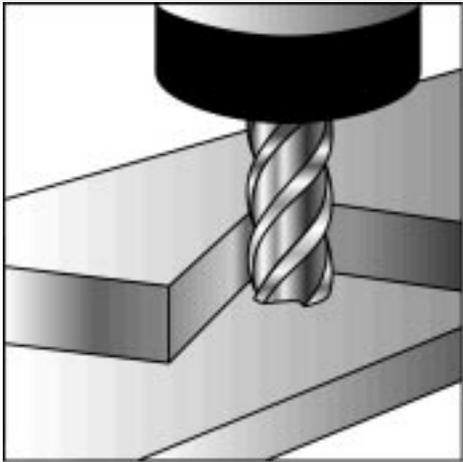




***Allen-Bradley***

***Offline  
Development  
System (ODS)***



# **User's Manual**



## Important User Information

Because of the variety of uses for the products described in this publication, those responsible for the application and use of this control equipment must satisfy themselves that all necessary steps have been taken to assure that each application and use meets all performance and safety requirements, including any applicable laws, regulations, codes and standards.

The illustrations, charts, sample programs and layout examples shown in this guide are intended solely for purposes of example. Since there are many variables and requirements associated with any particular installation, Allen-Bradley does not assume responsibility or liability (to include intellectual property liability) for actual use based upon the examples shown in this publication.

Allen-Bradley publication SGI-1.1, *Safety Guidelines for the Application, Installation, and Maintenance of Solid State Control* (available from your local Allen-Bradley office), describes some important differences between solid-state equipment and electromechanical devices that should be taken into consideration when applying products such as those described in this publication.

Reproduction of the contents of this copyrighted publication, in whole or in part, without written permission of Allen-Bradley Company, Inc., is prohibited.

Throughout this manual we make notes to alert you to possible injury to people or damage to equipment under specific circumstances.



**WARNING:** Tells readers where people may be hurt if procedures are not followed properly.

---



**CAUTION:** Tells readers where machinery may be damaged or economic loss can occur if procedures are not followed properly.

---

### Warnings and Cautions:

- identify a possible trouble spot
- tell what causes the trouble
- give the result of improper action
- tell the reader how to avoid trouble

**Important:** We recommend that you frequently back up your application programs on an appropriate storage medium to avoid possible data loss.

## Using this Manual

### Manual Objective

This manual provides information about the *outer shell* of Allen-Bradley's Offline Development System (ODS) software.

### Manual Content

We divided this manual into seven chapters.

For information about:	Refer to chapter:	Entitled:
ODS overview	1	Introducing ODS
<ul style="list-style-type: none"> <li>• installing the ODS software</li> <li>• removing the ODS software</li> </ul>	2	Installing ODS
<ul style="list-style-type: none"> <li>• starting a session on ODS</li> <li>• using online help</li> <li>• ODS conventions</li> <li>• file structure</li> </ul>	3	Getting Started with ODS
<ul style="list-style-type: none"> <li>• setting up ODS with a user-supplied text editor</li> <li>• configuring ODS features</li> <li>• executing DOS commands without exiting ODS</li> </ul>	4	Configuring ODS
<ul style="list-style-type: none"> <li>• storing ODS files in project directories</li> <li>• creating projects</li> <li>• opening projects</li> <li>• copying projects</li> <li>• renaming projects</li> <li>• deleting projects</li> <li>• backing up project files to floppy disk</li> <li>• restoring projects from floppy disk</li> <li>• selecting applications and utilities</li> </ul>	5	Using ODS Project Management
<ul style="list-style-type: none"> <li>• displaying the ODS revision level</li> <li>• copying ODS files</li> <li>• renaming ODS files</li> <li>• deleting ODS files</li> <li>• printing and displaying ODS files</li> </ul>	6	Using ODS File Management
<ul style="list-style-type: none"> <li>• using ODS to configure communications through:               <ul style="list-style-type: none"> <li>-1784-KL</li> <li>-1784-KT</li> <li>-1784-KTK1</li> <li>-serial port</li> <li>-programming from Data Highway Plus™ to Data Highway Plus</li> </ul> </li> <li>• using INTERCHANGE</li> <li>• configuring Data Highway Plus under Windows NT™</li> <li>• downloading AMP files for Use with the 9/PC from:               <ul style="list-style-type: none"> <li>-the local host PC into the 9/PC</li> <li>-a separate network-connected ODS workstation that is running Windows NT to the host PC and into the 9/PC card</li> <li>-an ODS workstation running Microsoft Windows NT and Dial-up Networking, connected to the serial port of the host PC running Microsoft's Remote Access Services (RAS), and into the 9/PC card</li> </ul> </li> <li>• setting up the 9/PC host (or server) computer</li> <li>• setting up the ODS (or client) computer</li> <li>• troubleshooting tips for RAS configuration</li> </ul>	7	Using ODS Communications Configuration

## Warnings, Cautions, and Important Information

We indicate in these ways information that is especially important:



**WARNING:** identifies information about practices or circumstances that can lead to personal injury as well as damage to the control, machine, or other equipment

---



**CAUTION:** identifies information about practices or circumstances that can lead to damage to the control, machine, or other equipment

---

**Important:** identifies information that is important for successful application of the control

## Audience

This manual assumes these conditions:

- you already know how to use a personal computer
- you are familiar with using DOS
- you are using a compatible computer (see page 1-3)
- the ODS software and the online help is already installed in the computer that you are going to be using

## Terms and Conventions

This manual includes these terms and conventions:

- servo controller — the axis or motion controller
- ODS — application software used to create and download configuration and interface files to the servo controller
- <x> — the key on the computer keyboard marked **x**, where **x** is the letter or key label
- [ENTER] — the key on the computer keyboard marked ENTER or RETURN

Some ENTER or RETURN keys may be marked with an arrow or other designator.

## Screens

We show screens and screen text in several different ways:

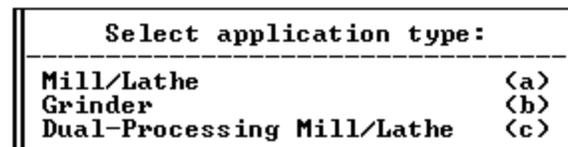
- full screens



- partial screens



- pop-up windows



- screen text

Installing Disk # 2

## Related Publications

For additional information about motion control systems, contact your local Allen-Bradley sales office or distributor or refer to these related publications:

Publication Number	Document Title	Catalog Number
1746-ND001	IMC 110 Motion Control System Installation Manual	1746-HCDOC
1746-ND003	IMC 110 Motion Control System AMP Manual	
1746-ND004	IMC 110 Motion Control System Programming Manual	
1746-ND002	IMC 110 Motion Control System Handheld Pendant Manual	1746-HHDOC
1771-6.5.45	IMC 120 Motion Control System Installation Manual	1771-HSARS
1771-6.5.61	Installation Manual Supplement	
1771-6.5.51	IMC 120 Motion Control System Programming Manual	
1771-6.5.50	IMC 120 Handheld Pendant Operator's Manual	
1771-6.5.1	IMC 120 AMP Reference Manual	
1771-6.5.45	IMC 120 Motion Control System Installation Manual	1771-HCDOC
1771-6.5.51	IMC 120 Motion Control System Programming Manual	
1771-6.5.63	System Programming Manual Supplement	
1771-6.5.50	IMC 120 Handheld Pendant Operator's Manual	
1771-6.5.62	Handheld Pendant Operator's Manual Supplement	
1771-6.5.1	IMC 120 AMP Reference Manual	
1771-6.2.4	IMC 121 Motion Control System Installation Manual	1771-HIDOC
1771-6.4.3	IMC 121 Motion Control System Programming Manual	
1771-6.5.65	IMC 121 Handheld Pendant Operator's Manual	
1771-6.4.2	IMC 121 AMP Reference Manual	
1771-6.2.3	IMC 123 Motion Control System Installation Manual	1771-H3DOC
1771-6.4.1	IMC 123 Motion Control System Programming Manual	
1771-6.5.60	IMC 123 Handheld Pendant Operator's Manual	
1771-6.7.1	IMC 123 AMP Reference Manual	
1771-5.7	IMC 123CR Supplement	
8520-4.3	9/Series CNC PAL Reference Manual	8520-PRM2
8520-4.5.1	9/Series CNC Mini-DNC Software User Manual	8520-MDNC
8520-5.1.1	9/Series CNC Lathe Programming and Operation Manual	8520-LUM
8520-5.1.3	9/Series CNC Mill Programming and Operation Manual	8520-MUM

<b>Publication Number</b>	<b>Document Title</b>	<b>Catalog Number</b>
8520-5.1.4	9/Series CNC Grinder Programming and Operation Manual	8520-GUM
8520-5.1.5	9/Series Data Highway Plus Communication Module User Manual	8520-DHM
8520-5.2	9/Series CNC OCI User Manual Supplement	8520-OUM
8520-6.2	9/Series CNC Integration and Maintenance Manual	8520-IMM
8520-6.4	9/Series CNC AMP Reference Manual	8520-ARM2
8520-6.6	9/Series CNC OCI API Developer's Guide	8520-9API
8520-6.7	9/Series CNC OCI Installation Manual	8520-OIM
8520-9.1	9/PC Installation and Integration Manual	8520-9IM
8520-9.2	9/PC Logic Reference Manual	8520-9LM
8520-9.3	9/PC AMP Reference Manual	8520-9AM
8520-9.4	9/PC Lathe Operation and Programming Manual	8520-LPM
8520-9.5	9/PC Mill Operation and Programming Manual	8520-MPM

## What to Do Next

Familiarize yourself with the Table of Contents in the front of this manual and with the Index in this back of the manual. Use these tools to find information quickly and easily.

**END OF CHAPTER**

# Table of Contents

---

## Chapter 1 Introducing ODS

Chapter Objective .....	1-1
What is the Offline Development System (ODS)? .....	1-1
ODS Main Features .....	1-2
Hardware Requirements for ODS .....	1-3
Computers Compatible with ODS Software .....	1-3
What Comes with ODS? .....	1-3
What to Do Next .....	1-3

## Chapter 2 Installing ODS

Chapter Objective .....	2-1
Before You Begin .....	2-1
Make a Backup Copy of the ODS Software .....	2-1
Check the PATH Command .....	2-1
Installing the ODS Software .....	2-1
Using DOS .....	2-1
Using Windows NT .....	2-6
Modifying the CONFIG.SYS File .....	2-6
Modifying the AUTOEXEC.BAT File .....	2-7
Removing the ODS Software .....	2-7
What to Do Next .....	2-10

## Chapter 3 Getting Started with ODS

Chapter Objective .....	3-1
Getting Started .....	3-1
Using Windows .....	3-1
Using DOS .....	3-2
Using Pull-down Menus .....	3-4
Pulling Down a Menu .....	3-5
Selecting a Menu Option .....	3-5
Using Online Help .....	3-5
Reading the Status Line .....	3-7
Project .....	3-8
Application .....	3-9
Utility .....	3-10
Using Directories .....	3-10
Entering File and Project Names .....	3-11
Interpreting Error Messages .....	3-12
Using the [ESC] Key .....	3-12
Exiting from ODS .....	3-12
What to Do Next .....	3-12

## Chapter 4 Configuring ODS

Chapter Objective .....	4-1
Specifying the Text Editor .....	4-1
Keyboard Setup .....	4-2
Configuring the Serial Communication Setup .....	4-3
Configuring Print Device (Windows NT only) .....	4-4
Turning the Beeper ON/OFF .....	4-4
Turning the Verify Feature ON/OFF .....	4-5
Executing DOS Commands from within ODS .....	4-6
What to Do Next .....	4-6

## Chapter 5 Using ODS for Project Management

Chapter Objective .....	5-1
Creating a Project .....	5-1
Opening an Existing Project .....	5-7
Displaying Project Information .....	5-8
Changing Project Information .....	5-9
Copying a Project .....	5-12
Renaming a Project .....	5-15
Deleting a Project .....	5-16
Backing Up a Project to Floppy Disk .....	5-17
Restoring a Backed-up Project .....	5-19
Selecting an Application .....	5-21
Selecting a Utility .....	5-22
What to Do Next .....	5-22

## Chapter 6 Using ODS File Management

Chapter Objective .....	6-1
Using ODS File Management .....	6-1
Choosing the File Type Within a PAL Application .....	6-2
Copying a File from a Current Project .....	6-2
Renaming a File from a Current Project .....	6-3
Deleting a File from a Current Project .....	6-4
Copying Files from Another Project .....	6-5
Printing an ODS File .....	6-8
Using the Documentor .....	6-8
Printing Your File .....	6-9
Canceling a Printing Request .....	6-9
Displaying an ODS File .....	6-10
What to Do Next .....	6-11

## Chapter 7 Using ODS Communication Configuration

Chapter Objective .....	7-1
Selecting the Communication Code .....	7-2
Menu Structure .....	7-3
Configuring a 1784-KL .....	7-3
Configuring a 1784-KT .....	7-3
KT Address Considerations .....	7-5
Programming from DH+ to DH+ .....	7-6
Configuring the 1784-KTK1 .....	7-7
KTK1 Address Considerations .....	7-8
6122 Considerations .....	7-8
IBM PC XT Considerations .....	7-8
Configuring a Serial Driver .....	7-9
Using INTERCHANGE .....	7-10
Configuring DH+ Under Windows NTt In ODS .....	7-11
Configuring RSLinx for Ethernet .....	7-12
Downloading AMP Files for Use with the 9/PC .....	7-12
Downloading an AMP File from the Host PC to a 9/PC .....	7-13
Downloading Over a Network from a Second PC .....	7-14
Downloading from the Serial Port of a Second PC .....	7-15
Setting Up the 9/PC Host (or Server) Computer .....	7-15
Setting Up the ODS (or Client) Computer .....	7-19
Troubleshooting Tips for RAS Configuration .....	7-21
What to Do Next .....	7-21

## Introducing ODS

### Chapter Objective

This chapter provides you with an overview of the Allen-Bradley Offline Development System (ODS) and provides important information on what you need to run the ODS software.

If you want to:	See page:
get an introduction to Offline Development System	1-1
see a flowchart of the typical ODS process	1-2
identify the hardware requirements for ODS	1-3
identify what computers are compatible with ODS software	1-3
identify what is included with the ODS package	1-3
what to do next	1-3

### What is the Offline Development System (ODS)?

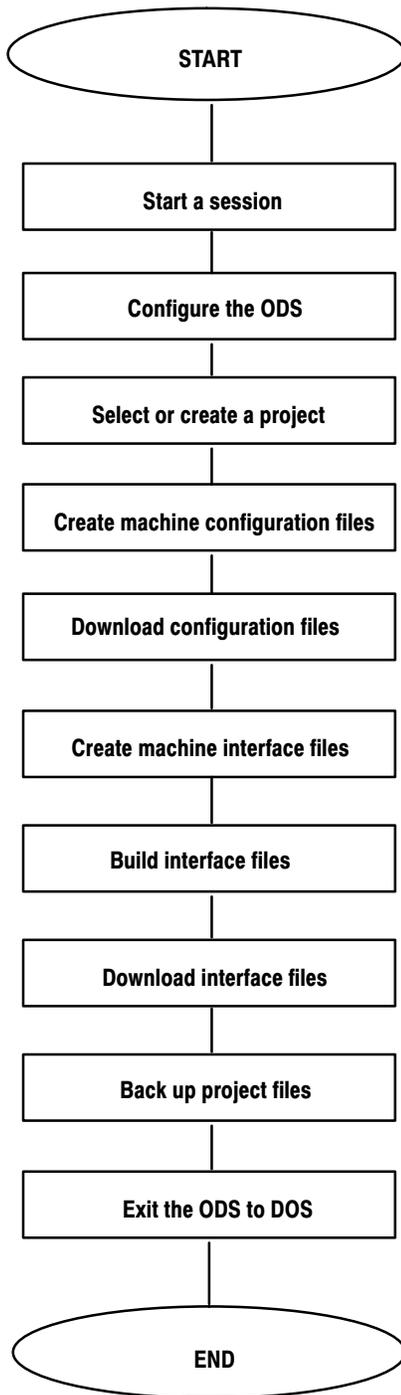
The Offline Development System (ODS), a menu-driven software package, runs on an IBM® or an IBM-compatible personal computer. This system uses a serial port and a communication cable to communicate with the Allen-Bradley product using this system. With ODS you can create, edit, and document these files:

**Important:** The 9/PC does not require a communication cable to upload and download part programs from ODS.

- machine configuration  
These files specify values for parameters that provide the computer numeric controller (CNC) or motion controller with information about a particular machine, such as the IMC™ 110, IMC 123, 9/Series, or 9/PC.
- machine interface  
These files provide the functional link between the CNC, the machine, the sequence of axis motions, and the machine's inputs and outputs as required by the application.
- machine motion control  
These files provide programming languages for the programs that you write (depending on the controller) that control the motion of the configured axes.

After you create or edit the files, you can use ODS to download them to the control. You can also use ODS to copy, restore, rename, or delete the files that you created or edited.

This figure shows a flowchart of the typical ODS process.



### ODS Main Features

The main features of the ODS software include:

- simple-to-use pull-down menus for easy access
- comprehensive help messages
- efficient file management capabilities (you can organize files according to project)
- access to DOS partition while using ODS
- availability of ODS on 3.5-inch floppy disks

## Hardware Requirements for ODS

ODS requires this hardware:

- a fully IBM-compatible personal computer (see compatible computers listed below)
- 640 KB of conventional RAM
- 3.5-inch floppy-disk drive
- 50-Mbyte of memory available on hard-disk drive (approximately .5 MB additional needed for each project)
- one serial port and one parallel port
- a monochrome display adapter (MDA) or a color graphics adapter (CGA)
- blank floppy disks for making backup copies (Refer to Chapter 2)

**Important:** ODS runs with MS-DOS™ version 3.3 or higher, Microsoft Windows 95™, or Microsoft Windows NT™.

## Computers Compatible with ODS Software

These computers support ODS software:

- Allen-Bradley Series 61XX computers
- IBM PC AT™, Compaq® 386, or any other fully IBM-compatible personal computer

## What Comes with ODS?

ODS software is packaged in a 3-ring binder that includes these items:

- ODS software on 3.5-inch floppy disks
- this Allen-Bradley Offline Development System (ODS) Software User Manual

## What to Do Next

Refer to Chapter 2 to learn about installing the ODS software.

**END OF CHAPTER**

## Installing ODS

### Chapter Objective

This chapter contains information to help you install and remove ODS software on a personal computer.

If you want to:	See page:
make a backup copy of ODS software	2-1
check the PATH command	2-1
install ODS software	2-1
modify the CONFIG.SYS file	2-6
modify the AUTOEXEC.BAT file	2-7
remove the ODS software	2-7
what to do next	2-10

### Before You Begin

Before installing ODS:

#### Make a Backup Copy of the ODS Software

Make a backup copy of your original ODS floppy disks by using the DOS DISKCOPY command. Refer to your computer's DOS documentation for more information about making backup copies.

#### Check the PATH Command

Make sure that the PATH command, which is usually initialized in the AUTOEXEC.BAT file, includes the directory that contains COMMAND.COM. This is usually the root directory, but can be any directory, depending on your version of DOS.

For instructions on how to modify the COMMAND.COM and the AUTOEXEC.BAT files, refer to your DOS manual.

### Installing the ODS Software

Follow the procedure in this chapter to install the ODS software into a personal computer.

#### Using DOS

**Important:** This procedure assumes that drive A is a 3.5-inch floppy-disk drive and that drive C is a hard-disk drive. If the drive designations on your computer are different, substitute the appropriate designations.

1. Turn on the computer and boot DOS. The computer displays the DOS prompt.

**Important:** Be sure that the PATH command includes the directory that contains the COMMAND.COM file.

2. Insert ODS disk 1 into drive A.
3. Change to the source drive, i.e., the drive in which the disk is inserted.

For example, if disk 1 is in drive A, but your system boots on C, you must change to drive A to install the software. See your DOS manual for more information.

4. At the prompt, type:

```
install a: c:
```

where **a:** is the source drive and **c:** is the destination drive, and press [ENTER]

The computer begins to execute the installation utility by displaying:

```
Copyright 1989-1999 Allen-Bradley Company, Inc.
Installation program - Phase 1
```

```
Installing ODS from a: to c:
```

The installation utility checks the amount of available space on the hard disk.

What happens next is determined by whether the computer's hard disk has enough available memory to accommodate the ODS software.

