

MachineShop[™]

Shell Runtime Guide

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CTC Parker Automation provides top quality products through rigid testing and the highest quality control standards. However, should a problem occur with your hardware or with the software protection key, CTC's standard product warranty covers these items for 15 months from the date of shipment from CTC. Exceptions appear below:

- PowerStation backlight bulbs have a 90-day warranty.
- Third-party products, such as bus cards, carry the manufacturer's specified warranty.
- For all displays, image retention (burn-in) is not covered by warranty.
- Software revisions that occur within 60 days after purchase are available under warranty upon request. Please review the MachineShop License Agreement for additional software warranty information.

Should you have any questions about your application or need technical assistance, please call CTC's Product Technical Support department at 513-248-1714, 8:00 a.m. to 5:00 p.m., Eastern Time. You may call this same number after hours for emergency assistance. See *Customer Support Services* on page 6 of this manual for more information about CTC's support products and services.

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Manual Overview and Support Services

Welcome to the MachineShop Shell. The MachineShop Shell is a software program that runs on the runtime workstation. It is used to configure many of the unit's hardware and software settings and to receive Interact and MachineLogic files downloaded from a development system. It also handles certain project-related tasks including backup and restore operations.

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Using This Manual

The MachineShop Shell Runtime User Guide is designed to help you get up and running with the MachineShop Shell. This manual describes the MachineShop Shell user interface and provides instructions on how to monitor and configure system settings from the Shell.

Chapter 1 - Manual Overview and Support: Presents an overview of the documentation that is provided with the MachineShop Shell. This chapter also provides an overview of the support services provided by CTC.

Chapter 2 - Introducing the MachineShop Shell: Describes how to navigate in the MachineShop Shell, how to get online help, and introduces you to the user interface.

Chapter 3 - System Administrator Functions: Provides instructional information on using the MachineShop Shell to perform administrator functions such as selecting the power on operation, creating and restoring backups, and adding language files to the runtime workstation.

Chapter 4 - Maintaining the PowerStation: Provides instructions for recalibrating the touchscreen, performing a keyboard test, and adjusting the brightness and contrast levels of the PowerStation display.

Chapter 5- Preparing for Transfers: Describes how to setup the runtime workstation for transfers with a development system running the MachineShop toolbar. This includes a serial connection, LAN connection, and Ethernet Point to Point connection.

Chapter 6- MachineLogic Control Panel: Describes how to use the Control Panel option to configure the settings for the MachineLogic Control Adapter. It also provides instructions for starting and stopping the MachineLogic runtime kernel and resetting the Watchdog timer.

Appendix A - Configuration Files: Provides the text of the files that are required for MachineShop Shell and the MachineLogic runtime system.

Appendix B - Installing the MachineShop Shell - Describes how to install the MachineShop Shell on a non-CTC workstation.

Documentation Components

The MachineShop Shell is shipped with the following documentation:

PowerStation User Guide - If you are running the MachineShop Shell on a CTC PowerStation, you should have received this manual. This document describes how to configure, install, and operate the PowerStation. Please read this manual in its entirety prior to operating the unit.

PowerStation CPU Manual - If you are running the MachineShop Shell on a CTC PowerStation, you should have received this manual. This manual is provided by the manufacturer of the CPU board found in your PowerStation. Please familiarize yourself with this manual prior to operating the unit.

PowerStation Template - If you are running the MachineShop Shell on a CTC PowerStation, you should have received this document. This document is a full-size template of the PowerStation you can use to prepare the location where you want to install the unit.

Workstation User Guide - If you are running the MachineShop Shell on a non-CTC workstation, you should have received user documentation for this unit. Please familiarize yourself with this manual(s) prior to operating the unit.

MachineShop Installation Booklet - The MachineShop Installation Booklet provides step-by-step instructions on how to install and configure all the necessary components of MachineShop. This includes creating installation disks for installing the MachineShop Shell.

MachineShop Shell Runtime User Guide - This is the document you are reading. It describes how to use the MachineShop Shell. Refer to the *Using This Manual* section on page 2 for a description of this manual.

MachineShop Shell Online Help - The online help contains detailed information on MachineShop Shell. To access the online help on a selection, press the F1 key on your keyboard, or press the Help button.

Related Documentation

In addition to the documentation that is shipped with MachineShop Shell, you should become familiar with the following documentation:

MachineShop Getting Started Guide - The MachineShop Getting Started Guide is designed to help you get up and running with MachineShop. This guide also provides instructions on how to download Interact and MachineLogic projects from a PC to a runtime workstation with the MachineShop Shell installed on it.

Interact Getting Started Guide - The Interact Getting Started Guide is designed to help you get up and running with Interact. This manual describes Interact concepts, and includes example applications detailing the features of the Interact modules.

MachineLogic Getting Started Guide - The MachineLogic Getting Started Guide is designed to help you get up and running with MachineLogic. This manual describes the MachineLogic user interface and provides instructions on how to create and online monitor MachineLogic projects.

Documentation Standards

As you read this manual, you will notice that the following documentation standards have been followed.

1. Important terms are shown in **bold**.
2. Text to be entered from the keyboard is shown in Courier font.
3. Buttons, menu titles, and keyboard keys are shown in Initial Caps.
4. Indented paragraphs denote one of the following:
 - **Note** - Describes alternative approaches or issues you should be aware of while using a particular function.
 - **Important** - Contains information that needs particular attention while reading the text. Follow this information to save development time and/or minimize problems.
 - **Warning** - Contains information on safety issues. Follow this information to prevent equipment damage or personal injury.

ISO Symbols



This symbol is the International Standards Organization (ISO) symbol for Caution (ISO 3864 No. B.3.1). This symbol denotes information that could affect operation of the PowerStation if not properly followed.



This symbol is the ISO symbol for Caution - risk of electrical shock (ISO 3864 No B.3.6). This symbol denotes information that could cause personal injury from electrical shock or damage to equipment if not properly followed.

Customer Support Services

CTC welcomes your thoughts and suggestions on our products and services. You can contact CTC by telephone, email, or fax. You can also visit CTC on the World Wide Web to learn the latest about CTC hardware, software, and customer support services.

- Telephone: 513-831-2340
- Fax: 513-831-5042
- E-mail: sales@ctcusa.com or support@ctcusa.com
- World Wide Web: <http://www.ctcusa.com>

CTC recognizes that every customer and every application has different support needs, so CTC offers a variety of support services designed to meet those needs. CTC offers three types of customer support services: Product Technical Support, Technical Support Products, and the Product Support Program.

Product Technical Support

The Product Technical Support department welcomes any question that might arise as you develop or run your applications. We offer complimentary support for any customer, whether you are an end-user, original equipment manufacturer (OEM), or system integrator.

If you have a question about MachineShop Shell, be sure to complete the following steps:

1. Consult the appropriate documentation included with the MachineShop Shell.
2. Check the online help. The MachineShop Shell has extensive online help facilities that cover all aspects of the product.

If you cannot find a solution using one of the above sources, contact CTC's Product Technical Support department at 513-248-1714, 8:00am to 5:00pm, EST. You may call this same number after hours for emergency assistance.

Technical Support Products

Our Technical Support Products department provides service in two areas: training and consulting. CTC offers training on all our products either at CTC in our state-of-the-art training center or at your site. You can learn how to write custom interfaces, develop specialized applications, and implement your complete, machine control application. You can contact the Training Coordinator by phone at 1-800-233-3329 or by email at training@ctcusa.com.

CTC offers consulting services through our Professional Consulting Services (PCS) group. Our PCS group can build your application from the ground up by writing custom, communications drivers or designing special modules to perform functions unique to your application. Our team of specialists is flexible, so they can create a project development schedule that meets your needs. You can contact the PCS Coordinator by phone at 1-800-233-3329 or by email at pcs@ctcusa.com.

Product Support Program

The Product Support Program (PSP) is designed to keep you up-to-date with the current version of MachineShop software. The PSP consists of a renewable, one-year membership that provides you with free upgrades, utilities, automatic notification of software updates, and other valuable tools for MachineShop. Single-user, site, and corporate licenses are available. The PSP is an easy, cost-effective way to automatically receive the most recent Interact software and the associated utilities. You can contact the PSP Coordinator by phone at 1-800-233-3329 or by email at psp@ctcusa.com.

**Chapter
Summary**

This chapter has provided a general overview of the documentation that is provided with MachineShop Shell as well as the supporting documentation that you may find useful as you use MachineShop Shell. This chapter has also provided an overview of CTC's support products and services.

In the next chapter you will learn about the MachineShop Shell user interface.

Introducing MachineShop Shell

The MachineShop Shell (referred to as “the Shell” throughout this manual) is the primary user interface for runtime workstations. The Shell was developed in conjunction with MachineShop to provide essential communication functions between a development system running the MachineShop Toolbar and a runtime workstation running the Shell. These communication functions include downloading and uploading files and projects and creating and restoring remote backups. The Shell also provides support functions for configuring and maintaining the runtime workstation.

This chapter introduces you to the MachineShop Shell and its components. It also includes information about getting around the user interface and how to get help.

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Shell Basics

The MachineShop Shell interfaces with the PowerStation, or any industrial computer, and its installed components (hardware and software). The Shell displays detailed information about the system and allows you to monitor and configure many of the system's hardware and software settings.

The purpose of the Shell is to simplify navigation and configuration of the workstation from a central source. It is designed to reduce the number of steps to perform a task and to minimize the complexity of the system.

If you are running MachineShop on a non-CTC industrial computer or workstation, you will need the Shell to be able to download MachineShop projects from your development system. Refer to the *MachineShop Installation Booklet* for information on installing the MachineShop Shell.

Navigating the Shell

You can navigate and make selections within the MachineShop Shell by using the touchscreen, or an attached mouse or keyboard.

Using the Touchscreen

When using the touchscreen, press on a selection area (such as a button) to make a selection. Throughout this documentation it is assumed you are using the touchscreen to navigate the Shell and to make selections.

Using the Mouse

To use a mouse, move the cursor over a selection area or button, and click to make the selection.

Using a Keyboard

To make a selection with a keyboard, press the key on the keyboard that corresponds to the highlighted letter on a displayed menu button. This will select and activate the selection at the same time. For instance, to select the **EXIT** button on the main menu, press the **E** key on the keyboard.

You can also use the TAB and arrow keys to move the cursor on the screen to a selection area or button. Press the TAB key to cycle the cursor forward through the screen. To reverse the direction of the cursor, press SHIFT+TAB. Press ENTER when the cursor is over a selection to make the selection.

Moving between screens

Screens that are longer than one page will display a set of small up and down arrows in the top right section of the Shell. These arrows scroll to information that cannot fit inside the standard display area.

To scroll to another screen, complete one of the following steps:

- Press the arrow on the touchscreen.
- Move the cursor over an arrow and click the mouse button.
- Press the PAGE UP and PAGE DOWN buttons on the keyboard.

Whenever information is displayed in an additional screen or you access a menu other than the main menu, a BACK button will display below the Help button. Press this button or press B on a keyboard to go back to the previous screen.

To exit or cancel a selection, complete one of the following steps:

- Press the touchscreen on an area outside the displayed menu.
- Press the ESC key on the keyboard.

Shell Keypads

Menu options that require input values will automatically display an onscreen pop-up keypad.

To use the keypad, complete the following steps:

1. Enter values by selecting the keypad number on the screen.
2. Do one of the following:

- Select ENTER to input the displayed value.
- Select BACKSPACE to clear the last number displayed in the keypad window.
- Select ESC to cancel the keypad selection and exit the keypad screen.

**System Control
Status**

During certain remote operations, the development station used to manage the runtime system will temporarily disable operation of the Shell. Examples of remote operations include file transfers, project backup and restore, and system information checks.

When a remote operation occurs, a status screen will display on the runtime workstation. This screen will continue to display until the operation is finished or aborted.

