

CM9740-CC1
System 9740™
Controller

Installation/
Operation Manual

C1508M-A (02/01)

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1.0 IMPORTANT SAFEGUARDS AND WARNINGS

Prior to installation and use of this product, the following WARNINGS should be observed.

1. Installation and servicing should only be done by qualified service personnel and conform to all local codes.
2. Unless the unit is specifically marked as a NEMA Type 3, 3R, 3S, 4, 4X, 6 or 6P enclosure, it is designed for indoor use only and it must not be installed where exposed to rain and moisture.
3. Only use replacement parts recommended by Pelco.
4. After replacement/repair of this unit's electrical components, conduct a resistance measurement between line and exposed parts to verify the exposed parts have not been connected to line circuitry.

The product and/or manual may bear the following marks:



This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.



This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

CAUTION:
RISK OF ELECTRIC SHOCK. DO NOT OPEN.

Please thoroughly familiarize yourself with the information in this manual prior to installation and operation.

1.1 REGULATORY NOTICES

This equipment has been tested and found to comply with the limits of a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

2.0 OVERVIEW

2.1 INTRODUCTORY REMARKS

The CM9740-CC1 is the controller for the System 9740™ Matrix switching system. Although the CM9740-CC1 has a smaller hardware footprint than the CM9760-CC1, it can, with its “9740 specific” executable software, interface the same peripheral mix that the CM9760-CC1 does, but on a reduced scale. In fact, the CM9740-CC1 can be installed as a node in a multi-node 9760 system, if desired.

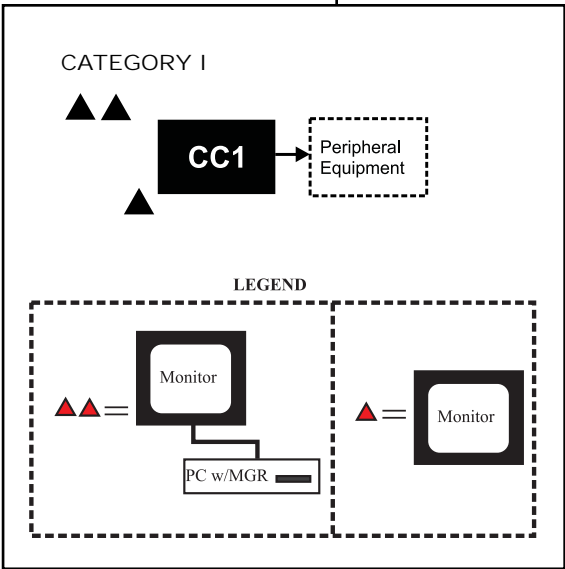
In this manual, we attempt to meet the diverse needs of the user for information by discussing the most common type of configuration in which the CM9740-CC1 can be found. This configuration type, referred to here as “Category I,” is discussed further in the next section.

2.2 MANUAL LAYOUT

The topics touched on in Section 3.0 are important for the user to be familiar with in order to gain the most benefit from the discussions that take place later in Sections 5.0 and 6.0. The physical aspects of the CM9740-CC1 are discussed in Section 4.0. Section 5.0 discusses installation configuration scenarios, and Section 6.0 is concerned with controller initialization.

The basic installation type, which we refer to as “Category I,” is discussed from the standpoint of the CC1 as being (1) part of a New System Installation and (2) as an individual CC1 Replacement Installation within an existing system installation. We don’t exclude upgrade scenarios in our discussions, by which we mean that an existing system software and/or hardware mix (of which the CC1 is a part) is upgraded to a newer version.

The Category I case is emphasized throughout and in more explicit detail with respect to the subtopics mentioned above, because, in most cases, one can extrapolate CC1 behavior there to more involved configurations.



Section 6.0 discusses initialization and what happens or should happen when the CC1 is powered on for the first time. We discuss various elements of system configuration, how they interact and the part the CC1 plays in it. What should happen, what can happen, and what to look for during initialization are also explored. Next, diagnostic screen functions, diagnostic key commands and those aspects of the MGR program that affect CC1 integrity are explored.

Finally, we briefly list some of the more common problems encountered during initialization and suggest possible corrective action.

At any point in the manual where information appearing in an appendix has a bearing on the discussion at hand, that appendix is referenced. Based on one's current knowledge and experience, one may or may not feel the need to consult it.

3.0 BEFORE YOU BEGIN

3.1 A BRIEF NOTE

The CM9740-CC1 is a nonexpandable CPU, optimized for systems ranging from a 16 x 4 configuration (16 inputs and 4 outputs) to a 256 x 32 configuration (256 inputs and 32 outputs).

Beginner or New to 9740

If you are totally new to Pelco, or are familiar with Pelco but new to the 9740 matrix system, read on.

3.2 FOR THE BEGINNER OR NEW USER, A FEW WORDS OF ADVICE AND SOME EXERCISES

From a hardware standpoint, the CM9740-CC1 is ubiquitous to 9740 System operation. Section 4.0 addresses that aspect of the CC1.

In addition to its physical prominence, the CC1 is central to the software tasks required within the 9740 System. These tasks include configuration, initialization, and system control in operational mode.

Normally, CM9740-CC1 installations are problem free and follow an installation scenario that proceeds as follows:

1. Everything is assembled together for the system configuration according to the provided roadmap, which exists in the form of port assignment sheets that tell you how everything physically relates to everything else—what device is attached to what port, and so on.
2. After all equipment and cables are installed and everything is finally hooked up, the power is turned on.
3. The system initializes.

Setup is complete and operation can begin. At some later point in time, however, if the existing system configuration needs to be changed, upgraded, or downgraded, then no matter how simple or complex your system is, there are two areas related to system software with which one should become thoroughly familiar:

- The directory structure of the CC1.
- The administrative extension of the system executable (the MGR* program) and the configuration files (flat files)** that comprise your specific system.

If you are not familiar with these two points, we encourage you to take the time NOW, rather than be forced by necessity later, to become familiar with these two items.

It's easy. Very little equipment must be connected. Your entire system does not have to be connected, nor does it have to be up and running to perform the two exercises that discuss these topics. If the previous statement applies in your case, or if you are responsible for implementing system configuration changes, then consult Appendix VII, which guides you through the entire process.

** MGR: The MGR program is an administrative extension of the 9740 executable. The executable resides on the hard drive of the CC1; the MGR program, when in use, resides on an external PC connected to the CC1.*

*** FLAT FILES: Flat files are information files based upon your particular system configuration that the system executable uses to know what it's connected to and how to talk to it. These flat files are created at the factory for your particular system configuration. For multi-node systems, a set of configuration files is created for each node (each node has its own CC1). The CM9740-CC1 cannot be used to construct multi-node systems. It can, however, appear as a node within a multi-node system. These flat files can be found in two different locations: (1) on the CC1 hard drive in the C:\9740 directory and (2) on the floppy disk labelled "Utilities."*

4.0 INTRODUCTION TO THE CC1

4.1 DESCRIPTION

The CM9740-CC1 Controller is the main component and central operating hub of the System 9740. All components of the system connect to and communicate with the Controller via the ports located on the rear of the unit.

The CM9740-CC1 Controller mounts in a standard 19-inch (48.26 cm) rack space.

Default Hardware Configuration

- a. 3.5-inch Floppy Drive
- b. Solid-state, non-volatile, flash memory
- c. CPU
- d. Mounting hardware
- e. Keyboard
- f. Mouse
- g. 2 SerCom cards

NOTE: The internal cards are manufactured or supplied by Pelco and contain no user-serviceable parts. Other than jumper settings or card replacement, any attempt to repair or modify the internal components of the CM9740-CC1 will void any applicable warranties.

4.2 MODEL

CM9740-CC1 CPU controller and processor, operates on 120-240 VAC, 50/60 Hz. (CE, UL, cUL)

Front View

The front area of the controller consists of the items identified in the illustration in Figure 1:

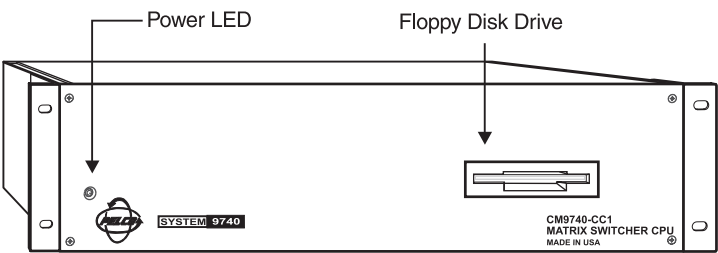


Figure 1
CM9740-CC1 Front View

The CM9740-CC1 Controller is equipped with an internal power supply that provides all the operating voltages for the unit. * Cooling for the processor is provided by a CPU-mounted fan.

* The power socket outlet shall be installed near the equipment and shall be easily accessible.

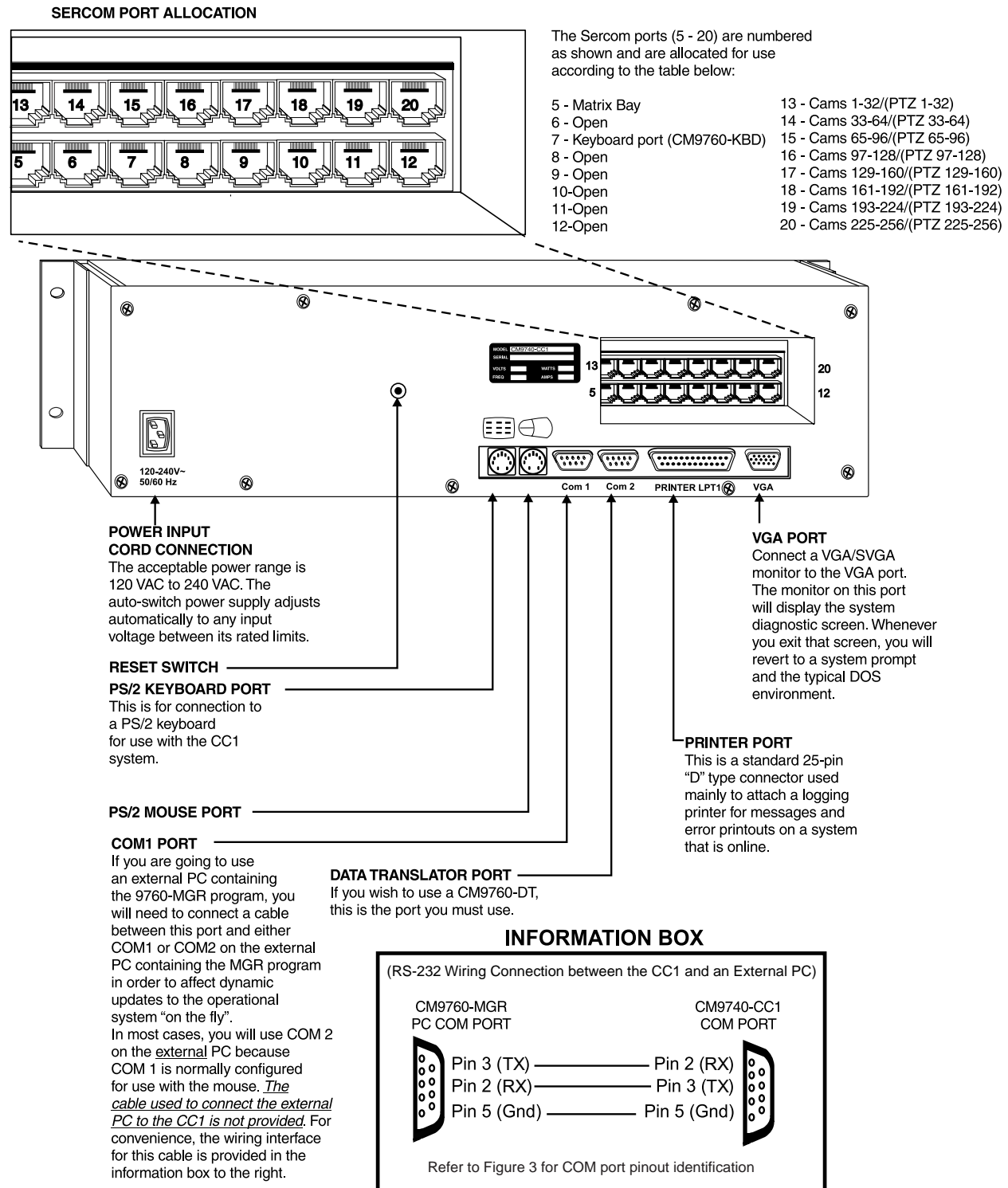
Rear View

The rear of the controller appears as illustrated in Figure 2.

This is the business end of the CM9740-CC1.

Figure 2

Rear View, General Identification



4.3 SERCOM BOARD CARDS

Sercom Card installation at the factory configures the Sercom cards for the slot position locations they occupy in the unit.

Once you have an operational system, you can cycle through your IRQ/Slot position settings by toggling the ALT + A key combination on the keyboard associated with the diagnostic screen.

4.4 MOUNTING THE CONTROLLER



WARNING: *Unplug the CC1 before attempting to install or remove any of the individual components. Failure to do so could result in serious damage to the equipment.*

The CM9740-CC1 Controller mounts in a standard 19-inch rack using standard mounting hardware (supplied with the unit). The unit occupies 3 RU (5.25 inches [13.34 cm]) of vertical rack space.

Before installing the unit, decide on the equipment orientation desired within the EIA rack and install the moveable ears on the unit accordingly. Secure as required.

4.5 CONNECTING TO THE CONTROLLER

All system devices connect to the rear of the CM9740-CC1 controller. In general, any connectable device that can be used with the CM9760-CC1 can also be used with the CM9740-CC1.

D-type, 9-pin connectors are used for COM 1 and COM 2, while the VGA card connector is a 15-pin D-type connector. The PS/2 keyboard connection utilizes a standard 5-pin mini-Din connector.

The printer connector (used mainly for system logging and printouts) is a 25-pin D-type connector. A completely operational System 9740 will more than likely require the addition of more equipment to the controller; namely, such items as a VGA monitor, or a PS/2 keyboard and printer. To connect this equipment, simply plug the desired piece of equipment into the appropriately labeled port. For connector information, refer to Figures 3 and 4.

Figure 3
CM9740-CC1 Rear Connector Pinouts

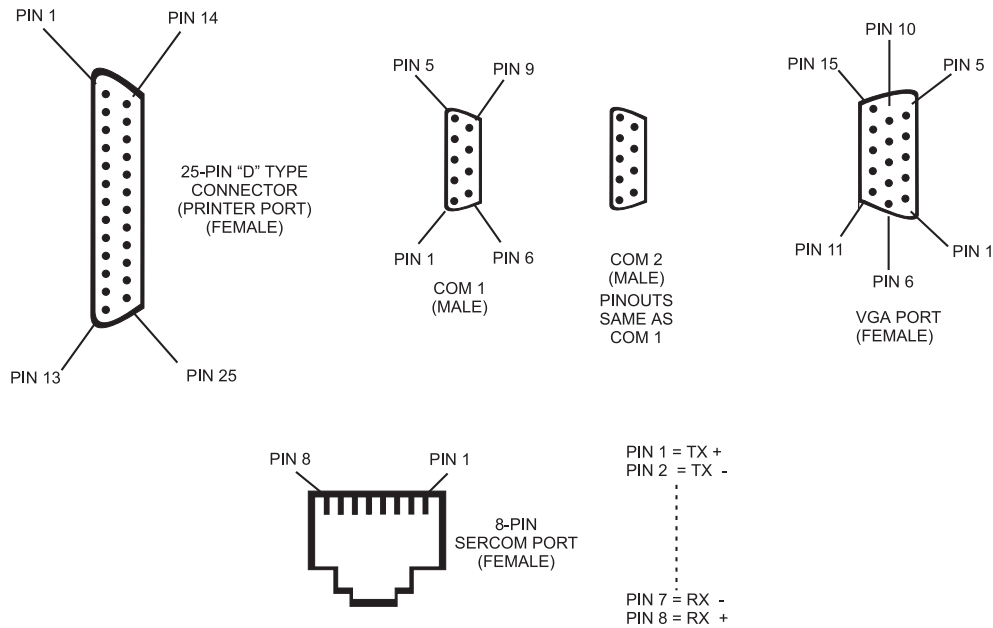
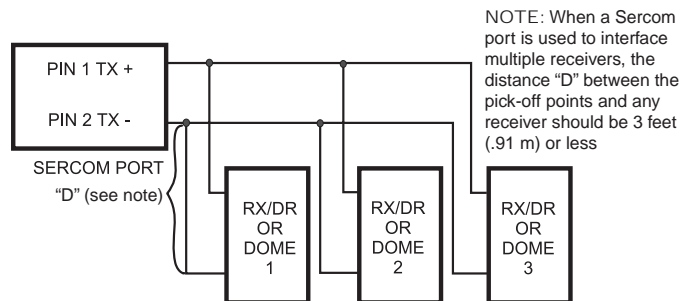


Figure 4
Multiple Receiver Hook-up



5.0 PHYSICAL INSTALLATION AND INITIALIZATION

5.1 CC1 INSTALLATION-CATEGORY I

Figure 5
Category I—Bare Bones

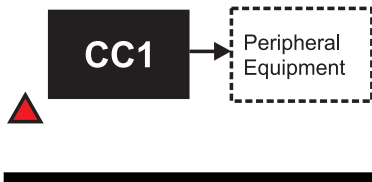
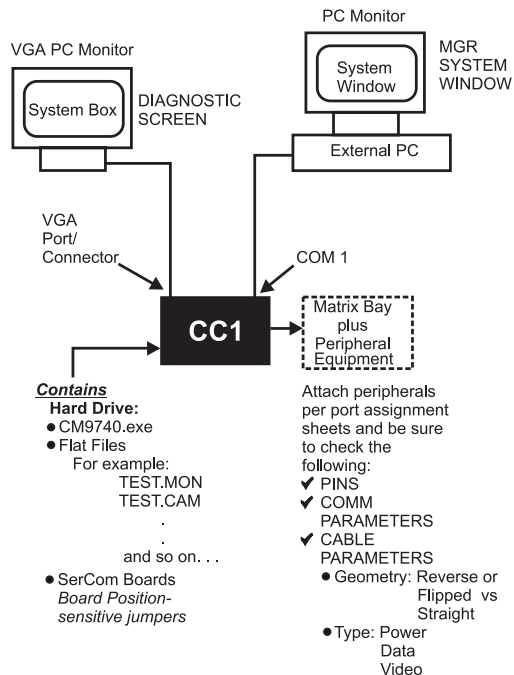


Figure 6
Category I—Fleshed Out



NOTE: Remember that each peripheral device is unique and has its own requirements. If questions arise with respect to any of the parameters for an individual piece of equipment, it is imperative that you consult the manuals for the device in question.

***Note that video paths are independent of the 9740.EXE being in operational mode. The fact that pictures appear on monitors when peripheral equipment is turned on does not mean that the system is operational. It is a necessary item for proper system operation, but has nothing to do with system initialization.*

Preliminary

For new installations, you normally receive a configuration setup or diagram and a port assignment sheet for your specific installation. Pay close attention to these when setting up your system.

Items specific to CC1 production for units leaving the factory include the following:

1. Configuration files (flat files) that correspond to your specific system configuration are created and exist, as a set, in two locations. One set is located within the C:\9740 directory on the drive of the CM9740-CC1. The other backup set is located on a floppy disk labeled Utility Disk.
2. The directory structure of your drive has been set up and includes those items alluded to in Section 3.2 and discussed in detail in Appendix VII of this manual.
3. The MGR program, which is a software extension of the 9740.EXE, exists on a five-unit floppy disk installation set that accompanied your unit. This program should be installed on the external PC that will be connected to COM 1 on the rear of the CC1. The MGR program should be loaded on the external PC and the PC should be connected to the CC1 before any power to the CC1 is turned on in preparation for the initialization process. The inclusion of MGR operability is not a necessary component of the initialization process; however, its exclusion would mean the loss of a valuable tool for viewing, verifying, and probing various aspects of that process.

