



GE Fanuc Automation

Programmable Control Products

*CIMPLICITY™ System-I/U
and Logicmaster 90™
Serial Software*

Installation Manual

GFK0724A

May 1994

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Note

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This manual is intended for CIMPLICITY System-I/U users who wish to run Logicmaster 90 software on their CIMPLICITY hardware platform. The information in this manual describes how to install Logicmaster 90 software on your system, configure your system, and run Logicmaster 90 software on the UNIX[®] machine.

Content of this Manual

Chapter 1. Introduction: provides a brief overview and describes the system requirements.

Chapter 2. Installing VP/ix: describes how to install and configure VP/ix[™] software.

Chapter 3. Starting VP/ix and Running Logicmaster 90 Serial Software: describes how to enter and exit VP/ix and how to start and exit Logicmaster 90 software.

Chapter 4. Troubleshooting: describes common problems that could occur when running Logicmaster 90 software on the CIMPLICITY System-I/U platform.

Chapter 5. Restrictions and Limitations: lists restrictions and limitations that must be observed when using your CIMPLICITY System-I/U station to run Logicmaster 90 software.

Appendix A. Cable Diagrams: provides part numbers and cable diagrams required to run Logicmaster 90 software on an I/U system.

Appendix B. Accessing and MS-DOS hard Disk Partition: Describes how to access a DOS partition on the hard drive.

Appendix C. Key Functions and Help Sheets: lists keys to remember for quick reference during installation and operation. It also provides help sheets for reference between UNIX and DOS commands, for the UNIX Vi editor, and for the MS-DOS[®] Edlin editor.

Related Publications

For more information, refer to these publications:

Logicmaster™ Series 90-70 User's Manual (GFK-0263). This manual describes how to use the Logicmaster 90-70 programming software to program, configure, monitor, or control a Series 90-70 PLC and/or remote drop.

Series 90-70™ Programmable Controller Reference Manual (GFK-0265). This manual describes system operation of a Series 90-70 PLC system, fault explanation and correction, and the Series 90-70 instruction set.

Logicmaster™ 90-30/90-20 User's Manual (GFK-0466). This manual describes how to use the Logicmaster 90-30/90-20 programming software to program, configure, monitor, or control a Series 90-30 PLC or Series 90-20 PLC.

Series 90™ -30/90-20 Programmable Controller Reference Manual (GFK-0467). This manual describes system operation of a Series 90-30 PLC or Series 90-20 PLC system, fault explanation and correction, and the Series 90-30/90-20 instruction set.

We Welcome Your Comments and Suggestions

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Chapter 1

Introduction

This manual is intended for CIMPLICITY System-I/U users who wish to run Logicmaster 90 software on their CIMPLICITY hardware platform. The information in this manual describes how to install Logicmaster 90 software on your system, configure your system, and run Logicmaster 90 software on the UNIX machine.

The integration of Logicmaster 90 software with the CIMPLICITY System-I/U platform provides online communications with the PLC CPU, including program load and store and I/O monitoring. Logicmaster 90 software will normally be run in a separate System X11/Motif™ window on the screen at the same time CIMPLICITY System-I/U is active in another window, without interfering with the I/U application (see diagram below).

The following block diagram illustrates Logicmaster 90 software running in the active window while CIMPLICITY System-I/U is running in another window.

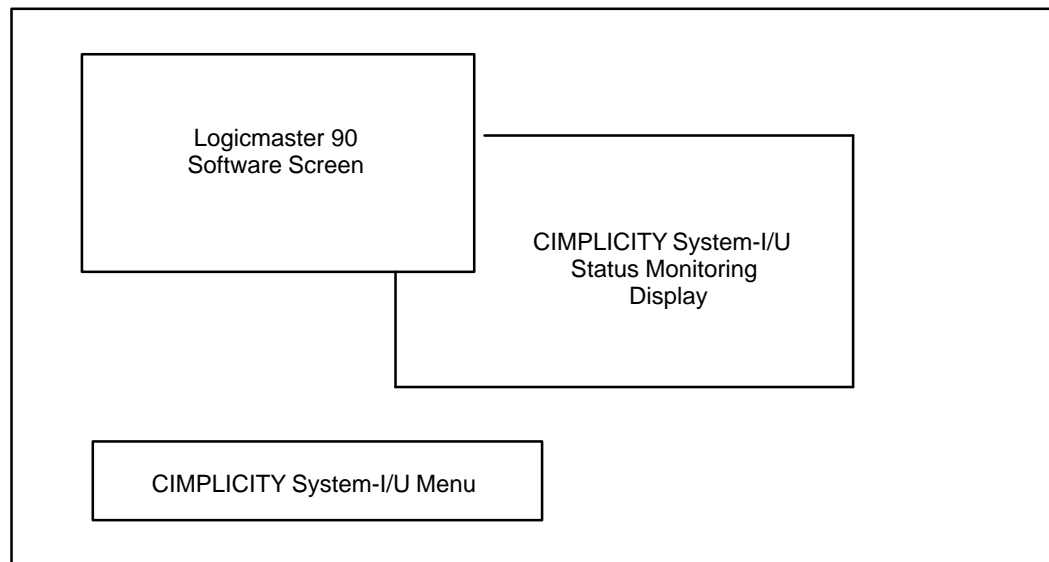


Figure 1-1. Sample Console Screen with CIMPLICITY and Logicmaster 90 Windows

System Requirements

The following software and hardware are required to support Logictmaster 90 operation on the CIMPLICITY System-I/U platform.