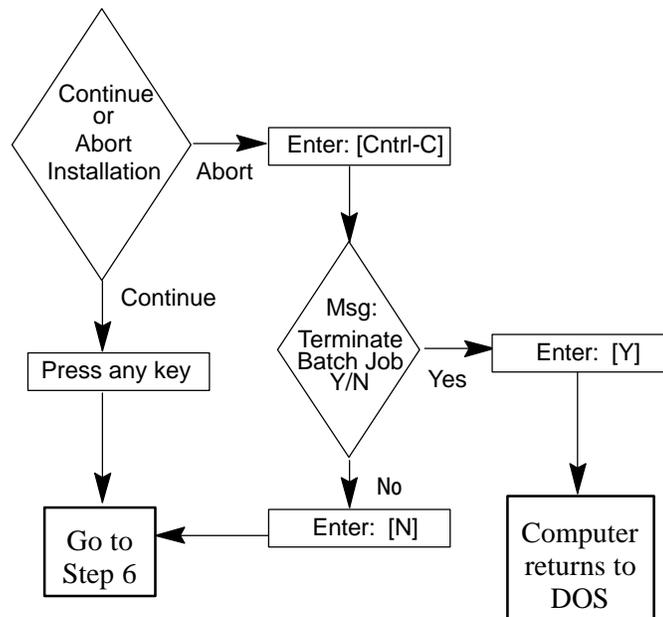
If you see the message:	then:
Installation will continue.	The installation utility continues the installation.
It appears that you may not have enough disk space to install the complete ODS package. Either remove the existing ODS, or delete other unwanted files. Aborting Press any key to continue...	The disk does not have enough memory for ODS.  The computer returns to DOS and displays the DOS prompt. Clear sufficient space on the hard disk. If a version of ODS is already installed, remove it. When enough free space is available, start the installation procedure again.

The installation utility checks the hard disk for the \IMC directory or any IMC files.

If you see the message:	then:
<p>A directory called \IMC already exists (on drive c:). If you are certain that this directory was created by an earlier version of Allen-Bradley's ODS, then proceed with the installation. Otherwise, press CTRL-C now and verify that this directory may be overwritten. Press any key to continue...</p>	<p>The hard disk contains the directory \IMC.  IMC files already exist in the directory. Follow the instruction on the screen. (Most ODS files are installed in this directory.)</p>

**Important:** Selecting **Press any key to continue...** will not affect any existing AMP, PAL, or logic files.

5. To continue or abort the installation, follow the flowchart below:



**Important:** Pay particular attention to the following when you install ODS software:

- If you press any key to continue, files stored in the \IMC directory are overwritten.
- If you are not sure this is acceptable, press [CTRL-C] to abort installation.
- Check files stored in the \IMC directory.
- Copy any files that need to be saved to another directory; delete the files from the \IMC directory.
- Start installation again.

The installation utility installs the files from disk 1 onto the hard disk and displays this message:

```
Phase 2 Installation will now be invoked.
If the message "Bad command or filename"
appears, it means that the DOS command
processor (COMMAND.COM) could not be located.
Make sure your PATH command includes the
directory that COMMAND.COM resides in. Then
re-start this Installation procedure.
See your DOS manual for further information.
Strike a key when ready . . .
```

6. Press any key to start Phase 2 of the installation utility.

The computer displays:

```
Copyright 1989-1999 Allen-Bradley Company
Installation program - Phase 2
Installing ODS for Model 9/Series (archive
version)...
```

When the installation utility finishes installing all of the files from disk 1, the computer displays this message:

```
Insert Disk # 2
Strike a key when ready . . .
```

7. Remove disk 1 from drive A, and insert disk 2.
8. Press any key to continue the installation process.

The screen displays this message:

```
Installing Disk # 2
```

9. After all of the files from disk 2 are installed, repeat the process for each of the remaining disks.
10. Select your options. ODS installs the products that you selected.

After you complete the installation process, the ODS displays this message:

```
Insert Disk # 1
Press any key to continue...
```

11. Remove the floppy disk from drive A, and insert disk 1. Press any key to continue.

The installation utility displays a message similar to this:

```
ODS supports most IBM 100% compatibles,
however, some use unusual video monitors.
Please select the type of computer this
version of ODS will be running on:
1) 100% compatible or Allen-Bradley
T35/T47/T50/T60
2) Allen-Bradley T45
3) COMPAQ Portable 386
Enter selection (1/2/3):
```

**12.** Select [1], [2], or [3], depending on the type of computer.

Choose selection [1] if you are using an Allen-Bradley Series 6120, 6121, 6122, or 618X computer.

The installation utility configures ODS to the type of computer selected. If the installation utility includes any update notices, it displays the first page under this heading:

```
mm/dd/yy
PLEASE NOTE THE FOLLOWING ITEMS:
*
*
notice text
*
*
--MORE--
```

**13.** Read the first page, then press any key to display the next page.**14.** Repeat step 13, displaying all the available pages. Press any key to continue.

The installation utility displays this message:

```
If you would like to print the
above message, use the DOS command:
PRINT a:READ.ME
Strike a key when ready . . .
```

You cannot enter the DOS PRINT command during installation.

**15.** Press any key to continue.

The installation utility displays the message:

```
To run ODS, type "cd \imc",
then type "imc".
IBM is a registered trademark of
International Business Machines Corporation
COMPAQ is a registered trademark of
Compaq Computer Corporation
Done...Please remove Disk 1 from the drive.
```

You see the C:\IMC> prompt.

**16.** Remove disk 1 from drive A.

Store the master ODS disks in a safe location. You can now print the READ.ME file.

## Using Windows NT

**Important:** This procedure assumes that drive A is a 3.5-inch floppy-disk drive and that drive C is a hard-disk drive. If the drive designations on your computer are different, substitute the appropriate designations.

1. Turn on the computer and insert ODS disk 1 into drive A.
2. Click the **Windows NT Start** button and select **Run**. A similar box appears:



If the correct path does not appear by default in the **Open:** pulldown menu box, type the correct path (e.g., **a:\install a: c:**, where **a:** is the source drive and **c:** is the destination drive).

3. Press [ENTER]

The computer begins to execute the installation utility. Refer to steps 4 through 15 in the *Using DOS* section (beginning on page 2-2) for further instructions on installing your ODS software.

## Modifying the CONFIG.SYS File

*If you are using a DOS-based system,* you can optimize ODS performance, by modifying your CONFIG.SYS file.

**Important:** 8100 HS110 software does not require you to add the line 'DEVICE=DF1DRV.SYS'.

1. Modify the CONFIG.SYS file, if necessary, to include these lines:

```

BUFFERS=25
FILES=20
DEVICE=DF1DRV.SYS

```

The record DEVICE=DF1DRV.SYS enables the DF1 communication driver to transfer files between ODS and the servo controller.

When selecting any other CONFIG.SYS commands, be aware of the memory requirements.

2. Reboot the computer to read the data from this file.

## Modifying the AUTOEXEC.BAT File

*If you are using a DOS-based system*, you can directly start ODS. You must modify the PATH command in the AUTOEXEC.BAT file by adding this entry to the path:

```
;C:\IMC
```

If you want ODS to start automatically when you turn on the computer, add this entry to the last line of the AUTOEXEC.BAT file:

```
IMC
```

Refer to the computer's DOS manual for further instructions.

## Removing the ODS Software

If for any reason you need to remove the ODS software from the computer's hard disk, use the following procedure:

**Important:** This procedure assumes that the floppy-disk drive is drive A and the hard-disk drive is drive C. If the drive designations on your computer are different, substitute the appropriate designations.

**Important:** Before you remove the ODS software from the hard disk, back up any projects you need to save, then delete all of the projects.

1. Insert ODS disk 1 in floppy-disk drive A.
2. If you are at the c: prompt, type:

```
a:
```

and press [ENTER].

3. At the prompt, type:

```
a:remove
```

and press [ENTER].

The removal utility displays this message:

<p><b>Remove ODS procedure</b></p> <hr/> <p><b>Which drive is ODS installed on?</b> Enter drive: [ ]</p>
--

- Select the drive that contains the ODS software. For this example, select drive C and press [ENTER].

The arrangement of the list may vary slightly from what currently appears on your screen. The removal utility displays a message similar to this:

Select control family to remove ODS for:	
IMC-110	<a>
IMC-120	<b>
IMC-120AR	<c>
IMC-121	<d>
IMC-123	<e>
IMC-123CR	<f>
<b>9/230</b>	<b>&lt;g&gt;</b>
9/240	<h>
<b>9/260</b>	<b>&lt;i&gt;</b>
<b>9/290</b>	<b>&lt;j&gt;</b>
<b>9/440</b>	<b>&lt;k&gt;</b>
<b>9/PC</b>	<b>&lt;l&gt;</b>
<b>ALL controls</b>	<b>&lt;m&gt;</b>

The menu highlights the installed ODS software and ghosts unavailable software. Select the control family you want to remove or ALL controls for all of the installed ODS software.

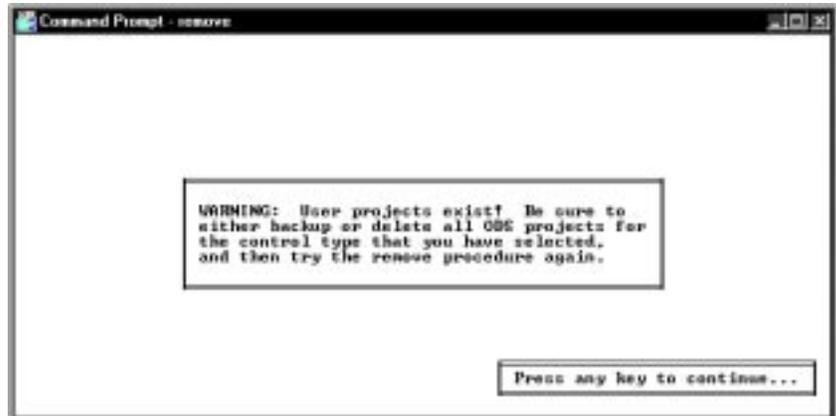
- Select a control type.

If you selected a 9/Series control, this screen appears:

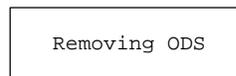
Select application type:	
<b>Mill/Lathe</b>	<b>&lt;a&gt;</b>
<b>Grinder</b>	<b>&lt;b&gt;</b>
<b>Dual-Processing Mill/Lathe</b>	<b>&lt;c&gt;</b>

6. If applicable, select an application type.

If all projects or files have not been deleted from a specific application before being removed, this warning appears:



With the appearance of this screen, the removal utility begins deleting files from the hard disk:



The removal utility looks for a particular list of files and directories. If it cannot find the file or directory that it is looking for, the removal utility displays a message similar to the following:



This message does not indicate that the removal process is proceeding incorrectly. It indicates the condition of the directory and is for your information only.

When removal is complete, the removal utility displays this message:

Removal Complete

Press any key to continue . . .

7. Remove the disk from the floppy-disk drive.

## What to Do Next

Chapter 3 tells you how to use the ODS software.

**END OF CHAPTER**

## Getting Started with ODS

### Chapter Objective

This chapter tells you how to create and edit these types of ODS files:

- machine configuration
- machine interface
- machine motion control

If you want to:	See page:
get started using ODS	3-1
use pull-down menus	3-4
use online help	3-5
read the status line	3-7
define projects	3-8
define applications	3-9
define utility	3-10
use directory	3-10
enter file and project names	3-11
interpret error messages	3-12
use the [ESC] key	3-12
edit ODS	3-12
know what to do next	3-12

### Getting Started

To begin:

#### Using Windows

1. Select **MSDOS Command Prompt** under the **Programs** option of the **Windows NT Start** menu.

2. At the DOS prompt, type:

```
IMC [ENTER]
```

If the message **Bad command or filename** appears, this is an indication that the **PATH** command in the **AUTOEXEC.BAT** file does not contain the directory **\IMC**.

3. If this is the case, type:

```
cd IMC [ENTER] IMC [ENTER]
```

ODS displays the welcome screen.



Continue to step 4 on page 3-3.

## Using DOS

1. Turn on the computer and boot DOS.

If **IMC** was included as the last record in the **AUTOEXEC.BAT** file, ODS starts automatically when you turn on the computer.

2. At the DOS prompt, type:

```
IMC [ENTER]
```

If the message **Bad command or filename** appears, this is an indication that the **PATH** command in the **AUTOEXEC.BAT** file does not contain the directory **\IMC**.

3. If this is the case, type:

```
cd \IMC [ENTER] IMC [ENTER]
```

ODS displays a similar welcome screen.



4. Press any key to continue. A screen similar to this appears:



```

Command Prompt - inc
=====
*
* Notice Central Offline Development System
*
* Allen-Bradley Company, 1989-1998
*
=====
Installing DOS print driver now...
-----
If you are requested to enter a device,
you may choose any of the following:
(PRN) - default, hit RETURN, or...
LPT1, LPT2, LPT3, COM1, COM2, AUX.
-----
See your DOS manual for further
information on how you can customize
the performance of the PRINT utility.
-----

```

ODS installs the DOS print driver in RAM, which allows you to download files to a printer.

**Important:** You must first install the print driver to be able to print files from ODS menus.

<b>If the print driver is:</b>	<b>then:</b>
already installed	the above screen appears for a moment and then is replaced by the ODS top level screen (page 3-4)
not installed	ODS asks you to select a device name: Name of list device [PRN]:

5. Select a device name.

<b>If you want to use:</b>	<b>then:</b>
the default device name	press [ENTER]
a different device	<ol style="list-style-type: none"> <li>Type a device name, for example: <ul style="list-style-type: none"> <li>• LPT1                      • COM1</li> <li>• LPT2                      • COM2</li> <li>• LPT3                      • AUX</li> </ul> </li> <li>Press [ENTER]</li> </ol>

Refer to DOS documentation for more information about printer device names.

6. However, if the screen is distorted, follow this procedure:

- a. Exit ODS.
- b. At the DOS prompt, type:

```
MODE BW80 [ENTER]
```

- c. Reboot ODS following the instructions on page 3-1 or 3-2. Examine the screen. If the screen is clear, we suggest that you add the command `MODE BW80` to the batch file, IMC.BAT.

ODS displays the first line of its menu.

- the **Project**

A project is a directory you create to store files for a particular controller or job.

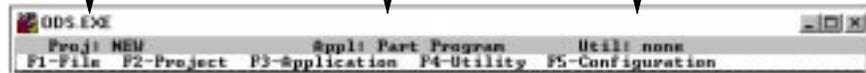
- the **Application**

An application is a group of programs used for creating and managing files.

- the **Utility**

A utility is one of the programs in an application.

status line →

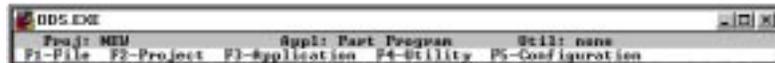


The *first line* of the ODS screen layout (referred to as the **status line**) identifies the project, the application, and the utility.

If a project, an application, or a utility is not active, the word **none** appears in the corresponding space in the status line.

## Using Pull-down Menus

The *second line* of the ODS screen is the **menu bar**. The menu bar identifies the pull-down menus. Select the functions you wish to perform from these menus. The active application and utility determine which menus are listed. For example, in this screen the top-level menu bar includes five choices.



In contrast, the menu bar for the 9/Series AMP editor utility includes four choices for a single process system:



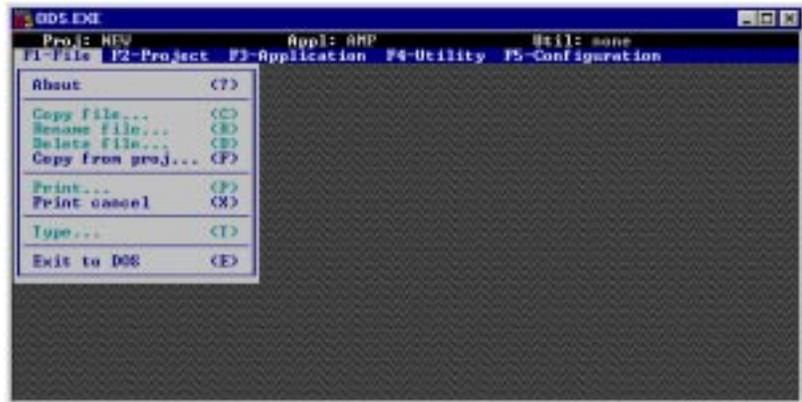
Some menu choices are:

- highlighted (available for selection)
- darker or ghosted (unavailable for selection)

ODS automatically enables and disables menu choices according to the operation that it is performing and its current status. For example, the F3-Application menu is not available unless a project is created or selected. Similarly, you must select an application before the F4-Utility menu becomes available.

## Pulling Down a Menu

To pull down a menu, press the function key indicated on the menu bar. ODS then displays it on the screen. For example, when you press [F1] to pull down the F1-File menu, you see this screen:



## Selecting a Menu Option

There are two ways to select the menu options:

- Press the key indicated between the parentheses on the menu. For example, press ? to select the About option.
- Use the arrow up [↑] or arrow down [↓] keys to highlight the option desired, then press [ENTER].

## Using Online Help

ODS online help is context sensitive; therefore, any time that you request help, ODS provides a relevant help message. Online help is structured into the ODS software, and is available only if you install it. The online help menu appears on the right side of the screen just below the F5-Configuration heading.

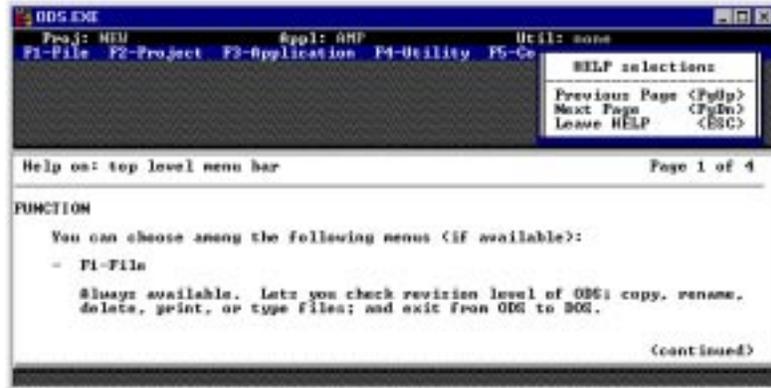
1. To request help, simultaneously hold down the [ALT] key and [H] key ( [ALT-H] ), then release.

During the ODS installation process, ODS presents update notices as a series of help messages. The help portion of the screen describes how to use the menu for the help messages.



This help message contains some introductory information about ODS. Read it carefully.

The box at the upper right of the screen below tells you how to display other pages of the help screens. If there is more text in the help message than can fit in one window, you can access the next page of help by selecting the [PgDn].



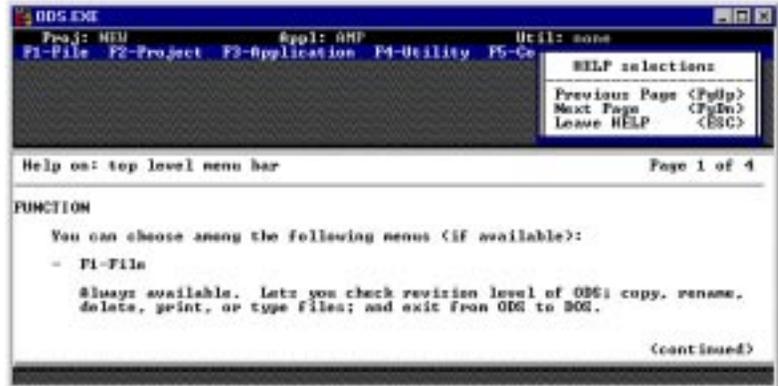
Notice that the Previous Page [PgUp] choice is ghosted, indicating that it is not available for selection. Since the page of help text displayed is the first page, there are no previous pages to access. When you select [PgDn] to move to the second help page, the [PgUp] choice becomes available.

2. Press the [ESC] key to clear the help text from the screen.
  - At the top of each help screen there is a heading that identifies:
    - the topic of the screen
    - the current page
    - how many pages there are in the help text
  - Most help text is divided into sections, with each section indicated by a heading in the text.
  - If the body of text for a heading within the help text is continued on the next page of help text, the word (**continued**) appears at the bottom of the page.

Help screens are available for each of the top-level entries (F1-File through F5-Configuration) in the menu bar.

When you select:	then:
F1-File from the menu heading	the selection is highlighted
[ALT-H]	the help messages that appear describe the entries contained in the F1-File menu

Refer to the example below:



When you select a specific function, use the arrow up [↑] or arrow down [↓] keys and highlight the desired entry. When you enter [ALT-H], a help message appears describing the functional details of the selected entry. For this example, the help messages are for the **Copy file** entry.