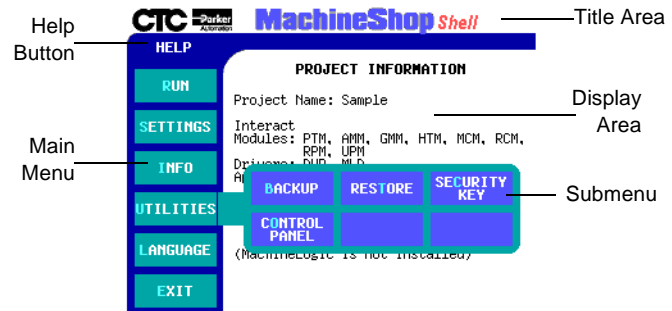
Getting Help

To obtain online help on a selection, press the F1 function key, or press the HELP button above the main menu. A page of text is displayed in the display area of the screen.

To exit a Help screen and return to the previous window, select the BACK button located below the Help button.

Shell User Interface

The MachineShop Shell screen appears in the center of the screen and is capable of displaying up to 256 colors, depending on the installed video system. A typical MachineShop Shell screen is displayed as shown below:



The screen is organized into five major components:

- **Title Area** - The Title Area is an open line across the top of the screen that can display a company name or logo.
- **Help Button** - The Help Button is located on the left side of the screen above the Main Menu. It allows you to obtain context-sensitive help for a displayed menu or submenu.
- **Main Menu** - The Main Menu is a set of six vertical-aligned buttons located along the left side of the screen below the Help Display. The Main Menu is the primary method for navigating through the Shell system options.
- **Submenu** - The Submenu is a group of horizontal buttons that typically appear when you press one of the six Main Menu buttons. These submenus give you additional system information and configuration options.

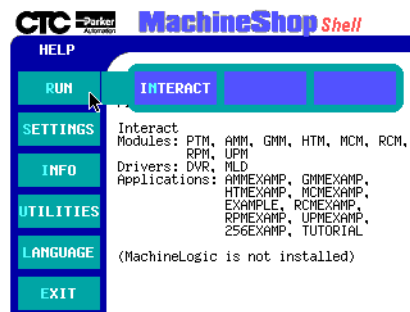
- **Display Area** - The Display Area is the section of screen located to the right of the Main Menu. The Display Area shows information about the current project loaded on the workstation. If no project exists, then “None” is displayed. It also displays various information pertaining to the menu and submenu options and is used to display the Help information.

Shell Main Menu

The Main Menu is the primary method for navigating through the Shell options. This section provides a description of each item on the Shell Main Menu.

Run Menu

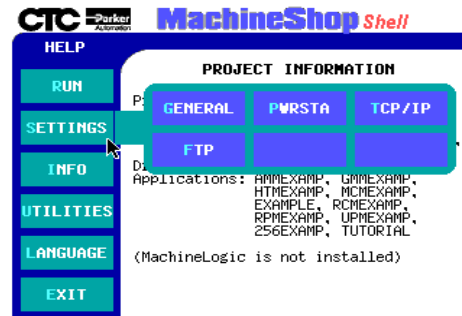
The Run menu allows you to execute Interact directly from the Shell. When the Interact runtime session is completed, you are returned to the Shell. An example of the Run submenu is shown below.



Note Interact may also be configured to launch automatically when the workstation is powered on. See the Power On option discussed in Chapter 3.

Settings Menu

The Settings menu allows you to view and edit various Shell and PowerStation configuration options. An example of the Settings submenu is shown below:

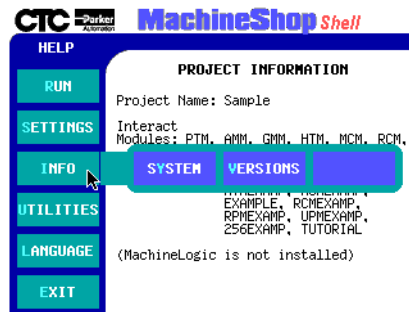


- **General** - This option displays current configuration settings and allows you to modify general runtime settings including whether Interact or the Shell will launch on start up, enabling MachineLogic at start up, and selecting the display type for non-CTC workstations.
- **PWRSTA** - This option displays current PowerStation settings. It also allows you to calibrate the touchscreen, perform a keyboard test, and if available, adjust the brightness and contrast levels of the screen.
 - Note** The PowerStation option will be displayed only if the Shell is running on a PowerStation.
- **TCP/IP** - This option is used to display and configure the TCP/IP settings (IP address, host name, etc.) for the runtime workstation. TCP/IP is a set of protocols that allow computers to communicate over local networks or the Internet. You may configure up to three interfaces for the connection used to communicate with the workstation.

- **FTP** - This option is used to display and configure the File Transfer Protocol (FTP) settings for the runtime workstation. These settings (user name and password) are required to perform project transfers to the unit.

Info Menu

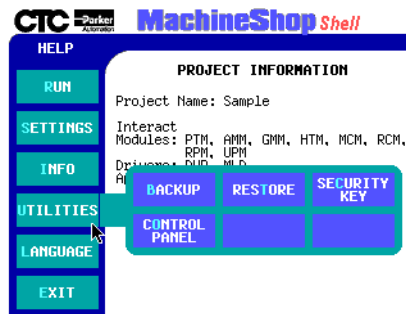
The Info menu allows you to view information about the current hardware and software installed on the unit. An example of the Info submenu is shown below.



- **System** - This option displays information about the processor, the amount of available conventional and extended memory, the logical drive assignment, and the port address assignments for all printer and serial ports in the workstation.
- **Versions** - This option displays version numbers for the Interact Application Manager, Modules, and Drivers. It also displays the version number for MachineLogic, support software, and system software.

Utilities Menu

The Utilities menu allows you to manage projects and to configure various hardware and software components including the Interact Security Key and MachineLogic Control Adapter. An example of the Utilities submenu is shown below.



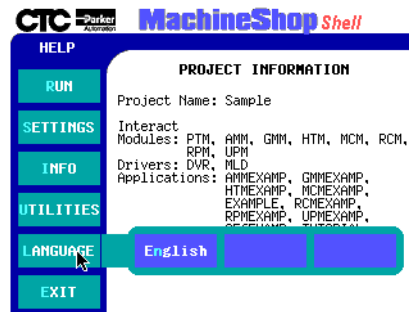
Note The Backup option is only available if a project has been installed on the workstation. The Control Panel option is only available if MachineLogic is included in the loaded Project.

- **Backup** - This option allows you to archive the current project to a selected path. Backups are automatically compressed using the zip compression method. It also allows you to configure or edit the project backup path(s).
- **Restore** - This option allows you to restore an archived backup project from a selected path. When you restore a project, the archived project is automatically decompressed and loaded on the unit. It also allows you to configure and edit the project restore path(s).
- **Security Key** - This option displays software security key information and lists the enabled software components installed on the runtime workstation. It also allows you to enable and transfer key options between Security Keys.

- **Control Panel** - This option displays information about MachineLogic. This includes the state of run-time kernel, system and I/O device errors, and tasks included in the MachineLogic project. It also allows you to configure the MachineLogic Control Adapter.

Language Menu

The Language menu enables you to select the language used by Shell to display text and online help files. An example of the Language submenu is shown below.



Note Only languages with language files detected by the Shell will display in the menu.

Exit Menu

Select Exit to exit MachineShop Shell and return to DOS. Before exiting the Shell, a submenu appears asking you if you really wish to exit the Shell. To cancel the Exit selection, press No or select an area outside of the submenu.

Chapter Summary

In this chapter you have been introduced to the MachineShop Shell interface. You have also learned how to navigate within the Shell and how to access the online Help.

In the next chapter, you will learn how to use the MachineShop Shell to configure many of the system's hardware and software settings.

System Administrator Functions

The MachineShop Shell allows you to configure various features for using the runtime system with Interact and MachineLogic. This chapter will show you how to use MachineShop Shell to perform project-related tasks including backup and restore operations as well as other system administrator functions. It contains both descriptive information and step-by-step instructions.

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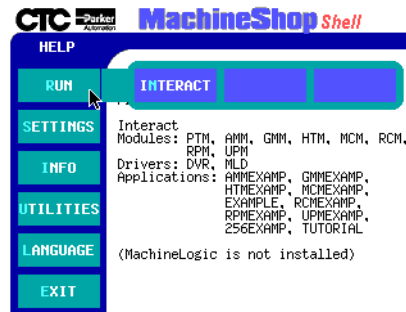
Execute Interact from the Shell

You may execute Interact directly from the Shell. When the Interact runtime session is completed, you are returned to the Shell.

To launch Interact from the Shell, complete the following steps:

1. Select the **RUN** button from the Main Menu.

The Run submenu appears.



2. Select the **INTERACT** button.

Note You may also configure Interact to automatically load when the runtime workstation is started. See the next topic, Power On Operation, for details.

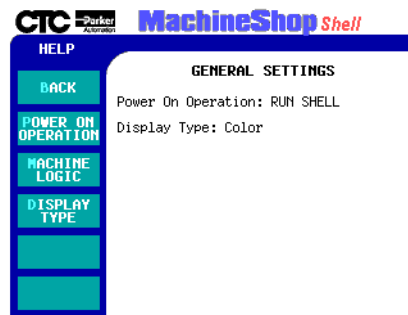
Power On Operation

You may select whether Interact or the Shell will run after the runtime workstation is turned on. You may change the power on operation at anytime, but the change will not take effect until the unit reboots.

To configure the Power On operation, complete the following steps:

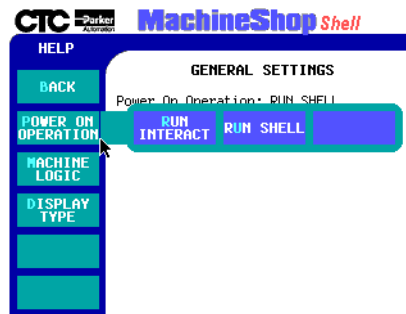
1. Select the **GENERAL** button from the Settings submenu.

The General Settings screen appears.



2. Select the **POWER ON OPERATION** button.

The Power On Operation submenu appears:.



3. Select one of the following buttons:
 - **RUN INTERACT** - Interact is automatically loaded without interaction from the user when the runtime system is turned on. When you exit Interact, the Shell Main Menu is displayed. This selection is useful if a power cycle should occur because the runtime system would automatically run Interact when the power is restored.
 - **RUN SHELL** - The Shell is loaded and the Shell Main Menu is displayed when the runtime system is turned on.

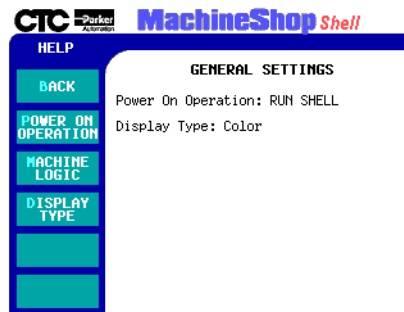
Enabling MachineLogic

The MachineLogic runtime kernel may also be automatically loaded when the runtime system is turned on.

To enable and disable MachineLogic when the unit is turned on, complete the following steps:

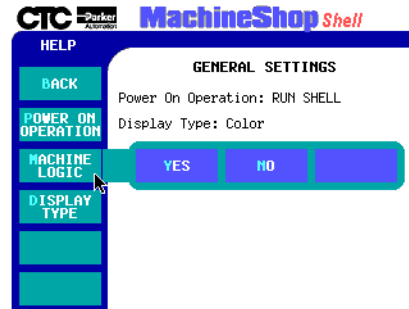
1. Select the **GENERAL** button from the Settings submenu.

The General Settings screen appears.



2. Select the **MACHINELOGIC** button.

The MachineLogic submenu appears.



3. Select one of the following buttons:
 - **YES** - The MachineLogic runtime kernel is automatically loaded (warm start) and executed when the run-time system is turned on.
 - **NO** - The MachineLogic runtime kernel is NOT loaded and executed when the runtime system is turned on.

Note The Shell modifies the MACHLOG.INI file based on the selection. See *Appendix A* for details on the MACHLOG.INI file.