- **Logictmaster 90 Programming Software (Serial Version):** Release 5.0, or later, of Logictmaster 90-70 programming software or Release 3.5, or later, of Logictmaster 90-30 programming software is required.
- **PLC CPU Firmware:** To insure proper communications, Release 4.0, or later, of PLC CPU firmware for the Series 90-70 PLC or Release 3.5, or later, of PLC CPU firmware for the Series 90-30 PLC is required.
- **VP/ix Software:** VP/ix environment software is required. (Refer to Chapter 2, *Installation*, for installation instructions.)
- **Hard Disk Size:** The hard disk on your computer must have, at minimum, enough space for CIMPLICITY System-I/U (200 MB) plus 10 MB for VP/ix. VP/ix will assign 10 MB on the hard drive for the default VP/ix hard disk. If the hard disk has more room (200 MB hard drive or more), additional VP/ix hard drive storage can be available in a separate DOS partition.
- **Unused Comm Port:** An unused serial communications port, COM1 or COM2, is required in order for Logictmaster 90 software to communicate with the PLC CPU.
- **Cables and Converters:** A Hand-Held Programmer cable (IC693CBL303), an RS-232/485 converter (IC690ACC900), and a standard PCM cable (IC690CBL702 or IC690CBL705) are required to connect your computer to the PLC CPU. Refer to Appendix A, *Cable Diagrams*, for more information.

The cable configuration is shown below:

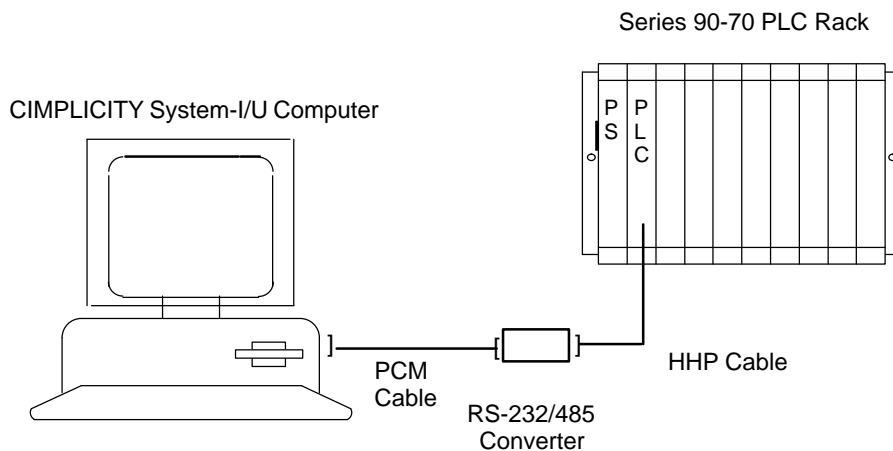


Figure 1-2. System Cable Configurations

Chapter 2

Installing and Configuring VP/ix

Before installing VP/ix, you must determine whether a separate MS-DOS partition will be used. VP/ix provides 10 MB of hard disk space on drive C:. If you need more than 10 MB of hard disk space for use with Logicmaster 90 software, you must make an MS-DOS partition on the hard disk as well as the UNIX partition. This is only required if you plan to have several very large Logicmaster 90 folders or if you will be running other applications in addition to Logicmaster 90 software in VP/ix.

CIMPLICITY System-I/U requires a minimum of 200 MB on the hard drive. If your hard drive is large enough to provide sufficient space for CIMPLICITY and the MS-DOS partition, you can make the MS-DOS partition during UNIX installation. If not, you will be limited to a 10 MB hard drive in VP/ix. See the Installation Chapter in the CIMPLICITY System - I/U Base System *System Manager's Manual* (GFK-0594) for information on how to create partitions. See Appendix B of this manual for information on how to use the MS-DOS partition.

Note

Since VP/ix is a version of MS-DOS 5.0, the MS-DOS partition should be no larger than 32 MB. Multiple MS-DOS partitions for use with VP/ix are not recommended.

You can also mount a different file system under UNIX for use as an MS-DOS hard drive, provided the hard disk is large enough for both. This is more complicated and may not leave enough MS-DOS memory for Logicmaster 90 software because additional commands must remain in the `autoexec.bat` file in order to access the disk.