Additional help messages are available for other ODS screens. If no help is available, ODS displays:

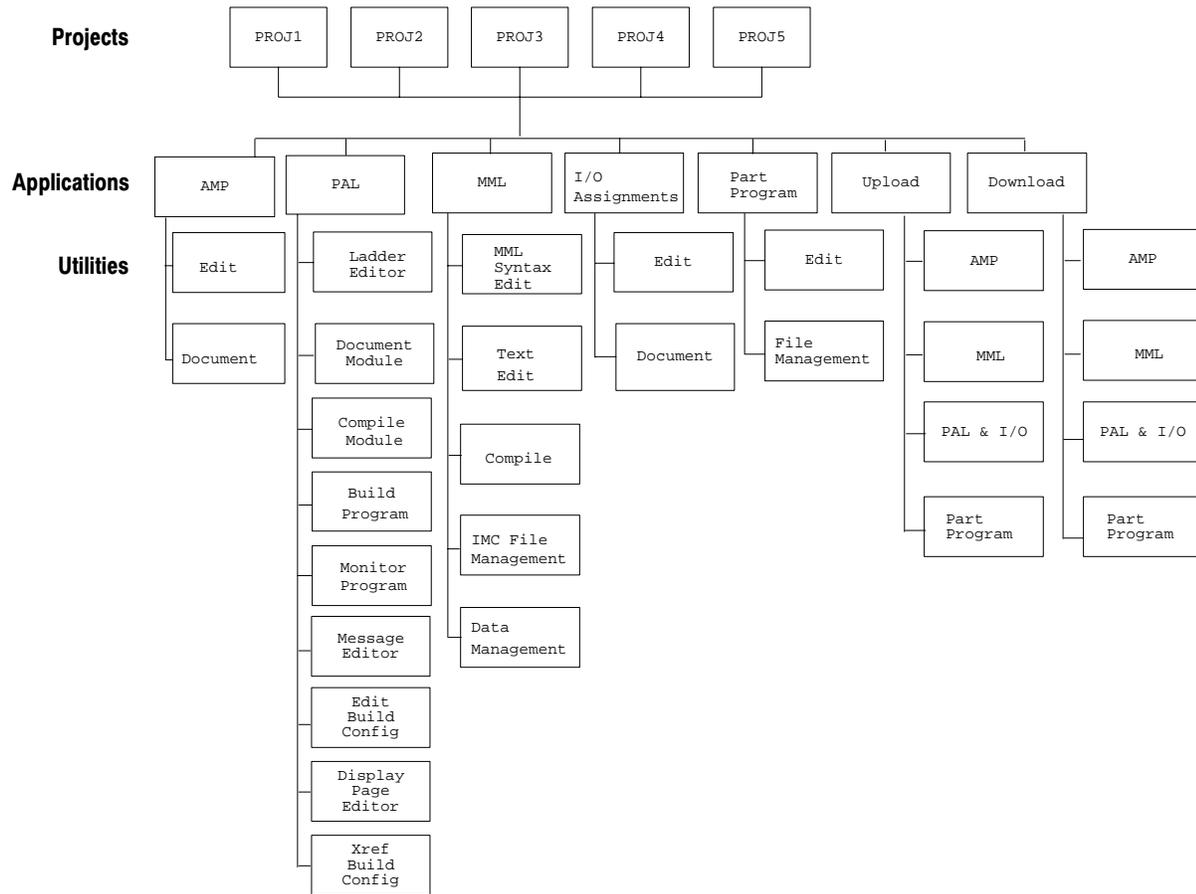
Sorry, no further help is available.

## Reading the Status Line

The status line of the ODS screen shows the active **Project**, **Application**, and **Utility**. Figure 3.1 illustrates the way that ODS is organized by project, application, and utility.



**Figure 3.1**  
**ODS Organization By Project, Application, and Utility**



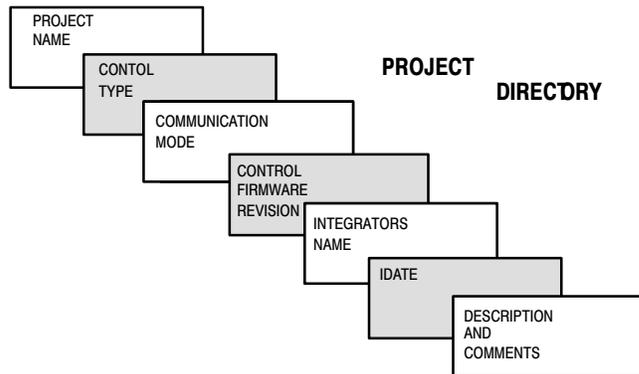
**F2-Project**

<b>Information</b>	<b>&lt;I&gt;</b>
<b>Change Info...</b>	<b>&lt;H&gt;</b>
<b>New...</b>	<b>&lt;N&gt;</b>
<b>Open...</b>	<b>&lt;O&gt;</b>
<b>Copy proj...</b>	<b>&lt;C&gt;</b>
<b>Rename proj...</b>	<b>&lt;R&gt;</b>
<b>Delete proj...</b>	<b>&lt;D&gt;</b>
<b>Backup...</b>	<b>&lt;B&gt;</b>
<b>Restore...</b>	<b>&lt;E&gt;</b>

**Project**

ODS creates configuration and interface files for the controller and machine, and organizes these files into projects as shown in Figure 3.2. You can compare a project to a file storage area for a particular motion controller and machine application.

**Figure 3.2  
Project Organization**



You can create a project directory for each motion controller/machine system. This lets you use ODS on many different motion controller and machine applications.

The F2-Project pull-down menu is used to manage project directories. You can:

- log general information
- create new projects
- select existing projects
- copy projects
- rename projects
- delete projects
- back up projects to floppy disk
- restore projects from floppy disk

Chapter 5 describes the functions of the F2-Project menu.

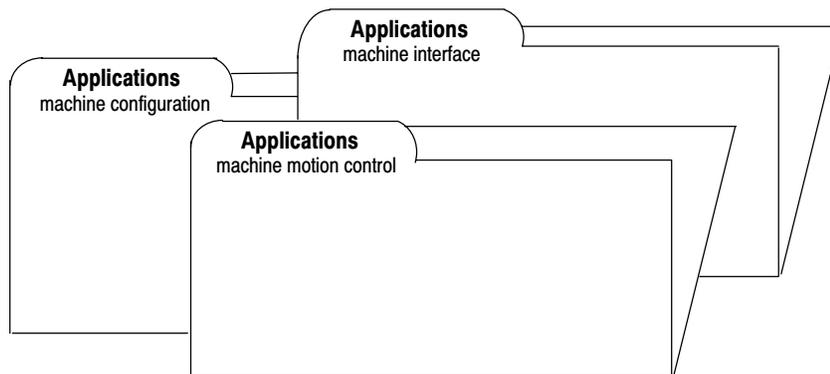
### Application

#### F3-Application

AMP	<A>
PAL	<P>
I/O Assignments	<I>
Part Program	<R>
Upload	<U>
Download	<D>

Use the F3-Application pull-down menu to select the application that you need for your project (as shown in Figure 3.3 using a 9/Series ODS package).

**Figure 3.3**  
**Application Organization**

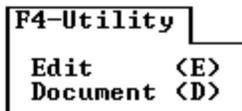


Each project contains several applications that include these files:

- machine configuration
- machine interface
- machine motion control

You can access the F3-Application pull-down menu when you create or select a project. The type of applications available for a project depends on the controller that is being integrated to the machine.

### Utility



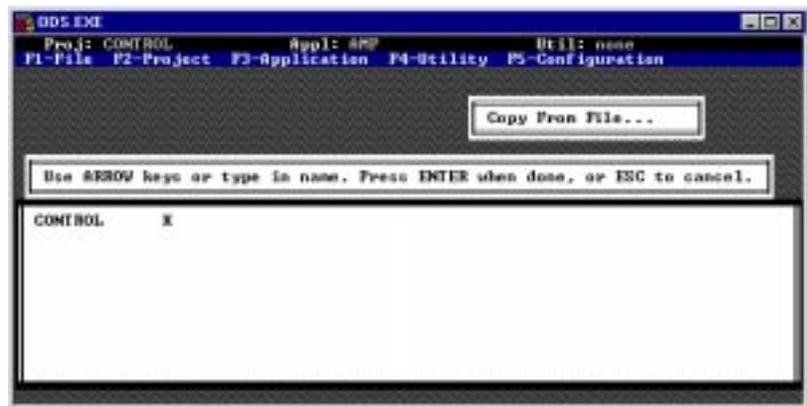
The F4-Utility pull-down menu lets you select the utility needed for your application. The utilities that are available depend on the active application. For example, the AMP application includes:

- an editor utility that lets you create and edit AMP parameter files
- a document utility that creates lists of the parameter values in an AMP parameter file

## Using Directories

The file directory is one of the ODS management tools. All directories have the same basic format as in the screen shown below, but each lists different types of files, depending on the active application.

For example, while one directory lists AMP parameter files, another might list PAL source programs, and another might list Projects.



All ODS directories share two common characteristics:

- One page of a directory can list as many as 66 items. If a directory contains more than 66 items, it displays on more than one page. To access the second page of a directory, press the [PgDn] key. To access the previous page, press the [PgUp] key.
- The two ways to select items from a directory are:
  - Use the arrow keys to highlight an item, then press [ENTER]. A highlight appears in the directory when an arrow key is pressed.
  - Type in the name of the item and press [ENTER]. A box for entry of the item name appears above the directory when a key other than an arrow key is pressed.

## Entering File and Project Names

When ODS asks for a file or project name, the name you enter can:

- contain no more than 8 characters
- contain letters A-Z and numbers 0-9
- contain any of these:

! @ # \$ % & ( ) - \_ { } ' ,

The system does not accept spaces in the filename. However, you can use the underscore (\_\_) as a substitute for a space. For example, the name FILE 1 is illegal, but the name FILE\_1 is legal.

If you enter a file or project name that does not meet these conditions, ODS displays an error message and gives you another opportunity to enter the name.

## Interpreting Error Messages

If you make a mistake while entering a file name, selecting an option, or performing some other task, ODS displays a message giving information on the situation. On color monitors, these messages appear in red boxes.

Press [ALT-H] to request on-line help if you need more information about an error message.

## Using the [ESC] Key

If you decide to discontinue an operation in ODS, pressing the [ESC] key usually cancels the operation. In most cases, pressing [ESC] returns you to the previous screen.

## Exiting from ODS

You can exit ODS and return to DOS by following this procedure:

F1-File	
About	<?>
Copy file...	<C>
Rename file...	<R>
Delete file...	<D>
Copy from proj...	<F>
Print...	<P>
Print cancel	<X>
Type...	<T>
Exit to DOS	<E>

1. Display the top level screen.
2. Pull down the F1-File menu and select the **Exit to DOS** option.
  - The computer clears the screen and displays the DOS prompt.
  - ODS saves the names of the last active project and application, and automatically activates them the next time you start ODS.

## What to Do Next

Chapter 4 tells you how to configure the ODS software.

**END OF CHAPTER**

## Configuring ODS

### Chapter Objective

This chapter tells you how to use the five functions available under the F5-Configuration menu. These functions include how to:

- specify the text editor
- use the keyboard setup
- configure your serial communication device
- configure your print device (Windows NT™ only)
- turn the beeper option On and Off
- turn the verify option On and Off
- execute DOS commands when you are in ODS

F5-Configuration	
Text editor setup... <T>	
Keyboard setup..... <K>	
Serial comm setup... <C>	
Print device setup.. <P>	
<hr/>	
Beeper OFF <F>	
√ Beeper ON <N>	
<hr/>	
Uerify OFF <O>	
√ Uerify ON <U>	
<hr/>	
Enter DOS shell <D>	

If you want to:	See page:
specify the text editor	4-1
use the keyboard setup	4-2
configure your serial communication device	4-3
configure your print device	4-4
turn the beeper ON/OFF	4-4
turn the verify feature ON/OFF	4-5
execute DOS commands from within ODS	4-6
know what to do next	4-6

### Specifying the Text Editor

Some applications and utilities require the use of a text editor that you must install. To use this text editor in ODS, specify the path and file name with the F5-Configuration menu. This lets ODS activate the text editor option.

**Important:** You must supply the text editor and install it on the computer's hard disk.

F5-Configuration	
Text editor setup... <T>	
Keyboard setup..... <K>	
Serial comm setup... <C>	
Print device setup.. <P>	
<hr/>	
Beeper OFF <F>	
√ Beeper ON <N>	
<hr/>	
Uerify OFF <O>	
√ Uerify ON <U>	
<hr/>	
Enter DOS shell <D>	

1. To access the text editor setup, pull down the F5-Configuration menu.
2. Select the **Text editor setup** option.  
ODS asks for the DOS path and file name of the text editor.

Enter the complete path and filename for the editor or word processor you wish to invoke when the item 'Text Editor' is selected from a menu. Some examples are:  
 \editor\ed.com  
 \edit.bat  
 [C:\winnt\system32\edit.com ]

If the text editor name was entered previously, the name appears in the **Enter Name** box on the screen.

3. If the text editor name needs to be changed or if there is no name, type in the DOS path and file name for the text editor and press [ENTER].

Assume, for example, that you are using Edit (a text editor supplied with DOS) and that it is stored in a file named EDIT.COM in a directory named DOS.

**Important:** You can specify any text editor; however, remember that you must store and supply this editor in the computer's memory so that ODS can find it. Refer to your DOS documentation for more information about specifying path and file names.

4. To set up the text editor, type:

```
\dos\edit.com
```

5. Press [ENTER].

ODS stores the path and file name entered and returns to the top-level menu bar.

## Keyboard Setup

ODS lets you select the language keyboard that is being used on your personal computer. A checkmark (✓) indicates the active selection. You can choose a new keyboard type from any of the other selections.

**F5-Configuration**

Text editor setup... <T>	
Keyboard setup..... <K>	←
Serial comm setup... <C>	
Print device setup.. <P>	
-----	
Beeper OFF <F>	
✓ Beeper ON <N>	
-----	
Verify OFF <O>	
✓ Verify ON <U>	
-----	
Enter DOS shell <D>	

1. Select the **keyboard setup** option from the F5-File menu.

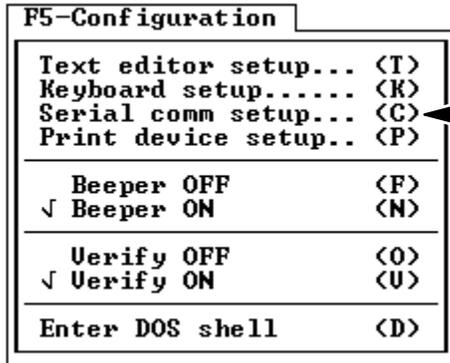
ODS displays this box:

**Select Keyboard Type**

✓ U.S. English <U>	
U.K. English <K>	
French <F>	
German <G>	
Italian <I>	
Spanish <S>	
-----	
Cancel <ESC>	

2. Using the arrow keys, make a selection and press [ENTER].

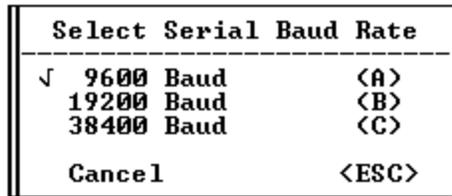
## Configuring the Serial Communication Setup



ODS allows you to configure the serial communication baud rate. Use the [F5]-Configuration pulldown menu to access **Serial comm setup**.

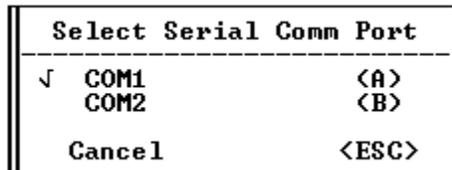
Use this procedure to configure your serial communication device:

1. Select the **Serial comm setup** option from the [F5]-Configuration menu. The following list box appears:



Select the appropriate baud rate for your serial communication device. To abort this activity, select <ESC>.

2. If you are using Windows NT, the following list box appears after you select the appropriate baud rate for your serial communication device:



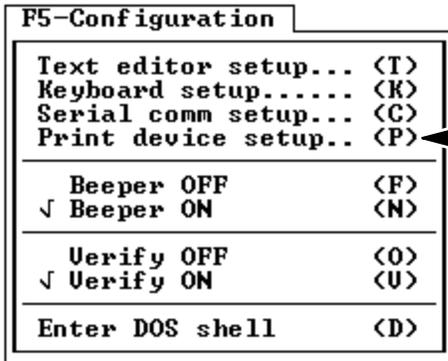
Select a serial communication port that is appropriate for your system. To abort this activity, select <ESC>. For DOS and Windows 95™ operating systems, make this selection in the DF1 device driver setup in the CONFIG.SYS file.

Once your selections are made, the configuration menu disappears, but ODS saves your selections as your default settings whenever ODS is started.

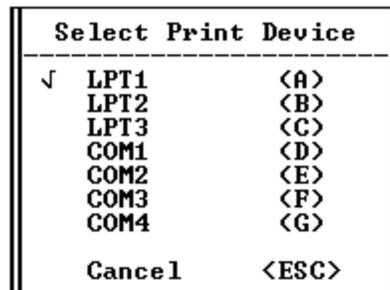
## Configuring Print Device (Windows NT only)

If you are using Windows NT, ODS allows you to select your default printer from a list of printers that are currently available to your system. Use the [F5]-Configuration pull-down menu to access **Print device setup**.

Use this procedure to select your print device:



1. Select the **Print device setup** option from the [F5]-Configuration menu. The following list box appears:



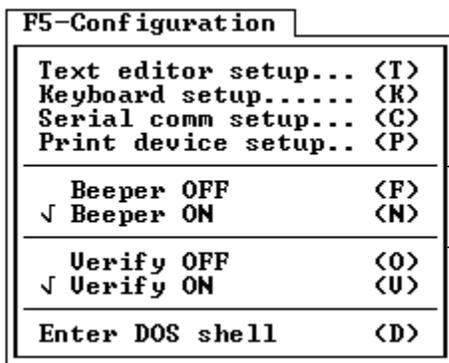
Select the appropriate baud rate for your serial communication device. To abort this activity, select **<ESC>**.

2. Select the appropriate print port for system. A checkmark appears next to the current active choice. After you select a print device, ODS saves it and makes this the default printer whenever ODS is started. To cancel this selection, press **<ESC>**.

## Turning the Beeper ON/OFF

ODS has a beeper that warns you when you press an illegal key or when you attempt something that is not allowed. The F5-Configuration menu lets you decide whether or not to use the beeper.

Use this procedure to set the beeper:



1. Select [F5] and pull down the F5-Configuration menu.

You can set the beeper to ON or OFF. A checkmark appears next to the current active choice. If this is the first time ODS has been configured, the check is next to **Beeper ON**. After you make a choice, ODS saves it and puts the beeper in that state whenever ODS is started.

2. Select either **Beeper ON** or **Beeper OFF**.

The configuration menu disappears, but the beeper is set according to the choice you made.

## Turning the Verify Feature ON/OFF

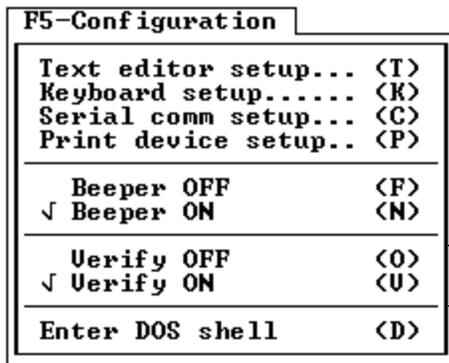
When the verify feature is set to **ON**, ODS displays a screen when you select the **Delete file** option:



To delete a file, select [Y]. If you select [N], ODS aborts the delete operation. This gives you the opportunity to cancel a delete operation after selecting it.

If the verify feature is OFF, ODS does not display the **OK to delete this file?** box before deleting a file.

The F5-Configuration menu lets you turn the Verify feature ON or OFF. Use this procedure to configure the **verify** feature:



1. Select [F5] and pull down the F5-Configuration menu.

Notice that there are two choices for **verify ON** or **verify OFF**. A check mark appears next to the current active choice. If ODS is being configured for the first time, the checkmark appears next to **Verify ON**.

2. Select either **verify ON** or **verify OFF**.

After you make a choice, ODS saves your selection, and puts the Verify feature in that state whenever ODS is started up.

The configuration menu disappears, but the Verify feature is turned ON or OFF according to the choice you made.

## Executing DOS Commands from within ODS

F5-Configuration	
Text editor setup... <T>	
Keyboard setup..... <K>	
Serial comm setup... <C>	
Print device setup.. <P>	
-----	
Beeper OFF <F>	
√ Beeper ON <N>	
-----	
Verify OFF <O>	
√ Verify ON <U>	
-----	
Enter DOS shell <D>	

Use the following procedure to enter the DOS shell and execute DOS commands without exiting ODS.

1. Select [F5] and pull down the F5-Configuration menu.
2. Select the **Enter DOS Shell** option.

The ODS screen disappears, and this prompt appears:

```
O.D.S. - Type EXIT to quit>
```

When this prompt appears, DOS commands can be entered and executed.

3. To return to ODS, type:

```
EXIT
```

4. Press [ENTER].

The ODS screen reappears.

## What to Do Next

Chapter 5 tells you how to use the ODS software for project management.

## END OF CHAPTER

## Using ODS for Project Management

### Chapter Objective

This chapter tells you how to use ODS for project management activities such as creating a new project, opening an existing project, and selecting a utility. Other functions of the project management feature are listed below.

A *project* is a directory that stores configuration, interface, and motion control files for a particular control or application. You cannot access an application until you have selected or created a project.

The F2-Project menu provides options for creating and managing project directories. In this chapter you learn how to use the F2-Project pull-down menu to perform these functions:

F2-Project	
Information	<I>
Change Info...	<H>
New...	<N>
Open...	<O>
Copy proj...	<C>
Rename proj...	<R>
Delete proj...	<D>
Backup...	<B>
Restore...	<E>

If you want to:	See page:
create a new project	5-1
open an existing project	5-7
display project information	5-8
change project information	5-9
copy a project	5-12
rename a project	5-15
delete a project	5-16
back up a project on floppy disk	5-17
restore a backed-up project from floppy disk	5-19
select an application	5-21
select a utility	5-22
know what to do next	5-22

### Creating a Project

F2-Project	
Information	<I>
Change Info...	<H>
New...	<N>
Open...	<O>
Copy proj...	<C>
Rename proj...	<R>
Delete proj...	<D>
Backup...	<B>
Restore...	<E>

In this section we assume that you started an ODS session as described in Chapter 3.