5.1.1 Category I—New Installation

1. CC1s are normally installed in close physical proximity to matrix bays, as these are the first items to be connected to the rear of the CC1, starting at Port 5 on the rear of the CC1.

Keyboards are installed after matrix bays; then, after that, everything else is installed on a "next available port" basis according to the port assignment sheets.

2. If the MGR program is to be used, it is installed on an external PC connected to COM1 on the rear of the CC1. The cable between the external PC and CC1 is not supplied by Pelco. Use the convenient pinout information given in Figures 2 and 4 for wiring up the cable. If you followed the exercise for the beginner referenced in the first part of the manual, you have already installed the MGR on an external PC. If that is not the case or if you wish to use a different PC, then the MGR program must be installed on the PC at any point before power is applied to the system. Use the quick-start installation guide in Appendix I to install the program on the external PC.
3. Connect the external VGA PC monitor to the VGA port provided on the rear of the CC1. This will display your diagnostic screen.
4. Once you are satisfied with the physical hook-up of all peripheral devices and have double-checked all communication parameters and switch settings, you are ready to do the following:
 - a. Turn on power to all peripheral equipment connected to the CC1.**
 - b. Apply power to the CC1.
5. Proceed to the Section 6.1, which discusses system initialization for single-nodes.

The next example is that rare case where the act of having saved a current copy of your configuration files (flat files) can save you a lot of work.

5.1.2 Category I-Upgrade Replacement (Hardware Only)

Object: Physical Replacement of the CC1

NOTE: Normally, one thinks of hardware and software as separate entities and that upgrading or replacing one would not significantly affect the upgrade or replacement of the other. For new system configurations, this is not a problem. Areas of concern do arise, however, when upgrading or replacing existing units within systems that are out in the field. If the replacement equipment contains preloaded software (for example, the CC1) or contains programmed ROMs (for example, the CM9760-KBD), care must be taken. You must make a reasonable effort to ensure that the new hardware and the software it contains are compatible with the system within which it is to be placed.

NOTE: You should always save your old executables and flat files, along with your autoexec.bat file, in case the upgrade installation doesn't pan out.

NOTE: You should always have a list of the current version levels of all the software that you are running on your system or at least know where to find the information. In general, it's best to make a list as soon as possible after receiving new software or equipment containing software and keep the list current.

The list would include version information on the following:

- 1. The CM9740.exe*
- 2. The 9760MGR software*
- 3. The CM9760-KBDs*

Assumptions:

- The CC1 to be replaced is part of an existing operational system configuration that has failed.
- The software environment that existed on the failed CC1 is to be used on the replacement CC1.

To physically replace the CC1:

1. Shut down any parts of the system that are running and turn off power (where applicable). We assume here that the failed CC1's power is already off.
2. Disconnect all peripheral equipment from the failed CC1, noting what is connected to what.
3. Connect a PS/2 keyboard to the replacement CC1 and power it up independent of the system to which it will be connected.
4. Take your most current copy of configuration files (flat files) for the system in question and copy them to the C:\9740 directory on the hard drive of the replacement CC1. If you don't have a set, you are going to have to create one from scratch.
5. The 9740.EXE that exists on the replacement CC1 will be configured with the latest revision of system software.
6. When power is applied to the replacement CC1 in step 3, it should boot to the diagnostic screen after loading system files. This is a reflection of the standard factory configuration of the autoexec.bat file and nothing else.

NOTE: You can choose to edit and effect changes in the autoexec.bat file after the system is hooked up and power is turned on. If you do, just keep in mind that the following instructions assume that you have already made the changes referenced.

7. Once you have loaded a copy of your current configuration files, the old executable and the adjusted autoexec.bat (if applicable) on the new CC1, turn off power to the CC1.
8. Replace the old unit with the new CC1 and reinstall, connector for connector, all peripheral equipment disconnected in step 2.
9. Turn on power to all the peripheral equipment and to the new CC1. Check system initialization and look for system errors. Correct any found, and then, again, save to disk any copies of your configuration files and any other files that you don't want to have to create or scrounge around for should similar circumstances occur in the future.

****IMPORTANT NOTE**

If you are doing an across-the-board upgrade of the system software associated with the CC1 (namely, the MGR program and the system executable), then any CM9760-KBD used with the upgraded system must also contain software that is compatible with the upgrade.

5.1.3 Category I-Upgrade Replacement (Hardware and Software)

Object: Physical replacement of the CC1, in conjunction with software upgrade or replacement.

Assumptions:

- The CC1 to be replaced is part of an existing, operational, system configuration.
 - The operational software within the existing CC1 needs to be replaced and/or upgraded, depending on circumstances covered in the steps below.
1. Repeat steps 1, 2, and 8 of the previous section, ignoring remarks about CC1 status. Do not, however, reconnect the external PC (containing the MGR program) to the new CC1 just yet.

The status of the new CC1 and its associated software files are as follows:**

- The latest 9740 executable will reside in the C:\9740 directory on the drive of the CC1. Backups of the executable are on the Operations and Utility disks that accompanied the shipment of the replacement CC1.
 - A five-disk set of the latest MGR program also accompanied the shipment.
2. If the software version of your current MGR program is less than that of the MGR program in the upgrade package, then the latest MGR software must be installed on your external PC.

To accomplish that, do the following:

- a. Remove your old MGR software according to Appendix V.
 - b. Install the new MGR software using the five-disk set of the System Manager. Use the quick-start guide located in Appendix I of this manual for instructions.
3. Connect any new equipment that is part of your hardware upgrade to the appropriate port(s) on the rear of the CC1, according to the installation instructions found in the manual(s) accompanying the new equipment.
 4. If the equipment connected in step 3 requires updates to your existing configuration files (which it will if the hardware portion of the upgrade necessitated the use of any additional Sercom ports), then do the following; otherwise, proceed to step 6:
 - a. Power-up the external PC containing the MGR program and use the READ utility to read in your existing configuration set (flat files) into the MGR program (refer to Appendix IV, if needed).
 - b. Make the necessary changes in your current configuration files to accommodate any new equipment. As part of those changes, don't forget to enter a PIN for the new equipment in the COMMS file and to assign operator access. Consult the applicable device manual and the MGR documentation as needed until all the parameters that need to be changed are taken into account.
 - c. Save your updated flat files to the database and then use the WRITE utility of the MGR program to write out the changed configuration set to floppy disk.
 - d. Copy the new configuration set into the C:\9740 directory of the new CC1 (refer to Appendix II, if necessary).
 5. Reconnect the external PC containing the upgraded MGR software to the new CC1 and load the upgraded configuration set into the C:\9740 directory of the new CC1. Proceed to step 7.
 6. Reconnect the external PC containing the upgraded MGR software to the new CC1 and load your existing flat files into the C:\9740 directory of the new CC1.
 7. Repeat step 9 of Section 5.1.2.

5.1.4 Category I-Upgrade Replacement (Software Only)

Object: To upgrade current system software to the latest available.

Assumptions:

- You're currently running a fully operational CC1 to which is attached an external PC containing the MGR program.
- You have ordered the current software upgrade package for the CC1.
- You have also ordered (if applicable) compatible keyboard software for use with the system software upgrade (CM9760-KBD-XXX).

To upgrade your system software:

1. Halt system operation (if applicable) with the familiar Ctrl + Q key combination.
2. Replace the old MGR program on the external PC with the upgrade MGR program by doing the following:
 - a. Remove the old MGR program, following the instructions in Appendix V.
 - b. Install the new MGR program using the quick-start guide in Appendix I.
3. Use the READ utility of the just-installed MGR program to read in a copy of your current configuration files.
4. Effect any changes desired, save the files to the database and use the WRITE utility to write a copy of your configuration files to floppy disk. Make sure you continue to use the same global prefix name for your configuration set that you used before or you will have to change your autoexec.bat file later.
5. Copy the new configuration set to the C:\9740 directory on the hard drive of the CC1 and overwrite any files existing there.
6. Copy the latest system executable (CM9740.EXE) [located on the "Utility Disk"] and overwrite the old executable located in the C:\9740 directory of the CC1.
7. Upgrade the keyboard software (if applicable) using the appropriate KBD upgrade kit.
8. Attach all equipment not yet connected to the CC1.
9. Power-up all peripheral equipment; turn on the CC1.
10. Initialize the system and check for errors.

6.0 CC1 INITIALIZATION

The initialization process occurs during the time that the CM9740.EXE program is booting up. During this time configuration files and diagnostic programs are loaded enabling system parameters for CCTV matrix operation. As the initialization process proceeds, the executable calls for its associated diagnostic and corresponding information screen. The primary visual verification of successful initialization is signaled by the information displayed there. That, and other indicators of successful initialization (for example, the 9760 KBD LCD screen and the Manager system window, which are both discussed in the next section) give a range of items to check to verify successful initialization.

In the absence of perfect system initialization, what you hope to see is verification that the system is at least up and running. Small problems might be indicated by system messages other than the one you wanted to see, but you are essentially "in business."

6.1 SINGLE-NODE INITIALIZATION

As just discussed, normal initialization is the result of a successful boot process, which, more often than not, ends with a display of its associated diagnostic screen indicating success. It will do this either because (1) it was configured that way at the factory or (2) because the autoexec.bat file was edited by the user to call the appropriate executable during the boot process.

6.1.1 Diagnostic Screen

Initialization begins when the CC1 is turned on (we assume all peripheral equipment is powered on). The boot process executes as a standard DOS boot. When the executable in the autoexec.bat file is called, a bare outline of the diagnostic screen appears on the attached monitor. A synopated series of messages appears in the System box until the process ends and, if successful, a "Setup Complete" diagnostic screen like that shown in Figure 7 appears.

6.1.2 Keyboard

Within your system configuration, you may also have other devices connected that give online system indications, some more helpful than others.

For example, consider the CM9760-KBD. If you have one attached to your system, the LCD screen display will look as follows before the system boots:

Figure 7
Single-Node Initialization

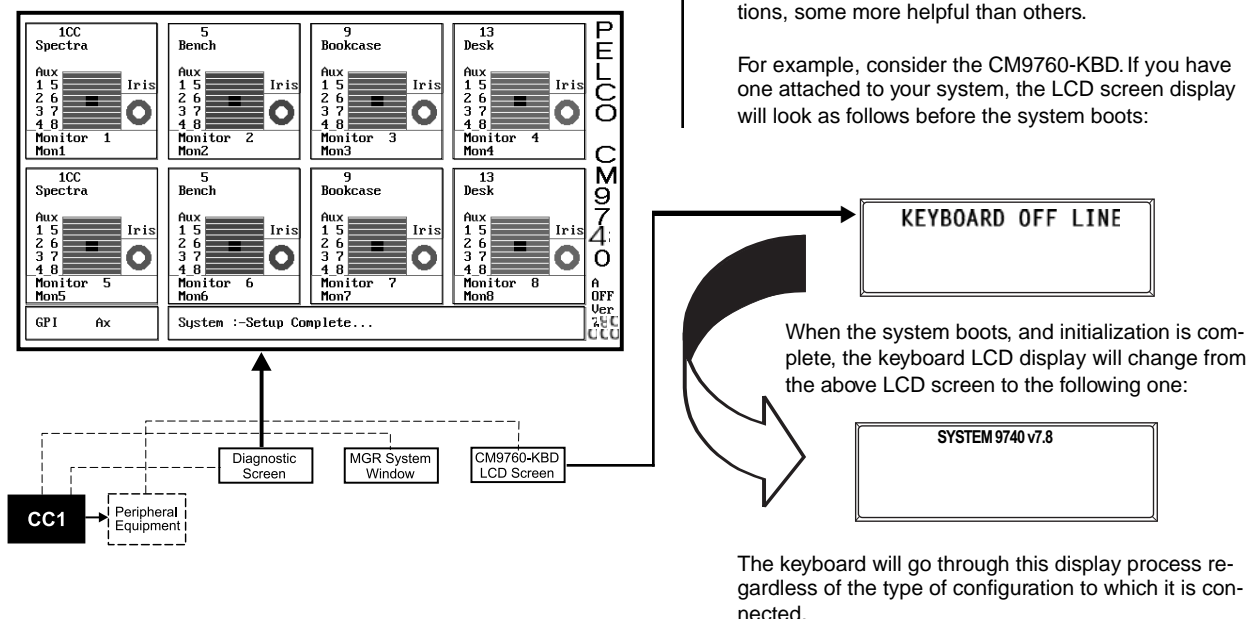


Figure 8
Initialization–System Window

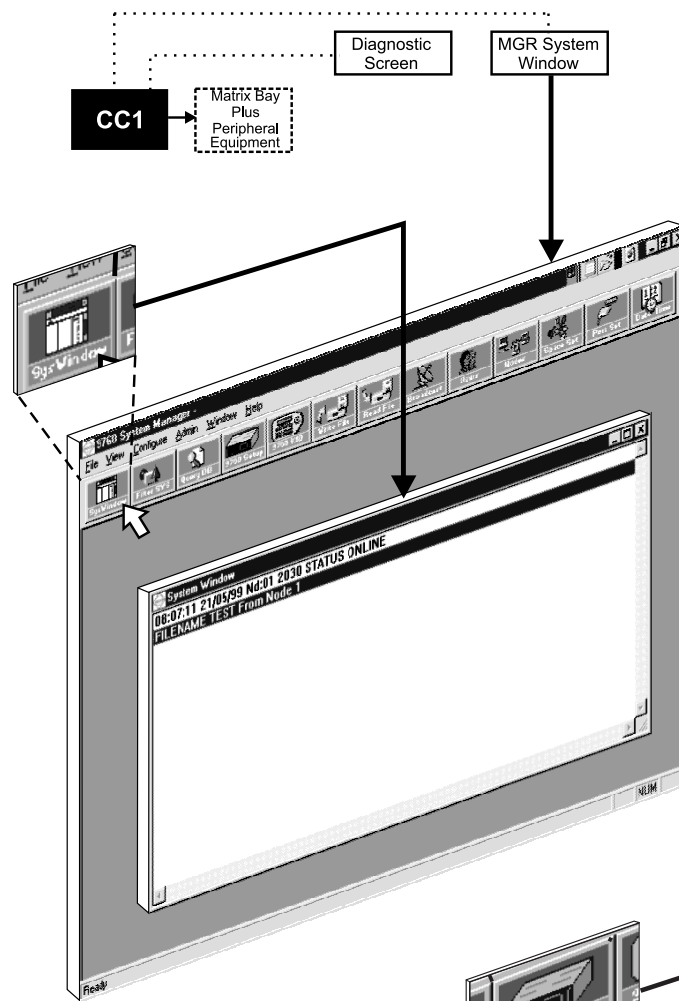
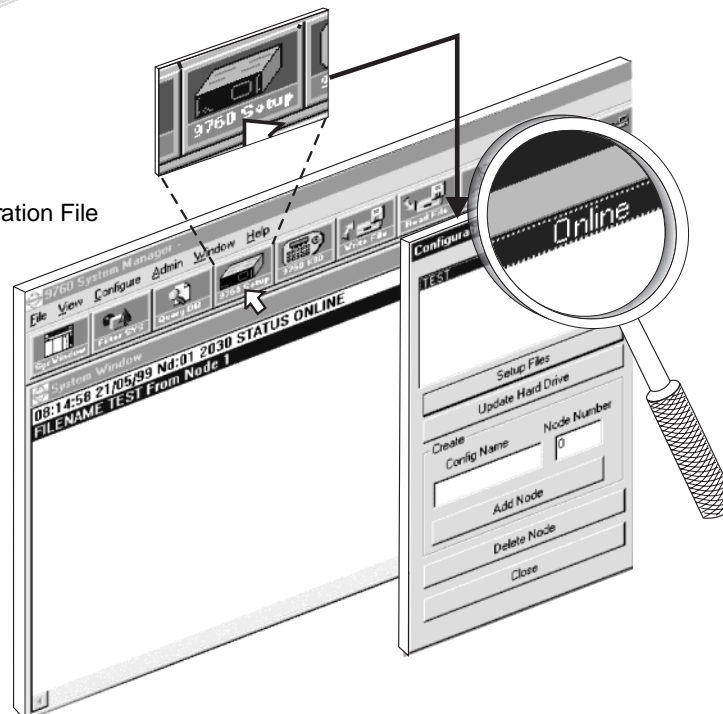


Figure 9
Initialization– Configuration File



6.1.3 MGR Program System Window

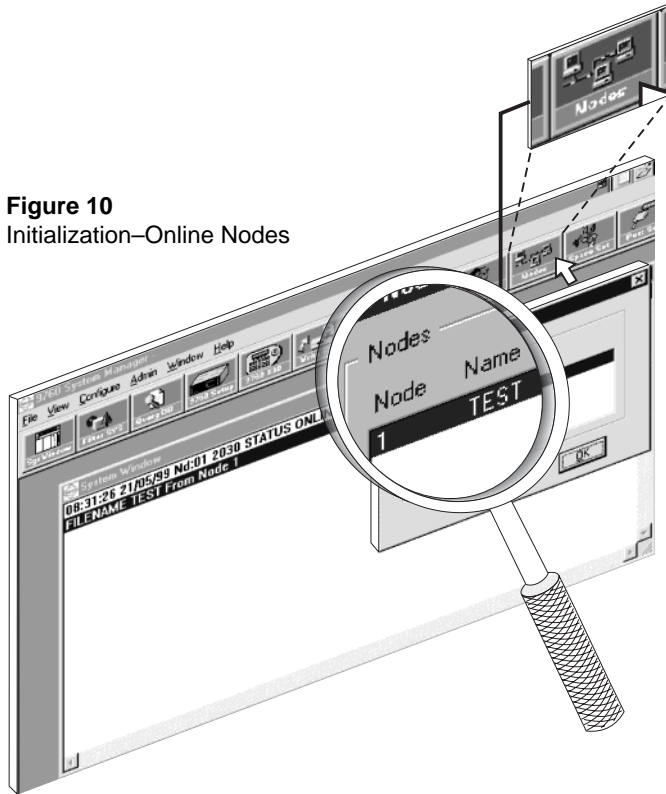
That leaves the MGR system window, which is part of the MGR program proper. If you have an external PC connected to the CC1 that contains the MGR program, there are multiple indications of online status associated with this program that can be checked.

Just before the boot process, have the MGR program up and running with the system window showing. Click on the SysWindow icon as indicated in Figure 8; the window should be blank. If it isn't, close the system window and answer "No" to the dialog inquiry about retaining current system window messages. Then, reopen the window and it will be blank. At the end of the initialization process when the "Setup Complete" message appears on the diagnostic screen, a corresponding display indicating system status will appear in the system window of the MGR program, like that shown in Figure 8, indicating that the system is up and online.

6.1.4 Configuration File

In addition to the SysWindow message regarding online status, you can click on the 9760 Setup icon on the MGR program toolbar, which will bring up the Configuration Files dialog box (refer to Figure 9). On the far right side of the line indicating the Node # and the "group" configuration file name associated with that node is another indication that the system is online. The word "Online" appears, as shown in Figure 9. A dash "-", normally occupies that spot when the system is not online.

Figure 10
Initialization—Online Nodes



6.1.5 Online Node Dialog Box

If you close the Configuration File menu and click on the Nodes icon on the MGR program toolbar, you will see what appears in Figure 10.

This indicates the node number and the associated "group" flat file name associated with the node currently online.



A CAUTIONARY NOTE

Be aware when looking at secondary window dialog boxes. The Online Nodes box and the Configuration Files box, for example, are windows that are not dynamically updated by the MGR program whenever additional changes—other than the one currently posted—happen in the online environment. The SysWindow of the MGR program, however, is dynamically updated.