Caution

The contents of any existing C: drive in VP/ix will be destroyed by the installation procedure. Any files or software that need to be preserved should be backed up on floppy diskettes and restored after the installation procedure is completed.

It is assumed that you have installed the INTERACTIVE UNIX Operating System and CIMPLICITY System - I/U Base System according to the instructions in the CIMPLICITY System - I/U Base System *System Manager's Manual*.

Details of what you need to do for each of the following steps are found in the INTERACTIVE UNIX *VP/ix Environment Guide*. Follow the instructions in these chapters to install VP/ix and configure the VP/ix environment to run Logicmaster 90.

1. **Install** VP/ix.

See the section, *Installing VP/ix*, in the INTERACTIVE UNIX *VP/ix Environment Guide*.

2. **Create** a private copy of the C driver in `/usr/cimmgr/vpix`.

See the section, *Configuring Login Accounts for the VP/ix Environment*, in the INTERACTIVE UNIX *VP/ix Environment Guide*.

3. **Edit** `/usr/cimmgr/vpix/vpix.conf` and make the following changes:

See the section, *VP/ix Configuration File*, in the INTERACTIVE UNIX *VP/ix Environment Guide*.

A. **Uncomment** one of the following two lines to configure the floppy drive.

- If you are accessing floppy drive A for high density 3.5" floppy diskettes, remove the semicolon from the beginning of the following line:

```
;A                /dev/rdisk/f0q18dt
```

- If you are accessing floppy drive B for high density 3.5" floppy diskettes, remove the semicolon from the beginning of the following line:

```
;B                /dev/rdisk/f1q18dt
```

B. To run Logicmaster 90 software, one of the serial ports (COM1 or COM2) must be available for the standard serial COM port version of Logicmaster 90 software to communicate with the PLC CPU.

Uncomment one of the following two lines to configure the serial communications port.

- If you are using COM1 as the serial communications port to the PLC, remove the semicolon from the beginning of the following line:

```
;COM1            /dev/tty00
```

- If you are using COM2 as the serial communications port to the PLC, remove the semicolon from the beginning of the following line:

```
;COM2            /dev/tty01
```

Warning

A UNIX application, including CIMPLICITY System-I/U, cannot use the same serial port as Logicmaster 90 software. You must make sure that CIMPLICITY System-I/U is not configured to use this port and that there are no other UNIX applications assigned to that port.

For more information on configuring the serial ports, see the Site Configuration chapter of the CIMPLICITY I/U System Manager's Manual (GFK-0594)

4. If you are running from an X11/Motif session **enter** the following command:

```
$ TERM=AT386
```

5. **Issue** the following commands to enter VP/ix and set yourself to the C Drive:

```
$ vpix
VP/ix Z:\USR\CIMMGR\VPIX> C:
```

This will give you the prompt:

```
VP/ix C:\>
```

6. **Issue** the following commands to copy in and process a CIMPLICITY script:

```
VP/ix C:\> copy z:\script\loadcimp.bat
VP/ix C:\> loadcimp
```

7. **Install** LM90 in VP/ix just as it would be installed under DOS by typing the following command:

```
VP/ix C:\> a:install
```

Refer to the *Logicmaster 90-70 User's Manual* (GFK-0263) or the *Logicmaster 90-30/90-20 User's Manual* (GFK-0466) for more information on installing the software.

8. **Enter** the following command to exitVP/ix:

```
VP/ix C:\> quit
```

Note

Do not use <ALT><SysRq><M> in Logicmaster 90 software under VP/ix to exit VP/ix. If you select Q (quit) from the VP/ix menu, any unsaved changes in Logicmaster 90 software or in other packages will be lost. The preferred method for exiting VP/ix is to type `quit` at the VP/ix prompt. However, be sure to exit Logicmaster 90 software before exiting VP/ix.

Chapter 3

Starting VP/ix and Running Logicmaster 90 Serial Software

This chapter describes how to enter and exit VP/ix and how to start and exit Logicmaster 90 software. For more information about VP/ix, refer to the *INTERACTIVE VP/ix Environment Guide*. For more information on the use and functions of Logicmaster 90 software, refer to the *Series 90-70 or Series 90-30/90-20 Programmable Controller Reference Manual* (GFK-0265 or GFK-0467, respectively) and the *Logicmaster 90 Programming Software User's Manuals* (GFK-0263 for Series 90-70 PLC and GFK-0466 for Series 90-30 PLC).

Starting VP/ix

VP/ix can be started from the UNIX shell prompt on the console or a virtual terminal screen, or it can be started from a terminal emulator window in X11/Motif.

Restrictions for Starting VP/ix

If you are running the CIMPLICITY System-I/U Shop Floor Interface, you **must** log out of CIMPLICITY in order to run Logicmaster 90 software.