Configure the Display Type

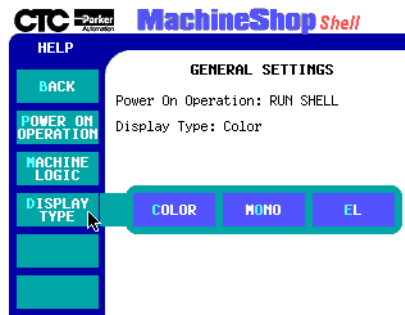
The Shell allows you to select the type of display (color, monochrome LCD, or EL) for the runtime workstation. This is helpful when you need to adjust the colors on your display. The default setting is color.

Note The Display Type option is only available for non-CTC workstations.

To configure the display type, complete the following steps:

1. Select the **DISPLAY TYPE** button from the General Settings menu.

The Display Type submenu appears.



2. Select one of the following buttons:
 - **COLOR** - supports 16-color VGA or 256-color Super VGA
 - **MONO** - supports 16-shade (Black & White) Monochrome
 - **EL** - supports 16-shade Electroluminescent Monochrome

Create and Restore Backups

Project file backups archive the entire project, not just an individual file, to a selected target. Projects are compressed into a subdirectory with the same name as the project. After the project is compressed, the file names are appended with a .zip suffix. Below is an example of the backup directory structure.

```
<Backup Path>\
  <Project Name>\
    $app$.zip
    $itr$.zip
    $ml$.zip
    $ml-app$.zip
    $ms$.zip
    control.xxx
```

When the project is restored, the compressed project is automatically decompressed.

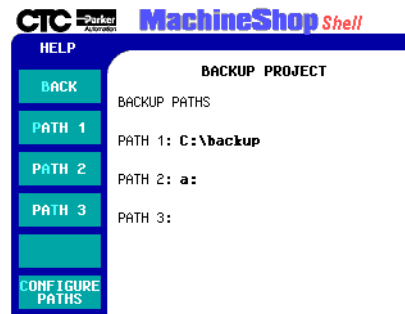
Creating a Backup

You may select one of three pre-configured paths as the target location for performing the backup.

To backup a project loaded on the workstation, complete the following step:

1. Select the **BACKUP** button from the Utilities submenu.

The Backup Projects screen appears:

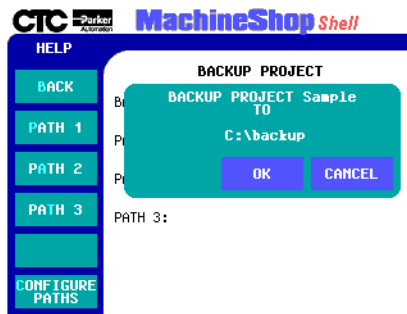


The current paths are shown in the display area. These paths are configured under the “Configure Paths” option.

Note If you have not configured a backup path, or need to edit a current path, see *Configuring a Project Backup Path* on page 27 for instructions.

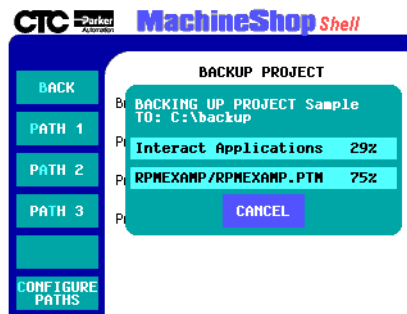
2. Select one of the **PATH** buttons from the Backup menu.

A confirmation window appears.



3. Select the **OK** button to begin the backup of the project to the displayed target source.

The status screen appears.



4. You may abort the backup operation at anytime by selecting the **CANCEL** button from the status screen.

Note If a problem occurs during the backup, an error message will be displayed on the screen.

5. Select the **OK** button when the backup operation is done.

Configuring a Project Backup Path

Before you backup the loaded project from the runtime workstation, you may need to configure or edit the backup path. This is the target location where the archived project will be stored.

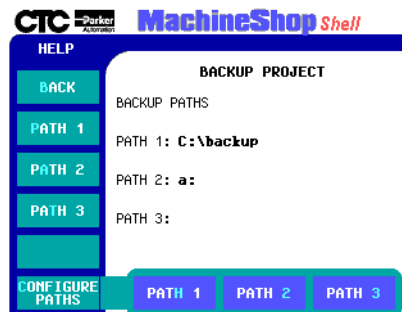
You may configure up to three target paths.

Note A keyboard is required to input a path setting. Only valid DOS characters can be used for a path setting. The [DELETE], [HOME], [END], [BACKSPACE], [LEFT ARROW] and [RIGHT ARROW] keys are supported for editing the path.

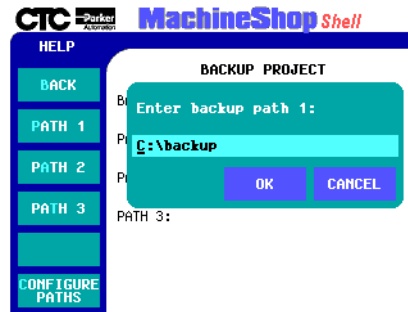
To configure a project backup path, complete the following steps:

1. Select the **CONFIGURE PATHS** button from the Backup menu.

The Configure Path submenu appears.



2. Select one of the PATH submenu buttons (1,2, or 3).
The backup path entry screen appears.



3. Enter the backup path using an attached keyboard.
4. Select the **OK** button to accept the path configuration.

Note A backup path cannot be verified until an actual backup is performed. If there is a problem during the backup operation, an error message will be displayed on the screen.

Restoring a Project

When a project is restored, the archived backup project is automatically decompressed and loaded on the runtime workstation.

You may select one of three pre-configured paths as the source location for performing the restoration.

To restore a project, complete the following step:

1. Select the **RESTORE** button from the Utilities submenu.

The Restore Project screen appears.

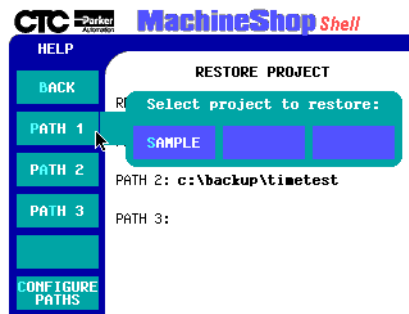


The current paths are shown in the display area. These paths are configured under the “Configured Paths” option.

Note If you have not configured a restoration path, or need to edit a current path, see *Configuring a Restoration Path* on page 30 for instructions.

2. Select one of the **PATH** buttons.

A menu of archived projects for the selected path appears.



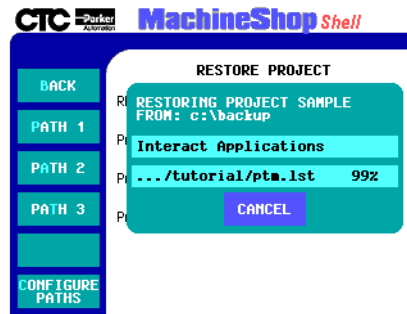
3. Select the project to restore from the menu.

A confirmation window appears.

- Select the **OK** button to begin the restoration from the displayed path.

Note If you have a project loaded on the workstation, a window will appear to notify you that your current project will be erased. Select OK to continue the restoration.

A status screen appears.



- You may abort the restore operation at any time by selecting the **CANCEL** button from the status screen.

Note If you abort the restore operation, there will be no project loaded on the workstation.

On success, a popup window appears asking if you wish to reboot the workstation.

- Select the **YES** button to allow changes to take effect.

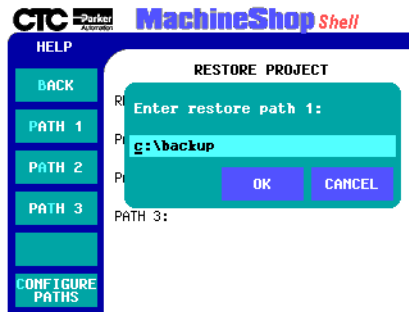
Configuring a Restoration Path

Before you restore projects files to the runtime workstation, you may need to configure or edit a restoration path. This is the location where the archived project is stored. You may configure up to three restoration paths.

Note A keyboard is required to input a path setting. Only valid DOS characters can be used for a path setting. The [DELETE], [HOME], [END], [BACKSPACE], [LEFT ARROW] and [RIGHT ARROW] keys are supported for editing the path.

To configure a restoration path, complete the following steps:

1. Select the **CONFIGURE PATHS** button from the Restore menu.
The Configuration Paths submenu appears.
2. Select one of the **PATH** submenu buttons (1,2, or 3).
The restore path entry screen appears.



3. Enter the restore path using an attached keyboard.
4. Select the **OK** button to accept the configuration path.

Note A restoration path cannot be verified until an actual restoration is performed. If there is a problem during the operation, an error message will display.

Security Keys

The Shell allows you to program your Security Key. You may enable individual key options or transfer security key options between keys. The Shell also displays security key information (Serial Number and Key Number) and installed module information for the security key(s) attached to the workstation.

To display security key information, complete the following step:

- Select the **SECURITY KEY** button from the Utilities submenu.

The Security Key screen appears.

Module	Config	Runtime
FTM	Enabled	Enabled
GMM	Enabled	Enabled
AMM	Enabled	Enabled
RCM	Enabled	Enabled
DTM	Enabled	Enabled
HTM	Enabled	Enabled
UPM	Enabled	Enabled
RPM	Enabled	Enabled
MCM	Enabled	Enabled
ORM	Enabled	Enabled
NBIOS	Enabled	Enabled
IMD	Enabled	Enabled
CAD	Enabled	Unused

The Shell automatically scans and detects if a security key is attached to the workstation. If a key is detected, the display area shows the serial and key number, the Interact modules, and the features that are enabled in the “Runtime Key”. The display area also lists the module’s acronym followed by its status which can be Runtime, Config, or Transferred.

Note If you have a second security key, you can view security key information and installed module information for that security key by selecting the **VIEW KEY #2** option from the Security Key screen.

Enable Software Options

When you order additional software, you will receive a Module Enable Code Certificate listing enable codes for each software option purchased. These enable codes are used to activate the respective software options on the Security Key.

To enable software options, complete the following steps:

1. Select the **ENABLE** button from the Security Key menu.

The pop-up keypad appears.

2. Enter a valid 8-digit code for the selected module on the keypad.

3. Select the **ENTER** key to accept the code.

If the code is valid, the module will be enabled and the status will be updated in the display area. If the enable code is invalid, an error message will be displayed.

Transfer Enabled Options Between Keys

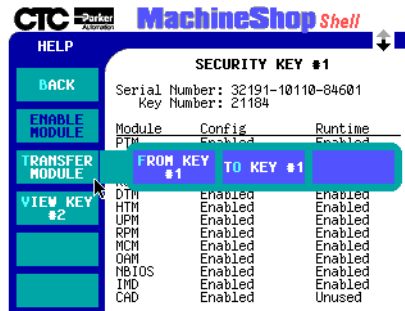
Enabled software options may be transferred from one key to another. You must have two keys in order to transfer enabled options and you may not transfer a module to another key that has the same module enabled.

Note Once an option has been transferred, it may be moved to its original key only.

To transfer options from one security key to another, complete the following steps:

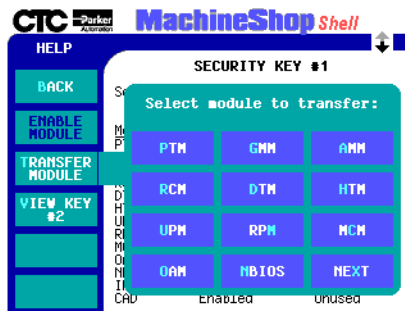
1. Select the **TRANSFER MODULE** button from the Security Key menu.

The Transfer Module submenu appears.



2. Select one of the following buttons:
 - **FROM KEY #1**- Transfers an enabled module from the first key to a second attached security key.
 - **TO KEY #1**- Transfers an enabled module from the second key to the first security key attached to the runtime system.

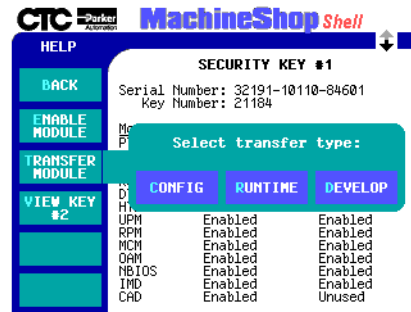
The menu of available modules appears.