To show this, look at the diagnostic screen of Figure 7. If you exit the program with a Ctrl + Q key combination, the diagnostic program ends and you immediately revert to the system prompt.

At the same time, on the external PC containing the MGR program, the SysWindow mirrors the off-line status as shown in Figure 11. It is dynamically updated. On the other hand, the Configuration Files subwindow still indicates that the system is "Online." It is not dynamically updated. The same is also true of the Nodes Dialog box, if you were to look at it.

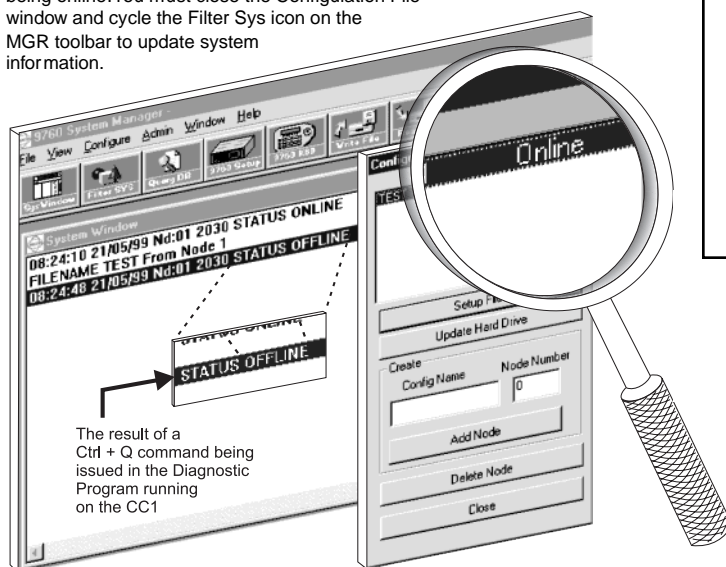
To update the Configuration File box or the Nodes Dialog box to reflect the current state of online status, you must close their respective windows and perform the following step:

Click on the Filter SYS icon on the MGR toolbar. Clicking on this icon opens up the Message Mapping window. Opening and closing this window causes an update of system information being reported to the MGR program.

It is best to think of the information contained in these subwindows as snapshots of the state of the system at the time they are opened.

Figure 11
MGR Windows—A Precaution

The Configuration File window still indicates the system as being online. You must close the Configuration File window and cycle the Filter Sys icon on the MGR toolbar to update system information.



6.1.6 Single-Node Hot Switch Configurations

Refer back to Figure 7 and note the information in the lower right-hand corner of the diagnostic screen. Specifically, note the A OFF phrase. This means "Asynchronous OFF," which means the CC1 is not part of a *hot switch* configuration.

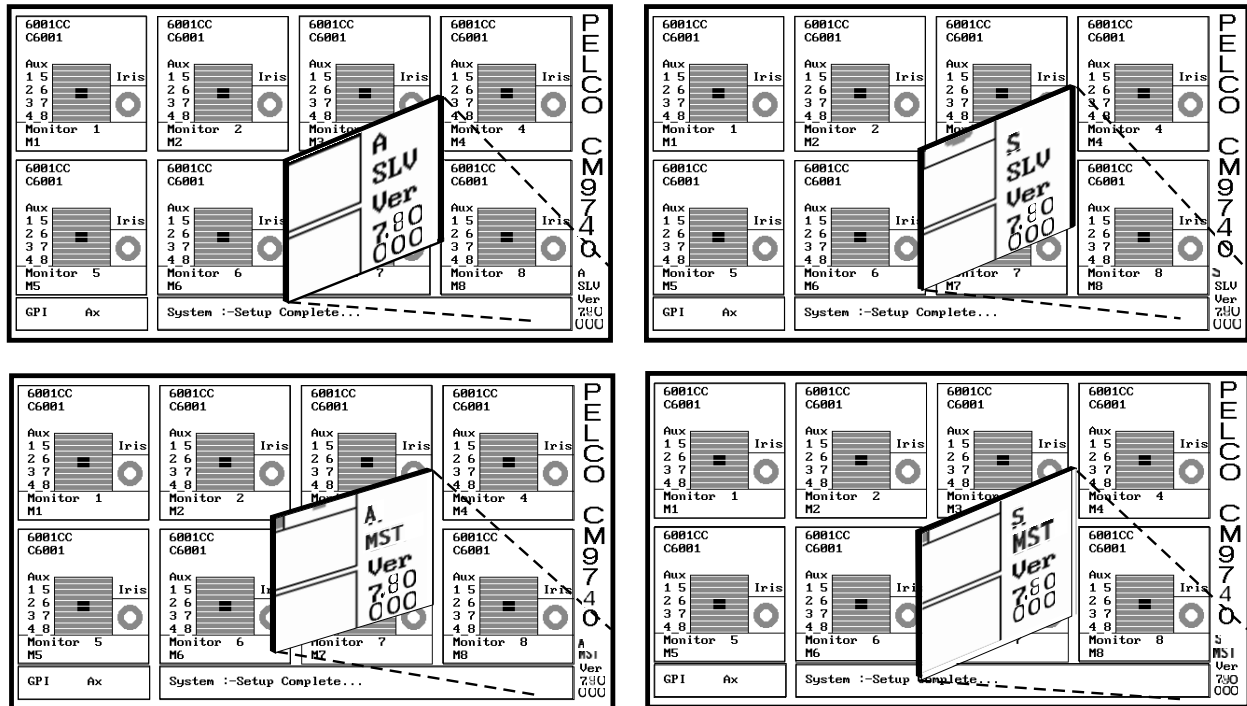
If, however, the CC1 is part of a hot switch configuration, that portion of the diagnostic screen represents the state of the CC1 being visually sampled at the time. This, in turn, depends on the switch settings on the processor board located in the hot switch interface. You might see any one of the four different diagnostic screens displayed in Figure 12 at the conclusion of CC1 initialization. However, this would be the only area of difference in the diagnostic display to indicate that the boot up initialization process had been successful. MGR program displays for hot switch configurations are the same as those already discussed.

NOTE: The diagnostic monitor and the external PC containing the MGR program are attached to the hot switch interface CM9760-CCS-PNL.

NOTE: In the diagrams below, the hot switch terminology references mean the following:

A = Asynchronous
S = Synchronous
SLV = Slave
MST = Master

Figure 12
Single-Node Hot Switch Configurations



7.0 CC1 CONTROLLER OPERATION

The center of 9740 system operation is the CC1 controller.

Monitoring operations and performing housekeeping chores are important parts of maintaining the CC1 and system integrity. First, we will discuss the tools used to monitor CC1 operation in general; then, we will discuss specific examples. Later, we will talk about *system time* and its relationship to maintaining system integrity.

7.1 MONITORING CC1 FUNCTIONS

The diagnostic screen on the VGA monitor and the SysWindow of the MGR program located on the external PC are adjuncts of the controller that are used for monitoring system functions and errors. In most single-node applications, the VGA monitor and associated keyboard are connected, respectively, directly to the VGA port and keyboard connector on the CC1.

Similarly, the MGR program and its associated SysWindow, as well as other useful dialog windows, are located on an external PC and connected to the CC1's Comm port.

For multi-node configurations (the CM9740-CC1 can be configured as a node in a multi-node system), the VGA monitor (for the diagnostic) and the external PC containing the MGR program are attached to the CC1 containing the NIU.

To avoid confusion over equipment configurations and the type of display screen you can expect to see on monitors attached to specific points within a configuration, refer to Figure 18.

7.1.2 The Diagnostic Screen

Once initialization takes place, the multi-node diagnostic screen is rather passive; it sits there unless system status changes. Nothing will change on the display screen. The single-node diagnostic screen, however, is a bit more engaging.

Description

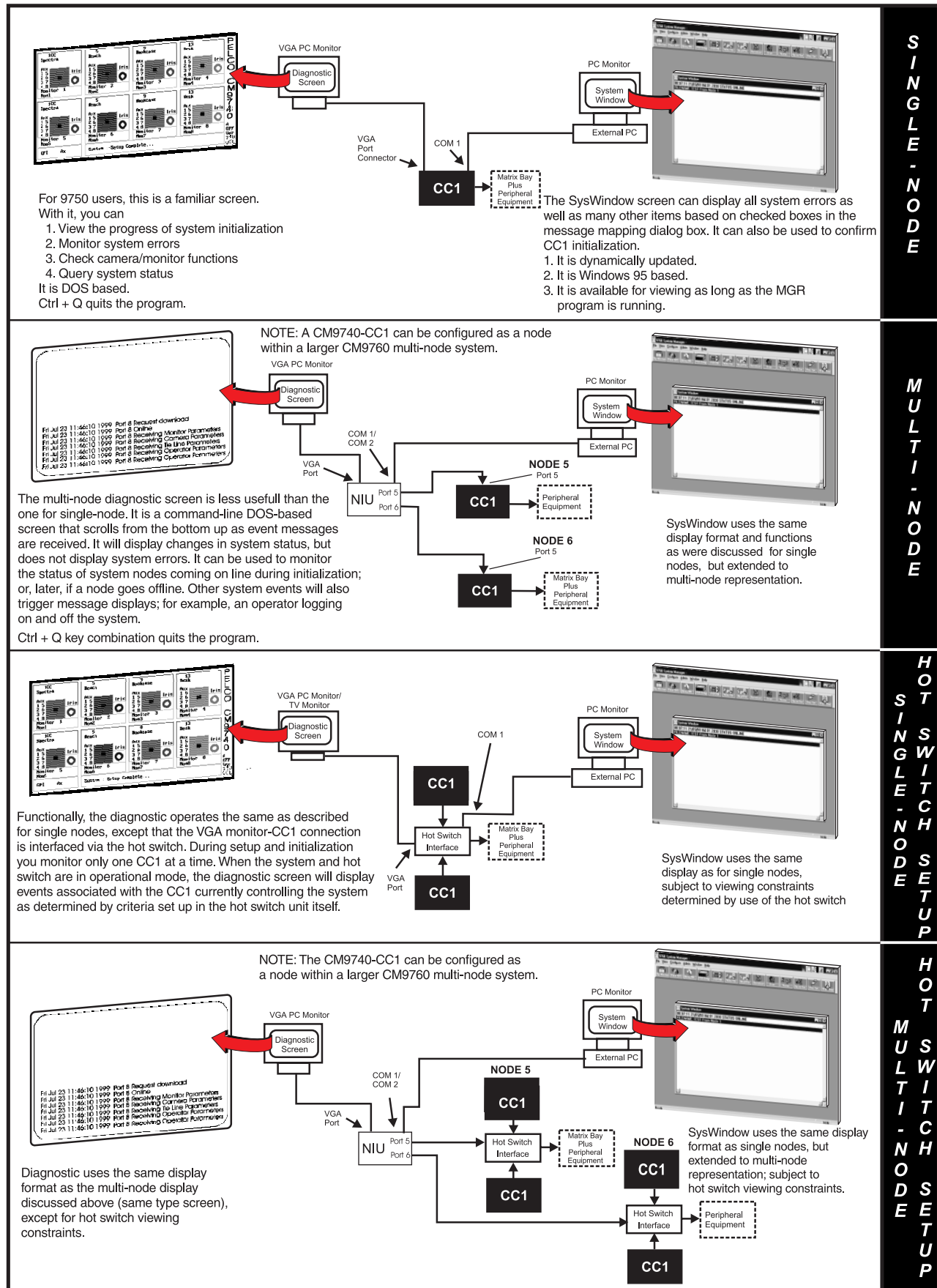
You have already seen how the diagnostic screen is used to observe system functions during CC1 initialization.

Moreover, at the end of the initialization process, the VGA monitor diagnostic displays a "Setup Complete" message on the System box (or the System Error line as it sometimes called) of the screen. Information pertaining to system errors appear here, as well as information pertaining to system operation. In addition, the results of PC keyboard commands appear here, which we'll discuss later.

Initialization will occur any time that the CC1 goes through the boot process. That happens when any of the following circumstances occur:

1. When power is cycled on the CC1.
2. When the reset button is pressed.
3. When an Alt + Ctrl + Delete key combination is invoked.

Figure 13
Display Screen Geometry



In addition to the area of the screen where the System box appears, there are two other areas of significance on the diagnostic screen. Refer to the sample diagnostic screen in Figure 14.

First, there is the GPI and Ax (short for Aux) box located in the lower left-hand portion of the screen.

GPI displays the GPI currently selected (if applicable). The GPI number will be updated when an auxiliary command is executed.

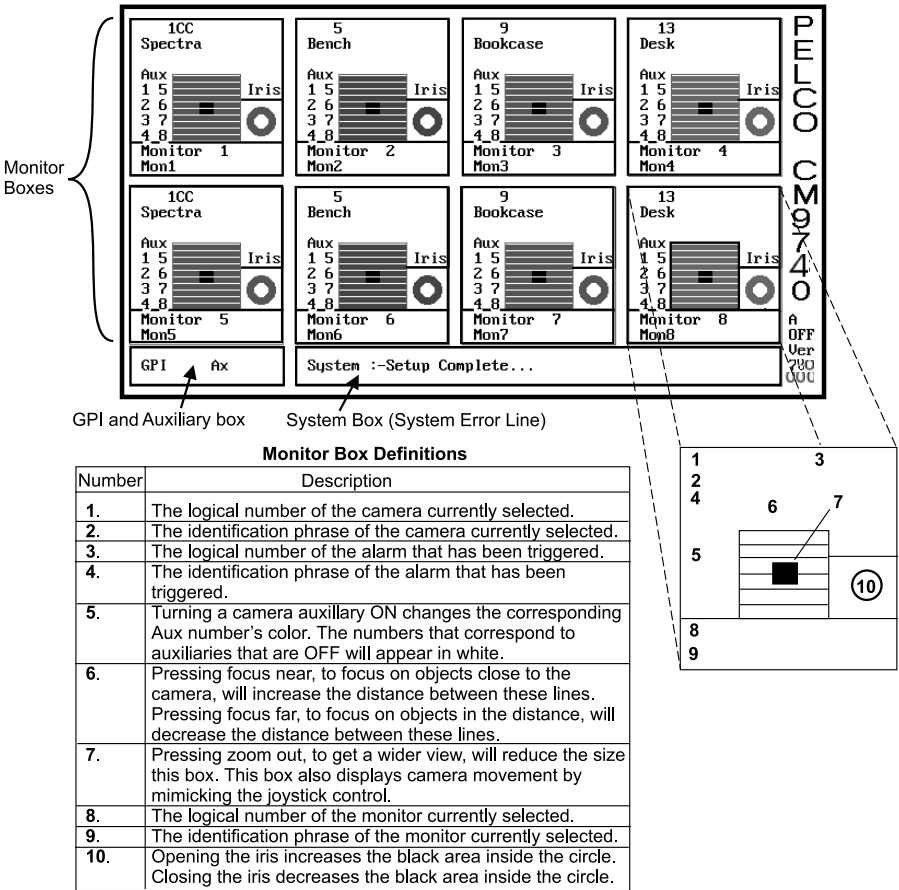
Ax displays the auxiliary currently selected and whether it is ON or OFF.

Second, there are eight identical Monitor boxes.

Each Monitor box represents a monitor and the camera currently being displayed on that monitor. The information displayed within each monitor box is detailed by the numbered references in Figure 14.

We might point out some other miscellaneous information areas associated with the diagnostic screen. Below the vertically placed PELCO CM9740 logo, on the right side of the screen, there is a boxed area within which information is given about the CC1 and its relationship to hot switch configurations. The term A OFF means your CC1 is not part of a hot switch configuration. The A stands for asynchronous. If the CC1 is part of a hot switch configuration operating in asynchronous mode, then it may read A SLV or A MST. The normal state for hot switch operation is, however, the synchronous mode, in which case you would see S MST or S SLV depending on hot switch parameters. Directly below this, the current version level of the system executable is listed using the format Ver xxx xxx.

Figure 14
Diagnostic Screen and Monitor Box Geometry

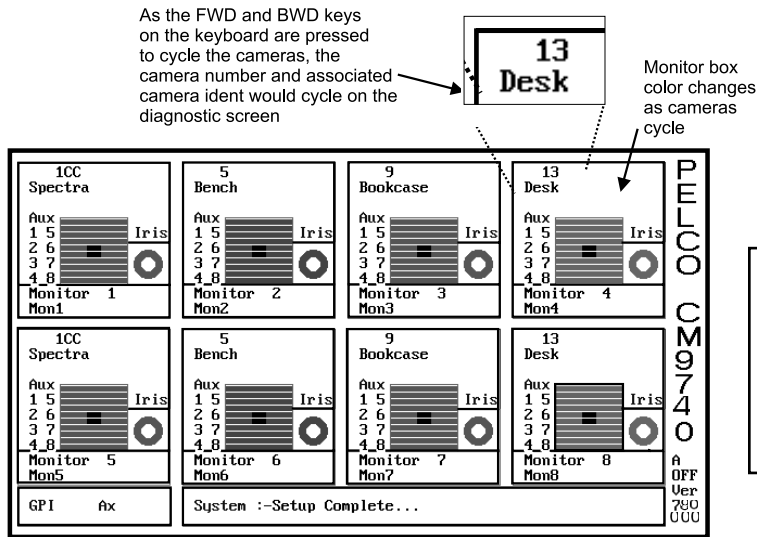


That concludes the general description of the layout of the diagnostic screen. Next, we'll look at a few examples of what you might see on the monitor boxes and show you how to change monitor box allocation. Then, we shall list some keyboard commands that are used to gather specifics on system operation.

7.1.2.1 Monitor Box Examples

Figure 15 shows a normal online diagnostic screen. If a CM9760-KBD connected to the system is using monitor 4 for camera display, the FWD and BWD buttons on the keyboard can be used to cycle through the available cameras. On the diagnostic screen, the corresponding camera numbers cycled on the keyboard are mirrored in the numbered display for the camera in the diagnostic screen. As each camera is cycled, the ident associated with that camera also appears and the monitor box color changes. This is indicated in the illustration.

Figure 15
Monitor Box Camera Switching



If a camera capable of presets, such as a Spectra II™ were connected, then the monitor box would look like that shown in Figure 16, which shows that a preset call was made from the keyboard.

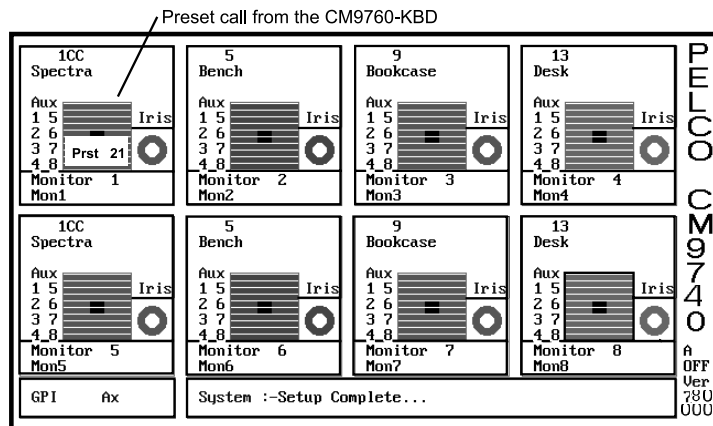
Unfortunately, more advanced functions like pattern or zone activity are not reflected in the diagnostic display. Your normal PTZ functions, presets, and so forth will have their functions identified by some activity in the diagnostic screen monitor boxes.



A CAUTIONARY NOTE

The diagnostic screen only indicates that a message or action was sent by the CC1 to an affected device in response to, for example, a keyboard command to send a camera to a preset. It does not confirm, in fact, that the action actually occurred.