To create a project:

1. Press [F2] and pull down the F2-Project menu.

2. Select the **new** option.

ODS displays the message **New project** and a directory of existing projects.



3. Select a name for the new project and press **[ENTER]** to continue, or press **[ESC]** to cancel.

If ODS accepts the project name, it displays a box that asks what is the control type of the new project. The order in which the products are listed may vary slightly from what currently appears on your screen.

A list similar to this appears:

Select control family:	
IMC-110	(a)
IMC-120	(b)
IMC-120AR	(c)
IMC-121	(d)
IMC-123	(e)
IMC-123CR	(f)
9/230	(g)
9/240	(h)
9/260	(i)
9/290	(j)
9/440	(k)
9/PC	(l)

For example, if you want to select an IMC 120 project, enter **(b)** for the IMC 120 option. This choice determines which applications ODS makes available for the project.

4. Select a control type.

If you select one of the 9-Series controls, a similar screen appears:

Select application type:	
Mill/Lathe	<a>
Grinder	<b>
Dual-Processing Mill/Lathe	<c>

5. If applicable, select an application type. For this example, we chose (a).

ODS asks you to determine the type of communication required for your control.

Communication Mode Desired	
√ Cntrl Serial Port	<C>
DH+ Network	<D>
Ethernet/OCI	<E>
PC to 9/PC	<P>
Exit, NO SAVE	<ESC>

**Important:** For standard RS232 communication, select (c). For use with the DH+ network, select (d). If you are using OCI, you can either select the Ethernet (e) or Control Serial Port (c) option.

**Important:** Accessing DH+ using DOS or Windows 95 with your 9-Series control requires INTERCHANGE. Accessing DH+ via Windows NT requires RSLinx. Refer to Chapter 7 for more information about the configuration menu flow for INTERCHANGE and RSLinx with DH+.

**Important:** The Ethernet/OCI communication mode is only available for the 9/260 and 9/290 CNCs. Accessing Ethernet requires Windows NT and RSLinx. Refer to Chapter 7 for more information about the configuration menu flow for INTERCHANGE and RSLinx with DH+.

**If your control type is 9/PC** (the default selection for Communication Mode is *PC to 9/PC* ), the following steps must be completed:

- A.** Enter the location of the 9/PC host computer in the text box. The host computer is the computer name on the network where the 9/PC is installed. This name should typically be 20 characters or less. "Local" (or the name that you enter) denotes the default location of your host computer where your 9/PC is installed. Once you enter the location, select [ENTER].

**Important:** The explanation of "Local" in step A. assumes that ODS and 9/PC are installed on the same PC. If your host computer is a computer that 9/PC and ODS is not installed on, refer to page 6-12.

```

Enter the 9/PC Host
Computer

Previous  <SHIFT-TAB>
Next      <TAB>

Exit, SAVE   <ALT-T>
Exit, NO SAVE <ESC>
-----
[Local_     ]

```

- B.** By default, CNC\_1 will appear in the box as the 9/PC topic name. This is the name of your selected CNC. If this topic name is incorrect, enter a new name in the text box.

```

Enter 9/PC Topic Name

Previous  <SHIFT-TAB>
Next      <TAB>

Exit, SAVE   <ALT-T>
Exit, NO SAVE <ESC>
-----
[CNC_1_     ]

```

**Project subdirectories** are directories that are stored within the project directory. They store the created configuration and interface files.

ODS displays a list of alternative control firmware revision levels and asks you to select one of the items. You can select:

- one of the revision levels listed
- the **Read from control** option to read the revision level of the control that is connected to ODS. If no control is connected to ODS, selecting this option results in an error message

Select the appropriate option, as shown in the example screen:

```

- Release 12.XX - (a)
- Release 11.XX - (b)
- Release 10.XX - (c)
- Release  9.XX - (d)
Read from control (e)

```

ODS displays a box that asks for your name:

```

Enter your name:
[ ]

```

6. Type in a name and press [ENTER].

ODS stores the name and displays a box with the current date.

7. Press [ENTER] if this date is correct. If you want to modify the date, edit the text and press [ENTER].

ODS stores the date and displays the first of two boxes that asks for comments.

```

Enter up to 2 lines of comments for this project. (This is line 1 of 2)
[ ]

```

8. Type in any comments about the project and press [ENTER].

ODS stores the comments, then displays the other comment box.

```

Enter up to 2 lines of comments for this project. (This is line 2 of 2)
[ ]

```

ODS displays the information screen and asks you to verify that it is correct. For example:



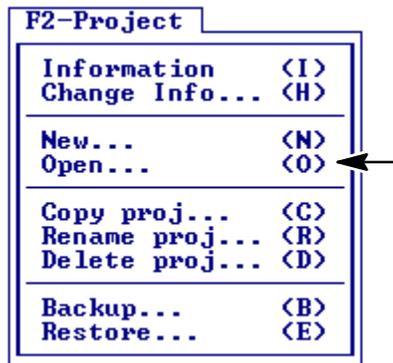
9. Respond to the question: **Is this info correct?**

If the information displayed is:	press:	then:
correct	[Y]	ODS activates the project and displays the top-level screen. Notice that the status line indicates that the newly created project is active.
incorrect	[N] or [ESC]	repeat steps 5 - 8 or press [ESC] to cancel the current operation.

ODS briefly displays the message:

```
Creating project sub-directories
```

## Opening an Existing Project



You do not have to create a new project every time ODS is used. ODS stores project files that you can open at any time.

Use this procedure to open an existing project:

1. Press [F2] and pull down the F2-Project menu.
2. Select the **open** option.

ODS displays the message **open project** and a directory of projects.



3. Select the project to be opened and press [ENTER]. If you want to cancel, press [ESC].

ODS clears the screen and displays the top-level menu. The name of the most recently opened project appears on the **status line as the active project**. This verifies that the project is open and is active.



You are now ready to select an application for the project.

## Displaying Project Information

The `Information` option displays the following information about the active project:

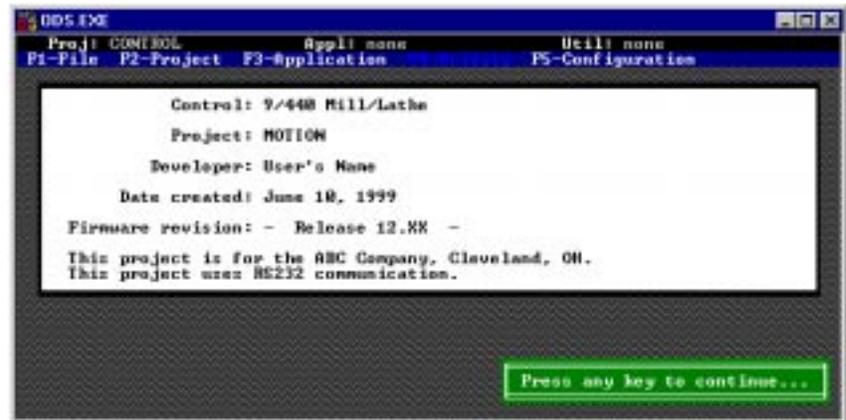
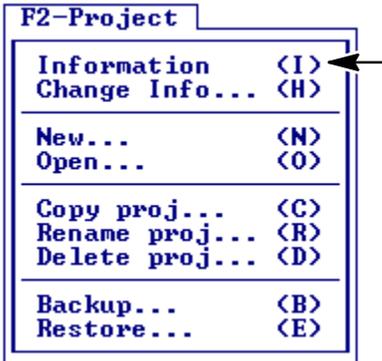
- control family
- project name
- developer's name
- date created
- firmware revision level of the control
- comments (2 lines)

This is the information entered when you create the project.

Use this procedure to display project information:

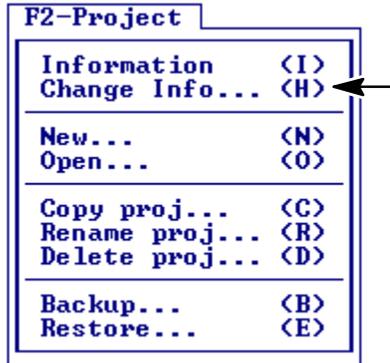
1. Press [`F2`] and pull down the F2-Project menu.
2. Select the `Information` option.

ODS displays the information for the active project. For example:



3. Press any key to clear the information display and return to the top-level menu bar.

## Changing Project Information



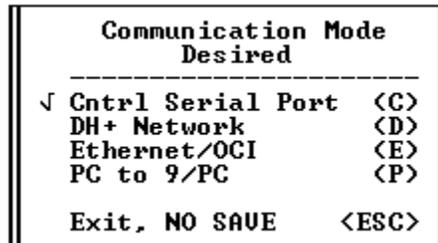
The **Change Info** option lets you change the following information for the active project:

- communication selection
- developer's name
- date created
- comments (2 lines)

If you want to change the control type or the firmware revision, you must create a new project. Use F2-Copy Project to copy the original project.

1. Press [F2] and pull down the F2-Project menu.
2. Select the **Change Info** option.

ODS displays the communication menu:



3. To change your selection:

To:	Select:
the serial port for standard RS232 communication	(C)
the port for the Data Highway Plus network <sup>1</sup>	(D)
the port for Ethernet/OCI communication <sup>1</sup>	(E)
communicate with 9/PC, using your PC	(P)

<sup>1</sup> The configuration menu flow for the Data Highway Plus and Ethernet are in Chapter 7.

**Important:** You can configure ODS to the DH+ network if the Data Highway selection is **not** ghosted.

If your control type is 9/PC, the following steps must be completed:

- A. Enter the location of the 9/PC host computer in the text box. The host computer is the location that you will be uploading and downloading files from. This name should typically be 20 characters or less. "Local" denotes the default location of your host computer. Once you enter the location, select [ENTER].

```

Enter the 9/PC Host
Computer

Previous <SHIFT-TAB>
Next      <TAB>

Exit, SAVE   <ALT-T>
Exit, NO SAVE <ESC>
-----
[Local_     ]

```

- B. By default, CNC\_1 will appear in the box as the 9/PC topic name. This is the name of your selected CNC. If this topic name is incorrect, enter a new name in the text box.

```

Enter 9/PC Topic Name

Previous <SHIFT-TAB>
Next      <TAB>

Exit, SAVE   <ALT-T>
Exit, NO SAVE <ESC>
-----
[CNC_1_     ]

```

ODS displays a box that asks you to enter your name. The current name is displayed in the box. For example:

```

Enter your name:
[          ]

```



8. Respond to the question: **Is this info correct?**

If the information displayed is:	press:	then:
correct	[Y]	go on to another task
incorrect	[N] or [ESC]	repeat steps 5 - 8 or press [ESC] to cancel the current operation.

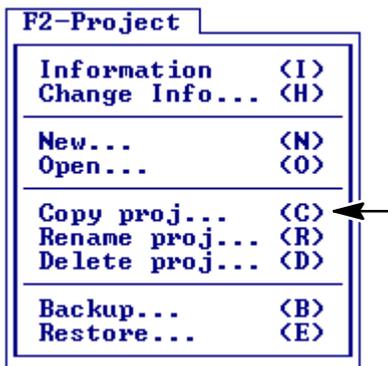
## Copying a Project

You can copy files from an existing project as the basis for a new project. Entire sets of files from an existing project of a compatible type can be copied to either a new project or another existing project.

Use this procedure to execute the copy operation:

1. Press [F2] and pull down the F2-Project menu.
2. Select the **Copy Proj** option.

ODS displays the message, **Copy Project FROM** and a directory of projects.



3. Select the project that you are copying from the directory or press [ESC] to cancel.

ODS displays the message, **Copy project TO** and displays a directory of projects that are compatible to the project chosen to be copied from.



4. Select the project to which you are copying. You can enter a new name or you can select an existing name from the directory. If you enter a new name, ODS will ask you for information about the new project that you going to copy to (see page 5-2, step 3.), and then go to step 6.

If you select:	ODS displays:
an existing project to which to copy	information about the selected project and asks whether or not it is alright to overwrite the existing project files with the copied files

This is an example screen:



Notice that the `WARNING` box in the lower left corner appears only if you try to overwrite the active project.

5. Respond to the question: `OK to OVERWRITE this project?`

If you want to:	press:
overwrite the existing project file	[Y]
keep the existing project file, unharmed	[N]

If you selected:	then ODS:
[No]	again asks for the name of the project to be copied to repeat step 4 or press [ESC] to cancel
[Yes]	briefly displays the message: Deleting project sub-directories

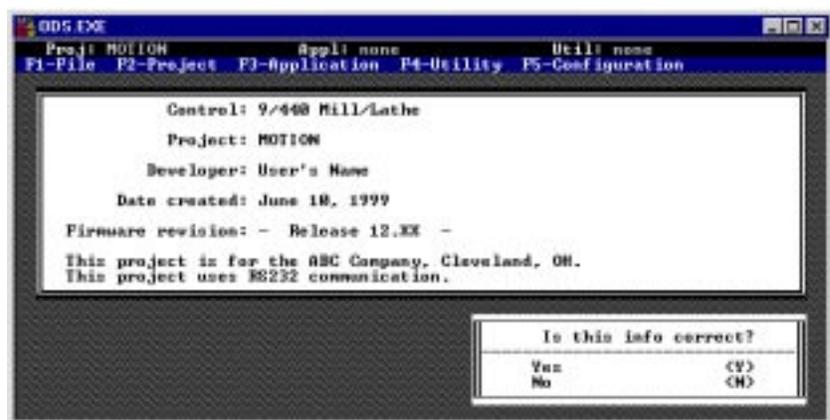
ODS first creates new project subdirectories for the new project, displaying the message:

```
Creating project sub-directories
```

ODS copies the project files from the selected source project to the selected destination project, displaying the message:

```
Copying files
```

6. After entering the project information, ODS displays all of the information typed in and asks if it is correct. For example:

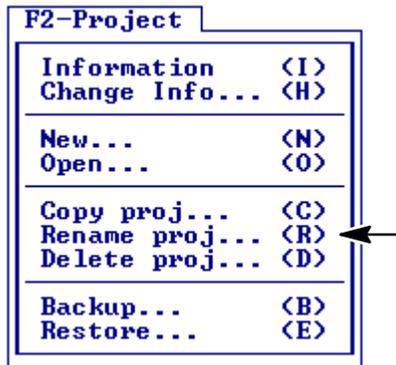


7. Respond to the question: **Is this info correct?**

If the data is:	press:	then:
correct	[Y] or [ENTER]	go on to another task
incorrect or needs to be changed	[N]	ODS gives you another opportunity to enter data for each item.

ODS activates the project just created, and displays the main menu. The status line indicates that the project just entered is active.

## Renaming a Project



This procedure lets you change the name of an existing project. This option is highlighted only if there is at least one project stored in ODS.

1. Press [F2] and pull down the F2-Project menu.
2. Select the **Rename Proj** option.

ODS displays the message **Rename project FROM** and a directory of projects.



3. From the directory, select the project to be renamed.

ODS displays the message **Rename project TO** and the directory of projects, and asks for the new project name to be given to the project.

Enter name: [            ]

Rename Project TO

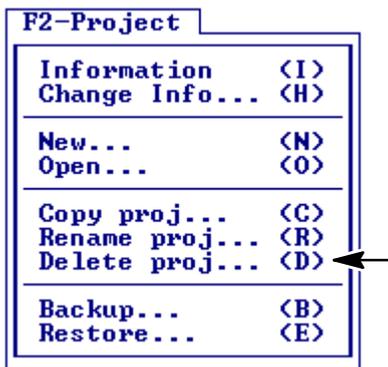
4. Type in the new name to be given to the selected project, then press [ENTER].

ODS renames the project, then asks you to enter project information. It also displays the information that was entered and asks if it is correct.

5. Respond to the question: **Is this info correct?**

If the data is:	press:	then:
correct	[Y] or [ENTER]	ODS stores the information and returns to the top-level screen.
incorrect or needs to be changed	[N]	ODS gives you another opportunity to enter data for each item.

## Deleting a Project



If you decide that it is no longer necessary to store a project on the hard disk, you can delete the project by using this procedure:

1. Press [F2] and pull down the F2-Project menu.
2. Select the **De**lete Proj option.

ODS displays the message **DELETE project** and a directory of projects.



3. Select the project to be deleted and press [ENTER], or press [ESC] to cancel.

ODS displays the information for the selected project and asks for permission to delete it.



Notice that the WARNING box in the lower left corner appears only if you try to delete the active project.

4. Respond to the question: OK to DELETE the project?

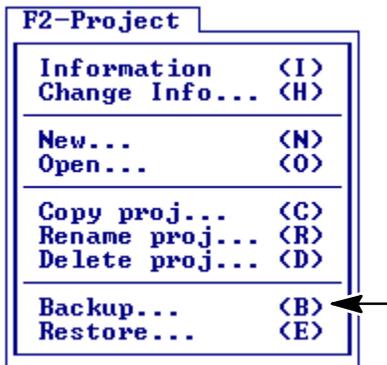
If you want to:	press:	then ODS:
keep the project	[N]	returns to step 3 It does not delete the project, again displays the project directory and asks for another selection.
delete the project	[Y]	displays this message: Deleting project sub-directories displays the main menu when the project is complete

## Backing Up a Project to Floppy Disk

ODS stores the files you created, including the configuration and interface files, on the computer's hard disk. The **Backup** option of the F2-Project menu lets you copy an entire project and all of its files from the hard disk to a floppy disk(s).

After backing up a project to floppy, you can delete it from the hard disk. This helps save space on the hard disk and helps avoid having inactive projects in the directory.

**Important:** Be sure to initialize your floppy disks.



Use this procedure to back up a project to floppy disk:

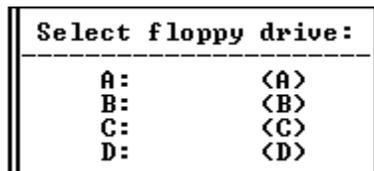
1. Press [F2] and pull down the F2-Project menu.
2. Select the **Backup** option.

ODS displays the message **BACKUP project** and the directory of projects.



3. Select the project to be backed up and press [ENTER]. Press [ESC] to cancel.

ODS asks you which floppy-disk drive to send project files to:



4. Select one of the drives according to the computer's configuration, and press [ENTER]. Press [ESC] to cancel.

The screen goes blank briefly and ODS activates the ODS-supplied disk backup utility.

**Important:** The target drive is the floppy-disk drive to which the project is being backed up. All files on the floppy disk are deleted.

5. Insert the floppy disk into the drive then press any key.



**CAUTION:** The **Backup** option lets you save only one project per floppy disk. At least one floppy per project is needed to back up more than one project and some projects may require more than one floppy disk, depending on the size.

The are files as they are being copied. When the backup is complete, ODS displays the message:

```
Backup completed. . .
. . . remove floppy . . .
. . . label floppy disks...
```

6. Press any key and ODS returns to the top-level menu bar.



**CAUTION:** Although all project files have been copied from the hard disk to floppy disk, nothing has been deleted from the hard disk. To delete the backed up project from the hard disk, use the **Delete Proj** procedure.

## Restoring a Backed-up Project



If necessary, a project that was backed up and deleted can be restored from a floppy disk to the hard drive. Use this procedure:

1. Press [F2] and pull down the F2-Project menu.
2. Select the **Restore** option.

ODS displays the message **RESTORE Project** and asks which floppy drive the project will be restored from.



3. Select the drive that will be used and insert the floppy disk that contains the backed-up project into the selected drive.

If the project was backed up on a computer that is running a version of DOS between 2.1 and 3.2 (inclusive), ODS reads the project information from the floppy disk, displays it on the CRT, and asks if it is permissible to restore this project. For example:



If the project was backed up on a computer using a version of DOS 3.3 or later, only the name of the backed-up project is shown. If the project being restored has the same name as the active project, ODS warns you that the files of the active project will be overwritten.

4. Check the information displayed to be sure the right project is being restored. If the project being restored has the same name as the active project, ODS warns you that the files of the active project will be overwritten.

**Important:** If the restored project has the same name as the active project, the active project's files are replaced with the files from the floppy disk.