3. Select a module you want to transfer from the list of available modules.

Use the Next button on the menu to view additional modules.

The Transfer Type submenu appears.



4. Select one of the following buttons:
 - **CONFIG** - Transfers the configuration component of the Interact module.
 - **RUNTIME** - Transfers the runtime component of the Interact module.
 - **DEVELOPMENT** - Transfers both the configuration and runtime components of the Interact module.

If there are any problems with the module selection or transfer, an error message will be displayed.

Add Language Files

You may choose the language used by the Shell to display screen text and online help. The language availability depends on the installed language files that are detected by the Shell.

The text for the Shell is stored in two files: PSU.TXT and PSU.HLP. The PSU.TXT file contains the menus and screen text, and the PSU.HLP file contains the help text.

To add you own language file to the workstation, complete the following steps:

1. Enter MS-DOS mode.
2. Copy the screen text file (PSU.TXT) and the online help file (PSU.HLP) to PSULANG.XXX and PSUHELP.XXX respectively.

XXX is an arbitrary extension. It is helpful to use an extension that indicates the language.

3. Open the PSULANG file.

An example of a PSULANG file is shown below.

Specify the language in the language file

```
<Application>
  <Name>Teflon</Name>
  <Comment>The Non-Stick Shell</Comment>
  <Version>EX-83873-100f</Version>
  <Language>French</Language>
</Application>
<Strings>
  <Text ID="1001">ERROR: Insufficient graphical capability.</Text>
  <Text ID="1002">ERROR: Unable to setup graphics mode.</Text>
  <Text ID="1003">ERROR: Could not find a valid mouse driver.</Text>
  <Text ID="1004">ERROR: Mouse initialization failed.</Text>
  <Text ID="1005">ERROR: Application initialization failed.</Text>
  <Text ID="1006">ERROR: Invalid filename.</Text>
  <Text ID="1007">ERROR: Memory allocation failure.</Text>
  <Text ID="1008">ERROR: XML parser general failure.</Text>
  <Text ID="1009">ERROR: Invalid Arguments.</Text>
  <Text ID="1010">ERROR: Cannot open file.</Text>
  <Text ID="1011">ERROR: Error while reading from file.</Text>
  <Text ID="1012">ERROR: Invalid XML format encountered.</Text>
  ...
```

4. Enter the language that the file contains at the Language parameter (in the Application section).

For example, if the language is french then the parameter would be as follows:

```
<LANGUAGE>FRENCH</LANGUAGE>
```

5. Translate the text in the file.
6. Save the changes and close the file.

The Language submenu will display the new language when the Shell is loaded.

7. Open the PSUHELP file and repeat steps 4 - 6.
8. Start the Shell and select the language from the Language submenu.

All screen text and online help will be displayed in the selected language.

Note The Shell will load the first occurrence of the language files if duplicate language names are found.

Chapter Summary

In this chapter you learned how to use the MachineShop Shell to perform many system administrator functions including how to select whether Interact or the Shell will load when the workstation is powered on, backup and restore project files, and add language files to the workstation.

In the next chapter, you will learn how to maintain the PowerStation.

Maintaining the PowerStation

This chapter will show you how to use MachineShop Shell to calibrate the touchscreen, perform a keyboard test, and to adjust the brightness and contrast levels of the PowerStation display.

If you are not running the Shell on a PowerStation, you may skip this chapter.

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Calibrate the Touchscreen

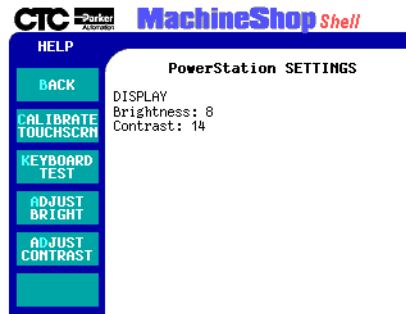
The PowerStation's touchscreen is calibrated prior to being shipped from CTC. However, you may need to recalibrate the touchscreen when you begin using the PowerStation for the first time or whenever the cursor location and the location on the screen where the user touches do not match.

Note The calibration utility requires a keyboard and involves calibrating the touchscreen for text and for graphics.

To calibrate the touchscreen, complete the followings steps:

1. Select the **PWRSTA** button from the Settings submenu.

The PowerStation Settings screen appears.



2. Select the **CALIBRATE TOUCHSCRN** button.
A message window appears reminding you that a keyboard is required to calibrate the touchscreen.
3. If you have a keyboard connected to the PowerStation, select the **YES** button to continue.
The Calibration Utility appears on the screen.
4. Follow the instructions on the screen. See the *PowerStation User Guide* for detailed instructions on how to use the calibration utility on your PowerStation.

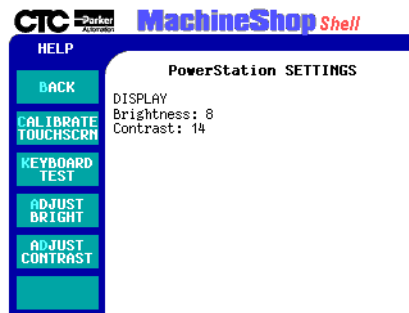
Perform a Keyboard Test

You may test the keyboard connected to the PowerStation by selecting the Keyboard Test option from the PowerStation Settings menu.

To test the keyboard, complete the following steps:

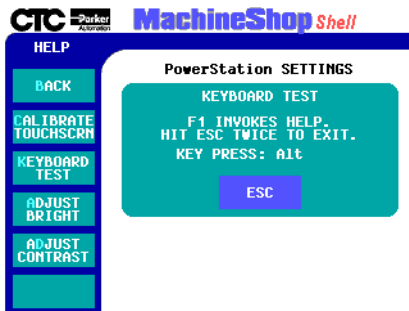
1. Select the **PWRSTA** button from the Settings submenu.

The PowerStation Settings screen appears.



2. Select the **KEYBOARD TEST** button.

The Keyboard Test screen appears.



3. Press any key on the keyboard.

The PowerStation will display the text string in the Key Press field. Confirm that the text string matches the pressed key.

- To exit the keyboard test, select the **ESC** button or press the **ESC** key twice.

Adjust the Brightness Level

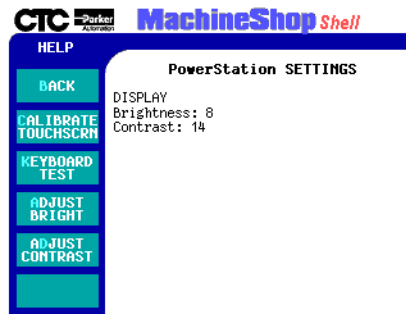
You may manually change the brightness level of the PowerStation touchscreen display. You can either Decrease or Increase the screen brightness.

Note This option is not available for all PowerStations or touchscreen displays.

To adjust the brightness level of your display, complete the following steps:

- Select the **PWRSTA** button from the Settings submenu.

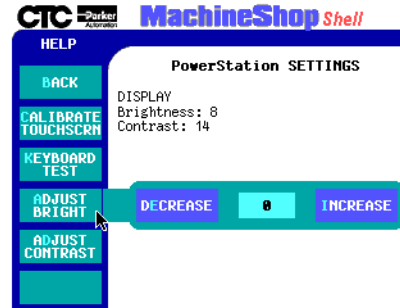
The PowerStation Settings screen appears.



- Select the **ADJUST BRIGHT** button.

Note This option may not be available depending on the PowerStation or display type.

The Adjust Brightness submenu appears.



3. Select one of the following buttons:
 - **DECREASE** - decreases the screen brightness
 - **INCREASE** - increases the screen brightness

Each click on a selection will increase or decrease the brightness setting by one.

Adjust the Contrast Level

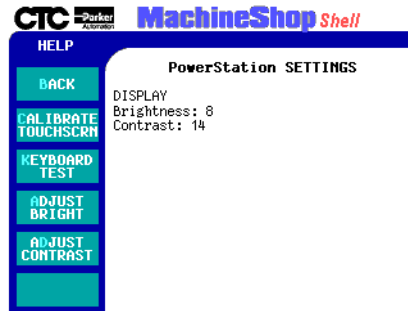
You may manually change the contrast level of the PowerStation touchscreen display. You can either Decrease or Increase the screen contrast.

Note This option is not available for all PowerStations or touchscreen displays.

To adjust the contrast level of your display, complete the following steps:

1. Select the **PWRSTA** button from the Settings submenu.

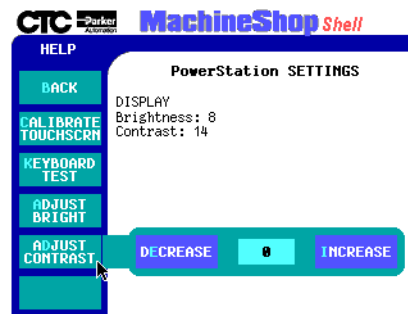
The PowerStation Settings screen appears.



2. Select the **ADJUST CONTRAST** button.

Note This option may not be available depending on the PowerStation or display type.

The Adjust Contrast submenu appears.



3. Select one of the following buttons:
 - **DECREASE** - decreases the screen contrast
 - **INCREASE** - increases the screen contrast

Each click on a selection will increase or decrease the contrast setting by one.

Chapter Summary

In this chapter you learned how to use the MachineShop Shell to perform maintenance on the PowerStation touch-screen display and to test the keyboard connected to the PowerStation.

In the next chapter, you will learn how to use the Shell to configure the runtime workstation for project transfers to and from a development system running the MachineShop toolbar.

Preparing for Transfers

The Shell is used by the runtime workstation to receive Interact and MachineLogic files transferred from a development system running the MachineShop Toolbar. This chapter describes how to prepare the Shell for file transfers. It includes setting up a serial, LAN, and an Ethernet point to point connection.

This chapter also includes instructions on how to download projects to the runtime workstation and create remote backups using the MachineShop Toolbar. For a more complete discussion on MachineShop, refer to the *MachineShop Getting Started Guide*.

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Configure the TCP/IP Settings

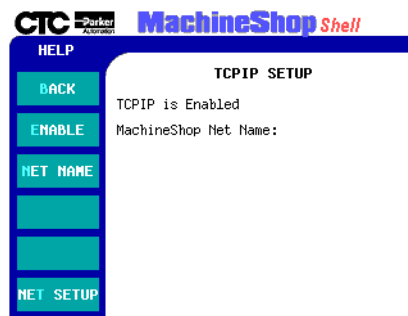
MachineShop (the Shell and toolbar) uses the industry standard TCP/IP protocol to communicate over ethernet, serial and internet connections. The TCP/IP option from the Settings submenu allows you to configure the TCP/IP settings for the runtime system.

The TCP/IP settings define the connection(s) that will be used to communicate with the development system. The settings include the IP address, IP mask, host name, port address, IRQ, and baud rate for serial connections. These settings must be configured before you can transfer files between the runtime and development systems.

To access the TCP/IP settings, complete the following step:

1. Select the **TCP/IP** button from the Settings submenu.

The TCP/IP Setup screen appears.



Note Changes made to the TCP/IP Settings are written to the TCPIP.INI file located in the NET directory. Changes do not take effect until the runtime workstation reboots. A confirmation message will display when you exit the TCP/IP Setup screen asking if you wish to reboot the system.

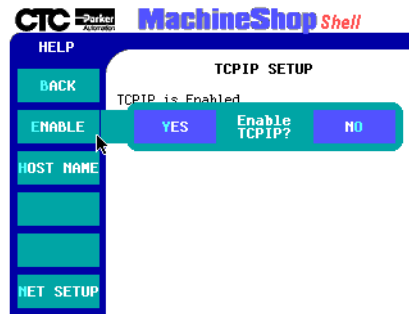
Enabling TCP/IP

TCP/IP must be enabled (loaded into memory) on the runtime system in order for communication to occur.