Figure 16
Monitor Box Preset Call



For example, if you issued a preset call for the camera depicted in Figure 16 to go to preset 41, the diagnostic screen would look the same except the number 41 would replace the number 21. This would occur even if you had never programmed the camera for that preset. So be aware of this when interpreting the meaning of what you see on the diagnostic screen.

7.1.2.2 Monitor Box Allocation

Monitor boxes can be re-allocated. To do so, perform the following steps:

Press one of the Fx keys (F1 through F8, as illustrated in Figure 17, show the relationship of the Fx key and Monitor box allocation) that corresponds to the number of the box that you wish to move a monitor too. Take the F1 monitor position, for example. When F1 is pressed, the System box will read (refer to Figure 18):

Allocate Box 1 to ?

Type in the number of the box containing the monitor that you wish to move there.

Allocate Box 1 to? 3

Press the Enter key
(Refer to Figure 19)

Box 3 will become blank and Mon 3 will now appear in the box for the Mon 1 position. The System box will now display the following:

Box 1 allocated to Physical Monitor 3
(Refer to Figure 19)

You can now allocate vacated Box 3 for Mon 1 (which is now not represented on the diagnostic monitor)—in effect exchanging the positions of Mon 1 and Mon 3 displays on the diagnostic monitor; or, you may press the F3 key and reallocate Box 3 to a different monitor position altogether. To perform the first option, press F3 key and the System box will read:

Allocate Box 3 to ?

If you enter "1", then the diagnostic screen is again complete, with eight monitors represented and with the MON1 and MON3 display positions switched (refer to Figure 20).

Figure 17
Monitor Box Allocation

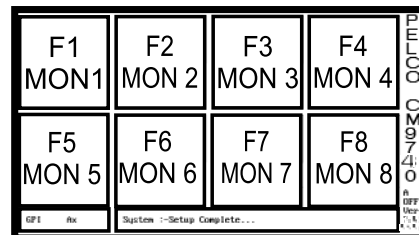


Figure 18
Monitor Box–F1 Allocation

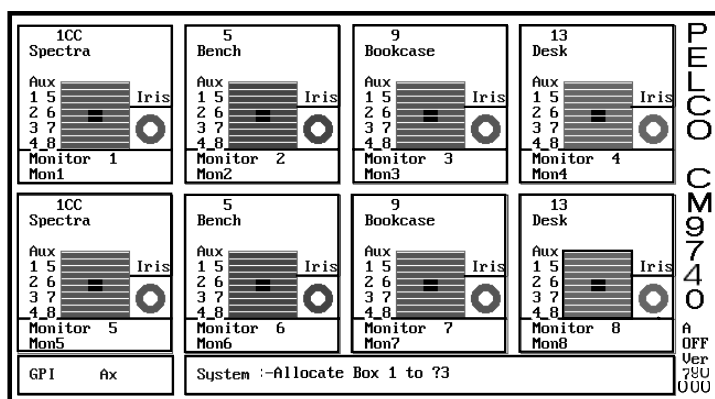


Figure 19
Monitor Box–Allocate 3 to 1

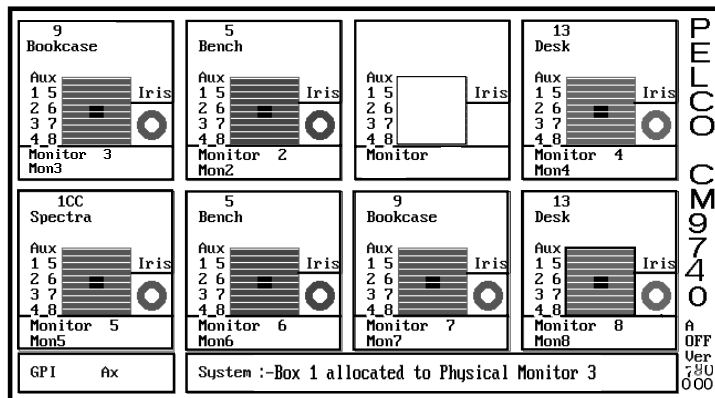
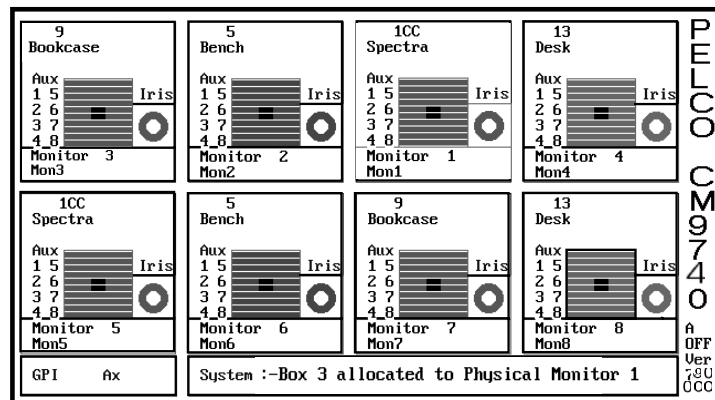


Figure 20
Monitor Box Switch



7.1.2.3 Screen Operation-Keystrokes

There are a number of helpful screen functions associated with certain keystroke combinations that result in a process being enabled or result in information being obtained. You have just seen how the Fx keys are used to reallocate monitor boxes. Those, as well as other key combinations, are listed in Table A.

Table A
Command Key Functions

NOTE: Be careful when using the ALT key in combination with other keys. Keyboard lockup can occur if you press an odd key combination.

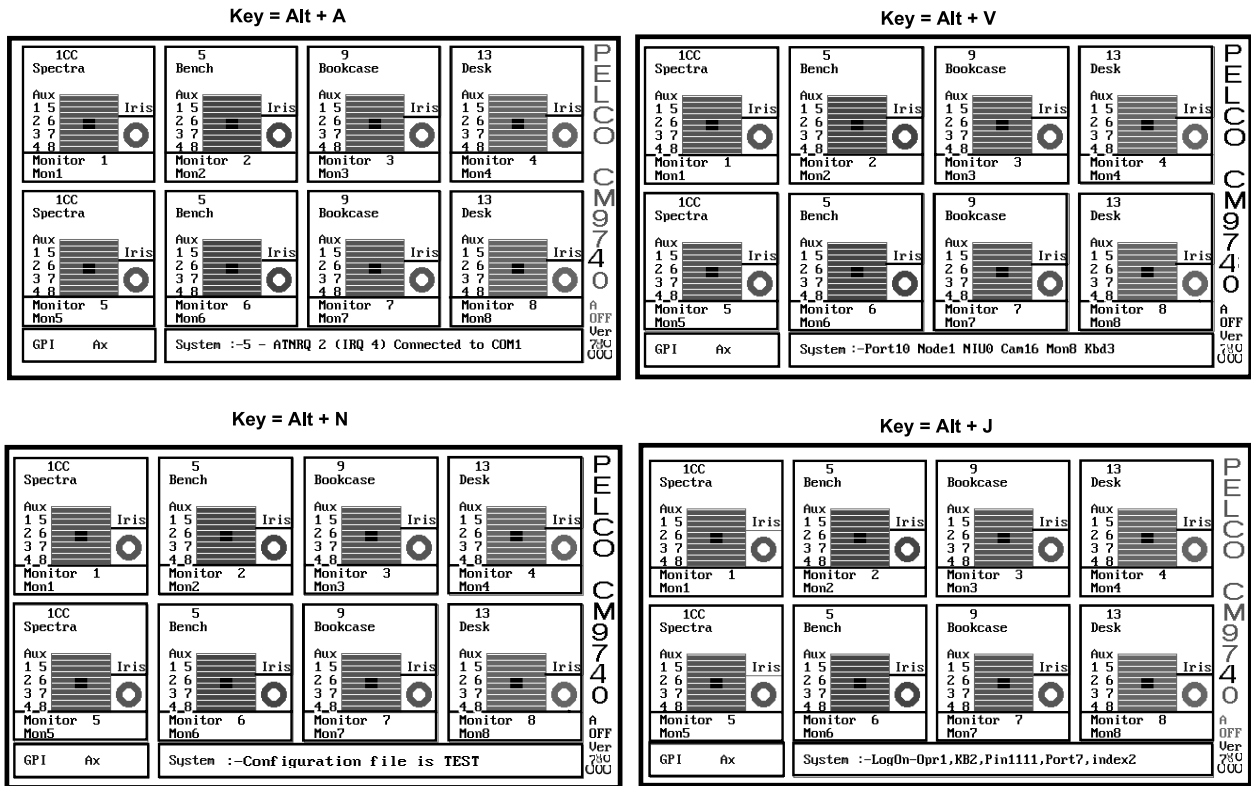
Key	Function	
F1 F2 F3 F4 F5 F6 F7 F8	Allocate diagnostic Monitor box	
Space Bar	Clear displayed message.	
Alt + Key	Function	"Format" and/or Comment
R	Switch ON/OFF system error printing.	N/A for systems with Tomcat IV Motherboards "System Error Print ON" "System Error Print OFF"
T	Switch ON/OFF system synchronization diagnostic trap.	N/A. This is primarily a programmer's troubleshooting tool. "Rsynch Trap Offline" "Rsynch Trap Online"
O	To display number of messages to be printed.	N/A for reasons stated above.
P	Switch ON/OFF printer port.	N/A for reasons stated above. If you try, diagnostic box will display "Printer not allocated."
A	Diagnostic function to display port parameters.	"1- ATNRQ (IRQ 10) Connected to SER 1" Toggling the Alt + A key combination will cycle you through all the allocated IRQs and where they are connected.
S	Switch ON/OFF system error display.	"System OFF" "System ON" Turns the display of the system error line or system box ON or OFF. When it's not important to see a visual display of error reporting, it is a good idea to invoke the OFF choice to minimize load on the system.
D	Switch ON/OFF system diagnostic display.	"Demo ON" "Demo OFF" When "OFF", the diagnostic display is visible, but not updated.
J	To display operator logged on parameters.	"LogOn - Opr1, KB2,Pin1111,Port7,index2"
K	To display system alarms parameters.	"Sys : 0 Auto : 0 0"
L	To display time adjustment parameters.	"Last Adj. 0 : 0 . 0" "Total 0 : 0 . 0"
Z	To display system alarm parameters.	" (10, 0) (10, 0) (10, 0) (10, 0)"
M	To switch between Master/Slave unit's PC keyboard and monitor using Change-Over system.	
C	Diagnostic function to display operator alarm parameters.	"Kb2Alms0 Alarm 00000F1000"
V	To display number of peripherals attached to the system.	"Port10 Node1 NIU0 CAM16 MON8 Kbd11" You can keep toggling until entire list is gone through.
B	To display alarm sequence parameters.	"Cur0, Alms0 - 0000 Cams 0 - 0000"
N	Display configuration file name.	"Configuration file is TEST"
Ctrl + Key	Function	
Q	Stop program.	

A number of these key combinations are quite helpful. Below we illustrate the diagnostic screens of some when the referenced key combination is invoked.

ALT+V ALT+A ALT+N ALT+J

There may be times when an error message appears on the System box (System Error line) that might be due to system noise or other temporary communication problems. To separate genuine from occasional "hits," press the spacebar. Pressing the spacebar clears the System box. If the error message is transient, it will not reappear again. If it does, then investigate the possible source of the error.

Figure 21
Keys Command-Examples



7.2 SYSTEM TIME

7.2.1 Setting and Adjusting System Time-For Single-Node

One special key combination is ALT + L, which is used in the process of making adjustments to system time. System time is one of the onscreen attributes that appears on all displays within a system. How the time is displayed is set up in the System configuration file; how time is set or changed is discussed here.

Single-node setup or adjustment of system time is functionally the same as that followed for multi-node setup of system time. For single-node operation, the single-node diagnostic screen is used.

Determine your current "global" configuration file name (if you don't already know it) by invoking an ALT + N key combination command. You will need that piece of information later.

To adjust the time:

We first synchronize the system clock (this is the clock kept by the DOS operating system) to an RTC (a Reference Time Clock). We then let the system run for 24 hours (or a multiple of 24 hours, if necessary). We then compare the system clock again with the RTC and note any difference. We then synchronize the system clock with the RTC again and then enter a time correction to the system clock based on our earlier observation. To accomplish this, do the following:

1. Exit the diagnostic program with the Ctrl + Q key combination. This should take you to the C:\9740> prompt.
2. At the DOS prompt, enter the TIME command. The display should be similar to that shown in Figure 22.
3. Enter a time using the time format displayed on the DOS screen xx:xx:xx:xx (a or p for AM or PM, respectively).
4. Use an RTC time acceptable to you as a reference (this may be an accurate digital watch, or, more than likely, a call on your phone to a local time reference). When the top of the hour is reached by the RTC, press the ENTER key on your keyboard.
5. Proceed to the C:\9740 directory, if not already there. DO NOT REBOOT IN ORDER TO GET BACK TO THE DIAGNOSTIC SCREEN. This would interfere with the time setting you just made to the system clock.
6. While in the C:\9740 directory, invoke the system executable using the configuration file name obtained earlier with the Alt + L key combination. Assuming a file name of TEST, the command line would look as follows:

C:\9740>CM9740 TEST

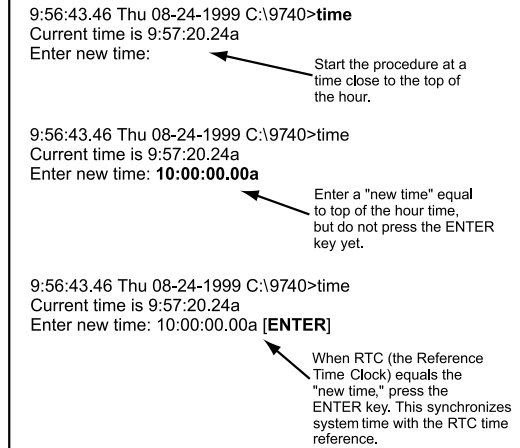
This starts the system executable and takes you to the diagnostic screen. The time you entered in step 4 will be displayed on all monitors in the system after initialization is complete.

7. Twenty-four hours later, check the system time against the RTC time by comparing the time displayed on any monitor screen in the system against that of the RTC. Make a note of this difference in time.
8. Repeat steps 1 through 6, ending up at the diagnostic screen (repeating steps 1 through 6 synchronizes system time with RTC time again). This time, however, enter an ALT + L keyboard command in preparation for making an adjustment to system time based on your observation in step 7. The System box (System Error line) will read as follows:

System :-Last Adj 0:0.0 Total 0:0.0

Enter a time using the following format:
MM : SS . HH [Minutes : Seconds . Hundredths of a Sec.] based on the time difference between RTC and system time that was noted in step 7.

Figure 22
Time Synchronization



NOTE: The best way to prepare for the synchronization process is to start the procedure just before the top of the hour, set your new time value to equal it and then wait for your reference time to approach that time and, when it does, press the ENTER key, synchronizing system time with RTC time. See the sample DOS screen representation in Figure 22.

NOTE: Since system time is displayed on Monitor screens in format variations based on the (HH/MM/SS) format, you will never have occasion to enter adjustments in the hundredths of a second field in response to the ALT + L diagnostic command line screen.

For example, if system time in step 7 had read 2:02.30 (2 minutes and 30 seconds after 2 PM) at the time RTC time read 2 PM, then we know that system time, over the next 24 hours, must be slowed by 2 minutes and 30 seconds to synchronize system and RTC time. To accomplish that, enter a negative (-) sign in front of the time differential that you enter. In this case, that would be:

-02 : 30 . 00

This subtracts 2 minutes, 30 seconds from system time over the next 24 hour time period so that when you compare system time with RTC time again, they should theoretically be equal. Be sure to use the above format.

If you wish to refine the adjustments to your original effort, you can quit to the DOS screen, set RTC and system time to be equal to each other, invoke the executable for the diagnostic screen from the C:\9740 directory, and then use your original time adjustment (in our example -02 : 30 . 00) as a basis for entering a new time adjustment that differs incrementally from the original. That might work based on something like the following reasoning: Say that five days (five 24 hour periods of time) have passed and you again check system time against RTC time. This time you discover that over the five-day period, you are running 10 seconds slow, or, on average, 2 seconds slower for each 24 hours of elapsed time. This time you must change the original time adjustment by ADDING 2 seconds to the original, NEGATIVE time adjustment.

In order to factor in the new adjustment, you should perform the following steps again, preferably, just before the top of the hour:

1. Quit the diagnostic and revert to the DOS screen using Ctrl + Q.
2. Invoke the DOS line command—TIME—to bring up current system time.
3. Pre-enter your system time to read top of the hour time. For our example, continue to use 2 PM as RTC time, so at the NEW TIME prompt on the DOS screen, you would enter:

2:00:00.0p

When RTC time reaches 2 PM, press the ENTER key, proceed to the C:\9740 directory and invoke the system executable, which includes your global configuration filename as an argument, (CM9740 TEST, for example) and boot to the diagnostic screen.

4. At the diagnostic screen, issue the ALT + L key combination.
5. On the command line, the following should appear:

Last Adj -2 : 30 . 0 Total -2: 30 . 0

6. Now enter in your refined time adjustment as a change to the last adjustment shown on the screen. In this example, you would enter the following:

-2 : 28 . 0

that is, $[(-2 : 30 . 0) + (00 : 02 . 0)] = -2 : 28 . 0$

7. After pressing the ENTER key, the System box will read

Last Time Adj -2:28.0 Total -4:58.0

Subsequent adjustments, if necessary, can be made using the previous discussion as a guide.

7.2.2 General Remarks Regarding System Time Adjustment

We have just discussed setting and adjusting system time for single-node operation. How is this accomplished for other configurations?

For a hot-switch configured node, the CC1s are synchronized through the intermediation of the hot switch. Setting or adjusting time on one CC1 will, when it is brought back online and put in synchronous mode, cause the time adjustment to be synchronized for both CC1s.

For multi-node situations, time adjustments are carried out utilizing the CC1 containing the NIU. The NIU, in turn, provides to the rest of the network the parameters for displaying system time. The time for the system is updated each minute by the NIU, which, of course, is initially adjusted to RTC by the user. If the NIU goes offline, each node reverts to its own internal system time.

7.3 CC1 SYSTEM INTEGRITY

Right now, we want to cover one of the more important aspects of maintaining CC1 system integrity. Specifically, this deals with keeping the configuration sets that reside in the database of the MGR program and the configuration sets that exist in the C:\9740 directory on the drive of each CC1, synchronized. The configuration sets that exist in either location should be duplicates of each other.

No system is static, changes will occur as equipment is added or moved, which means that the configuration files for the node on which this occurs may change. In many cases, changes to existing equipment may require an adjustment to the applicable configuration file that, in many cases, can be taken care of directly by using the dynamic update process available from within the MGR program itself. Of the eleven possible configuration files that can exist per node, seven can be dynamically updated. Those that can, are identified by the [Save & Send] bar tab, generally located in the lower left portion of each opened configuration file (the textual exception is the System configuration file which reads Save Send System Options). The Comms, V.Amp, Macro, and NIU files cannot be dynamically updated.

Dynamic updates cause two potential problems that are easily remedied. The first, and more important problem, is the fact that a dynamic updates affect system integrity if you don't follow through with a procedure called "Updating the Hard Drive." The second problem is caused by the solution to the first. Every time a hard drive update is invoked, you run the risk of losing your original file parameters because the number of updates you can perform are limited. We will discuss this process in the next few paragraphs.

7.3.1 Dynamically Updating a Configuration File

Refer to the Dynamic Update Block diagram (Figure 23), which shows the process that you should follow and what occurs every time you do an update to the system. It is very important to make sure that you maintain the synchronization between the configuration files that exist in the MGR database and the corresponding files that exist on the CC1 hard drive.