5. Respond to the question: **Is this info correct?**

If you want to:	press:	then:
select another project because the displayed project is not the correct one	[N]	return to step 1 and insert the correct floppy disk
restore the project	[Y]	<p>ODS executes its Restore Utility and prompts you to continue the procedure.</p> <p>The files are listed as they are copied from the floppy disk to ODS.</p> <p>When restoration is complete, ODS displays the message:</p> <p>Restore completed</p>

6. Press any key to continue.

## Selecting an Application

After opening or creating a project, you can select an application in which to work. ODS offers various applications for each of the products:

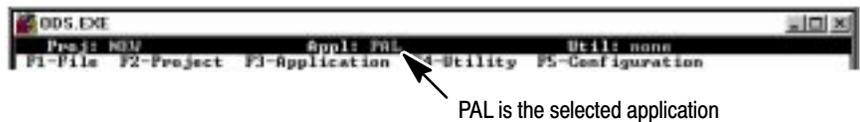
- **AMP** — (IMC 110, 120, 121, 123, 9/Series, and 9/PC) lets you create, edit, and document files of system parameter values
- **PAL™** — (9/Series) lets you create, edit, document, and compile PAL programs (machine interface ladder logic).
- **MML** — (IMC 110, 120, 121, and 123) lets you create a machine interface, using English-like statements for axis motion and I/O control
- **I/O Assignments** — (9/Series) lets you create, edit, and document the I/O assignments for this control
- **Part Programs** — (9/Series and 9/PC) lets you create, edit and download part programs (RS-274 format)
- **Upload** — lets you read AMP, MML, I/O Assignments, Part Programs, and PAL files from the servo controller
- **Download** — lets you send AMP, MML, I/O Assignments, Part Programs, and PAL files from ODS to the servo controller

To select an application from the F3-Application menu:

1. Pull down the F3-Application menu and select one of the applications listed.



ODS activates the application selected and displays its name on the status line. For example:



2. Once an application is selected, you can pull down the F4-Utility menu to select a utility.

## Selecting a Utility

### F4-Utility

Ladder editor	<L>
Message editor	<G>
Compile module	<C>
Document module	<D>
Edit build config	<E>
Build program	<B>
Xref build config	<X>
Monitor program	<M>
Display Page editor	<P>

After you select an application and its name appears on the status line, you can pull down the F4-Utility menu and select a utility. The utilities available depend on which application is active. Refer to chapters specific to an application for a description of the application's utilities. The example screen is the F4-Utility for the PAL application on a 9/Series control.

## What to Do Next

Chapter 6 describes ODS file management, including choosing, copying, renaming, deleting, and printing files.

**END OF CHAPTER**

## Using ODS File Management

### Chapter Objective

This chapter tells you how to use the common options of the F1-File menu. The F1-File menu appears on the top-level menu bar, and on the menu bars of several utilities. It provides options for handling files in the active project and application. The F1-File menu options vary depending on the active utility.

F1-File	
About	<?>
Copy file...	<C>
Rename file...	<R>
Delete file...	<D>
Copy from proj...	<F>
Print...	<P>
Print cancel	<X>
Type...	<T>
Exit to DOS	<E>

If you want to:	See page:
display information about the active utility or about ODS	6-1
choose the file type within a PAL application	6-2
copy a file from a current project/application into another file	6-2
rename a file from a current project/application	6-3
delete a file from the current project/application	6-4
copy a file from another project to the active project	6-5
print a file from the active project/application	6-8
stop printing	6-9
display on the ODS screen a file from the active project/application	6-10
know what to do next	6-11

This chapter also describes other less common options and applicable utilities.

### Using ODS File Management

When no utility is active, the **about** option displays the information about ODS. When a utility is active and the **about** option is available, it displays the information about the active utility.

To display the information:

1. Select [F1] and pull down the F1-File menu.
2. Select the **about** option.

ODS displays the appropriate information. For example, when no utility is active, the **about** option displays a message like this:

The revisions of all control types loaded are displayed.

3. Press any key to return to the top-level menu.

F1-File	
About	<?>
Copy file...	<C>
Rename file...	<R>
Delete file...	<D>
Copy from proj...	<F>
Print...	<P>
Print cancel	<X>
Type...	<T>
Exit to DOS	<E>

## Choosing the File Type Within a PAL Application

When you are executing a PAL file management function on PAL files, you must first select a PAL file type, such as Source, Build List, Build Map, etc. The list of file types that are available to you depend on the file management function that you are doing. File type descriptions are in the operation and programming manuals.

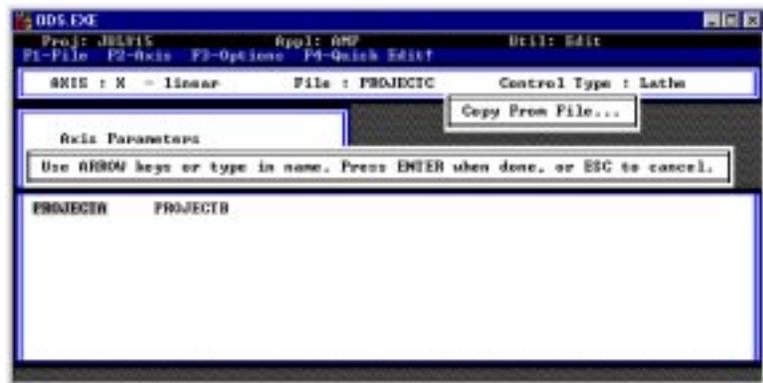
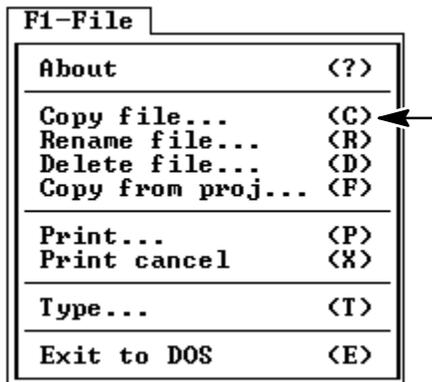
To **Print** or **Type** a file, you must run the **Document** utility under F4-Utility menu.

## Copying a File from a Current Project

Use the **copy file** option to copy one file of the active project/application to a new file. A project and application must be active for this option to be available. To **Copy** a file:

1. Select [F1] and pull down the F1-File menu.
2. Select the **copy file** option.

ODS displays the message **Copy From File** and a directory of files for the active project and application.



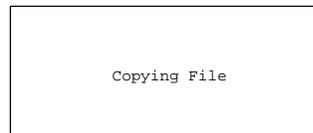
3. Select the file from which you want to copy, or press [ESC] to cancel.
  - use the ARROW keys to move the cursor to the selected file, then press [ENTER], or
  - type in the file name, then press [ENTER]

ODS displays the message **Copy To File** and the directory of files for the active project/application.



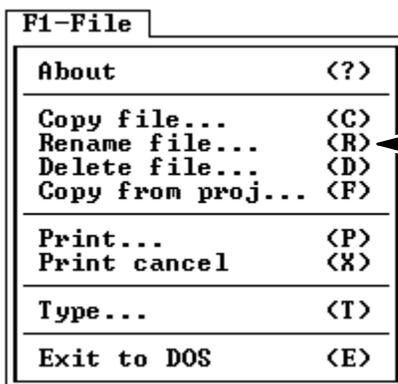
4. Type the new name of the file to which you want to copy, then press **[ENTER]**, or press **[ESC]** to cancel.

ODS copies the specified file(s) and displays:



When the copy is complete, ODS returns to the original menu bar.

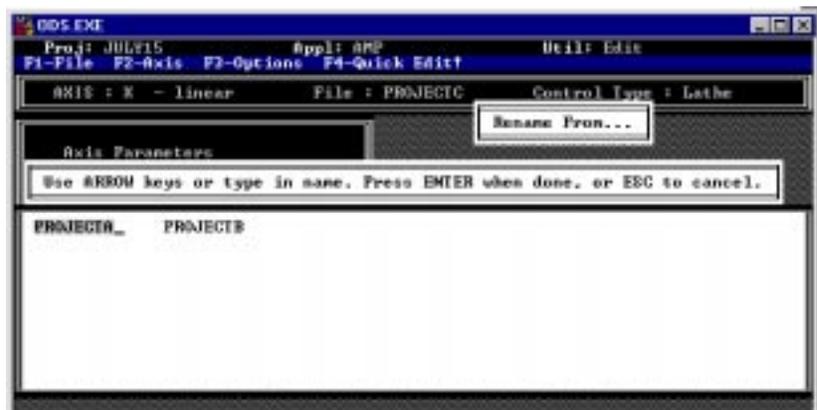
## Renaming a File from a Current Project



Use the **Rename** option to change a file in an active project/application. There must be a project and application active for this option to be available. To **Rename** a file:

1. Select **[F1]** and pull down the F1-File menu.
2. Select the **Rename file** option.

ODS displays the message **Rename From** and a directory of files for the active project/application.



3. Select the file that you want to rename, or press [ESC] to cancel.

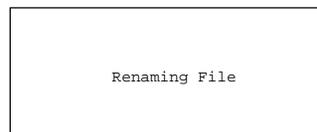
- use the ARROW keys to move the cursor to the selected file, then press [ENTER], or
- type in the file name, then press [ENTER]

ODS displays the message **Rename To** and the directory of files for the active project/application.



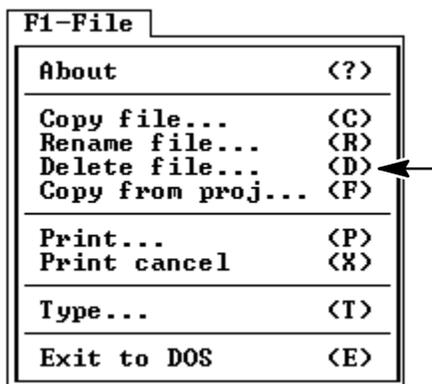
4. Type in the new name for the file you are renaming, then press [ENTER].

ODS renames the specified file and displays:



ODS returns to the original menu when the operation is complete.

## Deleting a File from a Current Project



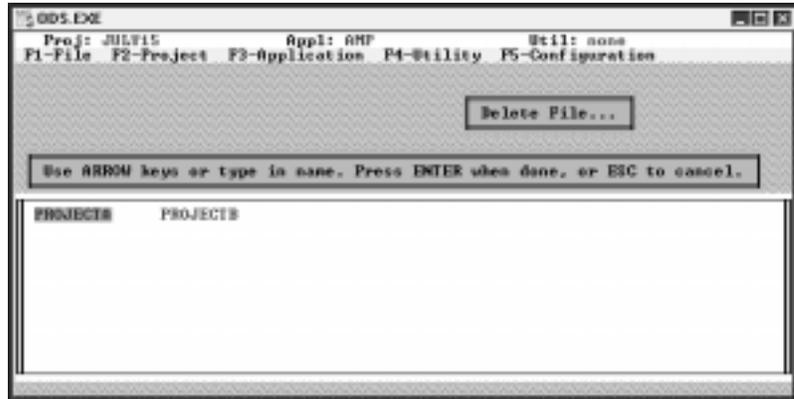
Use the **DeleTe** option to delete a file in an active project/application. There must be a project and application active for this option to be available.

To **DeleTe** a file:

1. Select [F1] and pull down the F1-File menu.
2. Select the **DeleTe file** option.

ODS displays the message **DeleTe File** and a directory of files for the active project/application.

3. Select the file that you want to delete, or press [ESC] to cancel.
  - use the ARROW keys to move the cursor to the selected file, then press [ENTER], or
  - type in the file name, then press [ENTER]



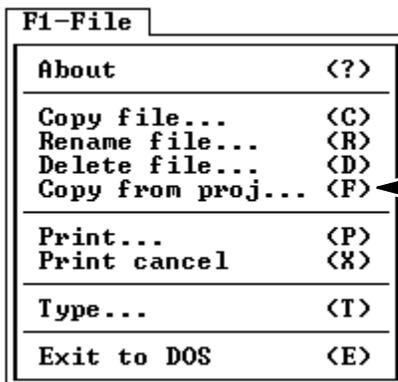
If the verify feature <sup>1</sup> is enabled:	then ODS:
no	deletes the file without checking for confirmation
yes	asks you if it is OK to delete the file

<sup>1</sup> Refer to chapter 4.

4. If the verify feature is enabled, select the appropriate response:

If you want to:	press:	then ODS:
cancel the delete operation	[N]	cancels the delete operation and returns to the original menu
delete the file	[Y]	briefly displays the message: Deleting File When the delete function is complete, ODS returns to the original menu bar.

## Copying Files from Another Project

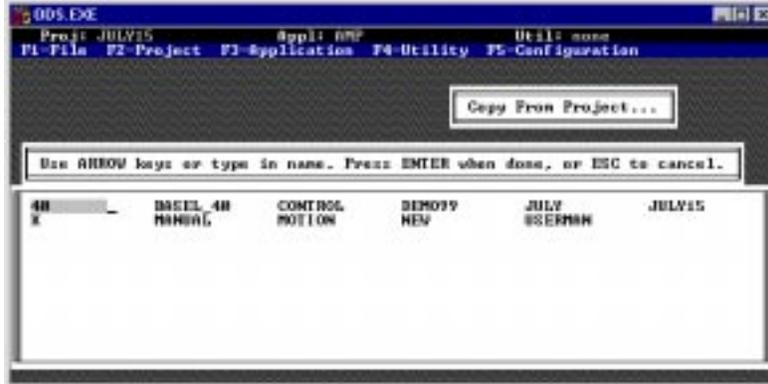


Use the **Copy from proj** to copy a file from the active application of another project to the active project/application. To **Copy from proj**:

1. Select [F1] and pull down the F1-File menu.

2. Select the **Copy from proj** option.

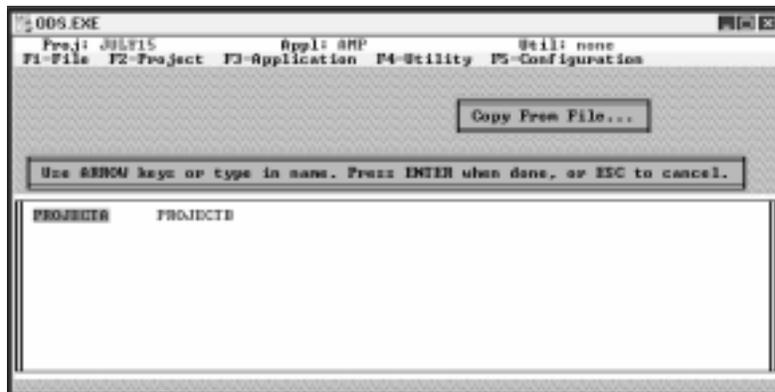
ODS displays the message **Copy From Project** and a directory of applicable projects.



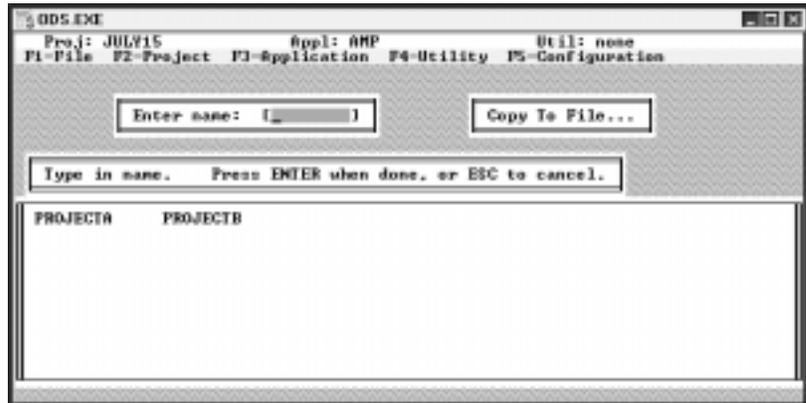
3. Select the project that contains the file that you want to copy, or press **[ESC]** to cancel.

- use the **ARROW** keys to move the cursor to the selected file, then press **[ENTER]**, or
- type in the file name, then press **[ENTER]**

ODS displays the message **Copy From File** and a directory of files for the active application and selected project.

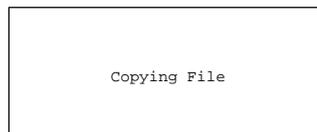


4. Select the file that you want to copy, or press [ESC] to cancel.
  - use the ARROW keys to move the cursor to the selected file, then press [ENTER], or
  - type in the file name, then press [ENTER]ODS displays the message **Copy To File** and a directory of files for the active project.



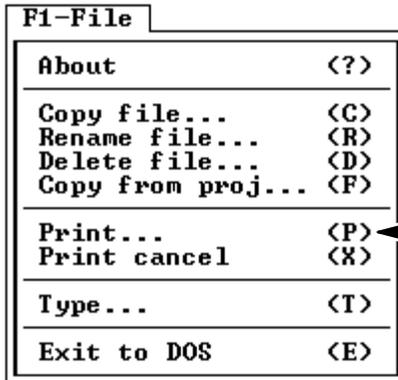
5. Type the name of the file to which you want to copy (the destination file), then press [ENTER], or press [ESC] to cancel. You must type a new name.

ODS copies the specified file(s).



When the copy function is complete, ODS returns to the original menu.

## Printing an ODS File

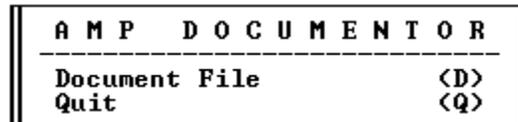


Use the **Print** option to send the contents of a file to a printer that is connected to the computer being used for ODS development. Refer to Chapter 3 for more information.

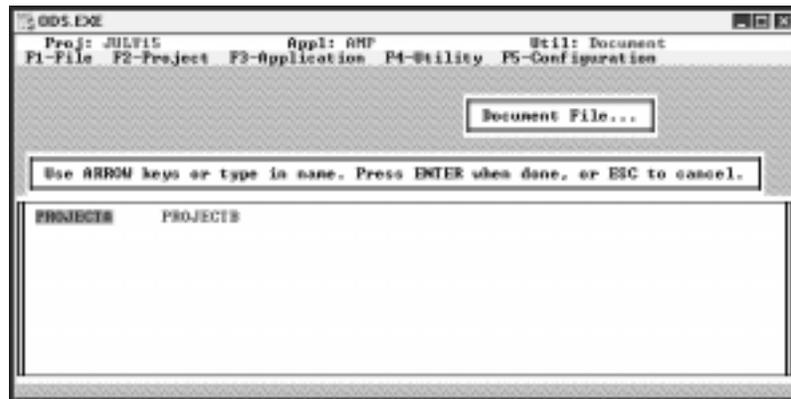
## Using the Documentor

Prior to printing your ODS file, you must use the Documentor utility to make it printable. The Documentor option is available for AMP, PAL, and I/O Assignments applications only. To enable (unghosted) the Documentor, you must have at least one file saved. To create a documented version of a file:

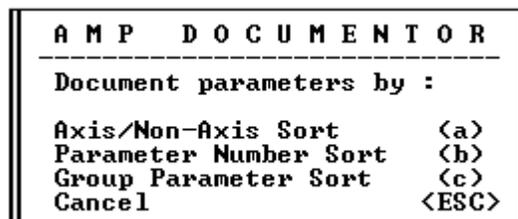
1. Select [**F4**] and pull down the F4-Utility menu.
2. Select the **Document** option. A similar screen appears:



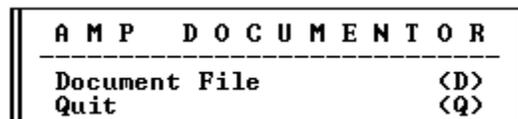
3. Select [**D**] to document the file. A similar screen appears:



4. Select the appropriate sort type.



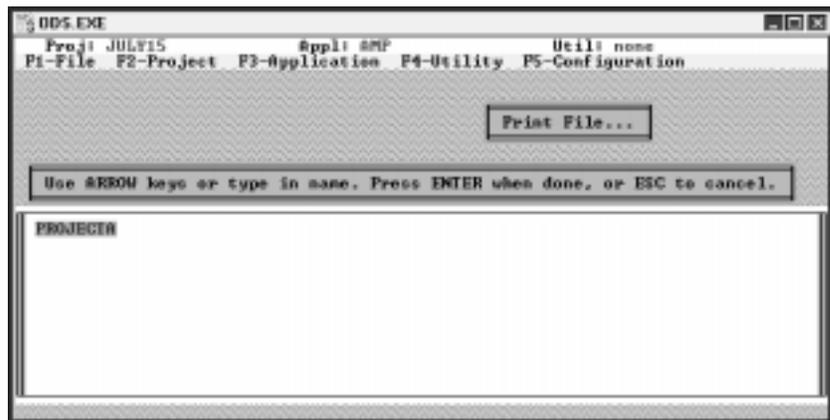
Once ODS documents the file, it prompts you to either document another file or quit the AMP Documentor.



## Printing Your File

1. Verify that the printer is connected to the computer.
2. Verify that the DOS print spooler was properly invoked when ODS was started.
3. Select [F1] and pull down the F1-File menu.
4. Select the **Print** option.

ODS displays the message **Print File** and a directory of files for the active project/application.

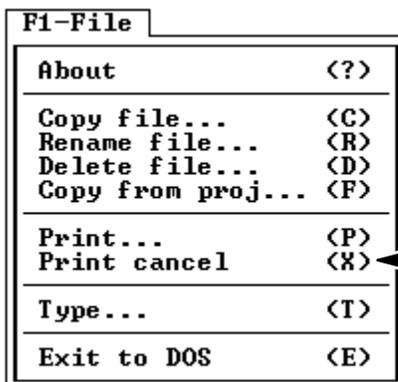


5. Select the file that you want to print, or press [ESC] to cancel.
  - use the ARROW keys to move the cursor to the selected file, then press [ENTER], or
  - type in the file name, then press [ENTER]

ODS outputs the file to the printer that is connected to the computer.

You can perform other ODS operations while printing is in progress.

