messages 141  
EXIT command 123

formatting records 98  
functional description of the Minicom card 166  
hardware installation--steps 26  
hardware requirements 12  
HELP command 120  
host defined 18  
IBM publications 22  
ID choice 52  
ID Menu 59  
inserting the Minicom card 35  
installation-- hardware-- overview 26  
installation--tools 27  
interrupt options of 8530 168  
interrupts-- programming 168  
inventory checklist 9  
line type menu 81  
local communications 13  
logical device defined 19  
logical unit address 52  
logical unit address menu 61  
LOGOFF command 102  
logon card menu 65  
LOGON command 93, 101

logon menu 63  
logon record 53  
loopback test 42  
manual-- use of 16  
messages 141  
Minicomm--remote communications 12  
modem connecting 40  
modem requirements 13  
NCP Gen information 176  
network address 52  
network address menu 59  
no-translate menu 77  
Non-Receive file chaining 111  
notation conventions 19  
NRC command 111  
NRZ menu 81  
NRZ protocol choice 53  
opening the PC cover 28  
PC defined 19  
programming the Minicomm card 166  
RC command 106  
readfile menu 67  
receive chaining 106

record formatting 98  
register definition for Minicom card 169  
remote processor or terminal requirements 14  
repair policy 178  
replacing the PC cover 38  
RJE commands 139  
RJE defined 19  
SDLC defined 19  
SDLC menu 81  
SDLC protocol choice 53  
serial number 24  
skip stops menu 73  
SNA defined 19  
software--copying 40  
startup command file menu 67  
STAT command 115  
status inquiry 115  
switches on Minicom card 168  
switches--checking 33  
telephone number 179  
terminating emulation 123  
translate menu 77  
translation between ASCII and EBCDIC 96

translation by file type 99  
TYPE command 118  
UNASSIGN command 112  
WAIT command 133  
warranty period 178  
XID choice 52  
XID Menu 59