Switching from X11/Motif to a virtual terminal session is not recommended if CIMPLICITY System-I/U is active on the console and updating windows on the X11/Motif screen. This will cause internal buffers to overflow since the screens cannot be updated. To avoid this problem, either start VP/ix in a terminal emulator window in X11/Motif or exit all CIMPLICITY update windows (for example, Status Monitoring, Point Management, Dynamic Alarm Display, Current Trends) before switching to the virtual terminal session.

Changing the Active Window

In order to interact with a window under X11/Motif, you must first **activate** it. Although many windows may be displayed on the screen and updated by the system at any one time, only one window can be **active** (accept user input) at a time. To activate a window:

- Move the mouse pointer to the window.
- Click the select button on the mouse.

The window frame will change color, and will now accept your input.

Starting Vp/ix and LM90

To start VP/ix and Logicmaster 90 software, enter:

```
$ lm90
```

at the UNIX operating system prompt on your terminal screen, or terminal emulator window. This will cause a script file, created during installation, to start VP/ix with the configuration needed for Logicmaster 90 software. If you start VP/ix from a terminal emulator window in X11/Motif, this should open a new window.

If an error occurs and the window disappears too quickly to read the error message, do the following:

- Shut down CIMPLICITY software and X11/Motif.
- Start VP/ix from the console or one of the virtual terminals.

The VP/ix banner should then be displayed. Any error messages will also be displayed.

Other VP/ix Startup Procedures

The configuration of VP/ix for Logicmaster 90 software does not include the `redir` command for access to the UNIX drives (Z:, Y:, etc.). If other applications require access to the UNIX files, you can start VP/ix with a different script file which includes the `redir` command. To do this, enter the following command at the UNIX operating system prompt:

```
$ dosz
```

VP/ix can be started directly from the UNIX prompt without using the script files. If these script files are not used, you must make sure that the necessary `autoexec.bat` file is in place for the desired MS-DOS application.

- From the console or in a virtual terminal, type:

```
$ vpix
```

- In a terminal emulator window under X11/Motif, type the following line (all on one line):

```
$ xpcterm +sb -bg xgfdark -fg white -e vpix &
```

Starting LM90 Manually in VP/ix

To start Logicmaster 90 software and display the Logicmaster 90 main menu, enter the following command at the VP/ix prompt:

```
VP/ix C:\> lm90
```

From the Logicmaster 90 main menu, you can select the programming software package (F1), the configuration software package (F2), or other packages as available..

The Logicmaster 90 software is initially configured for communications on serial port COM1. If you are using serial port COM2 for Logicmaster 90 communications, go to the Setup screen (F7) in either the programming or configuration software package, and select COM2 using the cursor and <Tab> keys. Save your serial setup changes by pressing Save (F7). These changes must match the CPU configuration stored to the PLC.

You are now ready to communicate with the PLC CPU. Press <ALT><M> to toggle the CPU to online status. After a brief pause, the status line should indicate communications with the PLC.

All functions available in Logicmaster 90 software are available in this environment. For example, if you access the programming or configuration software, you can:

- Display reference data by pressing Tables (F2).
- Monitor and modify the program from the program function by pressing Program (F1).
- Check the PLC status by pressing Status (F3).
- Switch to ONLINE mode by pressing <ALT><M>.
- Toggle RUN status by pressing <ALT><R>.

Exiting

Exiting Logicmaster 90 Software

To exit Logicmaster 90 software, press <CTRL><Break> or repeatedly press the <ESC> key until the main menu is displayed. Then, press the <ESC> key one final time to exit the main menu.

Exiting VP/ix.

To exit VP/ix, type: `quit`

Note

Do not use <ALT><SysRq><M> in Logicmaster 90 software under VP/ix to exit VP/ix. If you select `Q` (quit) from the VP/ix menu, any unsaved changes in Logicmaster 90 software or in other packages will be lost. The preferred method for exiting VP/ix is to type `quit` at the VP/ix prompt. Always be sure to exit Logicmaster 90 software (see above) before exiting VP/ix.

Chapter 4

Troubleshooting

This chapter describes common problems that could occur when running Logicmaster 90 software on the CIMPLICITY System-I/U platform. Possible solutions are suggested for each situation. If you continue to have PLC-related problems, contact the GE PLC Hotline at 800-828-5747 or 804-978-5747. For UNIX, CIMPLICITY System-I/U, or VP/ix problems, contact the CIMPLICITY Hotline at 800-762-6498 or 518-464-4607.

No Communications

When the Logicmaster 90 software cannot communicate with the PLC CPU, the status line in the software indicates NO COMMUNICATIONS. One reason for this may be that one or more of the cables is not properly connected to the PLC serial port or the correct serial port on your computer. Check your connections to the ports and the converter.

Another reason for no communications may be that the serial port setup for the PLC CPU does not match the serial port setup for your computer. Go to the setup screen, and try different combinations. For the Series 90-30 PLC, you can also use a Hand-Held Programmer to read the serial port configuration on the PLC CPU. If the program and configuration stored on the PLC CPU have been backed up, you can clear the PLC CPU memory by removing power, unplugging the battery, and shorting the battery terminal. This will return the PLC CPU to the default port setup (19,200 bps, ODD parity, ONE stop bit).