## Canceling a Printing Request

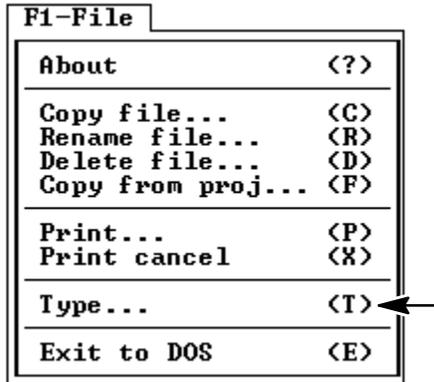


To cancel a printing operation that is in progress:

1. Select [F1] and pull down the F1-File menu.
2. Select the **Print cancel** option.

ODS stops sending data to the printer.

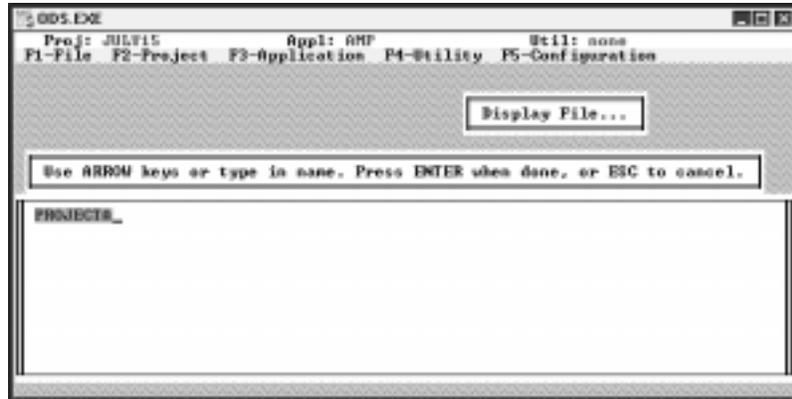
## Displaying an ODS File



Use the **type** option to display a file on the ODS screen. Prior to displaying your file, you must document it using the Documentor utility. Refer to page 6-8 for more information. To **type** a file:

1. Select [**F1**] and pull down the F1-File menu.
2. Select the **type** option.

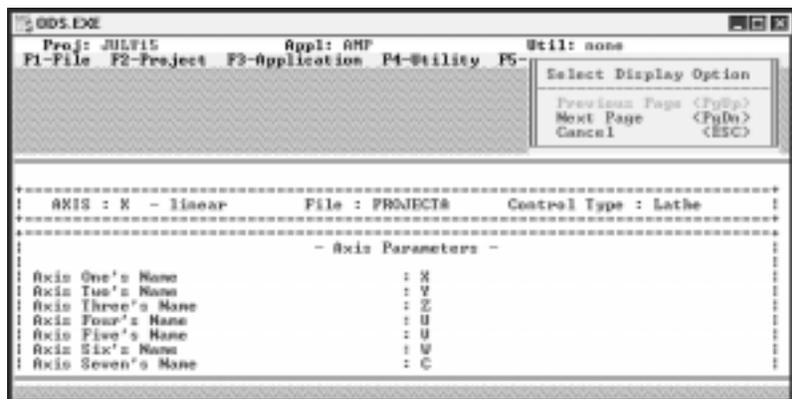
ODS displays the message **Display File** and a directory of files for the active project/application.



3. Select a file to display, or press [**ESC**] to cancel.
  - use the **ARROW** keys to move the cursor to the selected file, then press [**ENTER**], or
  - type in the file name, then press [**ENTER**]

ODS displays the first page of the file on the ODS screen.
4. Press the [**PgDn**] key to view the next page(s). Press [**PgUp**] to view a previous page(s).
5. Press the [**ESC**] key to return to the original menu after viewing the file.

This is an example page of an AMP document file:



**What to Do Next**

Chapter 7 tells you how to use the ODS software to configure communication through various communication links.

**END OF CHAPTER**

## Using ODS Communication Configuration

### Chapter Objective

Refer to this chapter when you use ODS to configure communication through these communication links:

- 1784-KL
- 1784-KT
- 1784-KTK1
- Serial port
- INTERCHANGE™– this is a separate product used to communicate to a CNC via DH+ if you are using DOS or Windows 95™. INTERCHANGE is a separate purchase and installation. It is not packaged with ODS.
- RSLinx™ – this is a separate product used to communicate with a CNC via DH+ or Ethernet if you are using Windows NT™. RSLinx is a separate purchase and installation. It is not packaged with ODS.

**Important:** Use of Ethernet communication is only available on 9/260 and 9/290 CNCs.

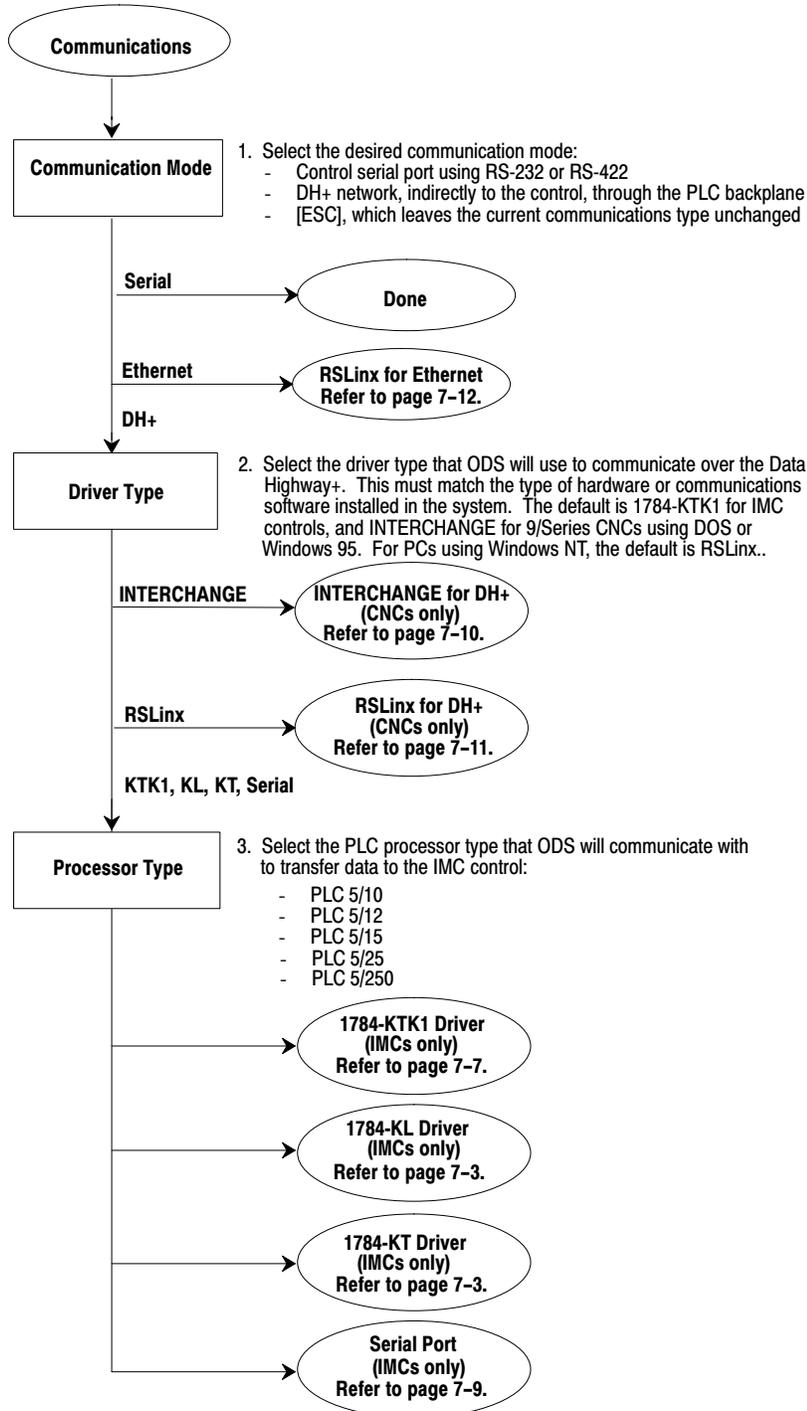
If you want to:	See page:
select a communication mode	7-2
preview the menu structure	7-3
configure a 1784-KL	7-3
configure a 1784-KT	7-3
preview KT address considerations	7-5
program from Data Highway Plus to Data Highway Plus <sup>1</sup>	7-6
configure the 1784-KTK1	7-7
preview KTK1 address considerations	7-8
preview 6122 considerations	7-8
preview IBM PC XT considerations	7-8
configure a serial port driver	7-9
use INTERCHANGE	7-10
use RSLinx for DH+	7-11
use RSLinx for Ethernet	7-12
download AMP files for use with the 9/PC	7-12
set up the 9/PC host (server) computer	7-15
set up the ODS (client) computer	7-19
troubleshoot when using RAS communication	7-21
know what to do next	7-21

## Selecting the Communication Code

Initial project definitions include the new project's name, control family, and communication mode. Figure 7.1 describes the menus you see when you select:

- communication mode
- processor type
- driver type

**Figure 7.1**  
**Communication Selection Flow Chart**



## Menu Structure

Configuring the required information for the various driver types as shown in Figure 7.2 is identical for all of the menus:

- <SHIFT-TAB> lets you review previous menus
- <TAB> previews the next menu
- <ALT-T> exits from the configuration menu saving the data
- <ESC> exits without saving

**Figure 7.2**  
Drive Type Menu

Enter Driver Type Desired	
1784-KTK1	<A>
1784-KL	<B>
1784-KT	<C>
Serial to DH+	<D>
INTERCHANGE <CNC>	<E>
RSLINK	<F>
Previous	<SHIFT-TAB>
Next	<TAB>
Exit, SAVE	<ALT-T>
Exit, NO SAVE	<ESC>

## Configuring a 1784-KL

The 1784-KL module lets a T45 and T47 communicate with the PLC-5™ processor. The 1784-KL also provides DH+™ to DH+ programming.

To configure the information for the 1784-KL module, select (B) from the Driver Type menu (Figure 7.2). Figure 7.3 describes the menu flow to configure the KL module.

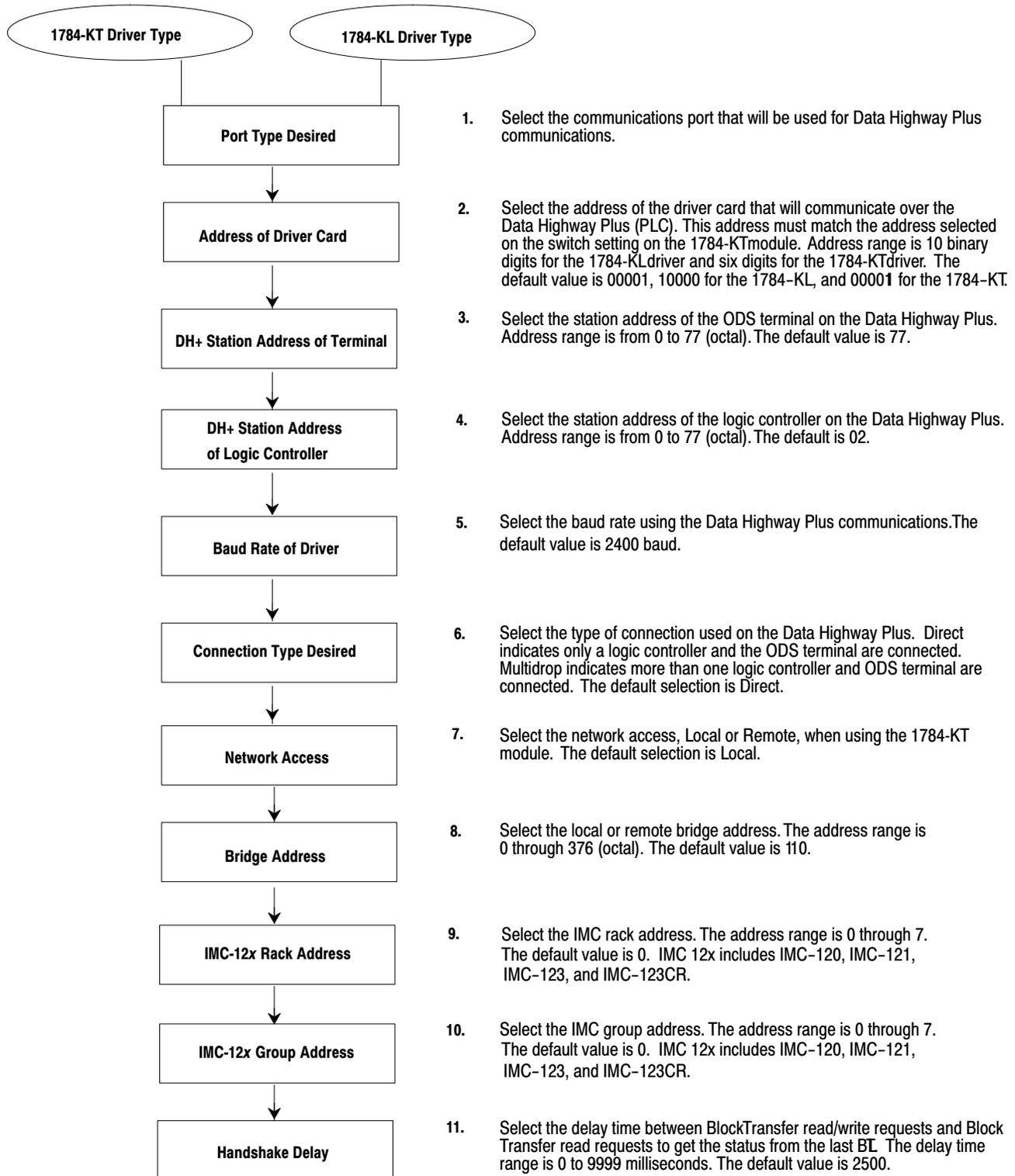
## Configuring a 1784-KT

The 1784-KT module provides access for DH to DH+ programming. It only takes one slot in your programming terminal and provides communication to all Allen-Bradley processors.

To configure the information for the 1784-KT module, select (B) from the Driver Type menu. Figure 7.3 describes the menu flow used to configure the KT module.

The communication driver is interrupt driven so that the serial port must support hardware interrupts. On most machines, COM1 and COM2 support these interrupts.

**Figure 7.3**  
**Configuration Flow for the 1784-KL or 1784-KT**



## KT Address Considerations

Figure 7.4 lists the valid KT addresses.

**Figure 7.4**  
**Valid KT Addresses**

Memory Address (Hexadecimal)	Network Board Switch Settings						Software Address (Binary)
	A14	A15	A16	A17	A18	A19	
A000:0000	OFF	OFF	OFF	ON	OFF	ON	000101
A400:0000	ON	OFF	OFF	ON	OFF	ON	100101
A800:0000	OFF	ON	OFF	ON	OFF	ON	010101
AC00:0000	ON	ON	OFF	ON	OFF	ON	110101
B400:0000	ON	OFF	ON	ON	OFF	ON	101101
B800:0000	OFF	ON	ON	ON	OFF	ON	011101
C000:0000	OFF	OFF	OFF	OFF	ON	ON	000011
C400:0000	ON	OFF	OFF	OFF	ON	ON	100011
C800:0000	OFF	ON	OFF	OFF	ON	ON	010011
CC00:0000	ON	ON	OFF	OFF	ON	ON	110011
D000:0000	OFF	OFF	ON	OFF	ON	ON	001011
D400:0000	ON	OFF	ON	OFF	ON	ON	101011
D800:0000	OFF	ON	ON	OFF	ON	ON	011011

Where:

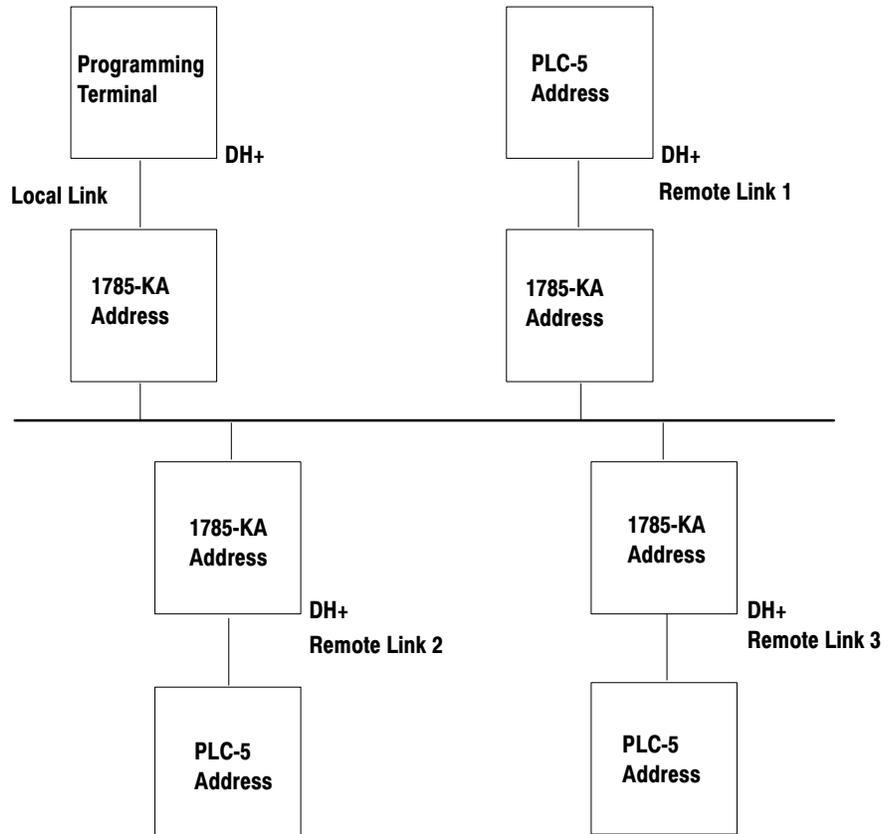
- 1 = Factory-set address
- 2 = Preferred addresses when readdressing the 1784-KT board
- 3 = KT board in a COMPAQ 386 that uses a VGA card
- 4 = KT board in a computer that uses an EGA card

## Programming from DH+ to DH+

Programming from DH+ to DH+ provides access to devices on other DH+ links that are attached to your DH+ link through a DH network. These remote programming configurations are available with the 1784-KT and 1784-KL modules.

Figure 7.5 shows a possible programming configuration from DH+ to DH+.

**Figure 7.5**  
**Remote Programming Example**



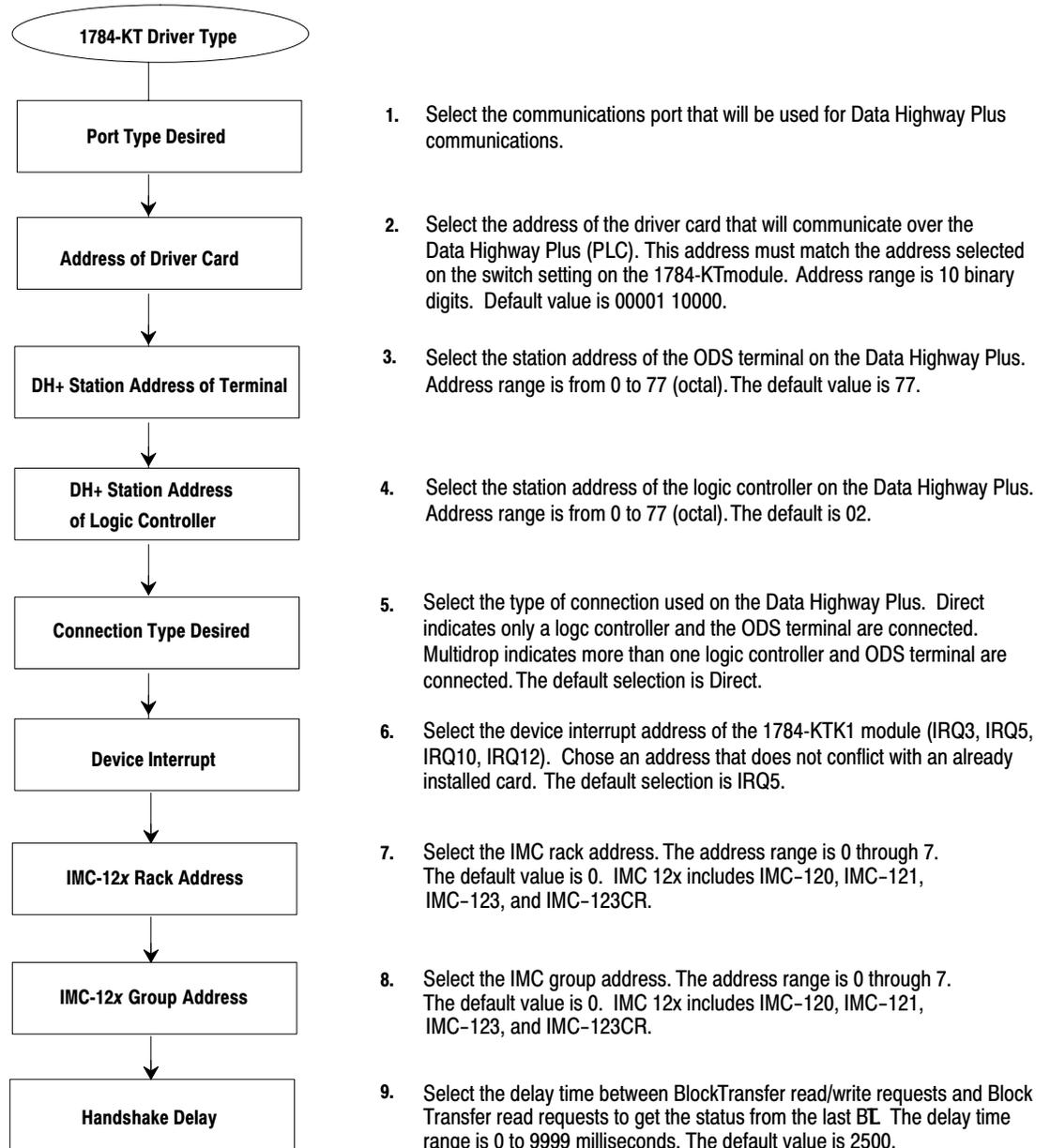
These rules apply when you set up remote programming:

- The PLC-5 processor on one DH+ link and a PLC-5 processor on another DH+ link can have the same address.
- The programming terminal can be on any link.
- Address 77 octal is an illegal bridge address on link 3. It translates to 0xFF, which does not exist on a DH link.