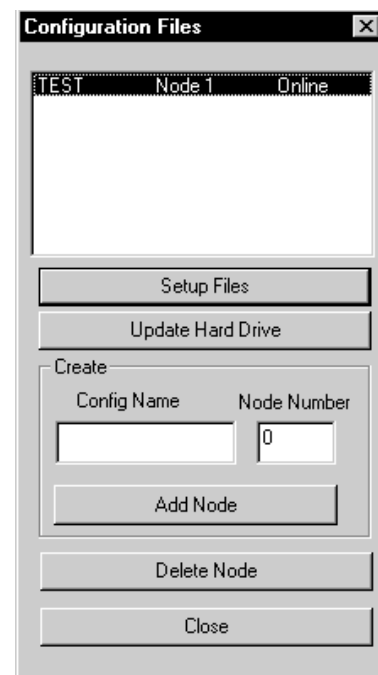
Single-node and multi-node dynamic updates are processed exactly the same way. You first open the Configuration File dialog box and select the node (by highlighting) that contains the configuration file you wish to update. In single-node situations only one node will be represented unless you run different configuration sets at different times on the same equipment configuration. Refer to Figure 23.

Click on the Setup Files bar tab which opens the tabbed set of configuration files for the node in question.

As an example, we will do a sample update to the ident field in the monitor file. Click on the Monitor File Tab and perform the following steps:

1. Make the desired change to the ident field of the Monitor file.
2. Press the Save & Send tab bar located in the lower left portion of the monitor configuration file.

Figure 23
Configuration File Dialog Box

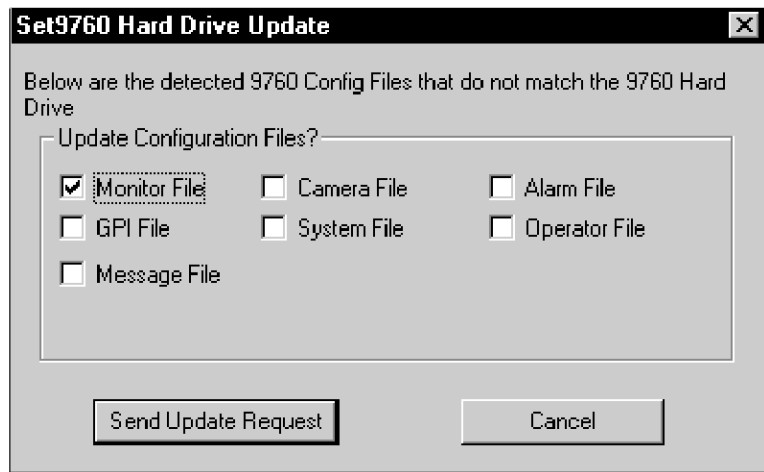


3. When the Save & Send bar tab is pressed, a splash screen appears and in the System Window of the MGR program, the following message appears:

DYNREQ Monitor code OK from Node 1

4. If there are no more changes, close the Configuration dialog window. When you do, the following dialog box appears (refer to Figure 24).

Figure 24
Hard Drive Update



5. Click on the Send Update Request bar tab.
6. The System Window of the MGR program will report the following message:

UPDT HardDrv Monitor File OK from Node 1.

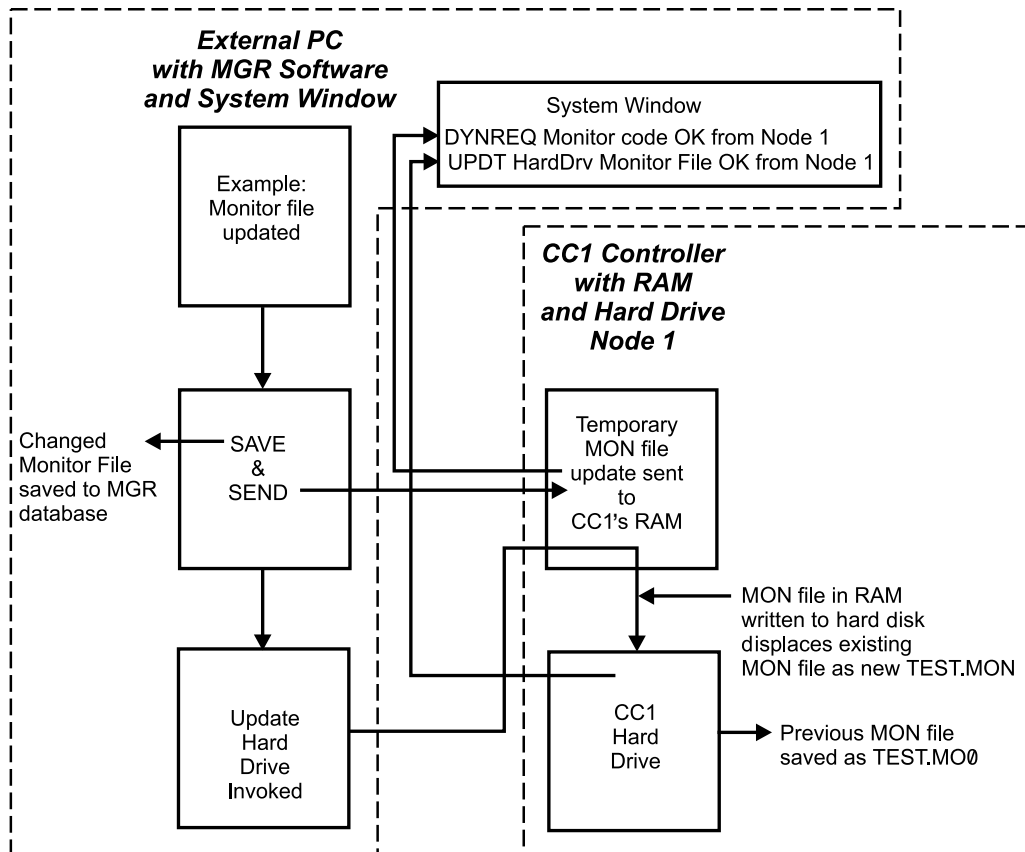
At this point you are finished with the dynamic update of your Monitor configuration file. You have saved the changes to the configuration file to the MGR database and you have also updated the corresponding configuration file on the node in question; therefore, system integrity is preserved.

One more aspect of dynamic updates must be considered. Whenever you click on a Send Update Request, the following happens (let's stay with the same example):

- a. First of all, the original TEST.MON file, which existed in the C:\9740 directory on the hard drive of the CC1 whose configuration set we are changing, is not lost, but is saved under the new file name of TEST.MO0. Refer to the Dynamic Update Block Diagram. The change to the TEST.MON file we made when we sent the Update Request now occupies the file by that same name.
- b. Subsequent update requests to the Monitor file will result in the same scenario being played out. TEST.MO0 will move to TEST.MO1, TEST.MON will move to TEST.MO0 and our latest update will now occupy TEST.MON. Each time we press the Update Request bar tab, the information for the new file will occupy the TEST.MON file and the old file information will be saved to a file of a different name. This process, however, does not continue forever.

Any TEST.MON updates after TEST.MO2 is filled will cause the original TEST.MON file we started with to be lost forever. Therefore, if any of the previously displaced configuration information is important to you and you wish to save it, then you should rename the applicable file from TEST.MO0, .MO1 or .MO2 to some other name and save it to another directory or archive it on disk.

Figure 25
Dynamic Update Block Diagram



8.0 TROUBLESHOOTING/COMMON PROBLEMS

In the tables below, some of the more common problems associated with CC1 power up, initialization, and operation are shown. For many of these, we also list possible causes and solutions.

Problems with the CC1 may occur in the following areas:

- The CC1 itself.
- Setup files (also known as configuration files or flat files).
- Peripheral Devices connected to the CC1.
- The DOS operating system.

It is important that a log be kept of all changes made to the system whether they be hardware or software related. The commentary should document the change made, why it was made, the date it was made, and the person responsible for the change. That way it will be easier to backtrack if errors occur. It also makes it easier to separate errors caused by the last recorded change from other types of errors, whenever one occurs.

Table B lists some common CC1 equipment errors.

Table C lists some common CC1 initialization problems.

Table B
CC1 Hardware Errors

Symptom	Possible Cause	Corrective Action
Green Power LED not lit	There is no AC power to the unit.	Check power cord connection.
	Fuse has blown.	Replace fuse.
No VGA display	Video cable is not seated. Power cord not plugged in. VGA card is bad.	Reseat cable. Plug in cord. Replace card.

Table C
CC1 System Errors

Symptom	Possible Cause	Corrective Action
Port x ERR Coms Framing	Mismatched baud rate (actually, after initialization and "Setup Complete" the diagnostic line would first report "Port x ERR Coms Parity" followed by the Framing error message.	Correct the Comms file baud rate settings to match those of the equipment it is attached to.
Port x ERR Coms Fatal	Failure of Comms line after power up and initialization.	Check and correct hardware fault.
Port x ERR Coms Parity	Mismatched parity entry in the Comms file.	Correct the Comms/configuration file for correct settings.
Port x ERR Coms Max Retry	If the communications line is faulty (mis-wired or not seated, for example), then, on initial power-up, the diagnostic screen will indicate this error message. If the communication line goes bad after power-up and initialization, then a Port x ERR Coms Fatal error will occur followed by a Port x ERR Max Retry message.	Check and correct the hardware fault.
	Temporary communications fault.	Fault will automatically be corrected when communications resume.
	Noise on the data line.	Check data cables.

APPENDIX I – INSTALLING THE MGR PROGRAM

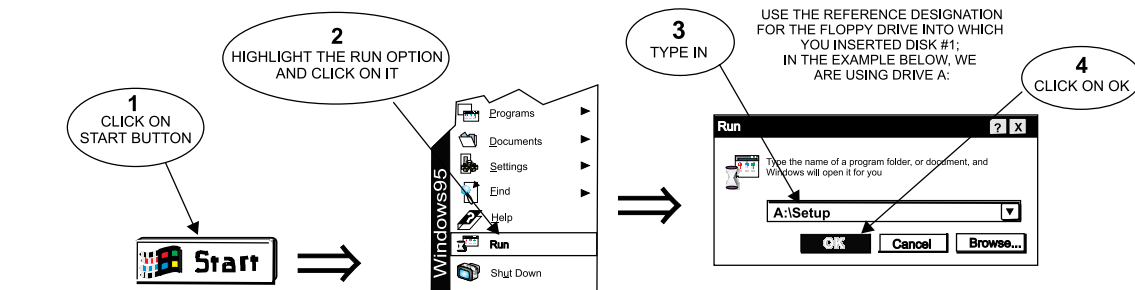
The reason the installation of the MGR program is reiterated here is that the 9740 DOS executable on the CC1 and the Windows® 95 based MGR program interact. If an external PC containing the MGR program is connected to a COM port on the CC1, the CC1 will report operational activity to the MGR program where it can be viewed by the operator in the MGR system window. Conversely, the operator of the system can, through the MGR program, change many of the configuration files of the 9740 online operational program via dynamic “on the fly” updates.

QUICK-START INSTALLATION GUIDE FOR 9760MGR(rev 7.50.000 or later)



CLOSE ALL RUNNING PROGRAMS AS WELL AS TOOLBARS (FOR EXAMPLE, MS OFFICE TOOLBAR)

INSERT DISK #1 INTO THE 3.5-INCH FLOPPY DRIVE FROM WHICH YOU PLAN TO LOAD THE PROGRAM. YOU SHOULD KNOW THE LETTER REFERENCE DESIGNATION OF THIS DRIVE AS IT WILL BE USED IN STEP 3 BELOW. FOLLOW THE INDICATED STEPS FOR SUCCESSFUL INSTALLATION.



5. NEXT, THE PROGRAM WILL BEGIN TO LOAD FROM DISK #1. THE 9760 MANAGER “SPLASH SCREEN” APPEARS AND THEN THE INSTALLATION WIZARD IS LOADED. THE WIZARD WILL GUIDE YOU THROUGH THE REMAINING INSTALLATION.

DURING THE INSTALLATION A SERIES OF DIALOG BOXES WILL APPEAR, EACH OF WHICH YOU MUST RESPOND TO.

IN THE LEFT COLUMN BELOW IS LISTED THE “DIALOG BOX TITLES” IN THE ORDER THAT THEY APPEAR; TO THE RIGHT IS THE BUTTON TO BE ACTIVATED IN ORDER TO BRING UP THE NEXT DIALOG BOX IN THE SEQUENCE. WHEREVER NEEDED, ADDITIONAL EXPLANATORY MATERIAL IS ADDED FOR CLARITY.

6. THE DIALOG BOXES (IN THE SEQUENCE THEY SHOULD APPEAR) AND THE CORRECT RESPONSES APPEAR BELOW:

DIALOG BOX TITLE	READ SCREEN MESSAGE AND OTHER EXPLANATORY MATERIAL	CLICK ON
9760 System Manager Install Program	SCREEN MESSAGE	NEXT
Software License Agreement	SCREEN MESSAGE	YES
Choose Destination Location	The default is C:\9760MGR, which will be created for you if it doesn't already exist. If you wish to choose another destination, consult your Windows 95 documentation; otherwise, accept the default and click on NEXT.	NEXT
Component Selection	Verify ALL components are selected, then click on NEXT.	NEXT
Question Dialog Box	THIS IS AN IMPORTANT WARNING! If this is a first time install of 9760 Manager software, you can ignore this warning. However, if you have the referenced version of MGR software on your system, then you must STOP your installation at this point and follow the instructions labeled “Supplementary 9760 Quick Start Guide Instructions” in Appendix I of the CM9760-MGR manual. After following those instructions, return to this document and begin again.	YES
Serial Port Selection	SCREEN MESSAGE	NEXT
Select Program Folder	Use the default (Pelco), or type in another folder name, if desired. Click the NEXT key.	NEXT
Setup Needs The Next Disk	At this point the program will call for Disk #2 to be inserted into the drive. Be sure the disk activity light is out; remove Disk #1 and insert Disk #2. Follow additional window dialog prompts to load Disks 3 through 5.	OK
Setup Complete	Remove the last disk from the designated drive and click on FINISH.	FINISH

APPENDIX II – DOS ENVIRONMENT AND COMMAND REFERENCE

IMPORTANT NOTE

Generally speaking, the CM9740-CC1 that you order is configured in one of two ways and depends on whether the CC1 exists as part of a system order or whether it has been purchased as a stand-alone unit.

If the CC1 is configured as part of a system, flat files are created for the system configuration according to customer ordered criteria and placed in the 9740 directory on the CC1 hard drive. The AUTOEXEC.BAT file is configured to call the CM9740 executable program at the end of the DOS boot process instead of reverting to an onscreen system prompt. The result is that, at the end of the boot process, the 9740 diagnostic screen should appear on your monitor. Assuming you have correctly connected and configured all of the equipment attached to the CC1, a "Setup Complete" message appears in the System Window of the diagnostic screen.

CC1s purchased as stand-alone units differ in that there usually is not enough information with respect to where or how the unit is to be used; therefore, the factory cannot create flat files for the unit. Without flat files, no reason exists for altering the autoexec.bat file to invoke the 9740 executable; the flat files the executable needs don't exist. The result of the DOS boot process, in this case, is simply an on-screen system prompt. It then becomes the user's responsibility to create flat files, load them into the 9740 directory and appropriately alter the autoexec.bat file for the boot process to call the executable. All the information you need to accomplish this is contained in this and the rest of the system manuals.

** The error listed in step 3 should not occur with respect to the hidden system files as these were put on the hard drive when it was configured at the factory. If you see this error during the boot process, you probably have a disk in the A: drive.*

*** Since COMMAND.COM is not a hidden file, it's possible that it could accidentally be moved, corrupted, or erased. If this occurs, you may need to start DOS from a floppy disk and COPY COMMAND.COM into the CC1's root directory.*

DOS is an acronym for Disk Operating System. Every time you turn on the CM9740-CC1 or every time you reboot (Alt + Ctrl + Delete), the computer loads DOS from disk (the CC1's drive) into memory (RAM). Once loaded, DOS lets you run other programs, in particular, the CM9740.EXE program, which is located in the C:\9740 directory of the CC1. On factory-produced systems, the boot process doesn't end at a basic system prompt (C:\>), as would be the case for a normal PC. Instead, the process ends either at the C:\9740> prompt, or else the boot process loads and executes the CM9740.EXE program. The reason for this, in both instances, is the result of autoexec.bat file configuration. We'll examine the details of autoexec.bat configuration, but first, let's look briefly at the highlights of the boot process and how the autoexec.bat file is invoked in the first place.

► The Boot Process

The following process occurs when the CC1 is turned on or is rebooted:

1. If turned OFF and then turned ON, the CC1 goes through a power-on self-test (POST). Here the computer essentially examines its electronic components.
2. The computer looks at drive A for a DOS system disk. If one is not there, the CC1 will load DOS from its hard drive.
3. This process looks for two "hidden" system files: IO.SYS and MSDOS.SYS. If these files are not present, DOS displays the following error message:

Non-System disk or disk error*

(The CC1 will also display this error during the boot process if you've left a floppy disk in your A drive that has no system files).

4. If the "hidden" files are present, IO.SYS loads first and executes. An initialization program called SYSINIT contained within IO.SYS reads in the MSDOS.SYS file; SYSINIT next locates the CONFIG.SYS file and executes its files in order for it to configure itself in memory. Then SYSINIT locates and invokes COMMAND.COM. If SYSINIT cannot find COMMAND.COM, DOS will display the following error message:

Bad or missing Command Interpreter**

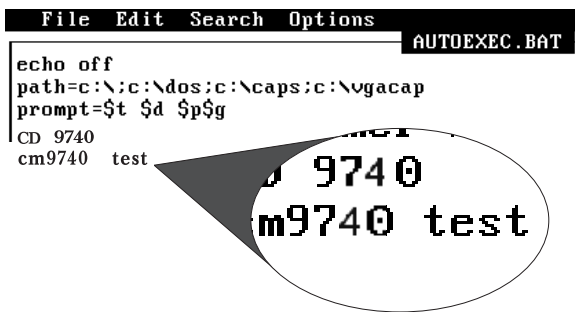
5. If SYSINIT finds and loads COMMAND.COM, it, in turn, searches your root directory for the AUTOEXEC.BAT file. If it exists, COMMAND.COM will cause the AUTOEXEC.BAT file to execute. If AUTOEXEC.BAT doesn't exist, the DATE and TIME commands will be invoked by COMMAND.COM. After entering date and time information, the basic system prompt (C:>) appears. This completes the startup or boot process.

You cannot separate the boot process from CC1 initialization. The DOS boot process must succeed before the CM9740.EXE program can run. The result of the DOS initialization process is that you are either sitting at a system prompt on a DOS screen or, as part of the boot process, the CM9740.EXE program has been invoked. In the latter case, the System Window of the diagnostic screen will read "Setup Complete" if everything initialized OK; otherwise, an applicable error message should appear.

► A Closer Look at AUTOEXEC.BAT and the BOOT Process

The AUTOEXEC.BAT file is the last file called during the boot process as described in the previous section. For CC1s configured as part of a system node at the factory, the end result of this process is the appearance of the CM9740 diagnostic screen on the attached monitor instead of what one would normally expect to see—the system prompt.

Figure 26
Sample AUTOEXEC.BAT File



```
File Edit Search Options AUTOEXEC.BAT
echo off
path=c:\;c:\dos;c:\caps;c:\vgacap
prompt=$t $d $p$g
CD 9740
cm9740 test
```

NOTE: The prompt command line in the figure above contains what are called “metacharacters” which tell the PROMPT command what to display when these characters are encountered. If the last two lines of the file above didn’t exist, the end of the boot process would be the system prompt. The system prompt displayed would depend on the “metacharacters” used with the PROMPT command. In the example above, the characters have the following meanings:

*\$t means display current time
\$d means display current date
\$p means display current directory
\$g means display the “greater than” character, >.*

As a result, the system prompt would look something like the following:

12:29:22.23 Fri 02-19-1999 C:\ >

The factory-configured boot process occurs because of the instructions added to the AUTOEXEC.BAT file. The AUTOEXEC.BAT file is a batch file, which contains a series of instructions that are executed serially when the file is called. Figure 26 is a sample autoexec.bat file.