To change the PLC CPU serial data rate:

1. Exit the Logicmaster 90 programming software package, and enter the Logicmaster 90 configuration software package.
2. Select I/O Configuration (F1), and then press Zoom (F10) to zoom into the PLC CPU.
3. Change the data rate to 9600 (or the chosen data rate).
4. Press the Escape key to exit the configuration software package.
5. Enter the programming software package, and store the configuration to the PLC CPU.
6. Use the status function (F3) to verify that there are no configuration faults listed in the PLC or I/O fault tables. If there are faults in either table, you must resolve them before continuing.
7. Go to the Setup screen (F7), and select the Commset menu (F4).

8. Press <ALT>-<M> to toggle the Logictmaster 90 software to OFFLINE mode.
9. Change the data rate on the Commset screen to the new data rate selected during Logictmaster 90 configuration. Then, press Save (F7).
10. Press <ALT>-<M >to toggle the Logictmaster 90 software operating mode back to ONLINE mode. (This will cause the data rate on the PLC serial port to change.)
After a brief pause, communications with the PLC CPU should be re-established.

Refer to Chapter 7, *Programmer Setup*, in GFK-0263 (for the Series 90-70 PLC) or Chapter 6, *Programmer Setup*, in GFK-0466 (for the Series 90-30 PLC) for more information about changing the serial port configuration on the PLC CPU and in the Logictmaster 90 software.

Loss of Communications during a Load or Store

If a “Loss of Communications” or “Communications Failure” error is displayed on the message line in Logictmaster 90 software, you may need to reduce the data rate used for communications with the PLC CPU. The default data rate is 19,200 bps. Reduce the data rate to 9600 bps or to 4800 bps, if 9600 bps does not clear the error. Follow the steps listed above to change the communications data rate.

Momentary Loss of Communications during Window Changes

When running Logictmaster 90 software in an X11/Motif window, you may experience a momentary loss of communications in the reference table display. This loss of communications does not cause a problem, and ONLINE status is restored almost immediately. This can occur when the Logictmaster 90 software window is displayed simultaneously with CIMPLICITY System-I/U status monitor and the mouse is being used to swap windows.

To prevent a momentary loss of communications, select a lower serial data rate for communications. Follow the steps listed above to change the communications data rate.

Error Messages

The following table identifies common error messages which may be displayed and describes the appropriate action to take.

Error Message	Action
Error opening serial device	If an “Error opening serial device” error is displayed when you enter VP/ix, CIMPLICITY is using that port for the mouse, CCM, or other communications. Refer to Chapter 2, for instructions to remove the conflict.
Loss of Communications or Communications Failed	If either a “Loss of Communications” message or a “Communications Failed” message is displayed during a load or store operation in Logictmaster 90 software, follow the steps listed above to change the communications data rate.
Strike F1 to continue	If you start VP/ix from the UNIX shell at the console or on a virtual terminal (not from an X window), the message “Strike F1 to continue” may be displayed with an audible beep. This is normal. Press F1 to proceed.

Table 4-1. Error Messages

Chapter 5

Restrictions and Limitations

The following restrictions and limitations apply. See the CIMPLICITY System-I/U Base System *System Manager's Manual* (GFK-0594), for more information about using an X-terminal with VP/ix.

1. Do not have more than one VP/ix session at a time. A second session will make your hard drive read only, and you will not be able to access the serial port and/or floppy drives.
2. Switching to a virtual terminal to run VP/ix and Logicmaster 90 software is not recommended if CIMPLICITY System-I/U is active on the console and updating the screen. CIMPLICITY may overrun internal buffers since it cannot update the screen.

To avoid this problem, use VP/ix in an X11/Motif window or exit all CIMPLICITY update windows (for example, Status Monitoring, Point Management, Dynamic Alarm Display, Current Trends) before switching to the virtual terminal.

3. See Chapter 2, for information on VP/ix disk size limitations.
4. Do not install your own version of MS-DOS in VP/ix. You must use the version supplied with VP/ix for this environment.
5. If disk space is a severe problem, the files in `/usr/vpix/dosbin` may be deleted. You will also need to modify your `.profile` file. This is **not** a recommended procedure, as you will need to reinstall VP/ix or restore from backup if anything happens to the files that were copied into `c:\dosbin`.
6. Do not use `<ALT>-<SysRq>-<M >` in Logicmaster 90 software under VP/ix to exit VP/ix. If `Q` (quit) is selected from the VP/ix menu, any unsaved changes in Logicmaster 90 software or in other packages will be lost. The preferred method for exiting VP/ix is to type: `quit` at the VP/ix prompt.
7. The drive-file `C:` in `/usr/cimmgr/vpix` is treated like any other file for UNIX. It is possible to write over or delete this file inadvertently. The best practice is to never set the current working directory to `/usr/cimmgr/vpix` under normal circumstances, except when installing software. Only in that directory would the typical DOS command `copy <fn> C:`, typed mistakenly at the UNIX prompt, cause the hard-drive-file to be overwritten.