## Configuring the 1784-KTK1

To configure the information for the 1784-KTK1 module, select (A) from the Driver Type menu. Figure 7.6 describes the menu flow used to configure the KTK1 module.

**Figure 7.6**  
**Configuration Flow for the 1784-KTK1**



## KTK1 Address Considerations

Figure 7.7 lists the valid KTK1 addresses.

**Figure 7.7**  
**Valid KTK1 Address**

Memory Address (Hexadecimal)	Network Board Switch Settings										Software Address (Binary)	
	A14	A15	A16	A17	A18	A19	A20	A21	A22	A23		
A000:0000	OFF	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	0001010000
A400:0000	ON	OFF	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	1001010000
A800:0000	OFF	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	0101010000
AC00:0000	ON	ON	OFF	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	1101010000
B400:0000	ON	OFF	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	1011010000
B800:0000	OFF	ON	ON	ON	OFF	ON	OFF	OFF	OFF	OFF	OFF	0111010000
C000:0000	OFF	OFF	OFF	OFF	ON	0000110000						
C400:0000	ON	OFF	OFF	OFF	ON	1000110000						
C800:0000	OFF	ON	OFF	OFF	ON	0100110000						
CC00:0000	ON	ON	OFF	OFF	ON	1100110000						
D000:0000	OFF	OFF	ON	OFF	ON	0010110000						
D400:0000	ON	OFF	ON	OFF	ON	1010110000						
D800:0000	OFF	ON	ON	OFF	ON	0110110000						

Where:

- 1 = Factory-set address
- 2 = Preferred addresses when readdressing the 1784-KT K1 board
- 3 = KTK1 board in a COMPAQ 386 that uses a VGA card
- 4 = KTK1 board in a computer that uses an EGA card

## 6122 Considerations

If you use a 6122 as your programming terminal, set the KTK1 address to 101001100001. Also, change the switch setting on the KTK1 module to reflect the address. See the 1784-KTK1 Product Data, publication 1784-2.3, for instructions about setting switches.

## IBM PC XT Considerations

If you use an IBM PC XT as your programming terminal, you can use only IRQ3. You cannot use IRQ5 because the hard drive already uses IRQ5. The IBM PC XT cannot use IRQ10 and IRQ12 interrupts.

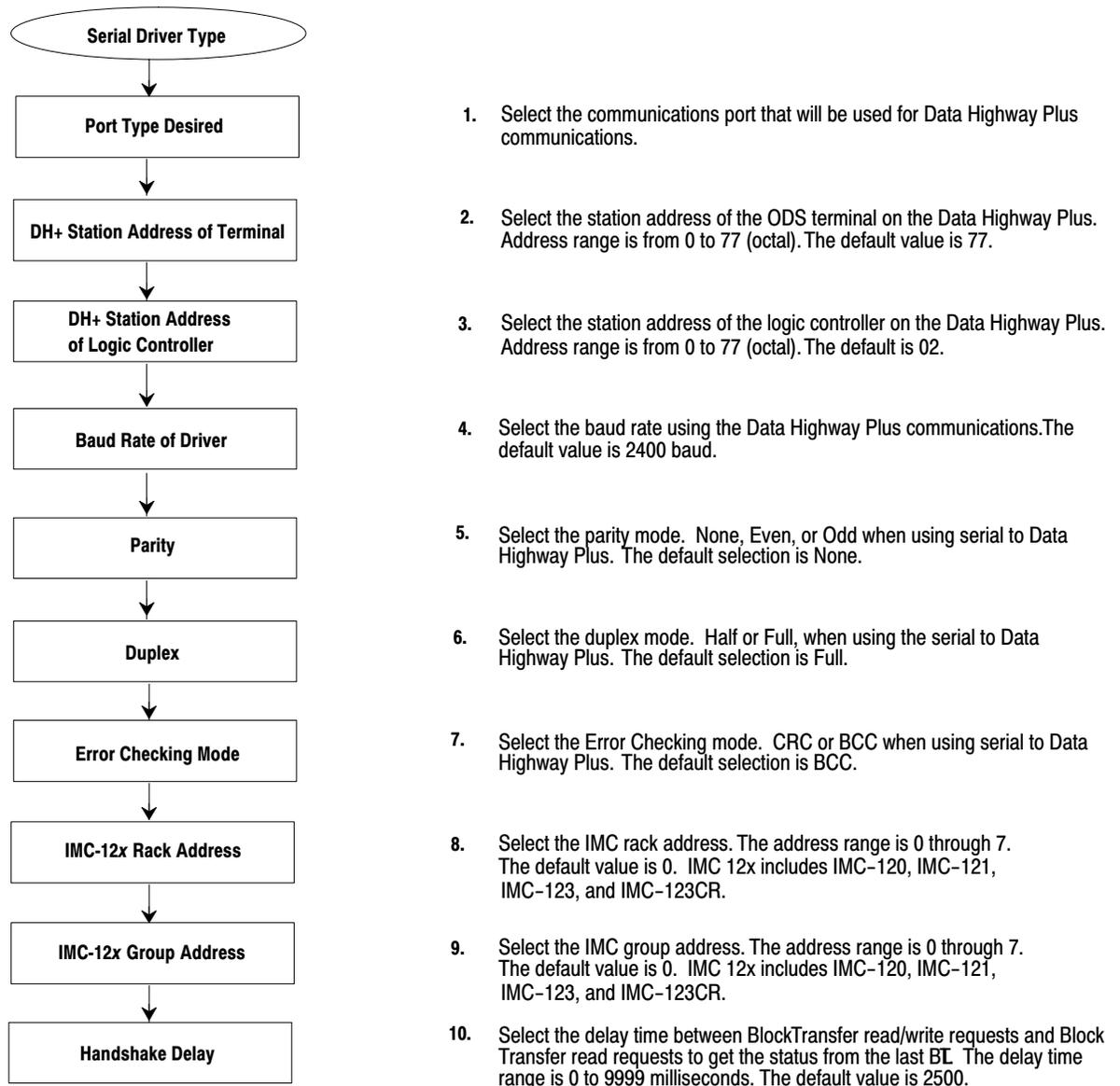
## Configuring a Serial Driver

You can use a serial port (COM1 or COM2) that is connected to the terminal and you can use the serial port with one of these communication modules:

- 1770-KF2
- Series B Communication Interface Module
- 1785-KE Communication Interface Module (resides in 1770 I/O rack)

To configure the information for the Serial Driver module, select (D) from the Driver Type menu. Figure 7.8 describes the menu flow used to configure the serial port.

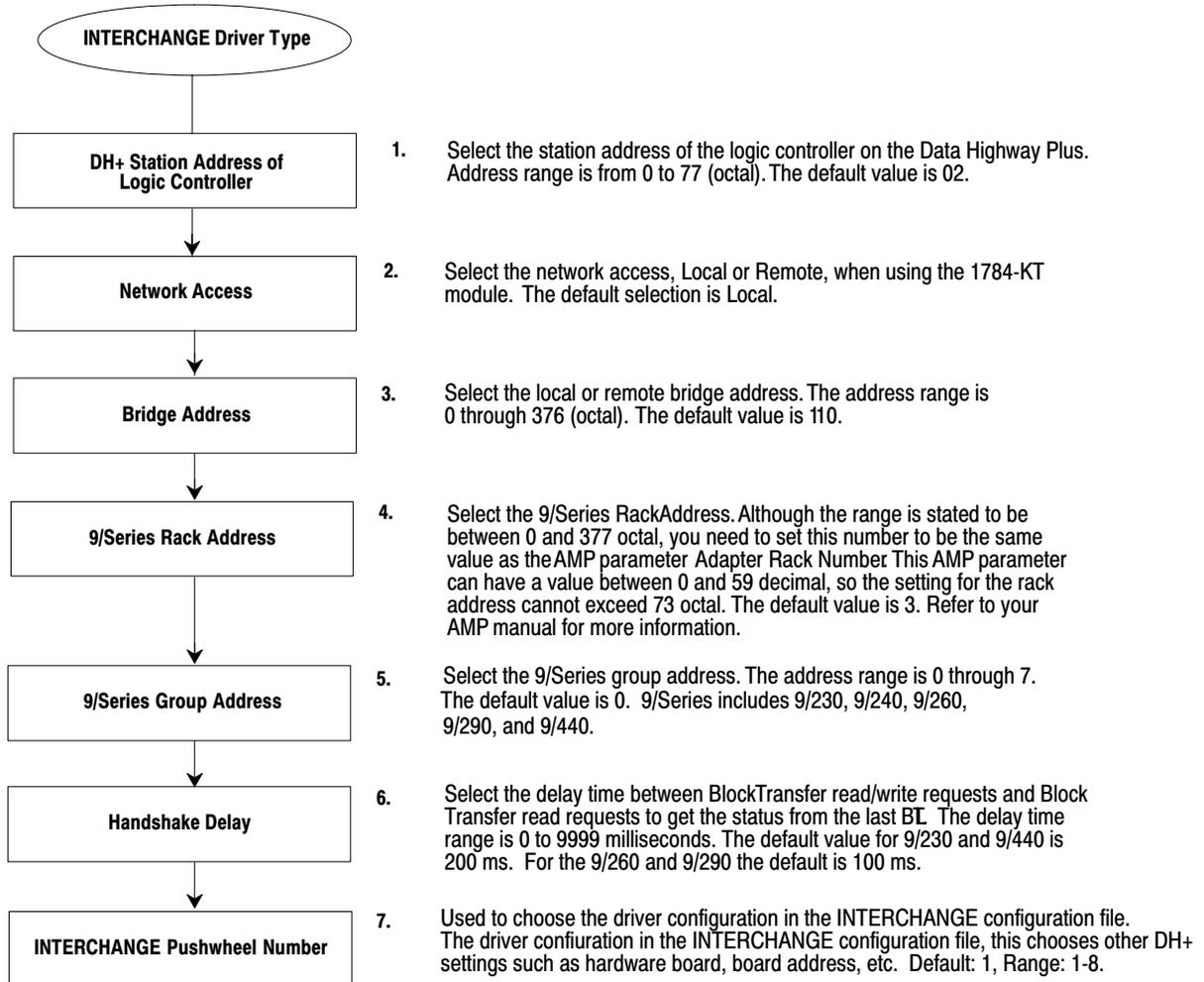
**Figure 7.8**  
**Configuration Flow for the Serial Driver Type**



## Using INTERCHANGE

To configure the information for INTERCHANGE, select (E) from the Driver Type menu. Figure 7.9 describes the menu flow used to configure INTERCHANGE.

**Figure 7.9**  
Configuration Flow for Using INTERCHANGE (CNCs only)



## Configuring DH+ Under Windows NT™ In ODS

Use the following instructions to configure DH+ under Windows NT via ODS:

1. In your Windows NT application, launch ODS in a DOS shell. With RSLinx running, follow steps 1 through 4 as described in *Creating a Project* (refer to Chapter 5).
2. Select **DH+ Network** as your application type by choosing <D>.

Communication Mode Desired	
Ctrl Serial Port	<C>
√ DH+ Network	<D>
Ethernet/OCI	<E>
PC to 9/PC	<P>
Exit, NO SAVE	<ESC>

3. When the system prompts you for your desired driver type, RSLinx is selected by default. Choose <F> to continue to the next screen.

Enter Driver Type Desired	
1784-KTK1	<A>
1784-KL	<B>
1784-KT	<C>
Serial to DH+	<D>
INTERCHANGE <CNC>	<E>
√ RSLINK	<F>
Previous	<SHIFT-TAB>
Next	<TAB>
Exit, SAVE	<ALT-I>
Exit, NO SAVE	<ESC>

4. A list box containing DH+ drivers that are currently configured in RSLinx appears. Select the name corresponding to your configured driver.

```

DH+ Drivers configured
in RSLinx
-----
√ Select-Later          <A>
  AB_KT-1              <B>
  EMU5-1               <C>

Previous Page          <PgUp>
Next Page              <PgDn>

Previous               <SHIFT-TAB>
Next                   <TAB>

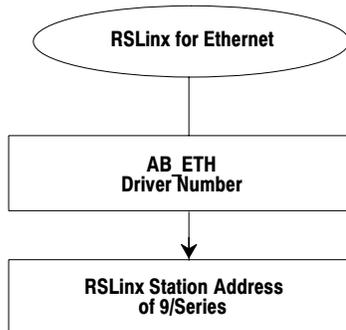
Exit, SAVE             <ALT-T>
Exit, No SAVE          <ESC>

```

## Configuring RSLinx for Ethernet

Refer to Figure 7.10 to see the menu flow used to configure RSLinx for Ethernet.

**Figure 7.10**  
Configuration Flow for Using RSLinx for Ethernet (CNCs only)



1. Select the appropriate driver number for your configuration. This number corresponds to the AB\_ETH driver configured in RSLinx for Ethernet communication. The driver range is 01 to 64 (decimal). The default value is 01.
2. Select the station address that was mapped to the 9/Series control IP address during RSLinx configuration. The address range is 0 to 63 (decimal). The default value is 0.

## Downloading AMP Files for Use with the 9/PC

After you edit and save your AMP file, download it to the 9/PC so that it is the currently active AMP file. You can use ODS to download AMP files three ways:

- from the local host PC into the 9/PC (refer to page 5-4)
- from a separate network-connected ODS workstation that is running Windows NT to the host PC and into the 9/PC card
- from an ODS workstation running Microsoft Windows NT and Dial-up Networking, connected to the serial port of the host PC running Microsoft's Remote Access Services (RAS), and into the 9/PC card

In all cases, the information you enter when creating the project is used to direct the download to the correct 9/PC for this project. This includes the host PC name and the topic name of the 9/PC card. This project information can be changed at any time.

## Downloading an AMP File from the Host PC to a 9/PC

When you download locally to the 9/PC, no external connections are required. The download is done across the computer's PCI buss.

This procedure loads the selected AMP file into the memory of the 9/PC card, then force the 9/PC restart. This restart will either be manually or automatically, depending on how you configured your 9/PC settings during installation.

1. Select the **Download** option from the F3-Application menu.

F3-Application	
AMP	<A>
Part Program	<R>
Upload	<U>
Download	<D>

2. Select the **send AMP params** option from the F4-Utility menu.

F4-Utility	
Send AMP params	<A>
Send Part Program	<R>

The following message displays:

**Please place the control in ESTOP to download**

After you press any key, the workstation displays the list of AMP files for this project.

3. Select or type in an AMP file name. The workstation displays the message:

**Waiting for response on the control**

This message is only displayed while ODS is waiting for the 9/PC to verify that it is in E-Stop. The displaying of the message is often too brief to even be seen under normal operation.

The workstation then displays the message:

**Download in progress**

**Percent transferred    xx %**

ODS displays the percentage of the file that was already transferred.

When the download process is complete, ODS displays the message:

**DOWNLOAD COMPLETE**

4. After downloading any new AMP file, you must restart the 9/PC. Depending on how your 9/PC Support Service is configured, this restart can be initiated in one of two ways:
  - If you selected the **AutoStart After AMP Download** option, the 9/PC will restart as soon as the download completes.
  - If you did not configure your 9/PC to automatically start after an AMP download, follow the procedure discussed in the *9/PC Installation and Integration Manual* to restart the 9/PC.

In either case, the 9/PC operator interface or Basic Display Set (BDS) displays the message:

```
CNC was stopped. Restart the CNC using the 9/PC
configuration manager. Select "exit" or use the
options menu to reconnect BDS to the CNC.
```

This indicates that BDS must be "reconnected" to the 9/PC card, as indicated in the message. Attempting to reconnect the BDS without restarting the 9/PC will result in the error message:

```
Cannot Link to ABOCISERVER | CNC_1
```

Once you restart the 9/PC, the new AMP parameter values become available for system operation.

### Downloading Over a Network from a Second PC

ODS can download AMP files to the 9/PC over a communications network assuming: **a)** both the ODS workstation and the host PC are on the network and **b)** the computer running ODS and initiating the download is running Windows NT.

When an AMP file is downloaded to the 9/PC, the ODS workstation downloads the file directly to the 9/PC card. This means that the previous AMP file is no longer in use and unless this older file was backed up, it no longer exists.

The difference between a network download and a local/host download is in the Computer Name that you entered under the project information. In case of network download, you must enter the name of the host computer.

To determine the name of the host computer, perform these steps at the host computer:

- A. Click the **Windows NT Start** button and select **Settings**.
- B. Click on **Control Panel** to activate the Network control.
- C. Select the Identification tab to identify the computer name.

If this information is correct, follow the steps in the previous section on downloading an AMP file.

## Downloading from the Serial Port of a Second PC

ODS can use the serial ports of your workstation and the host computer to download an AMP file.

**Important:** These computer configurations are required for correct operation of this capability :

- The computer running ODS and initiating the download must also be running Windows NT
- The 9/PC host computer must have Remote Access Services (RAS) installed and configured. RAS allows the host computer to act as a server to the ODS (or client) PC
- Both PCs must have Dial-up Networking installed. Dial-up Networking is required in a Windows NT system to enable remote communications via a modem or serial cable
- Both PCs must have identical user accounts created to facilitate dial-up networking operation

When an AMP file is downloaded to the 9/PC, the ODS workstation downloads the file directly to the 9/PC card. This means that the previous AMP file is no longer in use and if this older file was not backed up, it no longer exists.

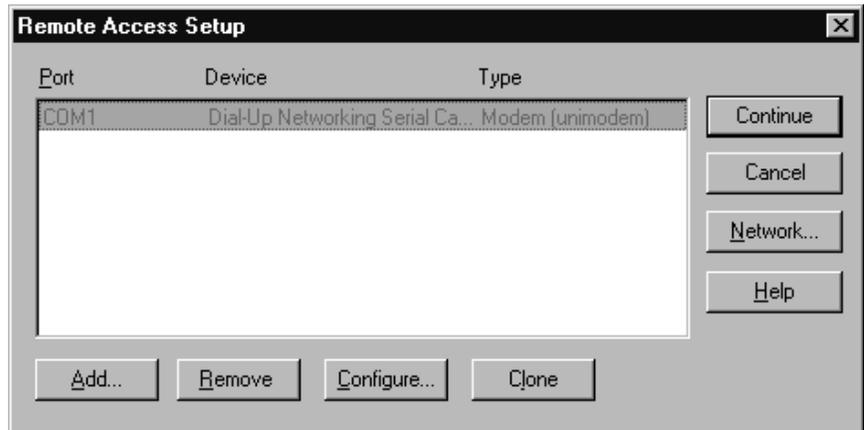
The difference between a download from a serial connection from a second PC and a local/host download is in the Computer Name that you entered under the project information. In case of a serial download, you must enter the name of the host computer.

Setting up the computers needs to be done only one time. The following steps are necessary to correctly install and configure the communications software on the two PCs. Note that an installation/setup must be completed for both the ODS workstation and the host computer.

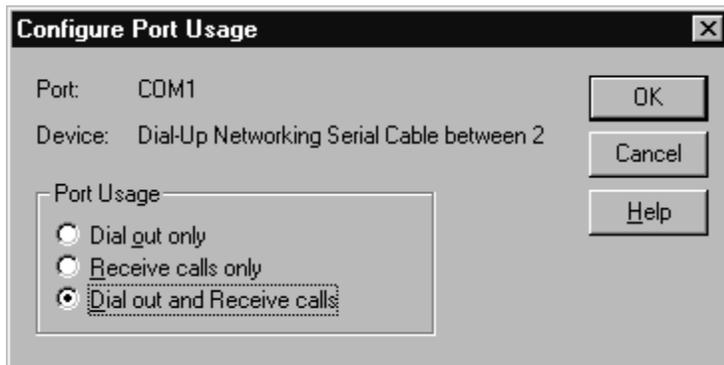
### Setting Up the 9/PC Host (or Server) Computer

1. Double-click the **My Computer** icon on your PC's desktop.
2. Double-click **Dial-Up Networking**.
3. Click **Install** to connect your computer to your remote network.
4. Enter the path where your files are located (e.g., *yourdiskdrive:\I386*) in the **Copy files from:** text box. The drive should appear by default, but if it doesn't, enter your CD ROM drive that contains the Windows NT CD.
  - If the message **No RAS Capable Devices Available** appears, click **YES** next to modem configuration
  - Select **Don't Detect, Select From List**. When the list box appears, select **Standard Modem** and **Dial-Up Serial Cable Between 2 PCs**

- Click **OK** to add COM1 – Dial-Up Networking Serial Cable Between 2 PCs. The Remote Access Setup window appears.