Invoking the CM9740 Executable

Focus on the last two instructions or commands in Figure 26. Here is what they do. The command “CD 9740” directs DOS to the 9740 directory where the 9740 executable resides. The last command starts the executable and directs the program to load into memory all flat files having the collective prefix name of “test” (also located in the same directory). The program continues to configure the system environment and goes online. If everything is OK, the “Setup Complete” message appears on the CM9740 diagnostic System Window on the attached monitor.

If you change the name (the prefix) of your current flat files or copy a new set of flat files (with a different name) to the 9740 directory, then your AUTOEXEC.BAT file must be changed to correspond. Otherwise, the CM9740.EXE will not execute properly. To effect the change, you need to edit the autoexec.bat file and change the old flat file name (in Figure 26, the old flat file name would be “test”) to the new name; save the file and reboot. On the other hand, if you were to delete or “REM out” the last two entries (if you type in the letters REM at the beginning of a line, the line is ignored when the program executes) in the AUTOEXEC.BAT listed in Figure 26, save the file and reboot, you would arrive at a basic system prompt and not call the executable at all. Then, in order to start the CM9740 executable, you would have to manually navigate to the 9740 directory and type in CM9740 test to activate the diagnostic program.

File Names and DOS

Keep in mind the eight-character limit imposed by DOS on file names. If you issue a command to change the name of the flat files in the 9740 directory to one exceeding eight characters, the name will be truncated. No problem arises

when creating flat file names using the Win95-based 9760-MGR program as it does not allow you to use more than eight alphanumeric characters when creating a global name for your flat files or configuration set.

DOS Commands

DOS commands are divided into two groups. Because of their large number, only those used most often are loaded into memory (RAM). The rest reside in the DOS directory. The former commands are called internal and the latter are called external commands. Whenever DOS comes across a command to act upon, it looks first in RAM, then it looks in the DOS directory, and then it looks in the directory from which the command was issued. Nothing is wrong with this unless you try to invoke an executable type file that isn’t in any one of those places. Instead, you are forced to navigate to the directory in which the executable file is located. Putting a PATH command statement into the AUTOEXEC.BAT file avoids having to do this.

The PATH Statement

The PATH statement causes DOS to look in each of the directory paths listed there for any executable [.EXE, .COM or .BAT file] it's instructed to carry out. The syntax of the PATH statement is as follows:

```
PATH = { [drive:]path; [drive:]path; [drive:]path.....] }
```

Example: PATH=c:\;c:\dos;c:\windows

(We included spacing in the syntax statement to make it easier to see the elements that make up the path statement. In actual use, spaces are not allowed, as the example demonstrates.)

Semicolons separate drive-path statements. There are no spaces. The complete drive path must be given for each directory you wish to include in the search. The search is for files with .EXE and .COM extensions only. An additional note: if the executable you call, in turn, issues a call for a non-executable file (that is, one without an .exe or .com extension), then the PATH statement doesn't apply. Instructions for using the executable must tell you either where to place needed non-executable files or the executable itself must provide the means whereby the file can be found. DOS will not look for these files.

You might think that inserting the directory path for the CM9740 executable file into the PATH statement would be a good thing to do, but it will not work. The CM9740 executable, at one point, needs to use a non-executable file that always resides in the C:\9740 directory. If you invoked the CM9740 executable from any directory location other than the C:\9740 directory, the executable wouldn't finish successfully because CM9740.EXE expects to find the file residing in the same directory that it's in. If you manually invoke the command (CM9740 test) while in the C:\9740 directory, the executable works OK. Sometimes, you actually need to do this. However, in most cases, you reboot to let changes to flat files take effect and the result is that, by default, DOS boots to the root directory. That is why the CD command to switch to the 9740 directory is included in the AUTOEXEC.BAT file. If you used the PATH command statement alone, the CM9740.EXE would be found, but the other non-executable file needed to finish the process would not be found and system initialization would fail.

► Navigating the DOS Directory Tree

Whenever you exit to DOS on the CC1, you will normally be at the following screen prompt:

```
C:\9740>
```

While in the directory, you may manipulate any file there or you may navigate to any subdirectory contained in that directory.

To navigate to a subdirectory of the 9740 directory, use the following syntax:

```
C:\9740> CD [subdirectory name] [ENTER]
```

For example, if a 9740 subdirectory had the name BKUPTST, your entry would read as follows:

```
C:\9740> CD BKUPTST [ENTER]
```

which puts you at the screen prompt in the BKUPTST directory:

```
C:\9740\BKUPTST>
```

Once there, files within the directory can be manipulated. The key entries used to backtrack on the directory tree depend on where you want to go. From the BKUPTST directory, you either can go back to the root directory with one single key entry or you can go in steps, one directory at a time. To proceed directly to the root directory, enter the following:

```
C:\9740\BKUPTST> CD\ [ENTER]
```

NOTE: In DOS, the "\ " symbol when used alone refers to the root directory. The ".." symbol refers to the parent directory. The action performed in the example where we issued the CD (change directory) command in conjunction with the ".." symbol moved us from the current directory to the directory immediately above the one we were in; that is, the parent directory.

The “\” symbol, when used alone represents the root directory; otherwise it indicates separation of various levels of the directory tree, collectively known as the directory path. The result of the above entry takes you directly to the root directory and the following screen prompt:

```
C:\>
```

To backtrack one directory at a time, enter the following at the system prompt:

```
C:\9740\BKUPTST> CD.. [ENTER]
```

The result of that key entry is as follows:

```
C:\9740>
```

If you enter the same command again (CD..) at the C:\9740> prompt and press the ENTER key, you would finally end up again at the root directory as was previously done. To proceed directly from the directory you are in to another directory, no matter where in the directory tree you are, enter the total directory path of the location you wish to go to at the system prompt. For example, if you are in the root directory and wish to proceed to the C:\9740\BKUPTST directory, then use the following syntax:

```
C:\> CD [directory path] [ENTER]
```

Enter the desired directory as follows:

```
C:\> CD C:9740\BKUPTST [ENTER]
```

The result would be a change to

```
C:\9740\BKUPTST>
```

► Manipulating Files in the DOS Environment

The safest way to manipulate files is to do so from within the directory in which those files are located. There are two reasons for this:

- (1) If you enter a DIR command at the directory prompt, the names of the file(s) you wish to manipulate are on the screen. This reduces the risk of making simple mistakes, such as entering an incorrect file name as part of an erase command, for example.
- (2) When using commands directed at file manipulation, the format of the command requires that the command name be listed first, followed by the file name to be acted upon. If you issue a command for a file that is in another directory, then you must enter the complete directory path where that file is found in addition to the name of the file at which the command is directed.

The command formats (COPY, MOVE, RENAME, DELETE, and so on) for the most commonly used commands are covered through associated examples in Table D on the next page.

Using the Wild Card Character

The most commonly used wild card character recognized by DOS is the asterisk [*]. The asterisk can be used effectively as a placeholder to collectively cover large groups of files which are going to be acted upon by the same DOS command. The asterisk helps you specify character positions that are of the “don't care” type in file names. When DOS encounters the asterisk, DOS ignores the characters in the position containing the wildcard as well as all the characters that follow it.

The flat files used by the CM9740-CC1 are a prime example of how the wildcard can be used.

Example 1 To copy flat files from the A floppy drive to the 9740 directory on the CC1 hard disk:

Change to the A: directory and use the following syntax at the A prompt:

A:> copy [flat file name].* [destination] [ENTER]

For example, if the filename prefix for the flat files is TEST, the command line would look as follows:

A:> copy TEST.* C:\9740 [ENTER]

Example 2 To move flat files from the 9740 directory to another directory (previously created) for, say, archiving purposes:

From the 9740 directory, use the following command syntax to move the files:

C:\9740>copy [source] [destination]

Since you are already in the 9740 directory, the source portion of the command consists of just the file name(s) to be moved. The destination contains the path to the directory where the files are to be moved to (assume a destination directory named archive and the same flat file prefix name of TEST). The command line would read as follows:

C:\9740>copy TEST.* C:\archive

► DOS Reference Directory

The following is a Command Reference Directory of the most common DOS commands that you are most likely to use when operating the CC1. This list, along with the HELP command reference that resides on the CC1 hard disk itself, should provide you with more than enough working information on DOS.

Table D
DOS Command Reference Directory

COMMAND	EXAMPLE(s)	SWITCHES	COMMENTS
CD	C:\>CD		Displays the name of the current directory or changes the current directory if specified (and if the directory specified exists).
	C:\>CD 9740		Changes to the 9740 directory.
CLS	C:\>CLS		If you want to clear a full screen display, the Clear Screen command will do it. It clears the screen to just the command prompt and the cursor.
COPY	C:\>COPY [source] [destination] C:\>COPY A:\TEST.* C:\9740 C:\>COPY A:*.* C:\9740 C:\>COPY A:\TEST.MON C:\9740		Copies one or more files to the location you specify. <i>Source</i> specifies the location and name of a file or set of files. Source can consist of a drive letter and colon, a directory name, a filename, or a combination of files you want to copy. <i>Destination</i> specifies the name and location of a file or set of files to which you want to copy. Destination can consist of a drive letter and colon, a directory name, a filename, or a combination of both. When more than one file is copied, MS-DOS displays each filename as the file is copied.

(Continued on next page)

Table D
DOS Command Reference Directory (Continued)

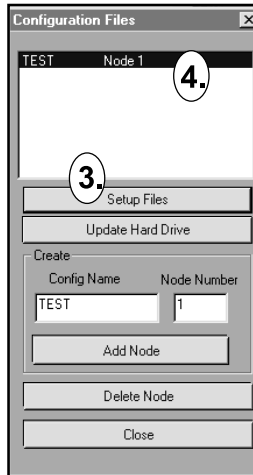
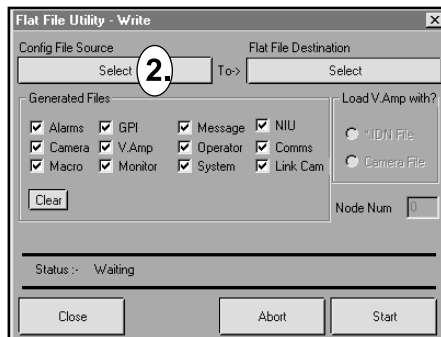
COMMAND	EXAMPLE(s)	SWITCHES	COMMENTS
DEL	C:\>DEL C:\9740\TEST.MON C:\>DEL A:TEST.MON C:\9740>DEL TEST.*		Deletes the file or files you specify. You must include the location (if other than your current location) and name of the file or set of files you want to delete.
	C:\9740>DEL TEST.* /P	/P	Prompts you for confirmation before deleting each file.
DIR	C:\>DIR		Displays a list of files and subdirectories that are in the directory you specify. When you use the DIR command without switches, it displays the disk's volume label and serial number, one directory or filename per line, including the filename extension, size, date and time the file was last modified; the total number of files listed, their cumulative size and free space left on the disk.
	C:\>DIR /W	/W	Displays the listing in wide format, with as many as five filenames or directory names on each line.
	C:\>DIR /P C:\>DIR /W/P	/P	Displays one screen of the listing (in whatever format) at a time. It's useful to use these switches when looking at the contents of the DOS directory. This switch will look for all instances of the filename in all directories.
	C:\>DIR {filename} /S [syntax] example: C:\>DIR *.mon /S	/S	In the example the location of all file names having the .mon extension will be found and displayed.
EDIT	C:\>EDIT AUTOEXEC.BAT		Starts the MS-DOS editor, a text editor you can use to create and edit ASCII text files. The example shown would load the autoexec.bat file for editing.
FASTHELP	C:\>FASTHELP		Lists and briefly describes every command provided with MS-DOS. This list is much less detailed than the list you get using the HELP command.
	C:\>FASTHELP DIR		Specifies the name of the command that you want FASTHELP to give information about. In this example: DIR.
FORMAT	C:\>FORMAT A:		Formats a disk for use with MS-DOS.
	C:\>FORMAT A:/S	/S	Transfers system files to the formatted disk. You can boot from the floppy of a disk formatted using this switch.
HELP	C:\>HELP		Starts the MS-DOS command reference located on the CC1's hard disk.
	C:\>HELP DIR		Specifies the command whose help topic you want to display. In this example: DIR.
MD	C:\>MD 9740		Creates a directory. The example creates a 9740 directory.

(Continued on next page)

Table D
DOS Command Reference Directory (Continued)

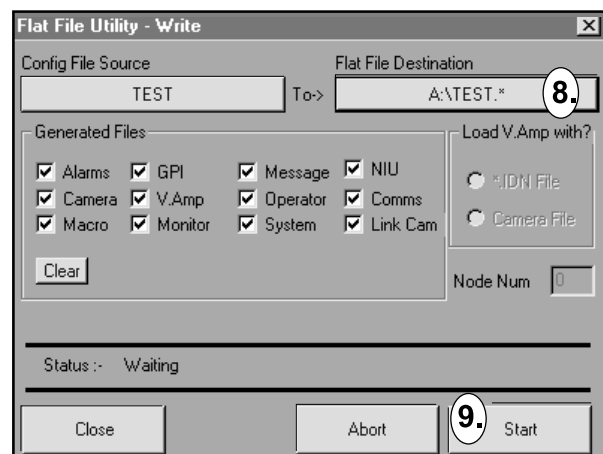
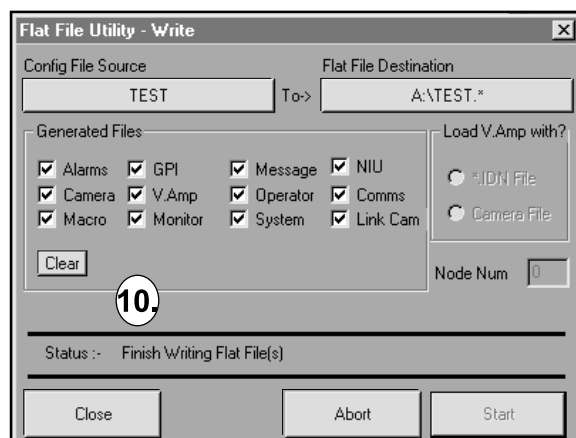
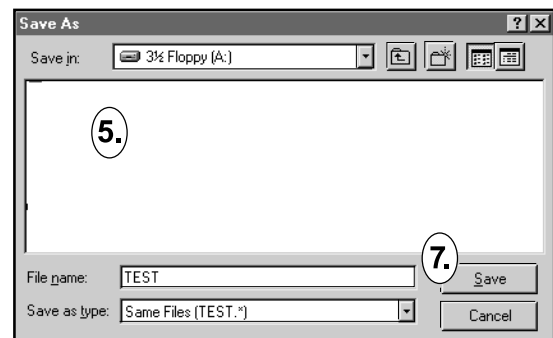
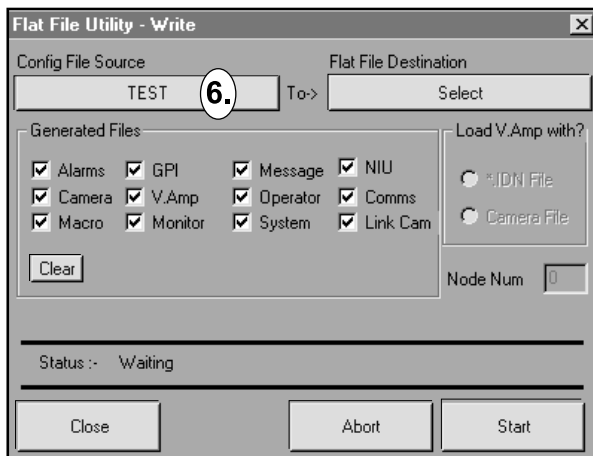
COMMAND	EXAMPLE(S)	SWITCHES	COMMENTS
MORE	C:\>DIR C:\DOS MORE		Displays one screen of information at a time. Can also be used with the TYPE command when viewing a long text file. The symbol is called a redirection operator. On the keyboard, it is located above the backslash \ symbol.
PATH	PATH=C:\;C:\dos;C:\windows		Indicates which directories DOS should search for executables. By default, DOS searches just the current directory.
RENAME or REN	C:\>RENAME C:\9740\TEST.* TESTALL.* C:\>REN C:\9740\TEST.* TESTALL.*		Changes the name of the file or files you specify. Specify the name and location of the file or files to be changed. The last part of the command specifies the new name. You cannot specify a new drive or path.
TYPE	C:\>TYPE C:\9740\TEST.MON		Displays the contents of the text file you specify. You must specify a directory path if the location of the file is in a directory other than the one you are in.
	C:\>TYPE C:\9740\TEST.ALM MORE	!MORE	Here the MORE redirection operator is used to enable us to view the alarm file (usually quite long), one page at a time.
UNDELETE	C:\>UNDELETE C:\9740\TEST.BAT		Restores files that were previously deleted using the DEL command.
	C:\>UNDELETE C:\9740\ /LIST	/LIST	Lists the deleted files can be recovered, but does not recover any files.
	C:\>UNDELETE C:\9740\ /ALL	/ALL	Recovers deleted files without prompting for confirmation on each file.
RMDIR or RD	C:\>RMDIR NETWORK C:\>RD NETWORK		Deletes or removes a directory. Before the directory can be deleted, it must contain no files or other subdirectories. The directory must be completely empty except for the "." and ".." symbols.
VER	C:\>VER		Displays the current version of DOS on your machine.
TREE	C:\> TREE		Displays the directory structure of all the directories on your hard drive if it is issued while in the root directory; otherwise, it will display only the subdirectories of the directory you are currently in.

APPENDIX III – MGR WRITE UTILITY



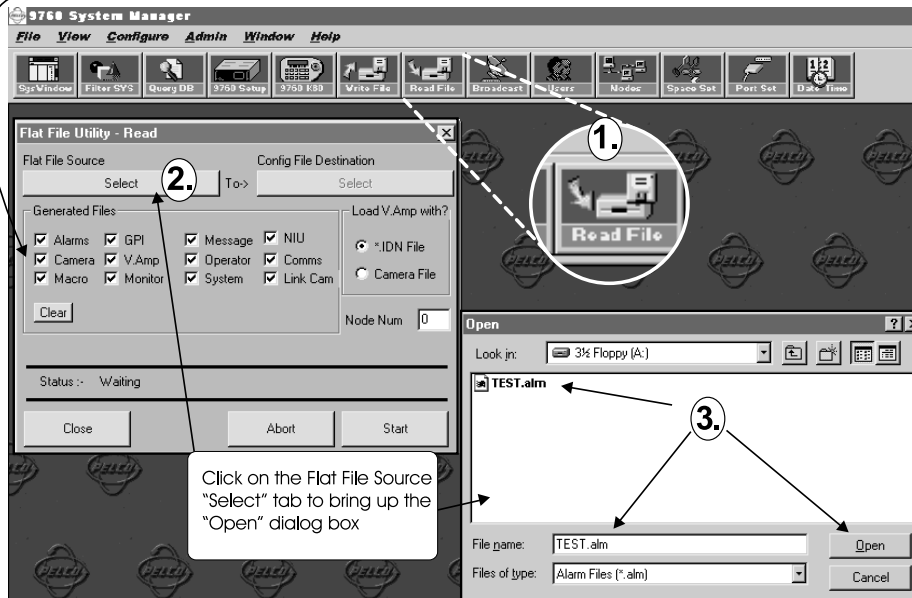
The MGR write utility can be used to generate a single flat file or an entire configuration set from either its database or from previously loaded external files that were subsequently edited with the MGR program. These generated files are usually copied to the C:\9740 directory of the CC1.