Appendix A

Cable Diagrams

PCM Cables

A PCM cable is used to connect the serial comm port of the personal computer running SIMPLICITY System-I/U to the RS-232/485 converter. There are two PCM cables to choose from:

Part Number	PC Connector Size	Description
IC690CBL702	9 pin	AT Style
IC690CBL705	25 pin	Workmaster II Style

Table A-1. PCM Cables

Select the cable that matches the connector on the serial comm port of your PC that will be used for Logimaster 90 software (COM1 or COM2). The PCM cables are 10 feet (3 meters) long.

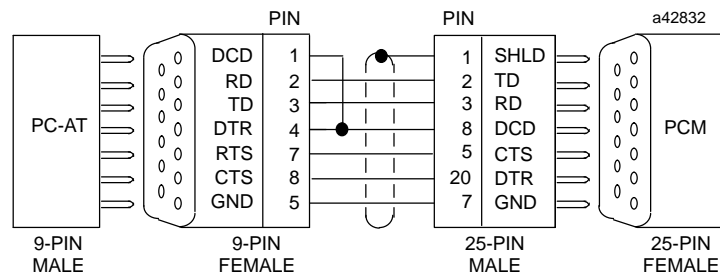


Figure A-1. AT Style PCM Cable (IC690CBL702)

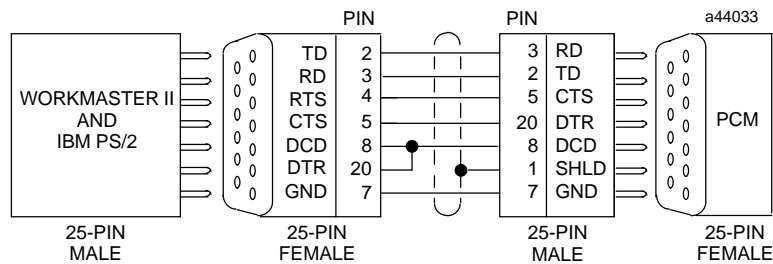


Figure A-2. Workmaster II Style PCM Cable (IC690CBL705)

The following cables provide acceptable operation at data rates up to 19,200 bps and distances up to 4000 feet for RS-422/485.

Catalog Number	AWG Wire Size	Description
Belden 9505	24	5 pair, stranded.
Belden 9306	22	6 pair, solid.
Belden 9832	24	5 pair, stranded.

Table A-2. Recommended PCM Cables

At shorter distances under 50 feet (15 meters), almost any twisted pair or shielded twisted pair cable will work, as long as the wire pairs are connected correctly. Do not use the shield as a signal ground conductor.

When using RS-422/485, the twisted pairs should be matched so that both transmit signals make up one twisted pair and both receive signals make up the other twisted pair. If this is ignored, cross-talk resulting from the mismatching could affect the performance of the communications system.

RS-232/485 Converter

The RS-232/485 Converter, IC690ACC900, provides an RS-232 serial interface for the PC serial port through conversion of the RS-422/RS485 signals of the Series 90 PLC serial port. This converter supplies a direct serial connection to the PLC serial port. The converter operates from a +5 VDC source provided from the PLC backplane bus through the cable connection.

Hand-Held Programmer Cable

A Hand-Held Programmer Cable, IC693CBL303, is used for the connection from the RS-232/485 converter to the 15-pin PLC CPU serial port. The HHP cable is 6 feet (2 meters) in length.