To enable and/or disable the TCP/IP network, complete the following steps:

1. Select the **ENABLE** button from the TCP/IP Setup menu.

The Enable TCP/IP submenu appears.



2. Select one of the following buttons:
 - **YES** - changes the TCPIP.INI file and loads the TCP/IP stack into memory at startup.
 - **NO** - changes the TCPIP.INI setting so that TCP/IP networking is disabled.

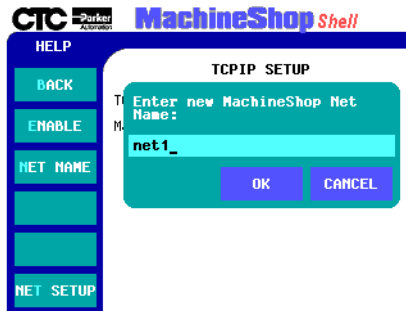
**Configure a
MachineShop Net
Name**

The MachineShop Net Name is used by MachineShop and the development systems to identify the runtime systems on a network.

To configure the MachineShop Net Name, complete the following steps:

1. Select the **NET NAME** button from the TCP/IP Setup menu.

The MachineShop Net Name entry screen appears.



2. Enter a name in the entry screen.
The name has a limit of eight characters and should be unique to a network.
3. Select the **OK** button to accept the new name.

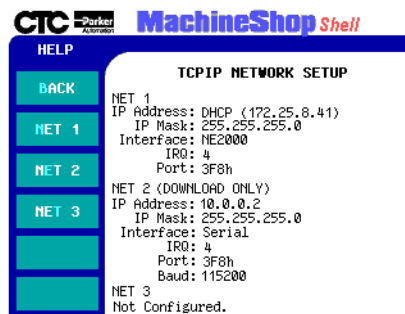
Configure the Connection

The Net Setup option from the TCP/IP Setup menu is used to define and configure the network connection. You can configure up to three connections but only one connection can be enabled at one time.

To configure the network connection settings, complete the following step:

1. Select the **NET SETUP** button from the TCP/IP Setup menu.

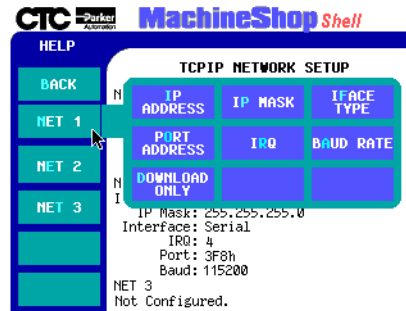
The TCP/IP Network Setup screen appears.



The display area of the screen shows the current network connection settings. Specific settings for each connection are based on the installed Network Interface Cards.

2. Select one of the **NET** buttons (1,2, or 3) from the Network Setup menu.

The Net submenu appears.



Select the Interface Type

Use the **IFACE TYPE** option from the Net submenu to select the communication interface for the selected network connection. The selection must match the installed network interface card for the selected NET connection.

To select the Interface Type for a connection, complete the following steps:

1. Select the **IFACE TYPE** button from the Net submenu.

The Interface Type submenu appears.

2. Select one of the following buttons:
 - **DISABLE** - disables the connection
 - **3C509** - select this option if you are using a 3COM 3C509 ISA Ethernet card

- **NE2000** - select this option if you are using a NE2000 compatible network interface card or PowerStation port
- **SERIAL** - select this option if you are using a serial port
- **ODI** - select this option if you are using NetBIOS networking with Interact's NBIOS driver

The Interface Type submenu closes and you return to the TCP/IP Network Setup screen.

Enter an IP Address

Use the IP ADDRESS option from the Net submenu to configure the IP Address for the connection. The IP Address is a unique address that identifies the runtime system to the network (using the TCP/IP protocol). It consists of two parts: a network number and a host number.

Check with your local network administrator to determine a valid IP Address to be used on your local network.

To configure the IP Address, complete the following steps:

1. Select the **IP ADDRESS** button from the Net submenu.

The IP Address entry window appears.

2. Enter a valid IP Address in the entry window.

An IP Address is a series of four numbers with a value of each number between 0 and 255 separated by periods (for example, 10.0.0.2).

Enter 0.0.0.0 if your network has Dynamic Host Configuration Protocol (DHCP) support. DHCP dynamically assigns IP addresses to workstations as needed.

3. Click the **OK** button to accept the value.

The entry window closes and you return to the TCP/IP Network Setup screen.

Enter an IP Mask

Use the IP MASK option from the Net submenu to configure the IP Mask for the connection. The IP Mask is a locally-defined subset of IP Addresses used to identify a smaller group within a network. Each network must have a mask even if there are no subnets on the network. The mask is applied to the IP Address in every message in order to separate the network number and the host number.

The IP Mask uses the same format as an IP Address. Check with your network administrator to obtain a valid IP Mask for your local network.

Note If using DHCP to obtain an IP Address, the DHCP server will assign an IP mask also. In this case, the value entered here is ignored.

To configure the IP Mask, complete the following steps:

1. Select the **IP MASK** button from the Net submenu.

The IP Mask entry window appears.

2. Enter a valid IP Mask value in the entry window.

An IP Mask is a series of four numbers with a value between 0 and 255, separated by periods (for example, 255.255.255.0). The first number is always 255.

3. Click the **OK** button to accept the value.

The entry window closes and you return to the TCP/IP Network Setup screen.

Specify the Port Address

Use the PORT ADDRESS option from the Net submenu to configure the I/O Port Address for the selected network connection.

Note This value is ignored if the Iface Type is “ODI”.

To specify the Port Address for the network interface or COM port, complete the following steps:

1. Select the **PORT ADDRESS** button from the Net submenu.

The pop-up keypad appears.

2. Enter a valid I/O Port Address for the selected connection.

For serial ports, COM1=3F8, COM2=2F8,
COM3=3E8, and COM4=2E8

10Base-T Ethernet Port=280

3. Select the **ENTER** button to accept the value.

The pop-up keypad closes and you return to the TCP/IP Network Setup screen.

Select the Baud Rate

Use the BAUD RATE option from the Net submenu to select the communication speed used by the COM port to transfer data. This must match the baud rate set in the dial-up properties for the specific connection.

Note This option is only available for serial connections.

To select the baud rate for the serial connection, complete the following steps:

1. Select the **NET** button from the TCP/IP Network Setup menu.

The Network Connection submenu appears.

2. Select the **BAUD RATE** button.

A list of transfer speeds appear.

3. Select the transfer speed from the list.

This must match the baud rate set in the dial-up properties for the specific connection.

The list of transfer speeds closes and you return to the TCP/IP Network Setup screen.

Note If you have reliability problems using the selected baud rate, try selecting a slower baud rate.

Set the Hardware IRQ

Use the IRQ option from the Net submenu to set the hardware IRQ used by the network interface or COM port. The assigned IRQ number must match the hardware jumper settings for proper operation of the port.

Note This value is ignored if the Iface Type is “ODI”.

To configure the IRQ for the connection, complete the following steps:

1. Select the **IRQ** button from the Net submenu.

The Select Network Interface IRQ window appears.

2. Select the keypad number on the screen to enter the IRQ value.

The value set on the keypad must match the value configured on the installed hardware card or COM port.

For serial ports, COM1=4, COM2=3, COM3 and COM4=variable setting

PowerStation 10Base-T Ethernet Port=10

The pop-up keypad closes and you return to the TCP/IP Network Setup screen.

Set to Download Only

The Download Only option is used to keep the port from initializing until the Shell is loaded. This allows other applications (Interact) to use the selected connection once you exit the Shell. If you do not enable Download Only for the connection, TCP/IP will communicate over the network interface or COM port even when the Shell is not loaded.

You can toggle between enabling and disabling the download only option.

To enable/disable download only, complete the following step:

- Select the **DOWNLOAD ONLY** button from the Net submenu.

Restrict Access to Files

The FTP option from the Settings menu allows you restrict access to the files on the runtime system. FTP, or File Transfer Protocol, is the method by which project files get transferred from a development system on a network to a runtime system on the same network.

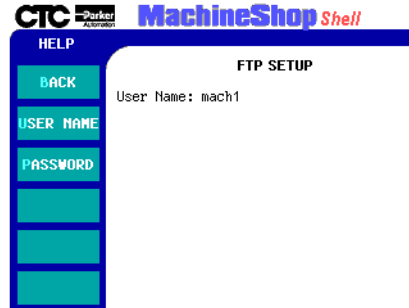
The FTP settings include a User Name and Password and are required to perform project transfers. The User Name is used to identify the name of the user that will transfer files to or from the workstation. The Password allows users access to the download capabilities of the workstation.

By default, these settings are blank. If you would like to restrict access to the files on the workstation, simply enter an FTP User Name and Password.

To add an FTP user name and password, complete the following steps:

1. Select the **FTP** button from the Settings menu.

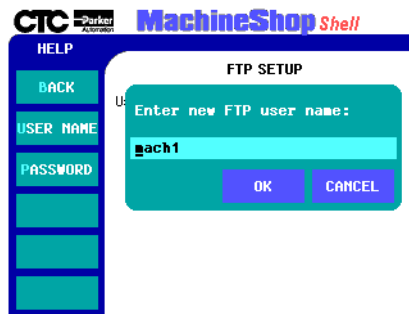
The FTP Setup screen appears.



The display area of the screen shows the current FTP User Name.

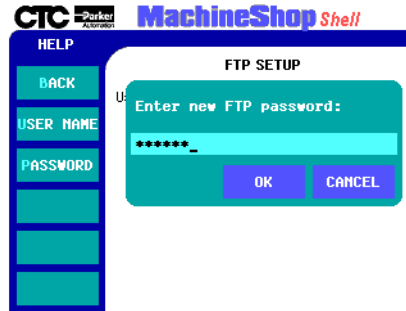
2. Select the **USER NAME** button from the FTP Setup menu to enter a user name.

The FTP user name entry screen appears.



3. Enter a user name in the entry window.
The user name has a limit of ten characters.
4. Select the **OK** button to accept the value.
5. Select the **PASSWORD** button from the FTP Setup menu to enter a password.

The FTP password entry screen appears.



Note If you have an existing password, you will be asked to enter the old password first. If you forget your password, open the PSU.CFG file and delete the password entry. You must then enter a new password.

6. Enter the password in the entry window.

The Password has a limit of 20 characters and is case sensitive.

7. Select the **OK** button to accept the value.

A confirmation window appears.

8. Enter the password again to confirm the new password.

LAN Connection

This section describes the steps you need to complete to prepare the runtime workstation for file transfers using a LAN connection. For detailed descriptions on how to configure the settings, see the *Configure the TCP/IP Settings* section in this chapter.

To configure the Shell for a LAN connection, complete the following steps:

1. Select the **TCP/IP** button from the Settings menu to configure the TCP/IP settings.

2. If TCP/IP hasn't been enabled, select the **ENABLE** button from the TCP/IP Setup menu.
3. If a MachineShop Net Name hasn't been configured for the runtime workstation, select the **NET NAME** button from the TCP/IP Setup menu and then enter a name.
4. Select the **NET SETUP** button from the TCP/IP Setup menu to configure the network interface.
5. Select one of the **NET** buttons (1, 2, or 3) from the Network Setup menu.
6. Select the **IFACE TYPE** button from the Net submenu and then select either NE2000 or 3C509 as the interface type.

Your selection depends on the network interface card installed in the unit. For the 10Base-T port, use NE2000.

7. Select the **IP ADDRESS** button from the Net submenu and then enter the IP Address.

Check with your local network administrator to determine a valid IP Address.

If your network has Dynamic Host Configuration (DHCP) support, enter 0.0.0.0 as the IP Address. DHCP dynamically assigns IP addresses to workstations as needed.

8. Select the **IP MASK** button from the Net submenu and then enter the IP Mask.

Check with your local network administrator to determine a valid IP Mask.

If using DHCP to obtain a IP Address, the DHCP server will also assign an IP mask. In this case, the value entered here is ignored.