1. Place a blank floppy to which the flat files will be written in drive A of the PC.
2. Start the 9760MGR program [same default for user ID and password (**Admin** in both instances, case sensitive)].
3. After the program loads, click on the Write File icon [1.], which will open the write Flat File Utility.
4. Click on the Select file source tab [2.], which will bring up the Configuration Files dialog box [3.].
5. Double-click on the Test Node 1 highlighted bar [4.]. If more than one configuration file is shown here, double-click on the file that you want to save. If you want to save all configurations sets, you will have to repeat these instructions for each set that you want to save.
6. This brings up the Save As dialog box [5.]. Also note that the Select file source tab now reads TEST [6.]. Navigate to the 3 1/2 floppy (A) drive for the Save In destination.
7. Click on the Save tab in the Save As dialog box [7.]. This closes the box and changes the File Destination tab text from Select to "A:\test.*" [8.].
8. Click on the Start tab [9.] and the configuration files will be written to the floppy disk as flat files. When the process is complete, the Status line in the dialog box will indicate it is finished [10.].



APPENDIX IV – MGR READ UTILITY

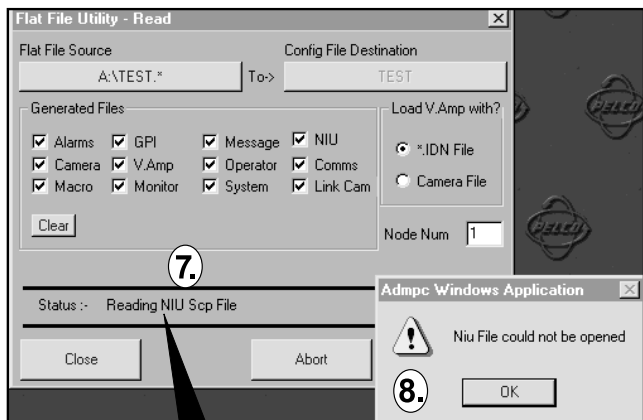
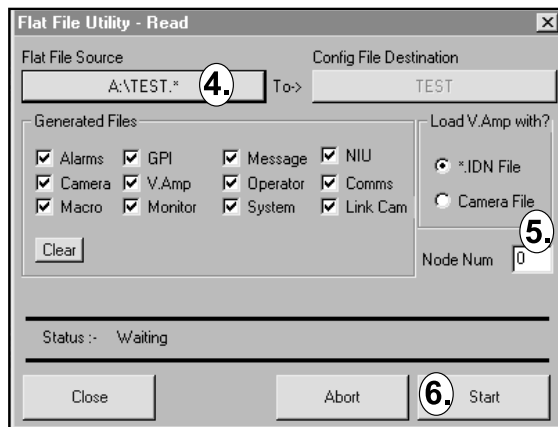
These files should be check-marked.



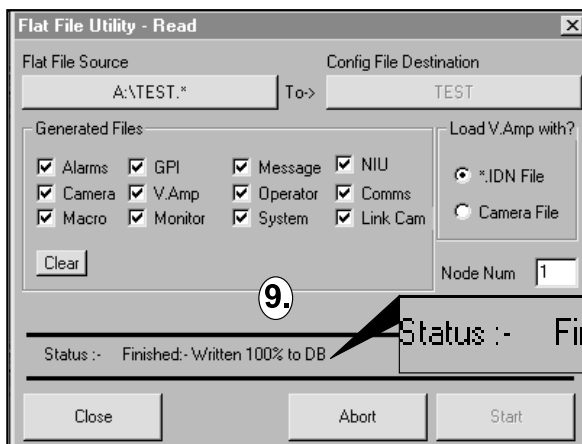
Reading flat files into the MGR is useful when you want to do the following:

- You upgraded your old MGR program and you now want to configure your old flat files to conform with the new MGR and generate a new set of flat files.
- You want to read in your current flat files and change them or you have a different configuration setup for an alternate node hook-up for which you wish to generate new flat files base on an existing set, etc. Whatever the reason, to read in flat files, execute the following steps:

1. Place the floppy containing the flat files into drive A of the PC.
2. Start the 9760MGR program (the default user ID is "Admin" and the default password is "Admin").
3. After the program loads, click on the Read File icon [1.], which will open the read Flat File Utility.
4. Click on the Select tab [2.], which will bring up the Open dialog box [3.].
5. Highlight any of the "test" files so that the global file prefix "test" (or whatever file name you use for your flat files), appears in the File Name box. Click on the Open tab to close the Open dialog box and return to the Flat File Utility dialog box.
6. Note that the Flat file source now reads "A:\test.*" [4.].
7. Enter a node number of "1" [5.] if you have only one node and click on the Start tab [6.].
8. All flat file data will be read in [7.]. Many warnings [8.] may appear. Just ignore them, click on OK in each instance and continue until all files are read.
9. When the process is complete, the flat file utility Status line will so indicate [9.].



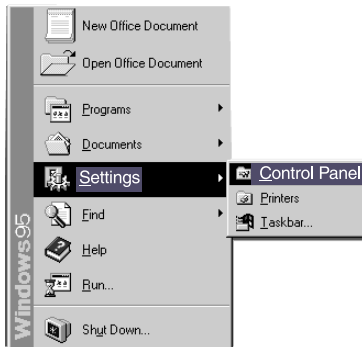
Status :- Reading NIU Scp File



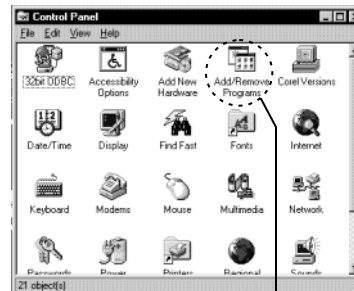
Status :- Finished:- Written 100% to DB

APPENDIX V – REMOVING AN EXISTING MGR PROGRAM

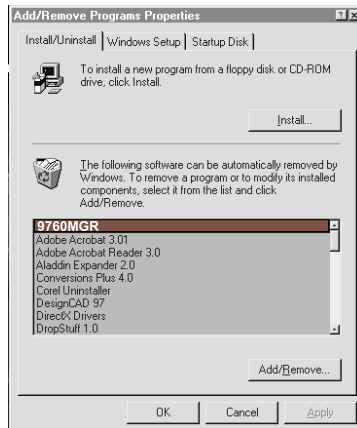
UNINSTALLING THE CM9760-MGR SOFTWARE FOLLOWS THE STANDARD WINDOWS ADD/REMOVE PROGRAM FOUND IN THE WINDOWS CONTROL PANEL.



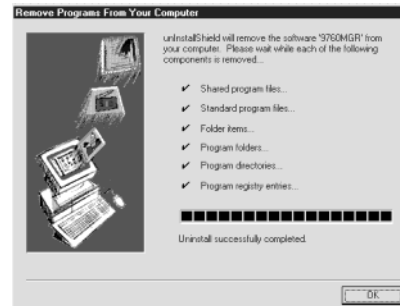
STEP ONE: Click on the Start button, highlight Settings, followed by highlighting the Control Panel. Left-click on the Control Panel.



STEP TWO: Find the Add/Remove Programs icon and double-click on it.



STEP THREE: Find and highlight the 9760MGR software selection, then press the Add/Remove button. This begins the 9760MGR removal. If, during the uninstall, any Confirm File Deletion boxes appear which ask if you wish to remove shared .dll files, which are probably not used by any programs, just answer NO and continue with the uninstall.



STEP FOUR: As the uninstall proceeds, the above listed files are checked off one by one until the uninstall is complete. Once complete, this dialog box just sits there until you click on the OK button. With that done, the uninstall is complete.

APPENDIX VI – EDITING THE AUTOEXEC.BAT FILE

The major reason for editing the autoexec.bat file with respect to CC1 use, is to influence the boot process during initialization of the CC1.

The factory normally configures your autoexec.bat file so that your originally named configuration set name (usually **TEST**) is used as the information source for the system executable (CM9740) during initialization.

If, later, you create or add to the original TEST configuration set and it evolves to the point where it is necessary to give it a new name or you create an new configuration set from scratch, then you must edit your autoexec.bat file if you want the end result of the boot process to automatically result in a diagnostic screen reflective of your new configuration set. To do this, you must edit the autoexec.bat file and change the **TEST** name to the new name you have chosen

To accomplish that, perform the following steps:

1. If your program is running, invoke the **Ctrl + Q** command to quit. Your screen should show the following system prompt:

```
8 : 15 : 14 , 96 Fri 08-25-1999 C:\9740>
```

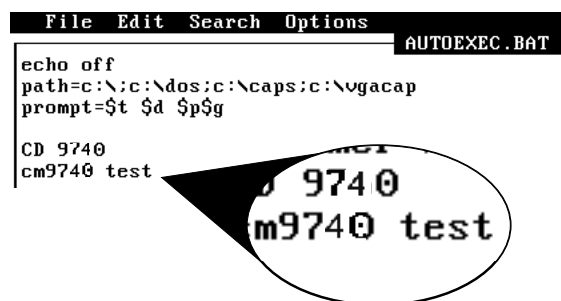
2. Proceed to the root directory by entering the following (shown in **bold**) after the system prompt:

```
8 : 15 : 14 , 96 Fri 08-25-1999 C:\9740>cd\
```

3. In the root directory, call up the ascii text editor for editing the autoexec.bat file, by entering the following (shown in **bold**) at the root prompt:

```
c:>EDIT AUTOEXEC.BAT
```

4. This will bring up the following screen with a flashing cursor located under the "e" in the **echo off** line of the autoexec.bat file..:

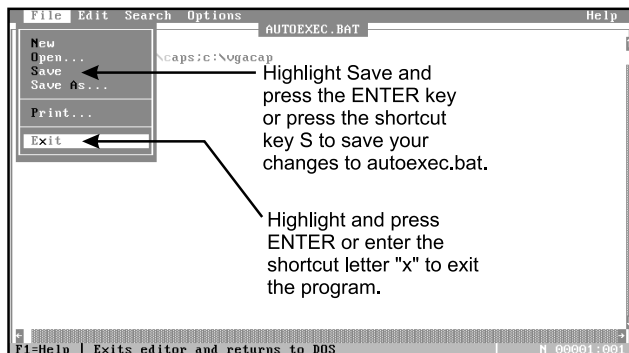


5. The object here is to change the word **test** that appears in the last line of the autoexec.bat file to the name of your new configuration set. For illustrative purposes, we shall use the name **SYS2**.

6. The arrow keys on the keyboard can control cursor movement on the screen. Use the arrow keys to position the cursor just under the first letter of the word **test** in the last line of the autoexec.bat file.

7. Use the **Delete** key to erase the word **test** and then type in **SYS2**.

8. Press the key combination **Alt + F**. This brings up the following screen:



9. Navigate to the **Save** line, using the cursor key and press **ENTER** (or press the **S** shortcut key). This saves your changes to the autoexec.bat file.

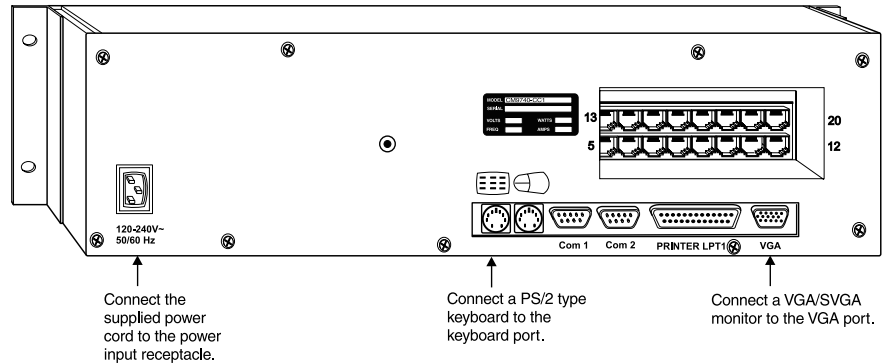
10. Press **Alt + F** again and make the appropriate choice to exit the program.

APPENDIX VII – EXERCISES

The Directory Structure of the CC1 – Exercise I

Take the CC1 that came with your order and hook it up according to the illustration in Figure 27.

Figure 27
CC1 Connections—Exercise I



When finished, your hook-up should look something like that illustrated in Figure 28.

If this looks a lot like a standard PC setup to you, you're right, it is.

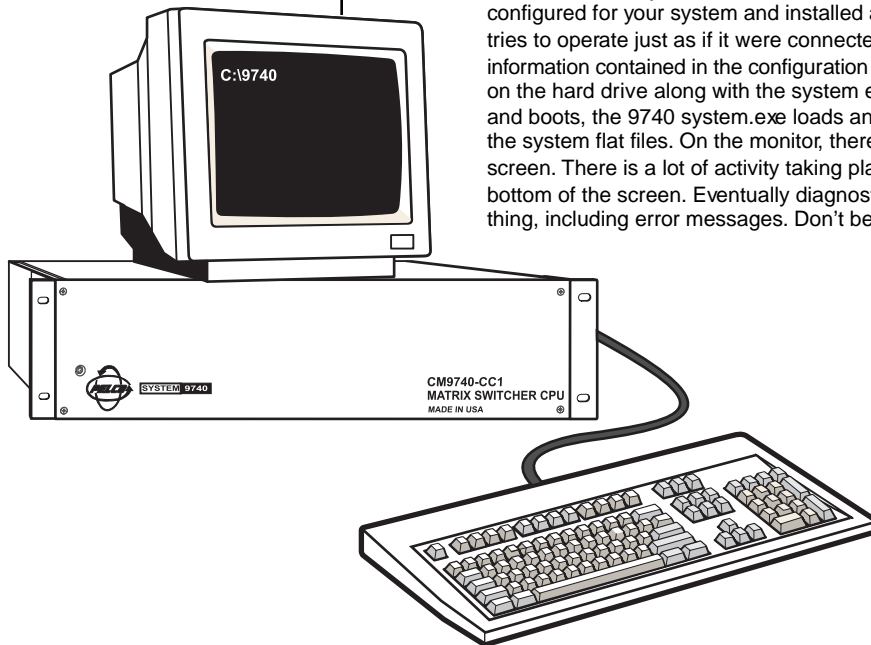
The CC1 is a CPU that has been designed and adapted for the singular purpose of operating a CCTV matrix system.

All you are going to do right now is look at the directory structure of the hard drive on the CC1.

Do the following:

1. Plug in the power cord for the monitor.
2. Turn on the monitor.
3. Plug in the power cord for the CC1.

Figure 28
CC1 Setup—Final



It is not necessary to understand what happens next. Because flat files are pre-configured for your system and installed at the factory, the CC1, when turned on, tries to operate just as if it were connected to all the equipment described by the information contained in the configuration files (flat files). These flat files are located on the hard drive along with the system executable. When the CC1 is turned on and boots, the 9740 system.exe loads and executes. In the process, it reads in all the system flat files. On the monitor, there appears what is called a diagnostic screen. There is a lot of activity taking place, especially in the System box at the bottom of the screen. Eventually diagnostic screen activity ceases. Ignore everything, including error messages. Don't be concerned about them.

**** Using the CTRL + Q key combination is also the proper method for exiting a fully operational system that is online.*

Next, hold the CTRL key on the keyboard down and, at the same time, press the Q key*** This action exits the System 9740 program and the associated diagnostic screen and takes you to the following DOS prompt:

```
C:\9740>_
```

You should arrive at this prompt using any CC1 received from the factory as part of any new system configuration. There may be date or time information associated with the prompt, but a flashing cursor should be located just to the right of the [>] symbol in the DOS prompt, as indicated in the prompt shown above.

At the prompt, type the letters CD, immediately followed by a backslash [\]. This looks as follows:

```
C:\9740> cd\
```

Next, press the ENTER key. You should now see:

```
C:\ >
```

This is called the root directory. It is the starting point for discussing the directory structure of the CC1. That discussion is laid out in the following sections of this Appendix. Follow the discussion, which takes you through the entire directory structure of the CC1 and discusses the primary contents of each. At the same time, verify for yourself that what is discussed applies to the CC1 with which you are performing the exercise. What you learn there is applicable to any CC1 within this or any system configuration. When you are finished, unplug the unit.

IMPORTANT NOTE: The executable for the System 9740 resides on the CM9740-CC1. This is NOT a Windows environment; it is a DOS environment. However, if installation and initialization go well, you may interface, on a limited basis, with the System 9740 via the Windows-based MGR program, and dynamically update certain operating files. Even so, you must understand that if CC1 initialization goes awry, or if problems with respect to the CC1 or any of the files it contains occurs, then a large part of your working environment will be the DOS ENVIRONMENT until those problems are fixed.

*** For those not acquainted with DOS, a quick reference on the DOS environment and basic DOS commands exists in the DOS Command Reference located in Appendix II.*

Preliminaries – Exercise I

Whether or not the CC1 you receive is part of a system order or is a stand-alone unit (ordered as a replacement for an existing unit or an upgrade unit), the system executable resides on the disk of the CC1 and operates in a DOS environment. Therefore, as pointed out in the note to the left, if problems arise, you will be working in a DOS environment. A basic knowledge of DOS and its structure as well as a familiarity with the more commonly used DOS commands** is required for you to manipulate files and/or fix problems.

Additionally, it is important to become familiar with the directory structure of the CC1 itself so that you can work there comfortably and safely. To ensure this happens, you should become conversant with the following items:

1. The location of important files and programs on the CC1.
2. The order of the boot process, how it works using factory default entries, and what you can do if you want to make changes to it.
3. Where the flat files that contain the information used by the executable to run your system are located (whether installed at the factory or put there at some point by you).

Figure 29 is a sample directory tree which represents the file structure of the CC1. Pay no attention to the VGACAP directory and its CAPS subdirectory. It doesn't exist on your hard drive. It's an extraneous DOS screen capture utility that was used for capturing some of the figures you see in this manual.

The `tree` command gives you a directory path listing of all the directories on the hard drive as long as it is issued while you are in the `root` directory. Just type in the word `tree` (minus the parentheses) after the `[>]` prompt. Refer to Figure 29.

If there are other files that are part of the root directory, they won't appear unless you issue a directory command (`dir`). If you issue the directory command while in the root directory, you will again get a listing of all the directories on the hard drive. However, you will also get a listing of any other files that are within the root directory. In general, the directory command will list all subdirectories and files that exist within the directory from the directory in which the command was issued. Figure 30 gives a listing of files and directories found when the `dir` command is issued from the root directory (enter `dir` just like you did for `tree`).

Notice that in addition to what amounts to an expanded directory listing just like that obtained using the “tree” command, there are now listed all of the files that are part of the root directory. Of special significance (with respect to the boot process and also part of CC1 initialization), are the **autoexec.bat** and **config.sys** files. We’ll come back to them later. First, focus on the 9740 directory. With respect to CC1 file maintenance, this directory is the most important of those listed. It contains your current flat file configuration as well as the executable for the system [CM9740.EXE]. If you navigate to that directory and open it you should see something like the listing in Figure 31. To get there, do the following (type in what you see in bold letters):

C:\> cd 9740 [*press the ENTER key*]

RESULT:C:\9740> (takes you to 9740 directory)

Next, invoke the `dir` command as follows:

C:\9740> dir [*press the ENTER key*]

Alternately, `dir/w` displays the file listing in columns across the screen.