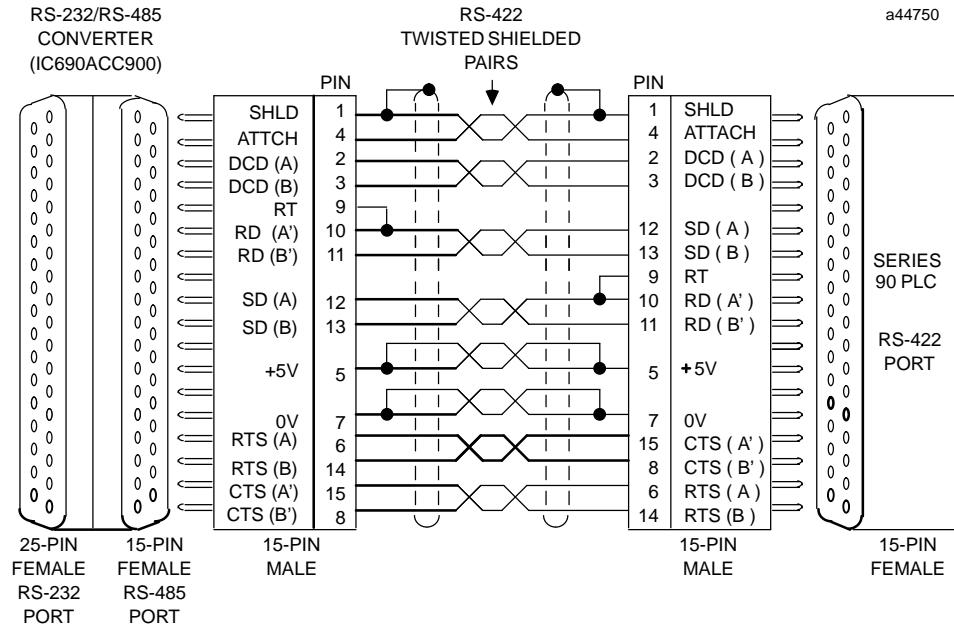


Figure A-3. Hand-Held Programmer Cable (IC693CBL303)

User-Built Cables

The following table identifies recommended cable types for those who intend to build their own cable. Catalog numbers are provided as suggestions only. Any cable having the same electrical characteristics is acceptable. It is strongly recommended that you use stranded wire. Since it is sometimes hard to find a cable with the desired number of twisted pairs (the Belden 9309 has an extra pair), you may end up with a cable with extra pairs.

Cable Length	AWG Wire Size	Catalog Number
6 feet (2m)	24	Belden 9508
30 feet (10m)	22	Belden 9309
30 to 980 feet (300 m)	22	Belden 9309

Table A-3. Specifications for Cable (RS-422/485)

Note

A greater cable length between the converter and the PLC CPU increases the possibility of noise coupling into the data and converter logic power circuits within the cable. The cable should be as short as possible in noisy environments. In extreme cases, additional noise protection measures, such as double-shielded cables, may be required.

Appendix B

Accessing An MS-DOS Hard Disk Partition

Backing Up Your System Before A Hard Disk Partition

If you have already installed INTERACTIVE UNIX and CIMPLICITY System-I/U and you need to repartition the disk to create an MS-DOS partition greater than 10 MB, you will need to reinstall, INTERACTIVE UNIX and CIMPLICITY System-I/u software in addition to installing VP/ix. You should do the following:

1. Perform a CIMPLICITY System-I/U application backup.
2. If VP/ix is already installed, back up any files in the VP/ix C: drive that you wish to save to floppy diskettes.

Access to the Hard Disk MS-DOS Partition

1. If you created an MS-DOS partition on your hard disk and will use that in association with VP/ix and LM90, edit `/usr/cimmgr/vpix/vpix.cnf` and remove the semicolon at the start of the following line:

```
;D /dev/dsk/0p0
```

You will refer to the root directory on the MS-DOS partition as D:.

1. You will also need to grant permission for VP/ix to access the driver for the MS-DOS partition. To do this, you must login as `root` and enter the following command:

```
# cd /etc/rc2.d
```

2. Edit a new file called `s65vpixd` using `vi` or `edit` or any UNIX editor. Enter the following line in the file:

```
chmod o+rw /dev/dsk/0p0
```

and save the file.

3. Make the file an executable script by typing:

```
# chmod u+x s65vpixd
```

4. Set the group for the new file to root by typing:

```
# chgrp root s65vpixd
```

Note

As a result of giving VP/ix access to your MS-DOS partition, all login accounts will have access to the MS-DOS partition. If this is not desired or if this is a multi-user system, you must either mount a separate MS-DOS file system from UNIX or be limited to 10 MB hard drive in VP/ix.

Appendix C

Key Functions and Help Sheets

CIMPLICITY-I/U Help Sheet

At UNIX Console Login

Login: cimmgr
Password: (varies)

Start Up CIMPLICITY

cimmenu
SITE_STARTUP
xinit
xcm

Shut Down CIMPLICITY

Logout of CIMPLICITY
exit
cimmenu
SITE_SHUTDOWN

In CIMPLICITY-I/U (AT Keyboard)

Function	Keys	Description
ENTER EXIT PREV NEXT SELECT REMOVE	KP Enter KP + End Page Down Delete Page Up	Save and process entered data. Exit current screen, and go to previous level. Scroll back to previous page. Scroll forward to next page. Toggle list of valid responses. Clear out current field.
ARROWS	Arrows	Up, Down, Over, Back.
MAINMENU FUNCHHELP KEYHELP REFRESH	KP 0 F11 KP F5	Return to main menu. Display help text – multiwindow. Display func spec. key use help Repaint current screen.

TOP OF PAGE SCROLL PREV SCROSS NEXT END OF PAGE	F1 F2 F3 F4	Scroll forward to top of next page. Scroll forward to next line. Scroll back to previous line. Scroll back to end of page.
PF1 PF2 PF3 PF4 MORE APLLFKEYS CONFIGURATION	NumLock KP/ KP * KP - F11 F12 Shift-F12	Shop floor interface keys. Toggle application/runtime menu keys. Toggle configuration/runtime menu.