9. Select the **PORT ADDRESS** button from the Net submenu and then enter a valid I/O Port Address for the network interface.
For the 10Base-T port, enter “280”.
10. Select the **IRQ** button from the Net submenu and then enter the hardware IRQ used by the port.
For the 10Base-T port, enter “10”.
11. If desired, select the **DOWNLOAD ONLY** button from the Net submenu to keep the port from initializing until the Shell is loaded.
12. Exit the Net Setup menu.
13. Exit the TCP/IP Setup menu and reboot the workstation.
Changes do not take effect until the runtime workstation reboots.
14. If you wish to restrict access to the files on the runtime workstation, enter a FTP user name and password. To do this, select the **FTP** button from the Settings menu.
15. Connect the ethernet cable to the ethernet port of the runtime workstation.

You are now ready to transfer files from the development system (running MachineShop) to the Shell. See the *Transfer Project Files* section in this chapter for details.

Serial Connection

This section describes the steps you need to complete to prepare the runtime workstation for file transfers using a serial connection. For detailed descriptions on how to configure the settings, see the *Configure the TCP/IP Settings* section in this chapter.

Note The COM1 port on the runtime workstation is used only for downloading and debugging MachineLogic projects.

To configure the Shell for a serial connection, complete the following steps:

1. Select the **TCP/IP** button from the Settings menu to configure the TCP/IP settings.
2. If TCP/IP hasn't been enabled, select the **ENABLE** button from the TCP/IP Setup menu.
3. If a MachineShop Net Name hasn't been configured for the runtime workstations, select the **NET NAME** button from the TCP/IP Setup menu and then enter a name.
4. Select the **NET SETUP** button from the TCP/IP Setup menu to configure the network interface.
5. Select one of the **NET** buttons (1, 2, or 3) from the Network Setup menu.
6. Select the **IFACE TYPE** button from the Net submenu and then select Serial as the interface type.
7. Select the **IP ADDRESS** button from the Net submenu and then enter the IP Address.

CTC recommends that you enter 10.0.0.2 as the IP address for the runtime workstation. On the development system, enter 10.0.0.1 as the IP Address.

8. Select the **IP MASK** button from the Net submenu and then enter the IP Mask.

CTC recommends that you enter 255.255.255.0 as the IP Mask for the runtime workstation.

9. Select the **PORT ADDRESS** button from the Net submenu and then define the COM port.

COM1=3F8, COM2=2F8, COM3=3E8, COM4=2E8

10. Select the **BAUD RATE** button from the Net submenu and then select the baud rate.

This must match the baud rate set in the MachineShop Toolbar.

11. Select the **IRQ** button from the Net submenu and then enter the hardware IRQ for the COM port.
COM1=4, COM2=3, COM3 and COM4=variable setting
12. Select the **DOWNLOAD ONLY** button from the Net submenu to keep the port from initializing until the Shell is loaded.
13. Exit the Net Setup menu.
14. Exit the TCP/IP Setup menu and reboot the workstation.
Changes do not take effect until the runtime workstation reboots.
15. If you wish to restrict access to the files on the runtime workstation, enter a FTP user name and password. To do this, select the **FTP** button from the Settings menu.
16. Connect the serial cable to the appropriate serial port of the runtime workstation.

You are now ready to transfer files from the development system (running MachineShop) to the Shell. See the *Transfer Project Files* section in this chapter for details.

Serial Cable You can use any standard Windows RAS null modem cable, you can construct your own cable, or you can purchase a cable from CTC. If you decide to construct your own cable, refer to the following table for cable pinouts.

9-pin	25-pin		25-pin	9-pin	Description
pin 5	pin 7	<----->	pin 7	pin 5	Ground-Ground
pin 3	pin 2	<----->	pin 3	pin 2	Xmit-Rcv
pin 7	pin 4	<----->	pin 5	pin 8	RTS-CTS
pin 6, 1	pin 6, 8	<----->	pin 20	pin 4	DSR, CD-DTR
pin 2	pin 3	<----->	pin 2	pin 3	Xmit-Rcv
pin 8	pin 5	<----->	pin 4	pin 7	CTS-RTS
pin 4	pin 20	<----->	pin 6, 8	pin 1, 6	DTR-DSR, CD

Ethernet Point to Point Connection

This section describes the steps you need to complete to prepare the runtime workstation for file transfers using an Ethernet point to point connection. For detailed descriptions on how to configure the settings, see the *Configure the TCP/IP Settings* section in this chapter.

To configure the Shell for an ethernet point to point connection, complete the following steps:

1. Select the **TCP/IP** button from the Settings menu to configure the TCP/IP settings.
2. If TCP/IP hasn't been enabled, select the **ENABLE** button from the TCP/IP Setup menu.
3. If a MachineShop Net Name hasn't been configured for the runtime workstation, select the **NET NAME** button from the TCP/IP Setup menu and then enter a name.
4. Select the **NET SETUP** button from the TCP/IP Setup menu to configure the network interface.
5. Select one of the **NET** buttons (1, 2, or 3) from the Network Setup menu.
6. Select the **IFACE TYPE** button from the Net submenu and then select either 3C509 or NE2000 as the interface type.

Your selection depends on the network interface card installed in the unit. For the 10Base-T port, use NE2000.

7. Select the **IP ADDRESS** button from the Net submenu and then enter the IP Address.

CTC recommends that you enter 10.0.0.2 as the IP address for the runtime workstation. On the development system, enter 10.0.0.1 as the IP address.

8. Select the **IP MASK** button from the Net submenu and then enter the IP Mask.

CTC recommends that you enter 255.255.255.0 as the IP Mask for the runtime workstation.

9. Select the **PORT ADDRESS** button from the Net submenu and then enter the Port Address for the selected network interface.
10. Select the **IRQ** button and then enter the hardware IRQ used by the network interface.
11. If desired, select the **DOWNLOAD ONLY** button from the Net submenu to keep the port from initializing until the Shell is loaded.
12. Exit the Net Setup menu.
13. Exit the TCP/IP Setup menu and reboot the workstation.

Changes do not take effect until the runtime workstation reboots.
14. If you wish to restrict access to the files on the runtime workstation, enter a FTP user name and password. To do this, select the **FTP** button from the Settings menu.
15. Connect the runtime workstation to the Ethernet connector using a cross-over 10Base-T cable.

You are now ready to transfer files from the development system (running MachineShop) to the Shell. See the *Transfer Project Files* section in this chapter for details.

Transfer Project Files

Once you have set up the Shell on the runtime workstation, project files on the development system may be transferred to the unit using the MachineShop Toolbar.

This section describes how to use the MachineShop Toolbar to download and upload an active project from the development system to the runtime workstation. It also includes the steps for creating a remote backup. For a complete discussion on MachineShop, refer to the *MachineShop Getting Started Guide* or the MachineShop online help.

Important Project files can only be transferred to the runtime workstation when the MachineShop Shell Main Menu is displayed on the screen.

Adding a Connection

Before you can transfer files to the runtime system, you must create a transfer connection on the development system. A connection refers to the method used to transfer files to or from a runtime system. The types of transfer connections available are MachineShop Net, Interact IPM Compatible Serial, and disk transfer.

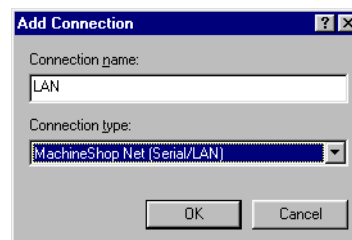
In this example, we will add a MachineShop Net connection. This type of connection allows you to communicate to the runtime system using a serial cable, Ethernet point to point or over a LAN. For instructions on the other transfer connections, refer to the *MachineShop Getting Started Guide*.

Note If you are using an Ethernet point to point connection, you will also need to configure the TCP/IP properties using the Network option in the Windows Control Panel. Refer to the *MachineShop Getting Started Guide* for instructions.

To add a MachineShop Net connection on the development system, complete the following steps:

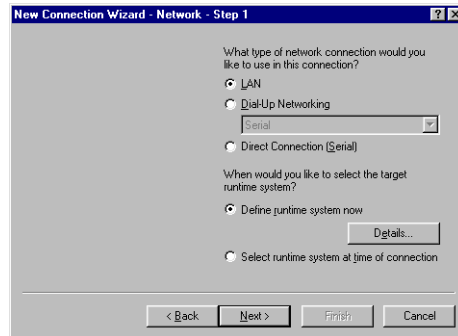
1. Select the **Add Connection** command from the Transfer Menu.

The New Connection dialog box appears.



2. Enter a name for this connection.
3. Select **MachineShop Net (Serial/LAN)** as the connection type.
4. Click the **OK** button to accept these choices.

The New Connection Wizard - Step 1 screen appears.



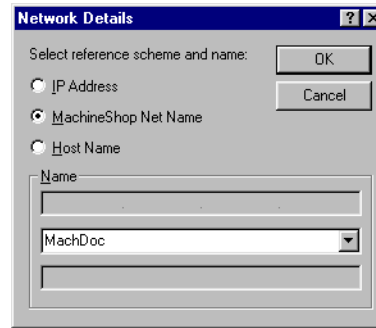
5. Specify the type of network connection you will be using for this connection by selecting one of the following options.
 - **LAN** - Select this option to connect to a runtime system through a Local Area Network (LAN).
 - **Dial-up Networking** - Select this option to connect to a runtime system through a modem using Windows standard Dial-Up Networking feature. The list box displays the available dial-up entries that you can associate with this connection.

Use Dial-Up Networking, available from the My Computer icon on the Windows desktop, to add additional dial-up connections.
 - **Direct Connection (Serial)** - Select this option to connect to a runtime system through a serial cable.

This option uses a specific dial-up entry named “MachineShop Direct Connection”. If this entry is not found, this option is not available. See the *MachineShop Getting Started Guide* or the MachineShop online help for instructions on how to create the MachineShop Direct Connection entry.

6. Select the **Define runtime system now** button and then click on **Details** to define the specific parameters for the target runtime system.

The Network Details screen appears.



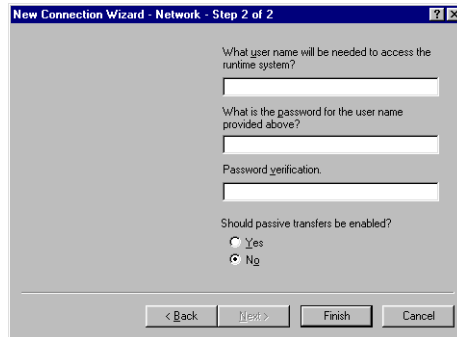
7. Select one of the following options:
 - **IP Address** - Select this option to specify the IP address of a runtime system. Enter the IP address in the top box of the Name group.
 - **MachineShop Net Name** - Select this option to specify a runtime system by name. This is the name you entered using the MachineShop Shell/Settings/TCP/IP/Net Name command.

MachineShop automatically displays the names that it is able to detect in the list box. Select a name from the list.

Note The runtime system must be configured and connected for it to appear in the MachineShop Net Name list.

- **Host Name** -Select this option to specify the host name, such as `www.ctcusa.com`, of the runtime system. This option requires a network with a domain name server (DNS). Your network administrator must also configure a host name to match the IP address of the runtime system prior to using this option.

8. Click on **OK** to accept your entries.
The New Connection Wizard screen appears.
9. Click on **Next** to continue.
The New Connection Wizard - Step 2 screen appears.



10. Enter a user name and password if an FTP user name and password was entered on the runtime system using the MachineShop Shell/Settings/FTP commands.

The user name and password must match what was entered on the runtime system for you to gain access to the runtime system.
11. Select Yes to enable passive transfers. Otherwise, select No.

Passive transfers allow MachineShop to connect to an FTP server when the MachineShop Toolbar is behind a firewall. In most cases, you will NOT need passive transfers.
12. Click on **Finish** to create the connection.

Downloading Files

Once a connection is created, you may download the files needed to create or update the runtime system. The MachineShop Toolbar includes a Transfer Wizard that steps you through the process of selecting a connection and downloading files to a runtime system.