- Select the **Configure** button in the **Remote Access Setup** window.
- Select **Dial out and Receive calls**, to allow the host computer to be both the RAS Client and Server.

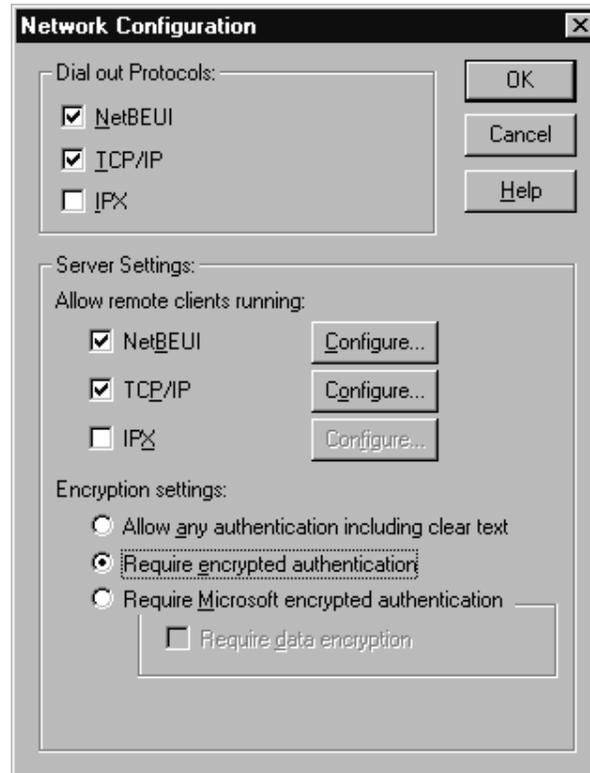


- Click **OK**
- On the remote Access Setup click **Network...**

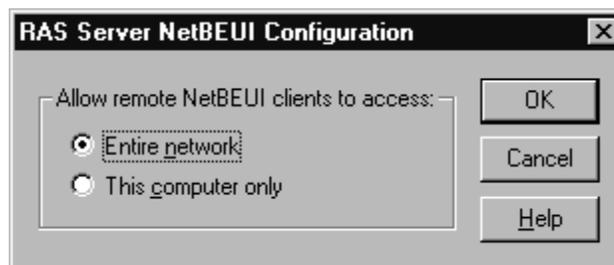
10. Select the following Dial out Protocols: **NetBEUI** and **TCP/IP**.

Select the encryption setting **Require encrypted authentication**. This setting is required.

Click the **Configure** button next to NetBEUI.

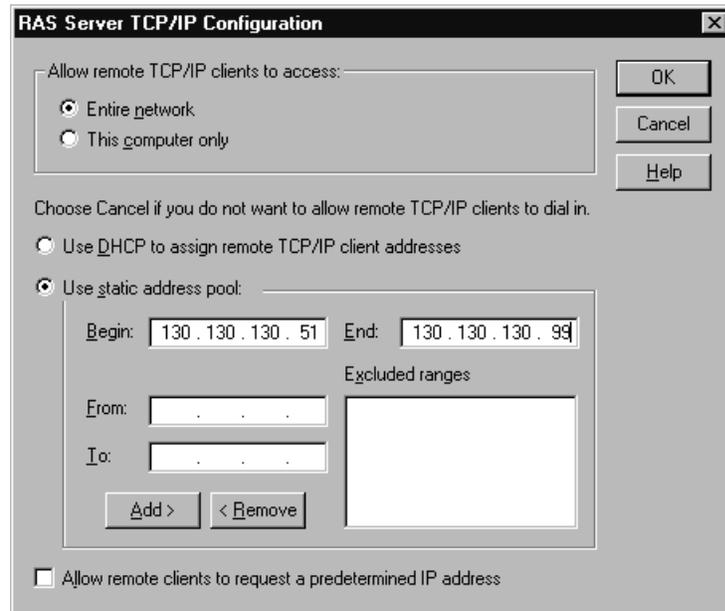


11. Select **Entire Network** in the **RAS Server NetBEUI Configuration** box. Click **OK**.



You can use TCP/IP, but you must either assign a pool of static IP addresses to be available for the clients, or if you have a DHCP server, allow it to assign client IP addresses.

12. Click on the **Configure** button next to TCP/IP to get RAS Server TCP/IP configuration dialog.



13. Check the **Entire Network** button. If you are setting up the ODS (client) computer, go to step 2 of the next section. If you are setting up the 9/PC host (server) computer, go to the next step.

14. Check the **Use static address pool** button if you are assigning static addresses. If you are using DHCP, click the **Use DHCP** button and skip the next step.

15. Enter your starting IP address in the **Begin** box, and your ending IP address in the **End** box.

16. Click **OK**. Click **Continue** to install RAS.

17. Click **Close**. When prompted, reboot the computer.

These next steps assume that you set up accounts on the subject PC for those users (or administrators) who will dial in to the server PC:

18. After logging into Windows NT,

- A. Click the **Windows NT Start** button and select **Programs**.
- B. Select **Administrative Tools (Common)**.
- C. Select **Remote Access Admin**.

19. Select **Users** → **Permissions**.

20. Click on the **Users** name (or administrator) who you want to permit to dial in to the server. Check the **Grant dialin permission to user** checkbox.

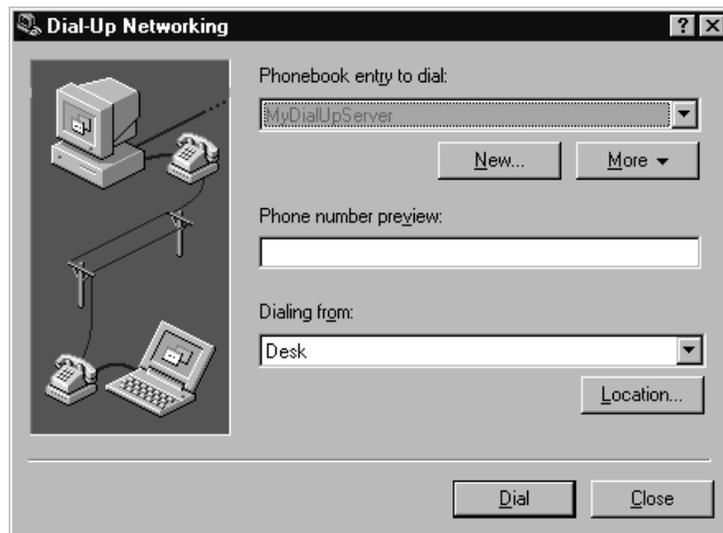
21. Under Call Back, select **No Call Back**, then click **OK**.

22. Select: Server → Start Remote Access Server.

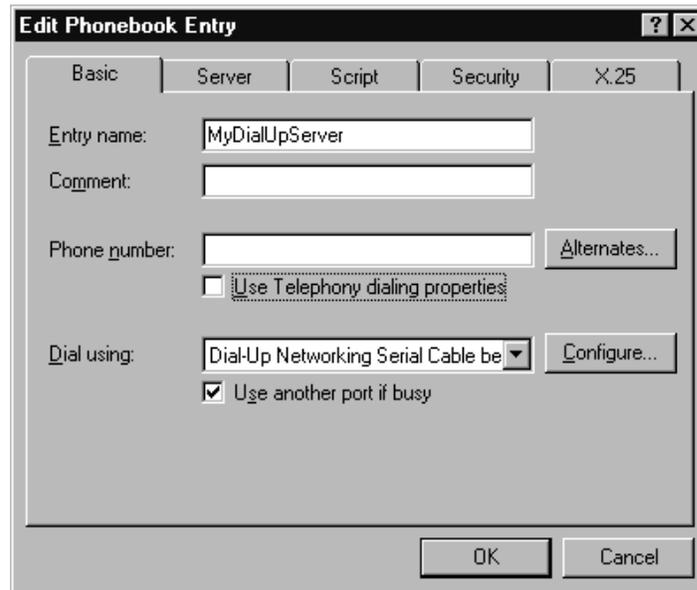
In the Server field, the name of the local computer should already be present. If not, enter the computer name preceded by two back slashes (e.g., \\yourcomputername). Click **OK** to start the service.

### Setting Up the ODS (or Client) Computer

1. Repeat steps 1. through 13. from the previous section.
2. Relog in. Double click the **My Computer** icon.
3. Double click **Dial-up Networking**.
  - If you did not previously configure any dial-up Phonebook, the New Entry Wizard appears.
  - Click **Next**, and select **Plain Text Password**
  - Select enter (or **Next**) through the rest of the selections until the following screen appears:
4. Click More and **Select Edit Entry and Modem Properties**.

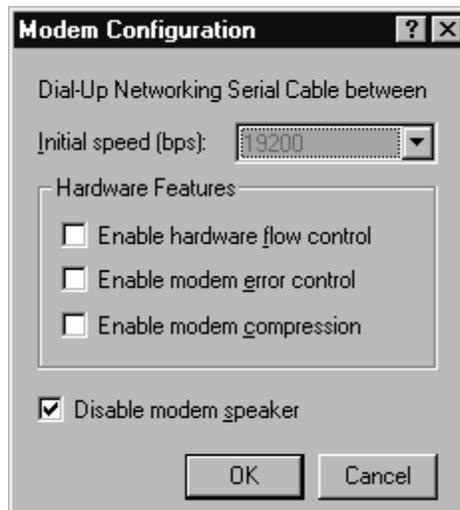


5. Click **Configure** next to **Dial using:**.



6. Select a baud rate that is available on this and the server PC.

7. Click **OK** on this and the Edit Phonebook Entry windows.



8. Disconnect your EtherNet cable.

9. Start the RAS server on the 9/PC Host (server PC) if you did not already do so in the last section:

A. Click the **Windows NT Start** button and select **Settings**.

B. Select **Control Panel**.

C. Double click the **Services** control panel to view the available services.

D. Locate and highlight the **Remote Access Server**. Click **Start**.

10. Click **Dial** to connect to the 9/PC host (server PC) from your ODS workstation (client PC).

### **Troubleshooting Tips for RAS Configuration**

If you receive the message "Error 651" when establishing a connection, the first items to check are:

- cable pinouts are correct and have continuity
- Cable connections are good to the PC serial ports
- The port you have connected the cable to actually corresponds to the port name you have configured (e.g., COM1 vs COM2).
- Baud rates and other port settings for the configured ports must be the same on the client and Server PCs
- Baud rates up to 115,200 have been successfully used on short cable lengths.

### **What to Do Next**

If you have any further questions after reading this manual, contact Allen-Bradley Software Support Services at (440) 646-6800.

**END OF CHAPTER**

## Symbols

[CTRL-C], 2-3  
[ESC] key, 3-6  
    using the, 3-12  
[PgDn], 3-6  
[PgUp], 3-6

## Numbers

1770-KF2, 7-9  
1771 I/O rack, 7-9  
1784-KL, configuring, 7-3  
1784-KT, configuring, 7-3  
1784-KTK1, configuring, 7-7  
1785-KE Communication Interface Module, 7-9  
6122 considerations, 7-8  
8100 HS110, software, 2-6

## A

About option, 3-5, 6-1  
AMP, application, 3-10, 5-21  
Application  
    AMP, 5-21  
    Download, 5-21  
    files, 3-10  
    I/O assignments, 5-21  
    menu, 3-10  
    MML, 5-21  
    organization, 3-10  
    PAL, 5-21  
    Part programs, 5-21  
    selecting, 5-21  
    Upload, 5-21  
Arrow keys, 6-10  
    down, 3-5  
    up, 3-5  
AUTOEXEC.BAT file  
    modifying, 2-7  
    where to find, 2-1

## B

Backup copy, 2-1  
Backup option, 5-17, 5-19  
Backup project, 5-18  
Bad command or filename, 2-4, 3-1, 3-2  
Beeper, On/Off, 4-4  
Buffers, 2-6

## C

Cancel  
    operation, 3-12  
    print request, 6-9  
CNC, 1-1  
COM1 serial port, 7-9  
COM2 serial port, 7-9  
COMMAND.COM file, 2-1  
Communication Mode, 7-2  
    6122 considerations, 7-8  
    Configuring 1784-KL, 7-3  
    Configuring 1784-KT, 7-3  
    Configuring 1784-KTK1, 7-7  
    Configuring DH+, 7-11  
    configuring RSLinx, 7-12  
    Configuring Serial Driver, 7-9  
    IBM PC/XT considerations, 7-8  
    KTK1 address considerations, 7-8  
    Menu Structure, 7-3  
    Programming Data Highway Plus, 7-6  
    Using INTERCHANGE, 7-10  
Compatibility, computer, 1-3  
computer name, 7-14  
Computers Compatible with ODS, 1-3  
CONFIG.SYS file, modifying, 2-6  
Configuration Flow  
    1784-KL, 7-4  
    1784-KT, 7-4  
    1784-KTK1, 7-7  
    Serial Driver Type, 7-9  
Configuring  
    1784-KL, 7-3  
    1784-KT, 7-3  
    1784-KTK1, 7-7

DH+ Under Windows NT (TM), 7-11  
 INTERCHANGE, 7-10  
 RSLinx for Ethernet, 7-12  
 serial driver, 7-9  
   1770-KF2, 7-9  
   1771 I/O rack, 7-9  
   1785-KE Communication Interface Module, 7-9  
   Series B Communication Interface Module, 7-9

Control family, 7-2  
 9/PC, 5-4  
 9/Series, 5-3  
 select, 5-2

Copy  
 files  
   from a current project, 6-2  
   from another project, 6-5  
 project, 5-12  
 project FROM, 5-12  
 project TO, 5-13

## D

Data Highway Plus, programming, 7-6

Delete  
 file, from a current project, 6-4  
 project, 5-16, 5-19

Delete option, 6-4

Device names, 3-3

DEVICE=DF1DRV.SYS, 2-6

DH+ network, configuring to, 5-9

Dial-Up Networking Wizard, 7-15, 7-19

Directories  
 selecting from, 3-11  
 using, 3-10

Directory, file, 3-10

Display, ODS file, 6-10

Documentor, using, 6-8

DOS  
 DISKCOPY command, 2-1  
 executing from ODS, 4-6  
 returning to, 3-12

Download  
 AMP files, for 9/PC, 7-12  
 application, 5-21  
 local host PC, 7-13  
 network, 7-14

download  
 RAS software, 7-15  
 Serial port, 7-15  
 Drive Type menu, 7-3

## E

EDLIN.COM file, 4-2

Entering  
 files, 3-11  
 project names, 3-11

Error Messages, interpreting, 3-12

Exiting, ODS software, 3-12

## F

F1-File menu, 3-5  
 exit to DOS, 3-12

F2-Project menu, 3-9, 5-1

F3-Application menu, 3-4, 3-10

F4-Utility menu, 3-10

File  
 copy  
   from a current project, 6-2  
   from another project, 6-5  
 delete, from a current project, 6-4  
 display, 6-10  
 print, 6-8  
 READ.ME, 2-5  
 rename, from a current project, 6-3  
 type, choosing, 6-2

File directory, 3-10

Files  
 entering, 3-11  
 machine configuration, 1-1  
 machine interface, 1-1  
 machine motion control, 1-1

## H

Hardware Requirements, 1-3

Help, online, 3-5

## I

I/O assignments, application, 5-21

IBM PC/XT considerations, 7-8

IMC.BAT file, 3-3  
Information option, 5-8  
INTERCHANGE, configuring, 7-10  
INERCHANGE Configuration Flow, Serial Driver Type,  
7-10

## K

Keyboard  
  setup, 4-2  
  type, 4-2  
KT addresses, valid, 7-5  
KTK1 addresses  
  considerations, 7-8  
  valid, 7-8

## M

Machine  
  configuration files, 1-1  
  interface files, 1-1  
  motion control files, 1-1  
Menu bar, 3-4  
  AMP editor utility, 3-4  
  top-level, 3-4  
Menu choices  
  ghosted, 3-4  
  highlighted, 3-4  
Menu options, selecting, 3-5  
Menu structure, 7-3  
Menus, pull-down, using, 3-4, 3-5  
MML, application, 5-21  
MODE BW80, 3-3  
Modifying, file  
  AUTOEXEC.BAT, 2-7  
  CONFIG.SYS, 2-6  
MS-DOS, 1-3

## N

New option, 5-2

## O

ODS Software, hardware requirements, 1-3

ODS software  
  backup copy, 2-1  
  directory characteristics, 3-11  
  exiting, 3-12  
  getting started with, 3-1  
  installing, 2-1  
  main features, 1-2  
  memory requirement, 2-2  
  package content, 1-3  
  screen  
    first line, 3-4  
    second line, 3-4  
  starting, 2-7  
  typical process, 1-2  
  welcome screen, 3-1, 3-2  
Online help, using, 3-5

## P

PAL, application, 5-21  
Part programs, application, 5-21  
PATH command, 2-1, 2-4  
Print  
  cancel request, 6-9  
  Documentor, 6-8  
  ODS file, 6-8  
Print Device, Configuring Your Windows NT, 4-4  
Print option, 6-8  
Programming, Data Highway Plus, 7-6  
Project, 5-1  
  active, 5-7  
  comparison to file storage, **3-8**  
  copy FROM, 5-12  
  copy TO, 5-13  
  copying a, 5-12  
  creating a, 5-1  
  delete, 5-16, 5-19  
  directory, 3-9  
  information  
    changing, 5-9  
    displaying, 5-8  
  menu, 3-9  
  names, entering, 3-11  
  opening an existing, 5-7  
  organization, 3-9  
  rename, 5-15  
  rename FROM, 5-15  
  rename TO, 5-15  
  restore, 5-19  
  subdirectories, 5-4

**R**

RAS, 7-15  
RAS Configuration, troubleshooting, 7-21  
READ.ME file, 2-5  
Remote Access Services, 7-15  
Rename  
  file, from a current project, 6-3  
  project, 5-15  
  project FROM, 5-15  
  project TO, 5-15  
Rename option, 6-3  
Restore, project, 5-19  
RSLinx, configuring for Ethernet, 7-12  
RSLinx Configuration Flow, Serial Driver Type, 7-12

**S**

Second PC, network download, 7-14  
Selecting  
  application, 5-21  
  Communication Mode, 7-2  
  control family, 5-2  
  menu option, 3-5  
  utility, 5-22  
Serial Communication , Configuring, 4-3  
Serial driver, configuring, 7-9  
Series B Communication Interface Module, 7-9  
Startup  
  using DOS, 3-2  
  using Windows, 3-1  
Status Line, 3-4  
  active project, 5-7

  Application, 3-4, 3-7, 3-9  
  Project, 3-4, 3-7, 3-8  
  reading, 3-7  
  Utility, 3-4, 3-7

**T**

Text editor  
  EDLIN.COM file, 4-2  
  setup option, selecting, 4-1  
  using, 4-1  
Troubleshooting, RAS Configuration, 7-21  
Type option, 6-10

**U**

Upload, application, 5-21  
User project warning, 2-9  
Utility  
  functions, 3-10  
  menu, 3-10  
  selecting, 5-22

**V**

Verify, On/Off, 4-5

**W**

Welcome screen, 3-1, 3-2  
Windows NT, configuring DH+ using, 7-11  
Windows NT (TM), configuring for DH+, 7-11



Allen-Bradley, a Rockwell Automation Business, has been helping its customers improve productivity and quality for more than 90 years. We design, manufacture and support a broad range of automation products worldwide. They include logic processors, power and motion control devices, operator interfaces, sensors and a variety of software. Rockwell is one of the world's leading technology companies.

### Worldwide representation.



Argentina • Australia • Austria • Bahrain • Belgium • Brazil • Bulgaria • Canada • Chile • China, PRC • Colombia • Costa Rica • Croatia • Cyprus • Czech Republic • Denmark • Ecuador • Egypt • El Salvador • Finland • France • Germany • Greece • Guatemala • Honduras • Hong Kong • Hungary • Iceland • India • Indonesia • Ireland • Israel • Italy • Jamaica • Japan • Jordan • Korea • Kuwait • Lebanon • Malaysia • Mexico • Netherlands • New Zealand • Norway • Pakistan • Peru • Philippines • Poland • Portugal • Puerto Rico • Qatar • Romania • Russia-CIS • Saudi Arabia • Singapore • Slovakia • Slovenia • South Africa, Republic • Spain • Sweden • Switzerland • Taiwan • Thailand • Turkey • United Arab Emirates • United Kingdom • United States • Uruguay • Venezuela • Yugoslavia

Allen-Bradley Headquarters, 1201 South Second Street, Milwaukee, WI 53204 USA, Tel: (1) 414 382-2000 Fax: (1) 414 382-4444