Virtual Terminals

Keys	Description
ALT-SysRq, F1 ... F7	Virtual terminal 1 - 7.
ALT-SysRq, F8	Return to origin virtual terminal.
ALT-SysRq, F9	Back in list of virtual terminals.
ALT-SysRq, F10	Forward in list of virtual terminals.

VP/ix

Keys	Description
Quit or ALT-SysRq-q	Leave VP/ix.
ALT-SysRq-m	VP/ix Menu.
copy pn1 pn2 /d /u	/d converts UNIX to DOS text format. /u MS-DOS to UNIX.

UNIX Help Sheet

Keys	Description
cat [-s] [fn(s)]	type, fns separated by spaces, -s silent. also concatenate using > for output fn.
cd [pn]	Home directory, if path not given.
chmod nnn fn(s)	Change permission, chmod u+x fn for script.
chown	Change owner.
cp fn pn	Copy.
cpio ls cpio -oc > /dev/dsk/f0q18dt cpio -ic < /dev/dsk/f0q18dt	Copy file(s) to/from disk. Archive files to disk. Read files from disk.
date	
dfspace	Total disk space.
ed	Line editor C.

<code>exit</code>	Log out.
<code>fdisk</code>	fdisk, disk partitions.
<code>find . -name [fn] -print</code>	Where is.
<code>grep -nli str fn [fn..]</code>	Search file(s) for string str.
<code>init *</code>	Various functions, such as reboot = init 6.
<code>kill [-9] pid</code>	-9 sure kill, use ps -e to get pid.
<code>login</code>	
<code>lp fn(s)</code>	print
<code>ls [-ltaxf] [fn/dn]</code>	dir, -l long/full listing, -t sort by time, -a all, -x wide, -f dirs.
<code>man entryname</code>	help, manual entries
<code>mkdir [dn(s)]</code>	Make directory.
<code>mv fn/dn pn</code>	Rename or move file or directory.
<code>passwd</code>	6 - 8 characters, one must be <>*? &\${;}\"'()[]
<code>pg fn(s)</code>	Type one page at a time, and press the Enter key.
<code>power down</code>	Special login for safe power down.
<code>ps [-fe]</code>	Process status, -f full, -e every process.
<code>pwd</code>	Show default, print working directory.
<code>rm, rmdir [-fir]</code>	rd remove dir, -f no ask, -i ask, -r check.
<code>shutdown</code>	Safe power down, when logged in as root or su?
<code>sort [-dfn] [-ofn] [fn(s)]</code>	Alphabetize, -f ignore case.
<code>spell fn(s)</code>	Spell checker.
<code>su</code>	Superuser.
<code>tar [-cxvf...] fn(s)</code> <code>tar -cvf /dev/dsk/f0q18dt fn(s)</code> <code>tar -xvf /dev/dsk/f0q18dt fn(s)</code>	Copy file(s) to/from disk. Create archive on disk. Copy files from disk.
<code>vi</code>	Screen editor.
<code>who [am i]</code>	Sho users, terminal; am i is your terminal.
<code>/</code>	Subdirs = \ in MS-DOS.
<code>.</code>	Current directory.
<code>..</code>	Directory above.

Note

Remember UNIX is case sensitive. Normally, use lower case.

Vi Editor Help Sheet

vi fn :w :w fn :q :wq	Enter the editor with fn in the edit buffer. Write current buffer to file. Write current buffer to file name fn. Quit, do not save any new changes. Write changes to file and quit editor.
Page Down/^f Page Up/^b Down Arrow/j Up Arrow/k Left Arrow/h Right Arrow/l	Move screen down one page. Move screen back one page. Move cursor down one line in current column. Move cursor up one line in current column. Move cursor left one character. Move cursor right one character.
a i R r o p x dw dd Esc	Add text after cursor. Press the Escape key Insert text before cursor. to exit these Replace (overstrike) text mode. text modes. Replace character at cursor with the next typed char. Open new line. Paste contents of last delete. Delete (x-out) character at cursor position. Delete word from cursor to start of next word. Delete current line Exit text mode, return to command mode.
/str str n u	Search forward for str. Search backward for str. Repeat previous search for further occurrence. Undo last command.

Edlin Editor Help Sheet

Keys	Description
edlin fn w q e	Enter the editor with fn in the edit buffer. Write current buffer to file. Quit, do not save any new changes. Write changes to file and exit editor.
l line # [line]i	List a range of lines. Edit line number specified. Insert line(s) at current line or given line.
Ins Del [line],[line]d	Insert/replac&text before cursor in line (toggle) Delete character at cursor position in line. Delete current line or given lines.
F1 F3 Esc	Copy one character from line to new line. Copy rest of original line to new line. Quit changes to current line and restore line.
[line],[line]sstr	Search forward for str.

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