To download files to the runtime system, complete the following steps:

1. Open the project you wish to download in MachineShop.
2. Select the **Transfer Wizard** command from the Transfer menu.
The Transfer Wizard appears.
3. Check the **Download to Runtime** box and then click on Next.
4. Follow the instructions provided by the Transfer Wizard to finish downloading the project.

Uploading Files

You may also upload a file or project to the development system using the Transfer Wizard. The process of uploading a project is very similar to downloading a project.

To upload files to the development system, complete the following steps:

1. Select the **Transfer Wizard** command from the Transfer menu.
The Transfer Wizard appears.
2. Check the **Upload from Runtime** box and then click on Next.
3. Follow the instructions provided by the Transfer Wizard to finish uploading the project.

Remote Backup

MachineShop provides a Backup Wizard to guide you through the process of backing up a project running on a runtime system to a selected target. The target can be a variety of storage devices including diskette, Compact Flash, hard drive, or network.

To create a backup of a project on a runtime workstation, complete the following steps:

1. Select the **connection** you want to use from the Select Connection box on the MachineShop toolbar.
2. Select the **Create Backup** command from the Tools menu.

The Create Backup submenu appears.

3. Select the **Remote System** command from the Create Backup submenu.

The Backup Wizard appears.

4. Follow the instructions provided by the Backup Wizard to finish backing up the project.

Remote Restore

MachineShop also allows you to restore a project backup to the runtime system. This is done using the Restore Wizard. The Restore Wizard will automatically decompress the backup project and load it on the runtime workstation.

To restore a project backup to a runtime system, complete the following steps:

1. Select the **connection** you plan to use from the Select Connection box on the MachineShop toolbar.
2. Select the **Restore Backup** command from the Tools menu.

The Restore Backup submenu appears.

3. Select the **Remote System** command from the Restore Backup submenu.

The Restore Wizard appears.

4. Follow the instructions provided by the Restore Wizard to finish backing up the project.

Chapter Summary

In this chapter you learned how to configure the TCP/IP settings for the runtime workstation. These settings must be defined for serial, LAN, or ethernet point to point connections. You also learned how to use MachineShop to download an active project on the development system to the runtime workstation.

In the next chapter, you learn how to use the Control Panel option to configure the MachineLogic Control Adapter.

MachineLogic Control Panel

The Control Panel option in the Shell allows you to view information about MachineLogic. This includes the state of the runtime kernel, I/O device errors, and the tasks included in the project. It also is used to configure the settings for the MachineLogic Control Adapter.

This chapter describes how to configure the settings for the MachineLogic Control Adapter. It also provides instructions for stopping and starting the MachineLogic runtime kernel and resetting the Watchdog timer. If the current project does not include MachineLogic, you may skip this chapter.

Chapter Contents

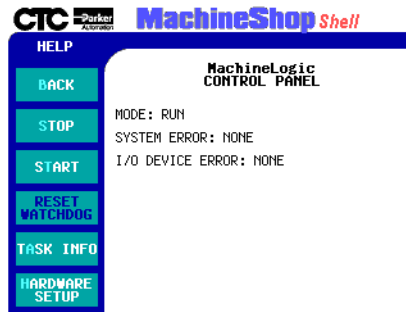
<i>Access the Control Panel</i>	74
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Access the Control Panel

To access the **Control Panel** option, complete the following step:

- Select the **CONTROL PANEL** button from the Utilities submenu.

The Control Panel screen appears.



The display area of the screen shows the current mode (STOP, RUN, or HALT) of the MachineLogic runtime. It also displays error information. If an error condition occurs, the error number and the corresponding message will be displayed on the screen.

Start and Stop MachineLogic

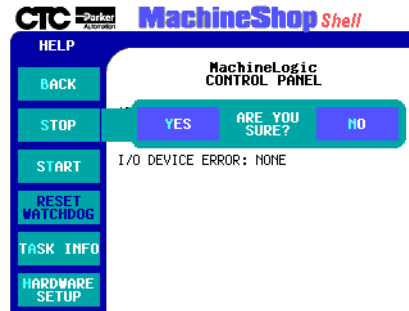
From the Control Panel menu, you may start and stop the MachineLogic runtime kernel.

Stopping MachineLogic

To stop MachineLogic from executing, complete the following steps:

1. Select the **STOP** button from the Control Panel menu.

The Stop submenu appears for confirmation.



2. Select one of the following buttons:

- **YES** - directs the Shell to stop the execution of MachineLogic
- **NO** - directs the Shell to continue the execution of MachineLogic and to return to the Control Panel main menu.

Once MachineLogic stops, the display area of the Control Panel screen is updated to show that MachineLogic is NOT running.

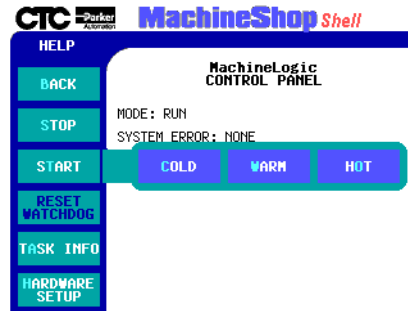
Starting MachineLogic

There are three types of start modes: Cold, Warm, and Hot. The start modes determine how data is initialized and tasks are activated in the MachineLogic project.

To start MachineLogic, complete the following steps:

1. Select the **START** button from the Control Panel menu.

The Start submenu appears.



2. Select one of the following start buttons:
 - **COLD** - initializes all data to the default value and activates all user tasks
 - **WARM** - initializes non-retentive data and activates all user tasks
 - **HOT** - does not initialize data but does activate all user tasks

After making the selection, the MachineLogic runtime kernel is started and the display area is updated to show that MachineLogic is running.

Reset the Watchdog Timer

The Reset Watchdog option on the Control Panel menu allows you to reset the hardware watchdog timer on the MachineLogic Control Adapter. If the timer exceeds the alarm threshold, the Reset Watchdog button flashes in red and an error message is displayed in the display area.

Note This option is only available when the Watchdog feature is enabled and the timer has exceeded the alarm threshold.

To reset the watchdog timer, complete the following step:

- Select the **RESET WATCHDOG** button from the Control Panel menu.

The watchdog timer is reset and the Reset Watchdog button is disabled.

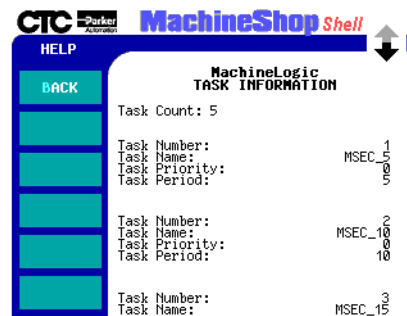
View Task Information

You may view information about the MachineLogic tasks included in the installed project. The information includes a count of tasks and details such as task name, priority, and period for each task in the project.

To display task information for the MachineLogic project, complete the following step:

- Select the **TASK INFO** button from the Control Panel menu.

The Task Information screen appears.



Configuring the MachineLogic Control Adapter

This section describes how to view and modify the current MachineLogic Control Adapter settings. This includes the retentive memory size and address, port address, hardware interrupt request, the watchdog and power fail status, and the UCS communication card settings.

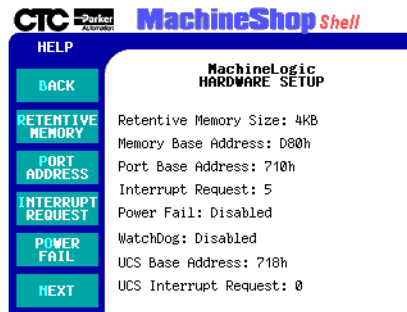
Note Changes made to the MachineLogic Control Adapter are written to either the MCLA.INI file or the MACHLOG.INI file. See *Appendix A* for details on these files.

These changes do not take effect until the workstation reboots. A confirmation message will display when you exit the Hardware Setup screen asking if you wish to reboot the system.

To view the current MachineLogic Control Adapter settings, complete the following step:

- Select the **HARDWARE SETUP** button from the Control Panel menu.

The MachineLogic Hardware Setup screen appears.



Retentive Memory

The Retentive Memory defines the non-volatile shared memory (NVSRAM) in kilobytes from 4k to 32K, incrementing in values 4k, 8k, 16k, and 32k.

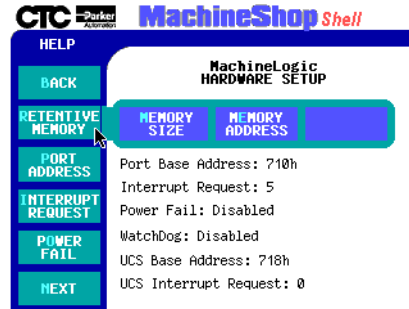
It also defines the base memory segment for the NVSRAM. The base memory segment must be defined at an address that is evenly divisible by the memory size and allows the entire memory window to fit within certain ranges based on the model of a PowerStation.

Note These settings should match the resource configured Data Area for the MachineLogic project. See the *MachineLogic Getting Started Guide* for more information.

To configure the Retentive Memory for the MachineLogic Control Adapter, complete the following steps:

1. Select the **RETENTIVE MEMORY** button from the Hardware Setup menu.

The Retentive Memory submenu appears.



2. Select one of the following buttons.
 - **MEMORY SIZE** - defines the non-volatile shared memory (NVSRAM) in kilobytes. A value of 0 will disable the NVSRAM. The default value of the Retentive Memory Size is 4K.
 - **MEMORY ADDRESS** - defines the base memory segment for the NVSRAM. The default value of the Retentive Memory Address is 0xD800.

The pop-up keypad appears.

3. Enter a valid memory size or memory address for the Control Adapter.
4. Press the **ENTER** button to accept the values.

Note These changes are stored in the MLCA.INI file. Changes do not take effect until the workstation reboots.

Port Address

The Port Address defines the I/O port address parameter, ranging from 0x200 to 0xFFF8 in multiples of eight. The default value of the Port Address is 0x710.

To configure the Port Address of the MachineLogic Control Adapter, complete the following steps:

1. Select the **PORT ADDRESS** button from the Hardware Setup menu.

The pop-up keypad appears.

2. Enter a valid port address for the Control Adapter.
3. Press the **ENTER** button to accept the value.

Note This change is stored in the MLCA.INI file. Changes do not take effect until the workstation reboots.

Interrupt Request

The Interrupt Request defines the assigned IRQ on the Control Adapter. Valid IRQ numbers are 3, 4, 5, 7, 10, 11, 12, or 15 (as long as the number does not conflict with any other PC IRQ assignments).

The default value of the Interrupt Request is 5.

To configure the Interrupt Request for the MachineLogic Control Adapter, complete the following steps:

1. Select the **INTERRUPT REQUEST** button from the Hardware Setup menu.

The pop-up keypad appears.

2. Enter a valid interrupt request number for the Control Adapter.

This value defines the IRQ used by the card. Set the IRQ to zero (0) if the Powerfail and Watchdog functions are disabled on the Control Adapter Card.

3. Press the **ENTER** button to accept the value.

Note This change is stored in the MLCA.INI file. Changes do not take effect until the workstation reboots.

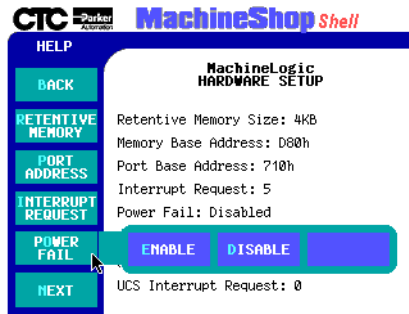
Power Fail Status

The Power Fail feature is designed to protect the system in the event of an uncontrolled power loss. The power fail detection circuit on the MachineLogic Control Adapter monitors the system voltage. When the +5 Volts supply drops below 4.75 Volts, it will generate an interrupt to shutdown the I/O and de-energize the relay. This relay can be used as an external indicator as part of an emergency stop circuit.

To enable/disable the Power Fail feature, complete the following steps:

1. Select the **POWER FAIL** button from the Hardware Setup menu.

The Power Fail submenu appears.