RESULT: Figure 31

```
12:39:31.07 Tue 02-09-1999 C:\>tree
Directory PATH listing
Volume Serial Number is 1B13-0FD8
C:.
```

```

├── DOS
├── 9740
├── TESTPORT
└── UGACAP
    └── CAPS

```

12:39:36.29 Tue 02-09-1999 C:\>

Figure 30
Root Directory

```

13:46:23.05 Sat 01-30-1993 C:\>dir
Volume in drive C: has no label
Volume Serial Number is 1B43-0F08

<DIR>
<DIR>
<DIR>
54,645 05-31-94 8:11a
9,345 05-31-94 8:11a
88 01-26-93 6:22a
189 01-26-93 6:22a
2,872 03-17-93 9:39a
68,284 bytes free
2,132,240 bytes free

DOS
TESTPORT
COMMAND
WINPRO
COMEXE
AUTOEXEC
OPTIMIZER
OGCORP

```

Figure 31
79740 Directory

14:20:21.61 Sat 01-30-1999 C:\79740\dir\w

Volume in drive C has no label
Volume Serial Number is 1B13-0FDB
Directory of C:\79740

File Name	Size	Attributes	Free Space
CM9740.EXE	1,967,382		2,133,327
TEST.AL	382		872
TEST.MON			
TEST.SYM			
TEST.CAM			
TEST.PIN			

14:20:27.65 Sat 01-30-1999 C:\79740>

CM9740.EXE
This is THE executable for the operational program that

CM9740. EXE

This is THE executable for the operational program that handles all tasks related to 9740 matrix system operation. The DOS program that calls the CM9740 executable is normally configured at the factory such that if (1) all equipment has been configured and attached to the CC1 and that (2) all flat files corresponding to the equipment hook-up exist in the CM9740 directory, then when the system is turned on, the CM9740 program will execute, and load the information in the flat files for system operation. We shall cover how and why this takes place; in what order this take place, and other aspects of successful CC1 initialization and operation in the upcoming sections of the manual.

9740 Directory

Flat Files

Note that in addition to the previously mentioned CM9740.exe, which is the system executable, there are a group of files, all of which have a common TEST prefix. These are the flat files that the system program uses to configure the system for operational mode. The suffixes on the TEST files tell you what type of file it is. These flat files are generated using the "write file utility" within the CM9760-MGR program that resides on an external PC, which normally is connected to the CC1.

These files reflect the specific configuration of your system node and, for most systems, were created at the factory during the time the system was put together and checked out prior to shipment.

Those of you already familiar with flat files will notice that there are only 7 flat files listed here out of 11 possible. Why this occurs is for the following reasons:

* Consult your CM9760-MGR manual (C547M) for detailed information on programming system configuration files, more commonly referred to as flat files.

** For information on how to use the CM9760 Write/Read utilities, consult Appendixes III and IV in this manual.

1. When the CM9760-MGR program* is used to create the files represented by the tabbed folders for the different configuration files for your system, you program only those files needed for your specific configuration. In this example, the only devices in the system were cameras, monitors, a matrix bay, keyboards and a relay unit; therefore, the programmed information files reflect just those files: Messages [.msg] (optional), Macro [.mac] (we had no macros), and Video Amp [.idn] (no MDAs or associated equipment for producing idents).
2. However, when you use the Write utility** of the MGR program to write these flat files to disk, you will find that all 11 files are written out to disk by the utility. On closer examination, though, you will find that the files for which you entered no information have a file size of 0 bytes. When you perform a wildcard [*] copy of all the TEST files to the CC1's hard drive, only those files containing information are read into the CC1 database.

Executables

The main executable file in this directory (CM9740.EXE) is highlighted and discussed in Figure 31.

Figure 32
The DOS Directory

```
13:46:23.05 Sat 01-30-1999 C:\>dir
Volume in drive C has no label
Volume Serial Number is 1013-0F08
Directory of C:\

<DIR>
<DIR>
<DIR>
54,645 05-31-94 8:11a
9,349 05-31-94 8:11a
02 01-30-99 0:22a
189 09-22-99 6:22a
2,099 03-17-99 3:59p
66,264 bytes free

DOS
9740
TESTPORT
COMMAND.COM
WINA20.SYS
CONF1G.BAT
AUTOEXEC.BAT
UPTIMER
UGACAP

13:46:23.76 Sat 01-30-1999 C:\>
```

DOS Directory

More than likely, the version of DOS that exists on your machine is version 6.22 of MS-DOS. As expected, all the normal commands and programs associated with the MS-DOS environment are located here.

You cannot be online to access any of these programs or files, which means you must first exit your program. Pressing the Ctrl key and the Q key at the same time will exit the program and take you to the familiar on-screen DOS prompt, which, more than likely, appears as follows:

C:\9740>

To use any of the programs or files located within any DOS directory, you must be within that directory. A workaround to this requirement exists if the name of the directory in question is included as part of what is called a *path* statement in your *autoexec.bat* file (refer to Appendix II for more information). At present, you need to navigate to the DOS directory. Type in the following [entries in bold] at the onscreen prompt and press the ENTER key:

C:\9740> cd c:\dos [ENTER]

or alternately, you can get there by navigating first to the root directory by typing the following:

C:\9740> c:\ or C:\9740> cd. . [ENTER]
(yes, that's cd, dot, dot)

and then change to the DOS directory by typing the following:

```
C:\> cd dos [ENTER]
```

In either case, you will arrive at the DOS directory and the on-screen prompt will as follows:

```
C:\DOS>
```

At the DOS directory, again invoke the `dir` command. You may want to use the `/w/p` switches with the command. Refer to Appendix II on the use of switches with commands. The command would look like this: `dir/w/p`.

HELP File

The first program file of interest within the DOS directory is activated by typing in the word `HELP` at the `C:\DOS` onscreen prompt. This would be invoked as follows:

```
C:\DOS>HELP [ENTER]
```

As soon as the `ENTER` key is pressed, the program appears. This program is an extensive interactive help file for MS-DOS commands and their associated switches. Follow the on-screen instructions to use and exit the program. An abbreviated table of DOS COMMANDS pertinent to CC1 use is included in Appendix II.

EDIT Command

The `EDIT` command is used to bring up the MS-DOS editor, which is used to create or edit ASCII text files. For example, to create an ASCII text file named `SAVETXT`, use the following command syntax at the onscreen prompt:

```
C:\DOS> EDIT filename [ENTER]
```

(now substitute `SAVETXT` for *filename*)

Your entry would be as follows:

```
C:\DOS> EDIT SAVETXT [ENTER]
```

The program loads. The filename you entered, `SAVETXT`, appears at the top of the screen. Text is entered on the main screen below. When the file is saved, it will be saved under the given name as an ASCII text file.

You can also edit existing ASCII text files, such as the `autoexec.bat` file located in your root directory. Other than specific instances in the manual where certain changes to the `autoexec.bat` file are discussed, we suggest that you do NOT alter this file until you become familiar with the DOS environment.

Figure 33
TESTPORT Directory

```

DOS          <DIR>
9740         <DIR>
TESTPORT    <DIR>

13:46:23.05 Sat 04-30-1999 C:\>dir
Volume in drive C has no label
Volume Serial Number is 1B13-0FD8
Directory of C:\

<DIR>          02-16-99      8:11a
<DIR>          02-16-99      8:11a
CM9760  EXE      995,056 02-26-99   7:54a
GSERVER  DRV      65,478 03-11-96   1:47p
TESTPORT CAM      3,548 04-22-97  12:50p
TESTPORT GPI       72 04-22-97  11:09a
TESTPORT MON      882 04-22-97  10:17a
TESTPORT MSG       28 04-22-97   3:26p
TESTPORT PIN       44 04-22-97   3:29p
TESTPORT SCP      1,864 11-11-96   3:43p
TESTPORT MAC      3,324 04-22-97   3:27p
TESTPORT SYM      110 04-25-97   1:47p
TESTPORT BAT       17 10-14-97  11:31a
SYSTEM16 FNT      2,147 11-09-89   5:31p
HELUB  FON      50,880 11-12-87   1:25p
UGS000  GIF       7,866 04-04-00   7:31a
16 file(s)      1,131,316 bytes
2,130,804,736 bytes free

13:46:23.76 Sat 04-30-1999 C:\>

```

TESTPORT Directory

The TESTPORT directory contains files that can be used to test whether or not the RJ-45 communication ports on the rear of the CC1 are good. If you issue a dir command while in the TESTPORT directory, you should see something like to the following:

```

Volume in drive C has no label
Volume Serial Number is 1B13-0FD8
Directory of C:\TESTPORT

.          <DIR>          02-16-99      8:11a
..         <DIR>          02-16-99      8:11a
CM9760  EXE      995,056 02-26-99   7:54a
GSERVER  DRV      65,478 03-11-96   1:47p
TESTPORT CAM      3,548 04-22-97  12:50p
TESTPORT GPI       72 04-22-97  11:09a
TESTPORT MON      882 04-22-97  10:17a
TESTPORT MSG       28 04-22-97   3:26p
TESTPORT PIN       44 04-22-97   3:29p
TESTPORT SCP      1,864 11-11-96   3:43p
TESTPORT MAC      3,324 04-22-97   3:27p
TESTPORT SYM      110 04-25-97   1:47p
TESTPORT BAT       17 10-14-97  11:31a
SYSTEM16 FNT      2,147 11-09-89   5:31p
HELUB  FON      50,880 11-12-87   1:25p
UGS000  GIF       7,866 04-04-00   7:31a
16 file(s)      1,131,316 bytes
2,130,804,736 bytes free

7:49:36.00 Tue 04-04-2000 C:\TESTPORT>

```



IMPORTANT NOTE:
If you already have an external PC with an existing MGR program installed, we advise that you not use it to perform the second part of this exercise; rather, skip it altogether and proceed with the rest of the manual. Follow the instructions for the installation phase of single- and multi-node systems with respect to CC1s.

The MGR and Your System Configuration Files (Flat Files)- Exercise II

For the second part of this familiarization exercise, you need an external PC (equipped with a mouse) and a VGA monitor. By "external" we mean external to the CC1, since it is also a PC. You shouldn't use the CC1 for this exercise. You can, however, use the PC that you plan to use later for connecting to the CC1. However, any PC with Windows® 95 installed on it will do, even a laptop.

In the first two parts of this suggested exercise, you will to do the following:

1. Load the MGR program onto the hard disk of the external PC.
2. Once the program is loaded, use the MGR program's READ utility to read in your configuration files from a floppy disk.

The reason for performing this exercise at all is to encourage those of you who are new to MGR operation the opportunity to explore the MGR program, and, at the same time, familiarize yourselves with the configuration files that define your system or, more precisely, that define a particular node in your system (each node in a multi-node system has its own set of configuration files). If you have only one CC1 in your system, then the phrase that we used "configuration files that define your system" would be appropriate. This setup and exercise occurs in an isolated environment (you are not connected to the CC1) and you're working with a just a copy of your configuration files. The originals still exist on floppy disk and on the CC1 hard drive. You can learn a lot about your system setup and about 9740 operation without worrying about messing anything up.

Loading the MGR

To load the MGR program, follow the quick-start installation guide for the 9760MGR (just substitute 9740 wherever you see 9760 and remember that Windows 95 must be installed on the PC you use). For your convenience, a copy is located in Appendix I of this manual. If you follow the installation guide you should have no problems installing the MGR program. We are also assuming here that this is a clean install of the MGR program and that no previously installed version exists on the PC. That being the case, you can ignore the warning step found about midpoint in the quick-start installation instructions.

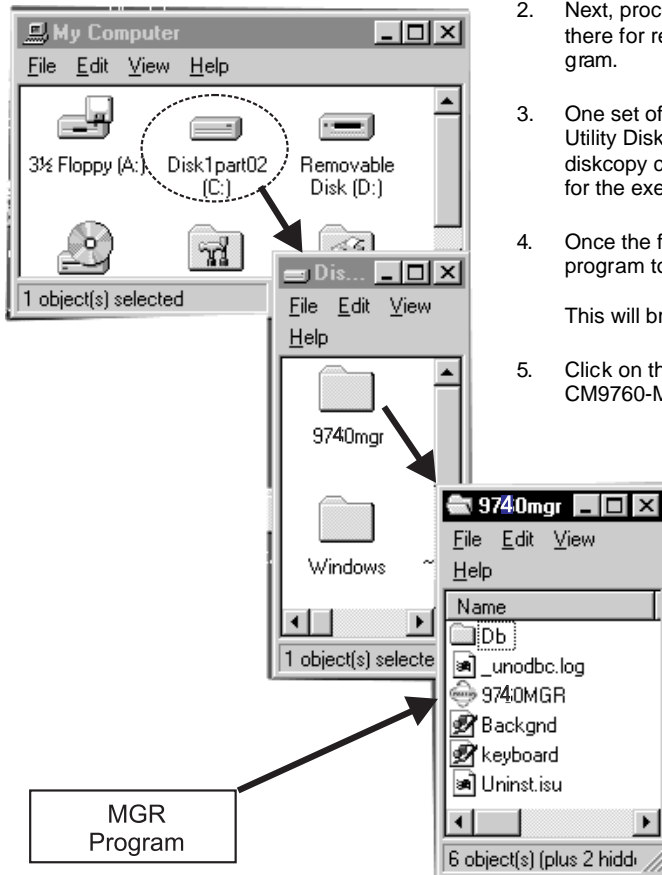
Reading in Your Configuration Files

After the MGR program is installed, a 9740MGR Pelco icon should appear on your desktop. If it is not there, look for the 9740MGR folder in the root directory of your C drive (refer to Figure 34). The 9740MGR application program will be located there.

Double-click on the MGR icon and the MGR program starts.

Now proceed with the following:

Figure 34
MGR Program Location



1. Proceed to Section 2.3 of the 9760 MGR manual and follow the instructions for logging on.
2. Next, proceed to Appendix IV in this manual and follow the instructions there for reading in your configuration files (flat files) into the MGR program.
3. One set of your flat files is located on the disk labeled "System 9740 Utility Disk" (as a precautionary measure, you might use the Windows diskcopy command to make a copy of the utility disk and use the copy for the exercise rather than the original).
4. Once the files are read in, click on the 9740 Setup files icon on the MGR program toolbar (refer to Figure 2-2 in the CM9760-MGR manual).

This will bring up a Configuration Files Dialog box.

5. Click on the rectangular Setup Files tab (refer to Figure 3-2 in the CM9760-MGR manual).
6. This brings up the Windows Set9740 Setup Files Dialog Box. Each tab there is associated with a dialog box for various setup files. The information contained within the files comes from the files you loaded in step 2. That data is now contained within the associated tabbed dialog boxes for purposes of viewing, editing, etc. We suggest you proceed to Chapter 3 of the 9760 MGR manual and follow the discussions there about these tabbed setup files (monitor, camera, etc.) and try to relate the information given there to the information you loaded for your individualized configuration files. This will at least enable you to get a "feel" for your own system configuration as well as introduce you to the use of one important aspect of the MGR program.
7. When finished, just click on the Close button to exit the Setup files and then close out the 9740 System Manager just as you would any other Windows program.

9.0 SPECIFICATIONS

ELECTRICAL

Processor:	CPU
Clock Speed:	133 MHz or better
Memory:	16 MB RAM
Disk Drive:	3.5-inch, 1.44 MB
Hard Drive:	16 MB
Monitor Output:	VGA (VGA graphics card supplied, monitor is not supplied)
I/O Ports:	16 RS-422 ports on two SerCom boards, expandable to 32 2 RS-232 COM ports, COM 1 and COM 2 1 Parallel printer port 1 VGA output port 1 PS/2 keyboard ports 1 PS/2 mouse port (not supported at this time)
Input Voltage:	115-230 VAC~ @ 50/60 Hz
Input Current:	750 mA
Power Consumption:	90 watts
Operating Temperature:	14° to 122°F (-10° to 50°C)

MECHANICAL

Mounting:	19-inch rack mount
Dimensions:	19.00 (W) x 5.25 (H) x 19.5 (D) inches (48.26 x 17.78 x 49.53 cm)
Weight:	13.6 lb (6.17 kg)

(Design and product specifications subject to change without notice.)

10.0 WARRANTY AND RETURN INFORMATION

PRODUCT WARRANTY AND RETURN INFORMATION

WARRANTY

Pelco will repair or replace, without charge, any merchandise proved defective in material or workmanship **for a period of one year** after the date of shipment.

Exceptions to this warranty are as noted below:

- Five years on FT/FR8000 Series fiber optic products.
- Three years on Genex® Series products (multiplexers, server, and keyboard).
- Three years on Camclosure® and fixed camera models, except the CC3701H-2, CC3701H-2X, CC3751H-2, CC3651H-2X, MC3651H-2, and MC3651H-2X camera models, which have a five-year warranty.
- Two years on standard motorized or fixed focal length lenses.
- Two years on Legacy®, CM6700/CM6800/CM9700 Series matrix, and DF5/DF8 Series fixed dome products.
- Two years on Spectra®, Esprit®, ExSite™, and PS20 scanners, including when used in continuous motion applications.
- Two years on Esprit® and WW5700 Series window wiper (excluding wiper blades).
- Eighteen months on DX Series digital video recorders, NVR300 Series network video recorders, and Endura™ Series distributed network-based video products.
- One year (except video heads) on video cassette recorders (VCRs). Video heads will be covered for a period of six months.
- Six months on all pan and tilts, scanners or preset lenses used in continuous motion applications (that is, preset scan, tour and auto scan modes).

Pelco will warrant all replacement parts and repairs for 90 days from the date of Pelco shipment. All goods requiring warranty repair shall be sent freight prepaid to Pelco, Clovis, California. Repairs made necessary by reason of misuse, alteration, normal wear, or accident are not covered under this warranty.

Pelco assumes no risk and shall be subject to no liability for damages or loss resulting from the specific use or application made of the Products. Pelco's liability for any claim, whether based on breach of contract, negligence, infringement of any rights of any party or product liability, relating to the Products shall not exceed the price paid by the Dealer to Pelco for such Products. In no event will Pelco be liable for any special, incidental or consequential damages (including loss of use, loss of profit and claims of third parties) however caused, whether by the negligence of Pelco or otherwise.

The above warranty provides the Dealer with specific legal rights. The Dealer may also have additional rights, which are subject to variation from state to state.

If a warranty repair is required, the Dealer must contact Pelco at (800) 289-9100 or (559) 292-1981 to obtain a Repair Authorization number (RA), and provide the following information:

1. Model and serial number
2. Date of shipment, P.O. number, Sales Order number, or Pelco invoice number
3. Details of the defect or problem

If there is a dispute regarding the warranty of a product which does not fall under the warranty conditions stated above, please include a written explanation with the product when returned.

Method of return shipment shall be the same or equal to the method by which the item was received by Pelco.

RETURNS

In order to expedite parts returned to the factory for repair or credit, please call the factory at (800) 289-9100 or (559) 292-1981 to obtain an authorization number (CA number if returned for credit, and RA number if returned for repair).

All merchandise returned for credit may be subject to a 20% restocking and refurbishing charge.

Goods returned for repair or credit should be clearly identified with the assigned CA or RA number and freight should be prepaid. Ship to the appropriate address below.

If you are located within the continental U.S., Alaska, Hawaii or Puerto Rico, send goods to:

Service Department
Pelco
3500 Pelco Way
Clovis, CA 93612-5699

If you are located outside the continental U.S., Alaska, Hawaii or Puerto Rico and are instructed to return goods to the USA, you may do one of the following:

If the goods are to be sent by a COURIER SERVICE, send the goods to:

Pelco
3500 Pelco Way
Clovis, CA 93612-5699 USA

If the goods are to be sent by a FREIGHT FORWARDER, send the goods to:

Pelco c/o Expeditors
473 Eccles Avenue
South San Francisco, CA 94080 USA
Phone: 650-737-1700
Fax: 650-737-0933

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REVISION HISTORY

Manual #	Date	Comments
C1508M	6/00	Original version.
C1508M-A	02/01	Updated to include certification information.