2. Select one of the following buttons:

- **ENABLE** - activates power fail detection on the MachineLogic Control Adapter
- **DISABLE** - deactivates power fail detection on the MachineLogic Control Adapter

Note This change is stored in the MACHLOG.INI file. Changes do not take effect until the workstation is rebooted.

Watchdog Status

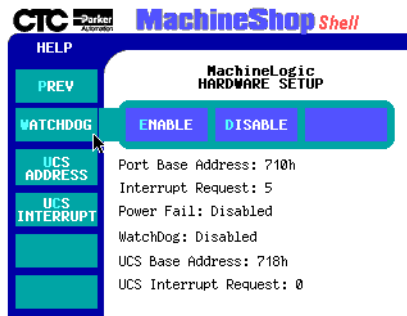
The Watchdog feature is designed to notify the user of a system failure (hardware or software) that affects the running of MachineLogic. If the watchdog timer exceeds the alarm threshold, the watchdog circuitry generates an interrupt to shutdown the I/O and de-energize the relay. This relay can be used as an external indicator of a control system failure.

You must manually reset the watchdog timer by selecting the Reset Watchdog button from the Control Panel menu.

To enable/disable the watchdog timer feature, complete the following steps:

1. Select the **WATCHDOG** button from the Hardware Setting menu.

The Watchdog submenu appears.



2. Select one of the following buttons:

- **ENABLE** - activates the watchdog timer on the MachineLogic Control Adapter
- **DISABLE** - deactivates the watchdog timer on the MachineLogic Control Adapter

Note This change is stored in the MACHLOG.INI file. Changes do not take effect until the workstation is rebooted.

UCS Address

The UCS Base Address defines the I/O port address parameter, ranging from 0x200 to 0xFFFF8 in multiples of eight. The default value of the UCS Base Address is 0x718.

To configure the base address for the UCS interface card, complete the following steps:

1. Select the **UCS ADDRESS** button from the Hardware Setup menu.

The pop-up keypad appears.

2. Enter a valid address for the UCS card.

3. Press the **ENTER** button to accept the address value.

Note This change is stored in the MLCA.INI file. Changes do not take effect until the workstation reboots.

UCS Interrupt

The hardware interrupt for the UCS interface card can be any of the following: 3, 4, 5, 7, 10, 11, 12, or 15 as long as it does not conflict with any other IRQ assignments made by the PC. The default value of the UCS hardware interrupt is Irq=0 (disabled).

To configure the hardware interrupt for the UCS interface card, complete the following steps:

1. Select the **UCS INTERRUPT** button from the Hardware Setup menu.

The pop-up keypad appears.

2. Enter a valid IRQ number for the interrupt.

Set the IRQ parameter to zero (0) if no interrupt is used.

3. Press the **ENTER** button to accept the interrupt value.

Note This change is stored in the MLCA.INI file. Changes do not take effect until the workstation reboots.

Chapter Summary

In this chapter you learned how to configure the Machine-Logic Control Adapter. You also learned how to start and stop the MachineLogic runtime kernel, reset the watchdog timer, and view tasks associated with the MachineLogic project.

The next section is an appendix that lists references for the MachineShop Shell and the Machine-Logic runtime system.

Configuration Files

This appendix provides the text of the files that are required for the runtime system.

MLCA.INI

The text of the MLCA.INI appears below:

```
[ControlAdapter]
MemBaseSeg=0xD800
MemSize=4 ;Set in Kbytes (0, 4, 8, 16, or 32)
IOBase=0x710
IRQ=5 ;(3, 4, 5, 7, 10, 11, 12, or 15)

[UCS]
UCSBase=0x718
UCSIrq=0
```

The parameters for MLCA.INI are described in the table below.

Parameter	Description
[ControlAdapter]	Memory sizes and locations for the control adapter
MemBaseSeg=0xD800	Defines the base memory segment for the non-volatile shared memory (NVS RAM). The base memory segment must be defined at an address that is evenly divisible by the memory size and allows the entire memory window to fit within the following ranges: <ul style="list-style-type: none"> • P1 PowerStations: 0xD000 to 0xEFFF • 386 P2 and all 5x86 PowerStations: 0xC800 to 0xEFFF • Pentium PowerStations: 0xC800 to 0xDFFF For example, 0xD000, 0xD100, 0xD200, etc. are valid base memory segments for a 4 kilobyte memory size.
MemSize=4	Defines the size of the NVS RAM in kilobytes from 4k to 32k, incrementing by the following values: 4k, 8k, 16k, and 32k. A value of 0 disables the NVS RAM.
IOBase=0x710	Defines the I/O port address ranging from 200 to FFF8 in multiples of eight.

Parameter	Description
IRQ=5	Defines the hardware interrupt. The IRQ you select can be any of the following: 3, 4, 5, 7, 10, 11, 12, or 15 as long as it does not conflict with any other IRQ assignments made by the PC. Set to 0 if Powerfail and Watchdog are disabled.
[UCS]	Parameters for UCS interface
UCSBase=0x718	Defines the I/O port address ranging from 200 to FFF8 in multiples of eight.
UCSIrq=0	Defines the hardware interrupt. The IRQ you select can be any of the following: 3, 4, 5, 7, 10, 11, 12, or 15 as long as it does not conflict with any other IRQ assignments made by the PC. Set to 0 if no interrupt is used.

MACHLOG.INI

The text of the MACHLOG.INI file appears below:

```
[COM]
Port = 1
Baud = 19200

[LIMITS]
Program = 50           ;Set in Kbytes
Inputs = 1024         ;Set in bytes on a quad boundry
Outputs = 1024        ;Set in bytes on a quad boundry

[CONTROLADAPTER]
PowerFail=ENABLED
Watchdog=ENABLED

[KEYBOARD]
CtrlAltDel=DISABLED;Key sequence is ignored if disabled.

[MACHINELOGICBOOTOPTION]
PowerOnOperation=ENABLED
```

The parameters for MACHLOG.INI are described in the table below:

Parameter	Description
[Comm]	Communication parameters for downloading and uploading
Port=1	Defines the COM port for communicating with MachineLogic.
Baud=19200	Defines the baud rate for communicating with MachineLogic.
[Limits]	Memory limits for control program
Program=50	Defines the amount of memory in kilobytes from 1k to 60k reserved for the control program.
Inputs=1024	Defines the amount of memory in bytes reserved for inputs to the control program. This value can range from 4 bytes to 8192 bytes.
Outputs=1024	Defines the amount of memory in bytes reserved for outputs from the control program. This value can range from 4 bytes to 8192 bytes.
[ControlCard]	Parameters for control adapter
Powerfail=Disabled	Controls whether or not the MachineLogic Control Adapter powerfail detection is enabled or disabled.
Watchdog=Disabled	Controls whether or not the MachineLogic Control Adapter watchdog timer is enabled or disabled.
[Keyboard]	Parameters for keyboard
CtrlAltDel=Enabled	Controls whether or not the Ctrl+Alt+Del key combination for rebooting the machine is enabled or disabled.
[MachineLogicBootOption]	Parameters for start up
PowerOnOperation=Enabled	Controls whether or not MachineLogic will start after the workstation is powered on.

TCPIP.INI

The text of the TCPIP.INI file appears below:

```
[TCP/IP]
APIInt=0xFB
EnableTCPIP=1
MachineShopNetName=Osaka
IDBroadcastPort=0xFFF8
IDBroadcastSeconds=10
Buffers=10
```

```
[Net_1]
InitOnStartup=1
IPAddr=0.0.0.0
IPMask=255.255.255.0
NetDriver=None
NetAddr=0x280
NetIRQ=10
```

```
[Net_2]
InitOnStartup=0
IPAddr=0.0.0.0
IPMask=255.255.255.0
NetDriver=None
NetAddr=0x300
NetIRQ=7
```

```
[Net_3]
InitOnStartup=0
IPAddr=10.0.0.2
IPMask=255.255.255.0
NetDriver=None
NetAddr=0x3F8
NetIRQ=4
Baud=115200
```

PSU.CFG

The text of the PSU.CFG file appears below:

```
<data>
    <application>
        <version></version>
    </application>
    <configuration>
        <poweron runitr="NO"></poweron>
        <lastlanguage>English</lastlanguage>
        <optiondata>4</optiondata>
        <displaytype>0</displaytype>
    </configuration>
    <backup>
        <path1></path1>
        <path2></path2>
        <path3></path3>
    </backup>
    <restore>
        <path1></path1>
        <path2></path2>
        <path3></path3>
    </restore>
    <ftp>
        <username></username>
        <password></password>
    </ftp>
</data>
```


Installing the MachineShop Shell

This appendix describes the steps to install the MachineShop Shell on a non-CTC workstation. The steps include the following:

1. Install the MachineShop Shell software from the MachineShop Shell Installation disk.
2. Copy the NET directory and the contents of CTC directory from the PowerStation Start disk to your PC.
3. Modify the workstation's AUTOEXEC.BAT file.

Note The MachineShop Shell Installation disk and the PowerStation Start disk are part of the Runtime Workstation disk set. For instructions on how to create the Runtime Workstation disk set, see the *MachineShop Installation Booklet*. For instructions on how to install the MachineShop Shell on a PowerStation, see your *PowerStation User Guide*.

Install the MachineShop Shell Software

To install the MachineShop Shell software, complete the following steps:

1. Insert the MachineShop Shell Installation disk into drive A.
2. Enter MS-DOS mode and change to drive A by typing `A :`
3. At the DOS prompt, type `Install A: C: .`
4. Press Enter to execute this command.
You will be asked if you want to continue with the installation.
5. Type Y for Yes in order to continue.
6. After the installation is complete, remove the MachineShop Shell Installation disk from drive A and then reboot your system.

Copy Files to the Non-CTC Workstation

After the installation is complete, you must copy the NET directory and the contents of the CTC directory from the PowerStation Start disk to the non-CTC workstation.

To copy the files to the non-CTC workstation, complete the following steps:

1. Insert the PowerStation Start disk into drive A.

2. Copy the A:\NET directory to C:\NET.
3. Copy the contents of the A:\CTC directory into the C:\CTC directory.

Modify the AUTOEXEC.BAT file

The lines shown below must appear in the AUTOEXEC.BAT file for the workstation to operate properly. You may add these lines to the end of your AUTOEXEC.BAT file.

```
REM
*****
REM Add the CTC folder to the system's PATH.
REM
*****

PATH %PATH%;C:\CTC

REM
*****
REM Load the MachineLogic Control Adapter driver if it is present.
REM
*****

IF NOT EXIST C:\MACHLOG\NUL.EXT MD C:\MACHLOG
CD \MACHLOG
IF NOT EXIST C:\CTC\MLCA.EXE GOTO NOMLCA
CD \CTC
LH C:\CTC\MLCA

:NOMLCA

REM
*****
REM Set up Interact and MachineLogic environment variables for MS Shell.
REM
*****

SET INTERACT=C:\INTERACT
SET INTERACT_FILES=C:\INTERACT\APPFILES
SET INTERACT_STARTUP=C:\STARTUP
SET MACHINELOGIC=C:\MACHLOG

REM
*****
REM Load NETWORK drivers -- NOVELL and/or TCPIP stack.
REM Remove REM on the CALL statement to load NOVELL network batch file.
REM If used, this must be called BEFORE loading the TCPIP stack.
REM
*****
```

```
CD \NET
REM CALL C:\NET\NET.BAT
LH C:\NET\TCPIP

REM
*****
REM Load MachineLogic if ML kernel present, and set for boot operation.
REM (determined by MLDU.EXE return value 0 = ENABLED, 1 = DISABLED)
REM
*****

IF NOT EXIST C:\MACHLOG\NUL.EXT MD C:\MACHLOG
CD \MACHLOG
IF NOT EXIST C:\MACHLOG\MACHLOG.EXE GOTO NOML
C:\CTC\MLDU
IF ERRORLEVEL 1 GOTO NOML

C:\MACHLOG\RTXDOS
C:\MACHLOG\MACHLOG

:NOML

REM
*****
REM Start the MachineShop Shell.
REM
*****

CD \CTC
PSU
```


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